

Proposed Changes to Letters of Agreement covering the disposal of
Radioactive Wastes from HMNB Clyde Faslane and Coulport

CONSULTATION DOCUMENT FOR

DISCRETIONARY CONSULTEES AND THE PUBLIC

January 2020

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We call this **One Planet Prosperity**

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TABLE OF CONTENTS

SUMMARY	3
1 INTRODUCTION	4
1.2 Application of Radioactive Substances Legislation to MoD	4
1.3 Consultation Process	5
2 APPLICATION INFORMATION	8
2.1 Background to Current Radioactive Waste Operations at HMNB Clyde	8
2.2 Proposed Changes to Faslane Agreements	10
2.2.1 Liquid Waste Arrangements Faslane.....	10
2.2.2 Gaseous Waste Arrangements Faslane	12
2.2.3 Solid Waste Arrangements Faslane	13
2.3 Proposed Changes to Coulport Agreements	14
2.3.1 Gaseous Agreement	14
2.3.2 Solid Waste Agreement.....	14
2.3.3 Liquid Wastes from Coulport	15
2.4 SEPA Changes	16
3 DETERMINATION PROCESS.....	17
4 RADIOACTIVITY - UNITS AND QUANTITIES	18
5 SUPPORTING PAPERS	19

SUMMARY

SEPA has received an application to approve radioactive waste disposal from HMNB Clyde. It is SEPA practice to consult with a number of organisations and the wider public on such applications. This document supports this consultation.

This consultation is available on SEPA's website and responses can be submitted online. Alternatively, consultation responses can be made in writing to the address below no later than 6 March 2020.

The Registry Department
Scottish Environment Protection Agency
Angus Smith Building
Parklands Avenue
Eurocentral
Holytown
North Lanarkshire
ML1 4WQ

Or email to: RSenquiries@sepa.org.uk

All responses will be made public unless a respondent specifically asks for their response to be treated confidentially. Confidential responses may be included in any statistical summary of numbers of responses received or views expressed. Respondents should be aware that SEPA is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and would therefore have to consider any request made to it under that Act for information relating to responses made.

1 Introduction

The Ministry of Defence (MoD) has submitted an application to SEPA for new administrative arrangements covering the disposal of radioactive waste at HMNB Clyde, Coulport and Faslane. The application covers discharges from a new effluent treatment facility at Faslane and seeks to update existing arrangements in line with current standards. The purpose of this document is to highlight the main points within the application, provide some background details and to seek the views of consultees on the proposed changes.

1.2 Application of Radioactive Substances Legislation to MoD

In Scotland the disposal of radioactive wastes was subject to the provisions of the Radioactive Substances Act 1993 (RSA93) until 1 September 2018. RSA93 was largely replaced from this date by Environmental Authorisations (Scotland) Regulations 2018 (EASR). Section 42 of RSA93 provided an exemption for MoD and this exemption is replicated in Regulation 78 of EASR. However, MoD policy states that:

“Where Defence has exemptions, derogations or dis-applications from HS&EP legislation, we maintain Departmental arrangements that produce outcomes that are, so far as reasonably practicable, at least as good as those required by UK legislation.”¹

Historically, the disposal of radioactive substances is covered in administrative arrangements between MoD and SEPA such that the provisions of RSA93 were applied appropriately. The framework of these arrangements is detailed in a MoD SEPA agreement on Matters Relating to Radioactive Substances, see paper 1. MoD and SEPA are working to update this framework to reflect the change in legislation. The update is likely to result in changes in terminology but the overall approach to regulation will not change significantly.

At a site level the arrangements take the form of Letter of Agreement (LOAs). These letters contain conditions and limitations on the disposal of waste similar to those previously included in RSA93 section 13 authorisations and now for EASR permits. The extant Letters of Agreement for HMNB Clyde Faslane and Coulport are included in annex 1 of paper 4b and paper 5. These Letters of Agreement are being renewed.

¹ Safety, Health and Environment Protection in Defence: Policy Statement by the Secretary of State for Defence. 20 June 2018

RSA93 and EASR have requirements specific to sites licensed under the Nuclear Installations Act 1965 (NIA65). MoD has exemptions from NIA65 and consequently HMNB Clyde Faslane and Coulport are not licensed under NIA65. In line with the MoD policy position stated above MoD has developed its own licensing arrangements to mirror NIA65. These arrangements are enforced by MoD's internal regulator the Defence Nuclear Safety Regular (DNSR). The HMNB Clyde sites are DNSR Authorised Sites that are the MoD equivalent to Nuclear Sites licensed under NIA65. Consequently, SEPA treats these sites as if they were licensed under NIA65.

1.3 Consultation Process

For some activities such as the permitting of sites licensed under NIA65 SEPA consults with the public and other relevant bodies. As we consider the DNSR authorised sites at Faslane and Coulport to be equivalent to a NIA65 Nuclear licensed site it is appropriate for SEPA to consult on this application.

SEPA has decided to consult the following bodies at the following stages.

Consultation Stage 1

SEPA has consulted with the Office of Nuclear Regulation (ONR), and DNSR, as this application relates to a MoD site, in their regulatory capacities. Food Standards Scotland (FSS) has been consulted with regards their role in the food safety. Previously RSA93 (section 24) and now EASR Schedule1 paragraph 23 provides Scottish Ministers the powers to determine applications. SEPA historically consulted Scottish Ministers to provide opportunity for these powers to be exercised. Scottish Ministers have been consulted on this application. The responses from the first stage of the consultation are included as paper 2.

Consultation Stage 2

Stage 2 of the consultation is to engage with other relevant public bodies and organisations that SEPA considers appropriate. The public bodies and organisations that SEPA has decided to consult with during this stage are listed below:

- Scottish Natural Heritage
- Environment Agency
- Argyll and Bute Council

- West Dunbartonshire Council
- Greater Glasgow and Clyde Health Board
- Highlands and Islands Health Board
- Scottish Water
- Public Health England
- Committee on Medical Aspects of Radiation in the Environment

In addition to those bodies, listed SEPA has notified the members of the Clyde Local Liaison Committee and has invited comment from the wider public. To this end the consultation is being advertised in:

- The Edinburgh Gazette;
- The Herald; and
- The Helensburgh Advertiser.

In addition to being on the website copies of the consultation package are available on request. Requests can be made using the contact details below.

This document presents information to support the Stage 2 consultation. In undertaking this consultation SEPA is looking for information relevant to this application. Specifically SEPA would like to be informed of any matters that your organisation or you as an individual are aware of that could influence SEPA's decision to make the proposed changes.

Your response to this consultation should be returned to the following addresses:

The Registry Department
Scottish Environment Protection Agency
Angus Smith Building
6 Parklands Avenue
Eurocentral
Holytown
North Lanarkshire
ML1 4WQ

Or email to: RSenquiries@sepa.org.uk

Responses should be made to SEPA by **6 March 2020** at the above address. Following the closing date, all responses will be considered prior to the determination of the changes.

Consultation Stage 3

Following the previous consultation steps and SEPA's determination of the application, the consultees from the first consultation stage will be consulted on the details of SEPA's determination and decision.

SEPA will document the determination considerations and details of any new arrangements. This document is known as a "decision document". This document will be made available on SEPA's website at the end of the process. Consultation responses will be included in this document. Therefore anyone responding to this consultation should be aware that their responses will be made public unless a respondent specifically asks for their response to be treated confidentially. Confidential responses may be included in any statistical summary of numbers of responses received or views expressed.

Respondents should also be aware that SEPA is subject to the provisions of the Freedom of Information (Scotland) Act 2002 and Environmental Information (Scotland) Regulations 2004 and therefore have to consider any request made to it under this legislation for information relating to responses made.

2 APPLICATION INFORMATION

MoD is building a Nuclear Support Hub (NSH) at Faslane which will centralise the existing radioactive waste handling facilities and radiochemistry laboratories. The NSH is situated to the north of the site and details of the facility are given in section 5 of the application (Paper 4b). As this a new location within the Faslane, see figure 2 of Paper 4b, there is a new effluent discharge point. This is one of the reasons that a new site agreement is needed.

2.1 Background to Current Radioactive Waste Operations at HMNB Clyde

This section is intended to provide some background information to assist consultees and members of the public to understand the information provided by the MoD in their application to renew the agreement for radioactive waste disposals from HMNB Clyde.

HMNB Clyde comprises of 2 sites: the Faslane Naval Base and the Royal Naval Armaments Depot at Coulport.

Faslane is located on the north eastern shore of Gare Loch. Faslane is one of MoD's principal operational submarine bases. The number of submarines which operate from Faslane is scheduled to increase. Faslane's function is to support the operation of submarines including routine maintenance and the provision of associated services. Coulport is on the eastern shore of Loch Long and is used for the storage and handling of weapons in support of the submarine programme.

MoD has contracted out a number of the operations at both Faslane and Coulport however MoD remains in control of both sites through the Naval Base Commander and therefore the defence exemption continues to apply.

Currently there are extant LOAs in place for gaseous and solid radioactive discharges from Coulport and solid, liquid and gaseous radioactive discharges from Faslane. The extant LOAs detail the arrangements for these disposals and include both limitations and conditions. The extant LOAs are given in appendix 1 of paper 4b and paper 5. A summary is provided in table 1.

Table 1: Details of Extant Letters of Agreement for HMNB Clyde

Site	Scope of Letter	Date of Letter
Faslane	Solid Radioactive Waste	17 August 1995
Faslane	Liquid and Gaseous Radioactive Waste	18 June 1993*
Coulport	Solid Radioactive Waste	9 June 1995
Coulport	Gaseous Radioactive Waste	8 December 2000

*An addendum was added in June 2019 to cover the disposal of general effluents

As can be seen from table 1 and paper 4b, the letters are all older than 15 years. In 2012 MoD and SEPA reviewed these LOAs and concluded that the arrangements were broadly in line with requirements placed on similar civil sites but identified a number of updates necessary to fully reflect current practices. The process to make these updates was initiated in 2013 and included a consultation similar to this one. However due to a number of factors including the planned timescale for the NSH and the requirement for a new discharge point SEPA agreed to defer the update until the NSH application was made.

An addition to the Faslane LOA for liquid wastes occurred in June 2019. The 2019 Addendum covers the disposal of general effluents. General effluents potentially contain very low levels of tritium but significantly greater quantities of non-radioactive contaminants such as oils, grease and biological material from processes aboard the submarine that do not directly involve radioactivity. The requirement to include general effluents in the LOA arose from findings other UK naval bases and because there are currently no clearance values for tritium in aqueous liquids, although they do exist for solids and other non-aqueous liquids. The 2019 Addendum largely replicated RSA93 exemption levels and conditions allowing very low concentrations to be disposed of either to the Gare Loch or to a sewer. Most importantly, the 2019 Addendum requires treatment of non-radioactive contaminants prior to discharge, as they are more harmful to the environment than the low level of tritium. The process for the 2019 Addendum followed that of a minor variation for an NIA65 licensed site with limited consultation (DNSR, ONR, FSS and Scottish Ministers) as the change only reflected exempted values.

In preparing the application for replacement agreements MoD was asked to review current and future operational needs in conjunction with radioactive waste disposal requirements. MoD provided information in this regard and proposed a number of changes. The relevant information is available at paper 4b.

It should be noted that although there are plans to increase the numbers of submarines at Faslane this does not represent any change to the nature of the radioactive waste arising although it may have an impact on the quantity of waste produced.

2.2 Proposed Changes to Faslane Agreements

2.2.1 Liquid Waste Arrangements Faslane

Sources of liquid waste arising at Faslane are summarised as follows.

1. Effluents that primarily originate from the operation of submarine reactor circuits and associated plant. They are taken from the submarine to the onshore facility (currently the Radioactive Effluent Discharge Facility (REDF) and in future the NSH) where they are treated by filtration and ion exchange to reduce the radioactivity (see section 5.5 paper 4b) before discharge to the Gare Loch. These effluents represent the bulk of activity discharged. These discharges are covered by the current LOA and are fully described in sections 3.4-3.6 and 5.5-5.7 of paper 4b.
2. Small volumes arise from maintenance work and on shore laboratories. This effluent may include samples of the effluents in 1 above, cleaning residues and tracers used for radiochemical analysis. These effluents are also transported to the REDF/NSH for treatment by filtration and ion exchange to remove particulate material and reduce the radioactivity before discharged into the Gare Loch. These discharges are covered by the current LOA.
3. Liquid waste also arises from conventional operations within the submarine that are not associated with the reactor and are often referred to as general effluents. These effluents contain pollutants such oils, greases and sewage. Tritium has been detected at very low levels typically below 1 Bq/ml. Due to the non-radioactive contaminants these effluents are not suitable for treatment as radioactive effluents. Furthermore, there is no practical way of removing the tritium. Consequently, these effluents are treated to remove the non-radioactive contaminants prior to disposal. Currently disposals are made under the Addendum to suitable contractors who treat the effluent and dispose of it to one of the following: a third party sewer; to the nearby Oil Fuel Depot which removes oil before disposal to the Gare Loch; or to the onsite sewage treatment works which also discharges to the Gare Loch following treatment. Sections 3.7 and 5.7.3 in paper 4b provide further details. The application seeks to increase the permitted concentration

level from 1 to 100Bq/ml but with no increase to the overall total activity disposed. Although concentrations to date have been less than 1Bq/ml higher concentrations have been found in similar effluents produced at other UK naval bases.

4. Trim and ballast water is used to adjust submarine buoyancy and manoeuvrability. As with the general effluents described above this water sometimes contains trace amounts of tritium. For this reason it was included in the 2019 Addendum agreement. No change is proposed in this application.
5. Chemically contaminated wastes containing low levels of radioactivity occasionally arise from submarine operations. The chemical content means that they are unsuitable for ion exchange and are therefore unsuitable for onsite treatment. Currently there is no agreed disposal route for these wastes. Routes do exist to specialist contractors and such routes are routinely included in the equivalent civil nuclear permits. MoD has applied to include this as route in the new agreement, see Section 5.7.4 of paper 4b.

SEPA requested that MoD review the existing liquid disposal limits to the Gare Loch in line with their operational requirements. Table 2 below (also see section 3.5.4 of paper 4b) shows the limits within the existing letters of agreement, the actual disposals made over the last 5 years and the new limits proposed by MoD.

Table 2: Liquid Discharges from Faslane

Radionuclide	Current Rolling 12 Monthly total Limit (MBq)	Previous Annual Discharges (MBq)					MoD proposed annual limits (MBq)
		2014	2015	2016	2017	2018	
Cobalt 60	500	0.12	0.63	0.33	0.68	0.49	100
Tritium	1,000,000	3810	19500	11000	330000	5816	500,000
Gross beta	500	0.25	1.47	0.66	1.36	0.99	100
Gross alpha	200	0.02	0.12	0.07	0.14	0.10	50
Carbon 14	n/a						100

In recent years liquid discharges from Faslane have been considerably lower than the agreed limits. As can be seen from table 2 above MoD have proposed substantial reductions whilst allowing for ongoing operational needs. Additionally, MoD was asked to carry out a waste

characterisation and assessment exercise. The results of which are present in section 5.6 of paper 4b. As a result of this work it is proposed that a specific limit for Carbon-14 is required.

Wastes of the types listed above can be brought onto the site from UK submarines that are in different locations. This could be when the submarine is at Coulport or when it is at a foreign port. In such cases this waste will be treated in the same manner as it would have been had it arisen from a submarine alongside at Faslane.

2.2.2 Gaseous Waste Arrangements Faslane

The extant LOA refers to the discharge of gaseous waste but does not provide any specific limits. Sources of gaseous wastes are limited to discharges from the Radiochemical Laboratory, evaporation from effluent tanks and ventilation of the solid waste handling facility; see section 3.8 of paper 4b for details. MoD reviewed current practices and the arrangements for the NSH to characterise and quantify the likely gaseous wastes. This work is reported in sections and 5.8-5.10 of paper 4b and suggests the following numerical limits for the NSH:

Tritium - 200MBq

Carbon 14 – 1MBq

Noble Gases - 100MBq

Any gaseous releases direct from the submarine are regulated by DNSR in accordance with the SEPA MoD agreement relating to matters involving radioactive substances. See paper 1.

In summary the proposed changes to the liquid and gaseous arrangements for Faslane are:

1. Continue disposal of liquid waste to the Gare Loch but with significantly reduced limits.
2. To increase the concentration of tritium but not the total activity in general effluents discharged.
3. Allow for the receipt, treatment and disposal of radioactive effluents associated with supporting submarines at foreign ports or Coulport.
4. To add limits for the discharge of gaseous wastes.

Question: Do you have any comments on the proposed changes to the Letter of Agreement for liquid and gaseous wastes from Faslane and in particular the annual limits proposed by MoD?

2.2.3 Solid Waste Arrangements Faslane

Solid waste arises from a number of submarine support activities including routine maintenance and the decommissioning of obsolete equipment and facilities. More detailed description is given in sections 3.1 and 3.2 of paper 4b. In recent years significant efforts have been put in place at Faslane to improve the segregation and sorting of waste which has resulted in a significant reduction in radioactive waste volumes.

The extant LOA agrees to solid waste being disposed to British Nuclear Fuels plc (BNFL) Cumbrian facilities at either Sellafield or Drigg for subsequent disposal in accordance with their RSA93 authorisations. Since this LOA was agreed there have been a significant changes to the policies surrounding the disposal of low level waste and also a number of managerial changes to the low level waste facility at Drigg and the Sellafield Site. It is now standard practice for SEPA to grant the transfer of waste from a site (nuclear or non-nuclear) to any site that is lawfully entitled to receive it without specifying the site. This is subject to a number of conditions including the application of best practical means. These conditions form Section C of SEPA's standard conditions (paper 3). MoD have applied to adopt this standard approach.

The Coulport LOA allows solid waste to be transferred from Coulport to Faslane for onward disposal.

In summary the proposed changes are:

1. Disposal of low level radioactive waste (LLW) will be brought in line with SEPA standard practice for all civil sites such that it will no longer be restricted to named facilities within the UK and will not be restricted in terms of volume or additional activity constraints.

Question: Do you have any comments on the proposed changes to the Letter of Agreement for solid wastes from Faslane?

2.3 Proposed Changes to Coulport Agreements

2.3.1 Gaseous Agreement

Gaseous releases from Coulport are solely of tritium and are described in section 4.2 of paper 4b. Table 3 provides details of the current discharge limits, recent disposals and future requirements.

Table 3: Gaseous Discharges from Coulport

Radionuclide	Current Rolling 12 Monthly total Limit (GBq)	Previous Annual Discharges (GBq)					MoD proposed annual limits (GBq)
		2014	2015	2016	2017	2018	
Tritium	50	6.69	4.23	2.94	1.78	1.77	25

MoD was asked to review the current discharge limit in relation to past and future operations, and as a consequence a substantial reduction in the gaseous discharge limit has been proposed from 50 GBq to 25GBq, see section 6.2 of paper 4b.

Any gaseous disposals direct from a submarine berthed at Coulport are regulated by DNSR in accordance with the SEPA MoD agreement relating to matters involving radioactive substances. See paper 1.

In summary the proposed changes are:

1. To reduce the annual rolling limit from 50GBq to 25GBq

Question: Do you have any comments on the proposed change to the Letter of Agreement for gaseous wastes from Coulport?

2.3.2 Solid Waste Agreement

The extant LOA covers the disposal of solid low level radioactive waste which has arisen as a result of MoD operations at the site. The disposal is to the BNFL facility at Drigg via Faslane. Much of this waste is in the form of desiccant. MoD has reviewed the operational experience with the desiccant programme and with the changes to radioactive substances legislation. As explained in section 4.1 of paper 4b the majority of this waste has a very low activity and would be considered as “out of scope” had it been generated by a civilian operator.

MoD has also reviewed operational needs for HMNB Clyde as a whole and has identified the potential to carry out some routine maintenance work on submarines whilst they are within the Coulport facility. This does not represent new work but rather just work that would otherwise be carried out at Faslane. Currently this waste is left on board the submarine and sailed round to Faslane where it is off loaded in the normal way. Operationally, there are circumstances where it would be beneficial to offload the waste at Coulport and transport it by road to Faslane. Whilst the transport of the waste between sites is not a matter for SEPA, the management of it leaving one site and being received at the other is. To accommodate this MoD has requested a change to the Coulport solid agreement such that it allows for the transfer of low level solid wastes to Faslane, see section 6.1 of paper 4b.

The proposed change would allow the disposal of a wider range of low level radioactive wastes from Coulport to Faslane to support operational flexibility. The subsequent disposal from Faslane would be under the terms of the Faslane LOA. There is no requirement for wastes to be disposed of from Coulport to anywhere other than Faslane. As the waste assessment facility is at Faslane it is proposed only to allow the disposal of wastes from Coulport to Faslane.

In summary the proposed changes are:

1. Broaden the definition of low level radioactive waste to which the agreement applies.
2. Limit disposal to Faslane for disposal in accordance with the LOA for Faslane.

Question: Do you have any comments on the proposed change to the Letter of Agreement for solid wastes from Coulport?

2.3.3 Liquid Wastes from Coulport

There is currently no agreement covering liquid wastes from Coulport. However in their application MoD has identified the potential to generate liquid waste at Coulport from routine maintenance works that would otherwise be carried out at Faslane. If this waste is offloaded at Coulport the subsequent transfer to Faslane would require SEPA's agreement.

There may also be arisings of general effluents such as described in section 2.1.1 above. This waste would not normally be disposed of via Faslane. Currently, such disposals are made in line with radioactive substances exemption provisions.

In summary the proposed change is:

1. Agree suitable routes for liquid waste disposals from Coulport for treatment at Faslane or disposal as a general effluent.

Question: Do you have any comments on the proposed change of adding the disposal of liquid waste from Coulport to Faslane to an updated Letter of Agreement?

2.4 SEPA Changes

SEPA's approach to licensing radioactive substances activities at civilian sites has changed significantly since the extant LOAs were issued. Typically permits include the limitations and conditions relating to all media types in one permit. Additionally SEPA would seek to use conditions that are similar to those used in the civil sector (see paper 3) and to set limits in a similar way as it would for a civil site.

In summary the proposed changes are:

1. If an updated agreement is to be made adopt a similar approach to conditions and format to EASR permits granted to civil nuclear operators in the updated LOAs.

Question: Do you have any comments on the proposed changes to SEPA updates to the Letters of Agreement?

3 Determination Process

In coming to a decision about this application, SEPA will consider the proposed changes in relation to the following factors including:

1. The radiological protection principles set out by the International Commission of Radiological Protection in their publication ICRP 103.
2. Relevant Government Policy on matters relating to radioactive substances.
3. Relevant guidance such as that produced by the International Atomic Energy Authority (IAEA).
4. The OSPAR and UK discharge strategies. OSPAR is a convention between 15 Governments, for the protection of the marine environment of the North East Atlantic.
5. Conservation regulations including The Conservation (Natural Habitats & Conservation) Regulations 1994 and the Nature Conservation (Scotland) Act 2004.
6. Human rights as described in the Scotland Act 1998 and the Human Rights Act 98 (HRA98).
7. Responses from consultees and members of the public.

This approach mirrors that adopted by SEPA when considering applications from civil nuclear sites. SEPA will document its decisions and rationales in relation to these factors in a decision document. This document will be published on SEPA's website at the end of the process.

4 Radioactivity - Units and Quantities

This section provides some background into the units and quantities of radiation that are used in this document and the application

Radioactivity may be defined as the process of disintegration or transformation of unstable atoms which leads to the emission of ionising radiations. The unit used to express the quantity of radioactivity present is the becquerel. One becquerel (Bq) is equal to the disintegration or transformation of one atom every second. One becquerel is a small quantity of radioactivity and it is normal to deal in large multiples such as those listed below.

kilobecquerel (kBq) one thousand (10^3) becquerels

megabecquerel (MBq) one million (10^6) becquerels

gigabecquerel (GBq) one billion (10^9) becquerels

terabecquerel (TBq) one thousand billion (10^{12}) becquerels

The basic unit of radiation dose is the gray (Gy). This is a unit of absorbed dose and is a measure of the amount of energy deposited in a material, such as tissue, by radiation passing through it. When passing through tissue some radiations deposit their energy in a more biologically harmful way than others. In order to take account of this effect a unit of dose equivalent known as the sievert (Sv) is used. The sievert is related to the gray by a simple weighting factor for each type of radiation. One sievert is a large unit of radiation dose. Radiation doses to members of the public are usually measured in small fractions of a sievert such as those listed below.

millisievert (mSv) one thousandth (10^{-3}) of a sievert

microsieverts (μ Sv) one millionth (10^{-6}) of a sievert

5 Supporting Papers

Paper 1: SEPA MOD Agreement on Matters Relating to Radioactive Substances, September 2012

Paper 2: Response from Stage 1 Consultation

2a: response from DNSR

2b: response from FSA

2c: response from ONR

2d: response from Scottish Government

Paper 3: Environmental Authorisations (Scotland) Regulations 2018 Standard Conditions for Radioactive Substances Activities

Paper 4: Application made by MoD

4a: HMNB Clyde application letter

4b: HMNB application document

Paper 5: Addendum to Faslane Liquid and Gaseous LOA