Environmental Permitting (England and Wales) Regulations 2010

Decision Document

Disposal of High Volume Very Low Level Radioactive Waste at the Lillyhall Landfill Site, operated by Waste Recycling Limited at Joseph Noble Road, Lillyhall, Workington

April 2011

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Executive Summary

In May 2009 we received an application from Waste Recycling Limited (WRL) for authorisation under the Radioactive Substances Act 1993 to dispose of solid, high volume very low level (radioactive) waste (HV-VLLW) at their licensed landfill premises at Joseph Noble Road, Lillyhall, Workington, Cumbria.

We have carefully reviewed this application and consulted relevant stakeholders. During the period over which the application was reviewed the Environmental Permitting (England and Wales) Regulations 2010 came into force and so a final decision on the application has been made in relation to these regulations and under relevant transitional arrangements. This determination also follows a decision by the European Commission in accordance with Article 37 of the Euratom Treaty. Based upon this review and the consultation comments we received we have decided to issue a permit to WRL for the disposal of HV-VLLW to the Lillyhall Landfill Site. This permit contains a number of limits and conditions which must be complied with. The main limits and conditions are for:

- No more than 26000 m^3 of HV-VLLW to be disposed of in any one year
- Further limitation of disposals by application of a 'Sum of Fractions' approach to assess and limit the impact of cumulative disposals over the lifetime of the site
- Requirements on the period allowed before disposal, coverage of waste after disposal, record keeping and reporting of data to us
- Specified environmental monitoring to be carried out on a routine basis

We have concluded that:

- Overall, we consider the application to be sound and to be consistent with relevant policy, legislation and guidance
- We believe the environmental permit will ensure the protection of the public and the environment from the effects of the radioactive waste disposals
- The permit will introduce stringent controls on disposal of radioactive waste
- The permit conditions are proportionate and risk based
- Our decision will not place a grossly disproportionate burden on WRL's resources in meeting the requirements of the permit, or require grossly disproportionate expenditure for sampling, monitoring and managerial control of disposals
- The existing Environmental Permit held by WRL will not be affected and will continue to provide proportionate regulation of non-radiological disposals to the site

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Legislation update and transitional arrangements

i. The Environmental Permitting (England and Wales) Regulations 2010 (EPR) came into force on the 6th April 2010. The application by Waste Recycling Ltd for the disposal of radioactive waste was made under the Radioactive Substances Act 1993 (RSA93) in May 2009. The procedural and determination arrangements described in our Introductory Document that supported consultation in October 2009 continue to apply for the application made by Waste Recycling Ltd as provided by regulation 75 of EPR 'Transitional applications'.

ii. Under RSA93, the permit was described as an 'Authorisation'. Under EPR the permit is described as an 'Environmental Permit' or 'Permit'.

iii. Under RSA93 we made reference to Best Practicable Means (BPM) and Best Practicable Environmental Options (BPEO). Under EPR we now refer to Best Available Techniques (BAT) which is taken to be broadly equivalent to BPM and BPEO.

1. INTRODUCTION

1.1 The Environment Agency has responsibility under the Environmental Permitting (England and Wales) Regulations 2010 (EPR) (formerly Radioactive Substances Act 1993 (RSA 93)) for regulating all disposals of radioactive waste. Under EPR, "disposals" of radioactive waste include discharges into the air, the sea, rivers, drains or groundwater, disposals to land, and by transfer to another site.

1.2 We regulate the disposal of radioactive waste through an overall system of regulatory control that is underpinned by issuing permits, under EPR, to operators at each applicable site. These permits specify the limitations and conditions that we impose on the disposal of radioactive waste. We can include any limitations and conditions we think fit. It is an offence under EPR not to comply with the limitations and conditions in a permit.

1.3 Our overall system of regulatory control at nuclear and non-nuclear sites includes:

- Deciding whether or not we should grant applications for new permits or changes to existing permits, and setting appropriate limits and conditions in any permits that we issue, which ensure that the public and the environment are well protected
- Periodically reviewing permits and operators' environmental performance and varying permits to make sure that the permit's limits and conditions are up to date and effective and continue to ensure that the public and the environment are well protected
- Carrying out announced and unannounced inspections
- Investigating incidents
- Using our powers of enforcement, including prosecution, as necessary
- Undertaking waste, effluent and environmental monitoring and assessments of public radiation exposure

Our primary aim is to ensure that, if granted, any new or varied permit will properly protect the public and the environment.

1.4 In May 2009 we received an application from Waste Recycling Limited (WRL) for authorisation under RSA 93 to dispose of solid, high volume very low level

(radioactive) waste (HV-VLLW)[1] at their licensed landfill premises at Joseph Noble Road, Lillyhall, Workington, Cumbria.

1.5 We reviewed the application and requested further information from WRL. Once we were satisfied that the application was substantially complete, providing sufficient information for our technical review, we consulted upon the application and a draft certificate of authorisation. This took place from October through to November 2009.

1.6 We completed our technical review. However, early in 2010 we were informed by the Department of Energy and Climate Change (DECC) that a submission to the European Commission in accordance with Article 37 of the Euratom Treaty would be required. We are not able to complete a determination until a decision on such an application is reached. A submission was prepared and submitted and in March 2011 a positive opinion was provided, allowing us to progress with our determination.

1.7 We have since concluded our technical review and given careful consideration to the consultation responses received and the opinions of the European Commission. We have also undertaken several 'readiness reviews' of WRL at the Lillyhall site in February 2010, August 2010 and March 2011.

1.8 This Decision Document sets out our considerations and decisions with respect to this application. The document provides an overview of the application, our determination process, consultation comments and our responses, and our final considerations in relation to this application. A final decision is presented.

1.9 This document accompanies and should be read in conjunction with the permit (CD7914) presented in Annex 1. Further background information can be found in the October 2009 Introductory Document[2] which accompanied the consultation material, as well as the application material submitted by WRL. This application material comprised an Environmental Safety Case (ESC) with completed application form[3], along with copies of additional information[4] provided by WRL in response to requests made by us.

1.10 Details of our guidance on disposal of radioactive waste to landfills and some 'frequently asked questions' on the subject can be found on our website at: http://www.environment-agency.gov.uk/business/sectors/100241.aspx

Site overview

1.11 The Lillyhall Landfill Site is an existing landfill site operated by WRL and located on Joseph Nobel Road, Lillyhall, near to the village of Distington. Stages 1 and 2 of the site are complete and disposals to Stage 3, which is partially full, began in 1998. Stage 3 comprises a partially filled clay-lined landfill, which currently accepts inert, non-hazardous and household wastes. The Stage 4 permit has been surrendered (October 2010) and the area of land previously defined as Stage 4 hazardous landfill has been incorporated into the non-hazardous landfill variation for Stage 3

[1] Solid waste with radioactivity not exceeding 4 $MBqte^{-1}$, except for tritium for which the concentration must not exceed 40 $MBqte^{-1}$

[2] Introductory Document to Accompany: Application for authorisation to dispose of high volume very low level radioactive waste at a landfill site not on a nuclear licensed site (CD7914), by Waste Recycling Limited, for premises at Lillyhall Landfill, Joseph Noble Road, Lillyhall, Workington, Cumbria. October 2009.

[3] Environmental Safety Case: Disposal of Very Low Level Radioactive Waste at the Lillyhall Landfill Site, June 2009, Waste Recycling Limited and Energy Solutions (Author Andy Baker).

[4] Responses from Waste Recycling Limited to requests for additional information received on 30 July 2009 and 5 October 2009

(V006) as of December 2010. The Stage 3 landfill has separate asbestos cells, as legally required for the disposal of asbestos and asbestos contaminated building material. The whole installation is designed as a containment landfill and to meet Environmental Agency guidance.

1.12 The area around the site is mainly rural, with industrial and commercial uses. The Distington Landfill Site lies immediately to the South. A water course, Distington Beck, runs in a culvert beneath Stage 1 of the site. Distington Village approaches to within 1km of the site to the southwest. There are no Sites of Special Scientific Interest or Natura 2000 sites within the immediate vicinity or affected by the site.

Existing Permits

1.13 WRL have operated the Lillyhall Landfill site under a Pollution Prevention and Control (PPC) permit from the Environment Agency, which has now become an Environmental Permit under the Environmental Permitting Regulations (Permit GP3037SJ, Variation Notice EPR/GP3037SJ/V006). This permit will remain valid and must continue to be complied with, irrespective of any new permit under EPR for radioactive waste disposal.

Application Overview

1.14 The following outlines the scope of the application:

Type of waste to be disposed:	Solid, high volume very low level waste (HV-VLLW), originating from nuclear sites.
Disposal route:	Burial alongside non-radioactive controlled wastes at the Lillyhall Landfill site at Lillyhall Industrial Estate, Workington, Cumbria.
Proposed disposal volumes:	Up to 26000 m^3 of HV-VLLW per year. Assuming planning permission is granted such that disposals to the landfill continue to 2031 this would result in a maximum total disposal volume of 582000 m^3 of HV-VLLW, out of an estimated total remaining site capacity of 1.5 million m^3.
Proposed approach to limitation:	Disposal volume will be limited annually to 26000 m^3 and to 582000 m^3 over the lifetime of the site. All waste will conform to the definition of HV-VLLW. To provide additional controls to ensure compliance with the Environmental Safety Case developed for the site, further restrictions will be applied that take account of the types of radionuclides present in the waste. These controls will be applied by inventory calculations referred to as the 'sum of fractions' approach[5].
Non-radioactive properties:	Will be consistent with the waste types currently landfilled at the site, as regulated

[5] See IAEA TECDOC-1380, Derivation of activity limits for the disposal of radioactive waste in near surface disposal facilities, December 2003.

through the existing Environmental Permit for the site (EPR/GP3037SJ).

1.15 Further explanation of the application is provided below in the form of extracts from additional information provided to us by WRL following our requests for further information:

"This proposal is for the disposal of High Volume Very Low Level Waste (HV-VLLW) to the Lillyhall Landfill Site. This is waste with radioactivity not exceeding 4 MBq te^{-1} or 4 Bq g^{-1} (except in the case of tritium for which the concentration should be less than 40 MBq te^{-1} or 40 Bq g^{-1}).

It is estimated that there is a remaining disposal capacity of about 1.5 million m^3 at the site and it is proposed that some of this is used for the disposal of HV-VLLW. The total annual rate of receipt of all wastes at the Site will vary from year to year, but for the purpose of the radiological assessment supporting the Environmental Safety Case, annual disposals of 67,000 m^3 have been assumed, based on our best estimate of projected annual receipts at the time.

It is proposed that no more than 26,000 m^3 of the permitted total annual disposal capacity of the site is used for HV-VLLW. According to forecast arisings of HV-VLLW in the UK 2007 Inventory, this is sufficient to accommodate peak annual forecast arisings of HV-VLLW from all nearby nuclear sites over the next two decades.

As a basis for radiological assessment, it is cautiously assumed that 26,000 m^3 HV-VLLW will be disposed of each year, out of total assumed receipts of all waste of 67,000 m^3, until the end of operations. These assumptions suggest that the last disposals would occur in 2031, resulting in a maximum total disposal volume in the landfill of 582,000 m^3 HV-VLLW. These assumptions have been taken as a basis for defining the scenario used for radiological assessment in the Environmental Safety Case.

It should be noted that the current planning permission for the site lasts until 2014, and operation thereafter is subject to the receipt of appropriate planning permission. It should also be noted that actual annual receipts of HV-VLLW at the Lillyhall Landfill Site are likely to be substantially less than the 26,000 m^3 in some years and that this is simply a cautious assumption made for the purpose of radiological assessment."

"In order to account for waste streams that include a mix of radionuclides, our proposed approach involves summing the contributions to radiation dose for any scenario over disposed radionuclides (a standard approach known as the 'sum of fractions')."

"In summary, an Authorisation is sought to dispose of a maximum annual volume of 26,000 m^3 of HV-VLLW to the Lillyhall Landfill Site (corresponding to a maximum total disposal volume in the landfill of 582,000 m^3). In addition:

- The waste shall be consistent with the definition of HV-VLLW;
- The materials present in the waste shall be consistent with the material definitions set out in the most recent Permit Variation from the Environment Agency;
- In order to account for waste streams that include a mix of radionuclides, the 'sum of fractions' will be applied to relevant scenarios to ensure that the

radionuclides present in the waste will not lead to estimated radiation doses in excess of the relevant regulatory criteria"

2. OUR PROCESS

2.1 We received WRL's application under the RSA93 on 22 May 2009 and we sent copies to the relevant public registers once we had determined that the application was valid. We also established that Cumbria County Council did not believe the proposals would be subject to the need for new or revised planning permission at the site at this time.

2.2 We then completed an initial review of the application. This review highlighted that there was insufficient information or information that was not sufficiently clear in relation to some aspects of the application for the purposes of our detailed review or for wider consultation. We therefore wrote to WRL on 2 July 2009 requesting further information. We received a response from WRL on 30 July 2009 which partially addressed our questions, although certain information and updates to the submitted ESC remained outstanding.

2.3 Following discussions with WRL we wrote again on 16 September 2009 requesting additional information and further clarity on some previous requests for further information. We received a response from WRL on 5 October 2009 which provided us with sufficient information to proceed with our technical review and to consult stakeholders. Some minor points of clarification did remain outstanding and were addressed with WRL in subsequent communications and meetings through to issue of this decision. However, we considered these issues to be points of technical detail and not of significance to the consultation. As a result of the further information supplied and subsequent communications, some figures used within the draft Certificate of Authorisation for limitation were varied. In all cases these changes led to greater limitation. Our technical review of the application proceeded throughout this period of information exchange.

2.4 Having received what we believed to be sufficient further information to support the application and ESC we drafted an illustrative Certificate of Authorisation for consultation purposes and prepared a short Introductory Document to support understanding of the application and our consultation. These documents, together with the application material from WRL were issued for consultation on 26 October 2009, requesting responses by 27 November 2009. We indicated to consultees that at this stage we considered the application to be broadly sound, but that any final decision was subject to careful consideration of all consultation responses and completion of our technical review.

2.5 As part of this consultation process we consulted our statutory consultees, Local Authorities, local Parish Councils, the applicant and other groups who requested sight of the consultation material. This included:

- The Health and Safety Executive (Nuclear Directorate)
- The Foods Standards Agency
- Cumbria County Council
- Allerdale Borough Council
- Copeland Borough Council
- Winscales Parish Council
- Dean Parish Council
- Distington Parish Council

- Cumbrians Opposed to a Radioactive Environment (CORE)
- Studsvik UK Ltd
- Waste Recycling Limited

The consultation material was also placed on relevant public registers.

2.6 Prior to formal consultation we took part in a number of briefings to Local Authorities, a Parish Council and the local community to tell them of our role in the application process and to answer any questions. We also provided written briefs to key council members and MPs prior to consultation. The proposals received coverage in a number of newspaper articles.

2.7 We received responses from most of the organisations we consulted. We thank the organisations for these responses and after careful consideration have responded to the matters raised in Section 3 of this document. As part of preparing our responses we have informed relevant government organisations of any issues raised that were of relevance to them. This included the Nuclear Decommissioning Authority (NDA), Department of Energy and Climate Change (DECC), Department of Health (DoH) and the Department for Transport (DfT).

2.8 In parallel we have completed our technical review and other relevant considerations, as detailed further in Section 4 of this document. As part of this process we sought and received confirmation from DECC that an Article 37 submission to the European Commission in accordance with the Euratom Treaty was required for the Lillyhall Landfill Site to receive and dispose of HV-VLLW. A submission was therefore prepared by WRL and submitted to the European Commission by the British Government on 1 September 2010. On 10 March 2011 an opinion was received (see Annex 2) on this submission which concluded:

"In conclusion, the Commission is of the opinion that the implementation of the plan for the disposal of radioactive waste in whatever form arising from the Lillyhall Very Low-Level Radioactive Waste Disposal Facility in the United Kingdom, during its normal operational life and after its final closure, as well as in the event of an accident of the type and magnitude considered in the general data, is not liable to result in the radioactive contamination of the water, soil or airspace of another Member State."

2.9 We undertook an initial 'readiness review' of WRL at the Lillyhall Landfill site in February 2010 to examine the operators readiness to operate under a RSA93 authorisation and to accept HV-VLLW for disposal. This review confirmed WRL's readiness subject to some minor additional steps (e.g. provision of clear reference points for environmental monitoring). We followed up with further readiness reviews to check on progress and to ensure continued readiness in both August 2010 and March 2011. These confirmed readiness and that all minor outstanding issues had been addressed.

2.10 In April 2010 EPR came into force and so following receipt of an opinion from the European Commission we updated the draft RSA93 authorisation to an EPR permit. This involved a number of formatting changes and addition of some conditions required to ensure consistency with EPR, as detailed in the attached permit.

2.11 After completing the above steps we decided to issue a permit for the disposal of HV-VLLW by WRL at their Lillyhall Landfill site under EPR and prepared a permit to be issued alongside this Decision Document to all consultees, the applicant and also placed on relevant Public Registers.

2.12 As noted above, we have made DECC and DoH aware of this application and the consultation responses received. The Secretaries of State have powers of direction under EPR concerning the application and our decision. Subject to consideration by the Secretaries of State, we will implement our decisions by issuing the permit shown in Annex 1.

2.13 In this Decision Document, as in all our regulatory work, we aim to be:

Transparent by having rules and processes which are clear to those in business and local communities;

Accountable by explaining ourselves and our performance;

Consistent by applying the same approach where possible within and between sectors and over time;

Proportionate (or risk-based) by allocating resources according to the risks involved and the scale of outcomes, which can be achieved; and

Targeted (or outcome-focused) by having environmental outcomes central to our planning and in assessing our performance.

3. CONSULTATION RESPONSES AND OUR COMMENTS

3.1 The table below summarises the consultation responses received from local stakeholders and statutory consultees, along with our responses and the way in which we have taken these into account in the determination process. We thank consultees for their responses.

	Consultee Comment	Response
Allerdale Borough Council		
1.1	The authorisation is accepted as providing for safe regulation of disposal.	We agree the disposals have been demonstrated as safe and sufficient to protect the environment, as well as meeting the constraints and requirements of government policy and legal requirements.
1.2	However the issue of HV-VLLW management and disposal remains a great concern to the Council because of wider contextual issues as set out in this report:	We note the wider issues raised within the Council's report.
1.3	The Council takes the view that the ad-hoc bringing forward of such disposal routes through private sector initiatives is unhelpful. The Council would wish to see the NDA bringing forward a considered programme to identify possible locations for such disposals in full consultation and putting those agreed locations out to tender for operation by proven radioactive waste management companies – so that risk to socio-economic development are minimised due to	We recognise the importance of perception in such matters and have required WRL to undertake significant stakeholder communications during the application process to increase understanding of the application and its implications. We have supported WRL with this communication where appropriate. WRL have applied for authorisation to dispose of HV-VLLW in response to "The policy for the long term management of solid low level radioactive waste in the United Kingdom" which was published in March 2007 by the Government and Devolved Administrations (The

Consultee Comment		Response
	issues associated with the perception of the public, communities and businesses.	Government LLW Policy). We are duty bound to determine their application from a technical perspective on its own merits and ensuring that it meets the constraints and requirements of the Government LLW Policy and legal requirements, where relevant to our regulatory role. We believe these constraints and requirements have been met. Our role does not extend to the location of such applications, other than how this may impact upon the technical assessment. We have brought these comments to the attention of DECC and the NDA.
1.4	The Council's preference is for the location of such disposals to be as close as possible to the point of arising, with development of facilities on or adjoining licensed sites or historic nuclear facilities. This would be consistent with the waste hierarchy and avoid significant radioactive waste movements locally, regionally and nationally. The ad-hoc approach is not able to demonstrate that the best practicable environmental option has been found.	We note the clear benefits from minimisation of transport, but note possible issues with the suitability and availability of appropriate land. Any application for such sites would also need to be considered on its merits and meet Government LLW policy and legal constraints. The best available technique (BAT) for disposal from the waste generating site will need to be considered as part of any application to transfer waste to the Lillyhall site. This will need to consider other options, such as alternative disposal routes, re-use and recycle. Proximity issues will be considered at this point.
1.5	Thus, notwithstanding that the numerical dose scenarios tabulated on page 4 of your Introductory Document meet regulatory requirements, the Council objects to the grant of an authorisation to Waste Recycling Limited pending further discussion with the NDA, other Councils and DECC officials, and for the reasons given above.	We have brought these comments to the attention of DECC and the NDA. Unless directed otherwise by Government we must determine any application on technical grounds, whilst ensuring consistency with Government LLW Policy and legal requirements, where relevant to our regulatory role.
Copeland Borough Council		
2.1	Thank you for your letter of 26th October. The issues raised were considered at a meeting of Copeland Nuclear Working Group on 22 October and 16 December 2009. I attach a copy of the Committee Report for your records. You will see that the Authorisation is accepted as providing for safe regulation of the disposal, and hope inter-modal transport of these wastes by rail rather than road is going to be utilised as the recent shipment from the LLWR at Drigg to Studsvik for further processing.	We agree the disposals have been demonstrated as safe and sufficient to protect the environment, as well as meeting the constraints and requirements of government policy and legal requirements. We recognise the potential benefits of inter-modal transport in reducing road miles, as demonstrated successfully by a recent shipment from LLWR at Drigg to the Studsvik Metals Recycling Facility at Lillyhall. However, we note that transport issues do not fall within the scope of our assessment and we have no powers to require particular transport methods which fall within the remit of the Department of Transport and Planning Authorities. We have therefore

Consultee Comment		Response
		brought this comment to the attention of the Department for Transport and WRL for consideration.
2.2	*However,* the issue of HV-VLLW management and disposal remains of great concern to the Council because of wider contextual issues – as set out in the Report.	We note the wider issues raised within the Council's report.
2.3	The Council takes the view that the ad-hoc bringing forward of such disposal routes through private sector initiatives is unhelpful. The Council would wish to see the NDA bringing forward a considered programme to identify possible locations for such disposals in full consultation and putting those agreed locations out to tender for operation by proven radioactive waste management companies – so that risks to socio-economic development are minimised due to issues associated with the perception of the public, communities and businesses.	Please see response to point 1.3
2.4	The Council's preference is for location of such disposals through a strategic land use planning approach. This would be consistent with the waste hierarchy and avoid significant radioactive waste movements locally, regionally and nationally. The ad-hoc approach is not able to demonstrate that the best practicable environmental option has been found. In addition we would hope good neighbour payments and an appropriate community package is being developed for the affected residents nearby.	Please see response to point 1.4 We note the point regarding community benefits but suggest this is a matter solely for WRL and the local communities, in conjunction with council bodies.
2.5	Thus, notwithstanding that the numerical dose scenarios tabulated on page 4 of your Introductory document meet regulatory requirements, the Council objects to the grant of an authorisation to Waste Recycling Limited pending further discussion with the NDA, other Councils and DECC officials, and for the reasons given above.	Please see response to point 1.5
Cumbria County Council		
3.1	The County Council supports measures to divert wastes from the LLWR, near Drigg which do not require the level of containment provided by that site. However, we would wish to see high volume very	WRL have applied for authorisation to dispose of HV-VLLW in response to the Government LLW Policy which was published in March 2007 by the Government and Devolved Administrations.

Consultee Comment		Response
	low level waste (HV-VLLW) managed on nuclear sites where it arises or if this is not possible on sites immediately adjacent to them. We are therefore opposed to its disposal at more remote sites, including existing landfill sites like Lillyhall. We consider it is premature for such proposals to be put forward before there has been a rigorous assessment of the potential for such wastes to be managed within or adjacent to the nuclear site where they arise. There has not been that assessment.	We are duty bound to determine their application from a technical perspective on its own merits and ensuring that it meets the constraints and requirements of the Government LLW Policy and legal requirements, where relevant to our regulatory role. We believe these constraints and requirements have been met. Our role does not extend to the location of such applications, other than how this may impact upon the technical assessment. The best available technique (BAT) for disposal from the waste generating site will need to be considered as part of any application to transfer waste to the Lillyhall site. This will need to consider other options, such as alternative disposal routes, re-use and recycle. Proximity issues will be considered at this point.
3.2	This position was set out in our response to the NDA's consultation on its strategy for the management of low level waste in August 2009. Primary concerns were that encouraging the supply chain to come up with sites, with no clear direction, would lead to a dispersed pattern of LLW management and disposal facilities through communities and remote from nuclear sites. Experience in Cumbria indicates that even in areas more comfortable with nuclear developments, like West Cumbria, there is strong opposition to dispersing LLW management facilities distant from nuclear sites. Public perception of the risks of even the most innocuous radioactive wastes leads to public reaction and concern that may lead to adverse social and economic impacts. It may also impact on support for other nuclear programmes.	We recognise the importance of perception in such matters and the potential impacts this may lead to. We have required WRL to undertake significant stakeholder communications during the application process to increase understanding of the application and its implications. We have supported WRL with this communication where appropriate. We believe the Environmental Safety Case provided by WRL, and which we have thoroughly assessed, does demonstrate that the proposals are safe and will protect the environment. The proposals provide for alternative, appropriately engineered, disposal capacity to the LLWR near Drigg, necessary to support ongoing nuclear decommissioning programmes. We believe the proposal is consistent with Government LLW Policy, in so far as it applies to our regulatory role. Although some social and economic issues are relevant to our considerations, we recognise that many of the wider considerations of the Government LLW Policy, including social and economic impacts, are a matter for planning and development control.
3.3	With regard to the social and economic impacts, the Community Strategy, states that Cumbria has been the slowest growing sub-region in the UK since the mid-1990's and needs to grow its economy faster than anywhere else just to catch up. The county's economy cannot afford any risks that would deter investment. This is a particularly sensitive issue at the Lillyhall Landfill	We note these concerns. We do not believe there is any cause for concern resulting from the proposals which we consider to be safe and providing for sufficient environmental protection. We believe this is largely a planning and development control issue.

	Consultee Comment	Response
	Site because it is adjacent to a regionally important employment site.	
3.4	An additional consequence of disposal at Lillyhall is that it would give rise to the need to transport VLLW on the public highway, a further potential source of concern, even given the low level of activity of the material involved. In addition to any radiological issues the volume of material involved, up to 582,000m^3 of waste in the period to 2031 represents a significant volume of traffic. The Safety Case indicates that Sellafield, the nearest nuclear site which might provide material, is about 15 miles from Lillyhall. Assuming all material came from that source in loads averaging 20 tonnes this would represent 1.75 million HGV road miles, based on a 30 miles round trip. This additional traffic and its environmental impacts in terms of emissions of greenhouse gas, impacts on air quality; noise etc could be largely avoided by the use of on-site or near site disposal.	We note that the 582000 m^3 of waste represents the maximum volume of HV-VLLW that may be disposed of to the site and therefore actual disposal may be less. Transport must be considered alongside all impacts within any best available technique (BAT) assessment undertaken to address the potential transfer of waste from the generating site to the Lillyhall Landfill. The Government LLW Policy is explicit in stating that the proximity principle needs to be taken into account when consigning sites take waste management decisions. The policy also states that the proximity principle needs to be weighed against other factors when considering options. This will inevitably mean that sometimes the preferred option may not be the nearest to the site of origin of the waste. On-site or near site disposal option may themselves not prove suitable. Any such application would need to be considered on its merits and meet Government LLW policy and legal constraints. Development of new disposal facilities may themselves generate unacceptable environmental or safety impacts which must also be considered. We also note that the WRL Lillyhall Landfill site is an established site for receiving non-radioactive wastes and routinely receives road deliveries of waste from around Cumbria. Under the proposals we do not anticipate any increase in total volumetric disposals over the lifetime of the landfill, although this matter is not within the scope of our assessment of this application. We have made the Department for Transport aware of this comment.
3.5	The Environmental Safety Case sets out the stakeholder engagement that has taken place in order to meet the authorisation requirements. It is the County Council's view that the planning system provides the proper forum for establishing the public acceptability of this project. The planning permission at Lillyhall does not specifically preclude the deposit of HV-VLLW. At the time the planning application was submitted planning authorities were discouraged by national planning policy from specifying waste types, as this was seen as a matter covered	We agree that the planning system is the correct means of establishing public acceptability in many areas. However, we also believe stakeholder engagement in the context of the Radioactive Substances Act 1993 (now EPR) is important to increase awareness, provide opportunity for engagement and to provide for transparency in the processes undertaken. We are satisfied with the stakeholder engagement WRL have undertaken in this context. We are aware that WRL have engaged with relevant Local Authorities on this application. It is our understanding that the activities proposed by this application fall within the

	Consultee Comment	Response
	by pollution control legislation and it was also never anticipated that disposal of radioactive waste would be proposed.	existing planning permission and are therefore only subject to receipt of a permit under the Environmental Permitting Regulations. As part of this application we have considered HV-VLLW as a waste type in terms of pollution control and consider the proposals to be safe and environmentally acceptable.
3.6	The current planning permission at Lillyhall only runs to June 2014, by which time restoration of the site is required to have been completed. Any continuation of landfill after that date would require a further planning permission to be granted. Emerging policies in the County Council's Minerals and Waste Development Framework Site Allocations document supports the continuation of landfill at this site. However, this does not include the use of the site for the disposal of HV-VLLW or necessarily for the continued operation of the life of the site to 2031 as now projected.	We recognise that the current planning permission only runs to June 2014 after which time further planning permission would need to be sought to continue disposals of any waste type. The permit recognises the WRL projection of disposals to 2031 purely for the purposes of limiting total disposals to the site. Limits are also applied annually and HV-VLLW disposals would be required to cease should disposals of controlled non-radioactive waste at the site cease. All disposals, in addition to requiring appropriate authorisation from the Environment Agency, also clearly require appropriate planning permission, without which disposals cannot take place. We are duty bound to determine WRL's application from a technical perspective on its own merits and ensuring that it meets the constraints and requirements of the Government LLW Policy and legal requirements, where relevant to our regulatory role. We believe these constraints and requirements have been met.
Cumbrians Opposed to a Radioactive Environment (CORE)		
4.1	Thank you for the invitation to comment on the above application by Waste Recycling Limited. We make the following comments and trust that, despite the lateness of our response, our comments will be given due consideration by the Environment Agency when making a decision on the application.	Noted.
4.2	CORE opposes the application on the following grounds:	Noted.
4.3	The remaining disposal capacity of UK landfill sites is known to be limited, and should be designated for the disposal of UK's domestic wastes alone. National recycling efforts and the government's stated aim of phasing out the use of such sites cannot be reconciled with the belated needs of the nuclear industry to divest itself of high volume radioactive wastes at any level of radioactivity. The expanded use landfill facilities represents not only a policy of nuclear waste dilution and	We accept that UK landfill capacity is limited, however the total volumes of HV-VLLW (and LLW) predicted to be generated within the UK over the next century are very small when compared to the quantities of conventional (non-radioactive) waste anticipated to be generated and disposed. The proposals are consistent with Government LLW Policy to allow for the disposal of HV-VLLW from nuclear sites to appropriately regulated landfill sites. The Government LLW Policy also stresses the need to reduce, reuse and recycle waste wherever possible to reduce

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	dispersal to sites remote from licensed nuclear sites but also directly contravenes the proximity principle.	the amount of HV-VLLW that has to be disposed of, similar to government's aims for conventional (non-radioactive) wastes. Such efforts to encourage waste minimisation will be focussed on the waste generating site and specific projects may be subject to demonstration that the best available technique (BAT) has been chosen. The Government LLW Policy is explicit in stating that the proximity principle needs to be taken into account when consigning sites take waste management decisions. The policy also states that the proximity principle needs to be weighed against other factors when considering options. This will inevitably means that sometimes the preferred option may not be the nearest to the site of origin of the waste.
4.4	Public acceptance is unlikely to be secured for plans it sees as giving a free-hand to the industry to continue producing wastes unchecked. An authorisation to allow the disposal of radioactive wastes, whether at Lillyhall, Keekle or elsewhere in the UK is effectively to give the nuclear industry carte blanche to continue producing nuclear wastes unimpeded, in the safe knowledge that any or all of the HV-LLW produced (or reclaimed from decommissioning work) no longer remains its responsibility. For West Cumbria, already under threat from the Government's new build programme, an Authorisation by the Environment Agency for the use of Lillyhall will result in an unacceptable expansion of 'nuclear' in West Cumbria at a time when the area's plans for diversification have already been jeopardised by the establishment of Studsvik's metals recycling centre at Lillyhall and Endecom's proposals to use the Keekle Head landfill site for nuclear waste.	The Government LLW Policy stresses the need to reduce, reuse and recycle waste wherever possible to reduce the amount of HV-VLLW that has to be disposed of. A national nuclear LLW strategy has been developed by the NDA to support implementation of this policy. We will continue to encourage and require waste minimisation on nuclear sites where practicable and require demonstration that the best available techniques are being adopted. However, we recognise that even after applying the waste management hierarchy on nuclear sites, like most conventional (non-radioactive) industries, there is still some need for waste disposal. With regards to potential impacts upon diversification in West Cumbria, we consider this to be a planning and development control issue.
4.5	Whilst we accept that HV-LLW wastes already exist and will continue to arise, CORE maintains that the responsibility for their disposal 'at the point of origin' rests wholly with the nuclear industry that produced them. The absence of any serious attempt by the industry to minimise the production of wastes, as exemplified by its continued and unnecessary production of waste via	Please see response to point 4.4 The proposal is consistent with Government LLW Policy.

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	reprocessing by courtesy of the Nuclear Decommissioning Authority, serves to highlight the industry's irresponsibility and represents a self-inflicted burden that should not be transferred to the public/private sector via the use of remote from source landfill sites.	
4.6	Given that disposal capacity at the Low Level Waste Repository at Drigg is also restricted, CORE believes that the Environment Agency and others should require the industry to urgently investigate the potential for disposal of these HV-LLW wastes at other land already licensed and owned by the industry. Such investigation, with findings subject to public scrutiny, should be a pre-requisite to any initial consideration being given to authorise disposal in remote landfill sites.	WRL have applied for authorisation to dispose of HV-VLLW in response to the Government LLW Policy which was published in March 2007 by the Government and Devolved Administrations. We are duty bound to determine their application from a technical perspective on its own merits and ensuring that it meets the constraints and requirements of the Government LLW Policy and legal requirements, where relevant to our regulatory role. We believe these constraints and requirements have been met. The Environment Agency has no powers to compel disposal on existing nuclear sites, but would expect consideration of such options as part of wider strategies to deal with radioactive waste.
4.7	CORE is concerned at the inevitable inability of Waste Recycling Group to give cast iron guarantees that its proposed Lillyhall landfill site will a) be as rigorously managed, monitored and regulated as currently licensed nuclear sites over centuries to come; b) will not be required at some future date to accept nuclear wastes of a higher category at the vagaries of the nuclear industry or discretion of Government policy and c) be used as a reception point for nuclear wastes from facilities other than Sellafield.	We will only grant an permit to a landfill operator for the disposal of radioactive waste if we are sure that the operator has provided a sound radiological impact assessment which demonstrates that disposals will be safe. Any permit we grant to an operator will specify the requirements that they must meet, including the operator's management and technical capability, and on monitoring and checks on waste received. We would then regulate the site to ensure that an operator is meeting the requirements of the permit, including record keeping. We may also carry out monitoring of the waste and the environment around the site. As part of the permitting process, we will require landfill operators to monitor sites permitted for the disposal of radioactive waste for a period after the disposals to the site have ended and the site has been capped. This is to ensure that the site is continuing to perform as predicted. Decisions on the length of time that monitoring needs to continue will be based on the content of the radiological impact assessment and on the ongoing monitoring results. This continued monitoring will be a legal requirement; we will only revoke the permit that requires this once we are satisfied that monitoring need not continue. The choice to apply for the disposal of radioactive waste categories higher than HV-

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		VLLW lies with WRL. Currently the operator has chosen only to apply to receive HV-VLLW. Government LLW Policy does allow for the possibility to dispose of LLW to landfill as controlled burial. Government policy does not currently allow for any higher categories of waste (above LLW) to be disposed to landfill. We would assess any application on its merits, which must also be consistent with Government LLW policy and legal constraints. The application does not currently restrict waste from any nuclear site. However, in addition to regulating the landfill site, we will require that any waste producer wishing to consign HV-LLW to a landfill site obtains our prior authorisation under EPR for its transfer. We will consider separately each application for transfer. As part of any such applications we require that they have considered what the best available technique (BAT) is for waste management. Operators will need to have addressed a number of factors before arriving at decisions. These include costs, proximity to disposal site, radiation doses to workers, waste minimisation and impact on the environment.
4.8	The expanded use of land-fill sites by the nuclear industry also raises concerns about the attendant increase in waste transports via the areas inadequate road infrastructure. CORE notes that whilst the Applicant's 'cautious' assumption would result in up to 26,000 cubic metres of HV-LLW being consigned to the proposed Lillyhall landfill site each year up to year 2031 and involve some 582,000cubic metres of waste in total, we can find no reference in the Applicant's June 2009 Environmental Safety Case as to the number of vehicle movements such waste movements are likely to require on a daily, weekly, monthly or annual basis.	We note that the 582000 m^3 of waste represents the maximum volume of HV-VLLW that may be disposed of to the site and therefore actual disposal may be less. Regulation of the transport of radioactive wastes is carried out by the Department for Transport and we have informed them of this and other related comments. The application does not currently restrict waste from any nuclear site. However, in addition to regulating the landfill site, we will require that any waste producer wishing to consign HV-LLW to a landfill site obtains our prior authorisation under EPR for its transfer. We will consider separately each application for transfer. As part of any such applications we will insist that they have considered what the best available technique is for waste management. Operators will need to have addressed a number of factors before arriving at decisions. These include costs, proximity to disposal site, radiation doses to workers, waste minimisation and impact on the environment and will thus also include transport considerations. We also note that the WRL Lillyhall Landfill site is an established site for receiving non-radioactive wastes and routinely receives road deliveries of waste from around Cumbria. Under the proposals we do not anticipate any increase

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		in total volumetric disposals over the lifetime of the landfill, nor significant daily/weekly increases in relation to currently anticipated non-radioactive waste transports.
4.9	The omission of such relevant information is unhelpful, as is the failure to identify the facilities/sites from which the HV-LLW is expected to be sourced. We have assumed that the major source will be Sellafield and, in the absence of transport details in the Application (either lorry movements or waste source) have made comparison with Endecom's proposal to transport similar wastes to the Keekle Head landfill site. This projects up to one million cubic metres of wastes being transported over a 50-year period - or 20,000 cubic metres per year. At Endecom's envisaged 12 lorry movements per day, this equates to some 3000 or more lorry movements per year (6000 if return trips are included). Given the similarity between Waste Recycling Group and Endecom annual figures of 26,000 and 20,000 cubic metres of waste respectively to be transported, an Authorisation for the use of the Lillyhall would result in an additional 3000 lorry movements (one way) by Waste Recycling Group.	Please see response to point 4.8
4.10	Without accounting for the now established increase in nuclear waste movements by road by the Studsvik facility at Lillyhall, an Authorisation for the use of the Lillyhall landfill site as proposed might therefore see up to 6000 one-way nuclear waste transports in total by lorry each year (Lillyhall and Keekle Head). Such an overload to an already inadequate road infrastructure is wholly unacceptable and detrimental to the area and its communities and, on infrastructure and socio-economic grounds alone, should mitigate against an Authorisation being granted by the Environment Agency to Waste Recycling Group.	We note the concerns raised about transport impacts. Such considerations are not directly relevant to our technical assessment of the application for disposal, but as noted above, would be a consideration within a best available technique (BAT) study for disposal of waste from a consignor to the Lillyhall landfill site. We have made the Department of Transport aware of this concern.
Dean Parish Council		
5.1	Dean Parish Council is opposed to the application CD7914 for the following reasons:	Noted
5.2	The Council is opposed to the overland movement of even very low	Regulation of the transport of radioactive wastes is carried out by the Department for

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	level radioactive waste, believing that nuclear waste should be disposed of as close to its source as possible.	Transport. We have informed them of this concern. Transport must be considered alongside all impacts within any best available technique (BAT) assessment undertaken to address the potential transfer of waste from the generating site to the Lillyhall Landfill. The Government LLW Policy is explicit in stating that the proximity principle needs to be taken into account when consigning sites take waste management decisions. The policy also states that the proximity principle needs to be weighed against other factors when considering options. This will inevitably means that sometimes the preferred option may not be the nearest to the site of origin of the waste. On-site or near site disposal option may themselves not prove suitable. Any such application would need to be considered on its merits and meet Government LLW policy and legal constraints. Development of new disposal facilities may themselves generate unacceptable environmental or safety impacts which must also be considered.
5.3	Councillors are opposed to the proliferation of disposal sites in West Cumbria which may lead to a perception of the region as a nuclear waste disposal area to the detriment of both prospective and existing industries, particularly those connected with tourism or the processing and packaging of food.	We note these concerns. We do not believe there is any cause for concern resulting from the proposals which we consider to be safe and providing for sufficient environmental protection. We believe this is largely a planning and development control issue.
5.4	Approval of this particular application will set a precedent which will make it difficult to resist any future application for the disposal of low level nuclear material, either in an extension to this site or an alternative elsewhere in the area.	We will consider any application from a technical perspective on its own merits and ensuring that it meets the constraints and requirements of the Government LLW Policy and legal requirements, where relevant to our regulatory role. This applies to both new applications or variations to existing permits, for example for extensions. We would note that volumes of radioactive waste requiring disposal in the UK are very small compared to conventional (non-radioactive) waste and for HV-VLLW are currently estimated to be around 1.8 million m^3 out to 2129 (see the NDA/LLW Repository Limited LLW Strategy Review[6]). The need for sites in the UK is therefore finite. However, we do note that we are currently dealing with other applications in England for LLW disposal in both Lancashire and Northamptonshire, we

[6] LLW Strategic Review, LLW Repository Limited and the Nuclear Decommissioning Authority, NLWS/LLWR/01 – Issue 1, January 2009

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		additionally anticipate an application for LLW disposal for the Keekle Head site at some point in the future, subject to planning considerations.
Food Standards Agency		
6.1	We understand that the application pertains to disposal of High Volume Very Low Level Waste Arising from Nuclear Decommissioning Wastes at the Landfill Site in question rather into the environment from the facility. Under normal operations, there ought to be no losses of the waste. However, we are aware that leaching of the gaseous and aqueous wastes can occur either through run-off or as venting gases.	It is correct that the application is for disposal of HV-VLLW into the Lillyhall landfill site and not for discharges into the environment by air or water. We agree that under normal operations there ought to be no loss of waste and believe WRL have demonstrated this in their submission. However there will be small amounts of aqueous leachate and gases generated through expected processes, as assessed by WRL in the Environmental Safety Case.
6.2	In discussion with the Environmental Chemicals Team, given the rather hypothetical nature of the release scenarios in the Applicant's Environmental Safety Case, we have focused on the engineered barrier systems to prevent the wastes from reaching the food chain, the possibility of the food chain's being affected by the potential of agricultural activity in the vicinity of the site and the Applicant's procedures in dealing with leachate arisings. In support of the last criterion for comment, we have undertaken a screening assessment of the impact to the food chain from potential releases.	The release scenarios modelled are in accordance with existing methodologies and practice and generally make use of conservative assumptions as required by our guidance.
6.3	The first point to note is that due to the nature of VLLW, either as low volume, in terms of the definition of this category for transfer of waste from Non-Nuclear Licensed Premises or High-Volume wastes from the Nuclear Industry, the actual activity levels being disposed are going to be low and the impact on the food chain is likely to be minor.	This is consistent with the predictions of minimal releases from the site.
6.4	We have undertaken a screening assessment based upon the safety cases and responses to requests for further information with regard to leachate. Although the results of the screening assessment would be high, it would be unrealistic to assume that the total inventory for vented or run-off radionuclide would be lost in a single event.	We agree that loss of all disposed radionuclides in one event would be unrealistic. WRL's assessment has demonstrated that radioactive gases and radionuclides in leachates would only be released, under expected scenarios, at very low rates.
6.5	We also notice that, as part of the management requirements set out in the draft certificate, there is a	Monitoring will be undertaken to provide assurance that no releases are occurring above those predicted or expected.

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	specification for monitoring to be undertaken. From a practical point of view of public reassurance and also dealing with some of the uncertainties in quantifying the losses, we would suggest that this would be a reasonable solution.	
Health and Safety Executive (Nuclear Directorate (ND))		
7.1	Further to your letter on the above dated 26 October 2009, ND is able to confirm that it has no objection to you granting an authorisation for the disposal of High Volume Very Low Level Waste (HV-VLLW) at Lillyhall Landfill Site	Noted.
7.2	As you are aware, ND does not have any operational vires with respect to VLLW, however we do wish to draw your attention to the following issues when granting your authorisation.	Noted.
7.3	1. The anticipated volume of waste arising at the site was not substantiated and also there was no reference provided to support the figures. If the estimated capacity proves to be inadequate it could lead to a constraint on disposal remediation work.	The volumes of waste to be disposed at the site are bounded by the radiological assessment presented in the Environmental Safety Case and planning requirements. They are not based upon potential arisings at consigning sites. In other words, the disposal volumes are limited by WRL's ability to readily and robustly demonstrate that the disposals will not exceed relevant dose criteria laid out in our guidance and planning restrictions. It is therefore accepted that the disposal volumes provided at the Lillyhall Landfill site alone may well not meet all UK needs for HV-VLLW disposal capacity. We note that during 2010 the NDA published a national nuclear LLW Strategy which addresses the issue of capacity.
7.4	2. The draft authorisation proposes requiring document retention "indefinitely" but asks for records to be held "on the premises". Given that the facility is only planned to be operational until 2031 it is likely that diverse locations will be required to achieve indefinite retention.	We agree that to achieve document retention beyond the end of management control of the site, diverse retention locations would be required. Such decisions on the need for continued retention and means of retention will be considered at that point. We have therefore changed the requirement in the certificate to require retention "Until surrender of the permit for the site". Any extended requirements for document retention can be addressed at that point. Up to the end of management control, we will continue to require WRL to maintain records in a manner suitable to ensure their preservation into the future.
Studsvik UK Limited		
8.1	As you are aware, Studsvik is the	Noted.

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	operator of the Metal Recycling Facility at 1, Joseph Noble Road, Lillyhall, Workington. The Studsvik Metal Recycling Facility was created in response to an increasing need for nuclear facilities to apply the Waste Management Hierarchy, as embodied within the UK Government Policy for the Long Term Management of Solid Low Level Radioactive Waste, March 2007. Studsvik is also fully supportive of the National LLW Strategy which has been developed by LLWR & the NDA, which looks at how government policy and the Waste Management Hierarchy can be implemented for radioactive waste.	
8.2	Studsvik recognises that landfill disposal for HV-VLLW has an important part to play in the management of the UK's radioactive waste legacy, for high volume bulk wastes such as rubble and soils. Studsvik supports the development of such landfill facilities, so long as they are publicly acceptable, accountable, and operate in full support of the implementation of the waste hierarchy. In a number of previous consultation responses, we have set out the environmental benefits of radioactive metal recycling, which are significant and varied.	We recognise the benefits of metal recycling as part of the waste hierarchy .
8.3	The recycling of low level radioactive metallic wastes is demonstrated and accepted as being the Best Practicable Environmental Option. We would therefore be concerned about any proposals, such as the landfill disposal of LLW metals which could be recycled. This could be seen as contrary to the Waste Management Hierarchy if the environmental benefits of recycling are not considered, leading to preferential disposal, rather than recycling, of radioactive metal.	We accept that in many cases the recycling of LLW metals will represent the BPEO (now addressed by BAT) and that a generic BPEO on this issue has made this case. However, recycling of LLW metals will not be the BPEO in all cases, as other factors such as cost, transport and safety (e.g. in segregating the LLW metal) must also be taken into account in each case. We understand that Studsvik accepts that there are some waste streams e.g. some metal which is part of concrete structures, which it cannot at present readily recycle. Not all LLW metal can be recycled, although we will continue to encourage application of the waste management hierarchy through our regulation of sites and encourage and where appropriate require metal recycling where it represents the BPEO.
8.4	With regards to the Lillyhall landfill, we welcome the Environment Agency's position that the disposal of waste would be subject to further authorisation on a case-by-case	The BPEO for disposal from the waste generating site will need to be considered as part of any application to transfer waste to the Lillyhall site. This will need to consider other options, such as alternative disposal routes, re-

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	basis and would be dependent on demonstration that this is the Best Practicable Environmental Option. We believe it would be useful if the Environment Agency could reconfirm our understanding that the Waste Management Hierarchy applies fully to HVVLLW as it does to any other waste category.	use and recycle. The waste management hierarchy does apply fully to HV-VLLW as it does to other waste categories.
8.5	On this basis, we are concerned that the Environmental Safety Case for the landfill states on pp3 that the disposed waste streams might typically comprise *steels from decommissioning buildings*. Studsvik would point out that all such materials are readily treatable at facilities including our Metal Recycling Facility and that disposal to landfill of such wastes would be in contravention of the Waste Management Hierarchy and Government Policy.	We understand that Studsvik accepts that there are some waste streams which contain metals from decommissioning that cannot always, at present, be readily treated (e.g. some reinforcing bar in concrete). Government policy does not prevent the disposal of HV-VLLW metals to landfill, but requires application of the waste management hierarchy at the highest practicable level. Disposal of metals to landfill is therefore not necessarily in contravention of the waste management hierarchy, as wider factors must be taken into account. We will however encourage and require through our regulation of consigning sites the recycling of metals wherever practicable. We do not wish to see unacceptable levels of metals disposed of to landfill and we intend to keep a close eye on landfill disposals to make sure that this does not occur.
8.6	Furthermore, we would be grateful if the Environment Agency could confirm our understanding that bulk metals which could be readily segregated cannot be accepted at the site by virtue of the current variation of the environmental permit and the associated link to the Landfill (England and Wales) Regulations 1992 with its requirements for pre-treatment (including segregation). We note that the Operator's Phasing, Acceptance and Emplacement Management Plan mentions segregation and sorting at source for these types of waste, but it is not explicit with regards to metals.	The Landfill (England and Wales) Regulations 1992 do not apply to radioactive waste, although we will apply controls to the wider (non-radioactive) properties of the waste to ensure equivalent protection to the environment. The requirement for pre-treatment of the wastes referred to does not apply to radioactive wastes and is therefore explicitly excluded in the permit (see Condition 1.4.1). A requirement for pre-treatment would not affect the hazardous properties of the waste. Any requirement for 'treatment' of radioactive waste going to the landfill will be regulated at the consigning site, not at the receiving site. As referred to previously, we still expect the consigning site to demonstrate satisfactorily that the waste management hierarchy has been applied, which may include segregation (treatment) of metals. We will encourage and require through our regulation of consigning sites the recycling of metals wherever practicable. For clarity we are not authorising WRL to treat HV-VLLW at the Lillyhall Landfill Site.

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		WRL's management procedures will need to reflect the above position.
8.7	The application makes some comment on the Waste Management Hierarchy on pp73, but we believe the applicant could do more to demonstrate a commitment to the Waste Management Hierarchy and in confirming how the Landfill Regulations apply to wastes which could be segregated.	As stated above the Landfill (England and Wales) Regulations 1992 do not apply to radioactive waste. We believe the most effective and most efficient place to apply the waste management hierarchy is at source at the consigning site.
8.8	We note some disappointment that the application failed to identify the presence of the Studsvik Metal Recycling Facility in close proximity to the site, where bulk metals which have been segregated from consignor's wastestreams could be treated, and indeed that a potential synergy exists between the two sites. Equally, we recognise that bulk metals could be treated via the Energy Solutions metal melt facility in the Tennessee which is referenced in Section 1.1 of the application.	As stated above, handling of HV-VLLW at the Lillyhall Landfill Site for purposes other than disposal will not be authorised. Therefore any segregation, treatment or handling of wastes with a view to potential recycling would need to be undertaken at the consigning site and under their control. Any commercial synergies are a matter for operators to resolve.
8.9	In closing, Studsvik would confirm our position that we are not in principle opposed to the landfill of HV-VLLW at the Lillyhall landfill, if this was deemed to be publicly acceptable. Studsvik understands the general, local public and stakeholder concern of any proposed development involving radioactive waste, including disposal.	Noted.
8.10	Studsvik was pleased to be able to present its own plans for the widest public scrutiny during the planning and licensing of the Studsvik MRF. Studsvik notes that this opportunity has not been afforded to the public and local stakeholders in this particular case to the fullest extent, and that this is a sensitive issue in West Cumbria.	We have required WRL to undertake extensive stakeholder engagement during their application process and we are satisfied that they have done so, for example through open days, engagement with community groups and press releases. We have consulted appropriate public bodies on the application and any other individual or group requesting sight of the consultation material, which is available to the general public.
8.11	Notwithstanding that issue, we would be keen to receive confirmation from the Environment Agency of the position with regards bulk metallic waste and how this is handled under the RSA93 authorisation and the operator's management procedures.	Noted. See point 8.6
Winscales Parish Council		
9.1	Members of Winscales Parish Council object to this application. They feel that the current levels of	Noted.

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	waste are sufficient, and do not wish to see an increase.	

4. OUR CONSIDERATIONS

4.1 This section summarises what we have considered during our determination process.

4.2 Disposal of HV-VLLW to Lillyhall Landfill (or any other landfill) will help reduce the volume of waste going to the Low Level Waste Repository (LLWR) at Drigg. In general we support the intention to reduce the overall volume of waste going to the LLWR, to preserve its limited capacity for wastes which contain higher levels of radioactivity and require higher levels of engineered containment. However, waste disposal should be the option of last resort and we expect to see the waste management hierarchy applied as far as possible to minimise waste disposal to any location. This intention aligns with the government LLW Policy[7].

Legal and policy considerations

4.3 As part of our determination we have considered all relevant UK policy and legislation, including:

- Government 'Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom' published in March 2007
- The Nuclear Decommissioning Authority National Nuclear LLW Strategy
- Statutory Guidance to the Environment Agency concerning the regulation of radioactive discharges into the environment issued in 2009
- OSPAR and UK Strategy for Radioactive Discharges
- The Environmental Permitting (England and Wales) Regulations 2010
- The Groundwater Regulations 2009 (now part of EPR 2010 Schedule 22)
- The Justification of Practices Involving Ionising Radiation Regulations 2004
- The Basic Safety Standards Directive (BSSD) 2000 in relation to both optimisation and limitation of doses to members of the public
- Environment Act 1995
- Conservation (Natural Habitats & c) Regulations 1994 (the Habitats Regulations)
- National Parks and Access to the Countryside Act 1949
- The Wildlife and Countryside Act 1981, sections 28G and 28I
- Section 85 of the Countryside and Rights of Way Act 2000
- Human Rights Act 1998

4.4 In implementing these requirements we have in particular referred to three pieces of guidance:

- Environment Agency Guidance Note: Disposing of radioactive waste to landfill[8]
- The UK Environment Agencies Near-surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation, February 2009[9] (referred to as the NS-GRA), which we have applied in a manner proportionate to the hazard presented by the waste disposed

[7] Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom, By Defra, DTI and the Devolved Administrations, published in March 2007
[8] Available at: http://www.environment-agency.gov.uk/business/sectors/100241.aspx
[9] Available at: http://publications.environment-agency.gov.uk/pdf/GEHO0209BPJL-e-e.pdf

- Radiological Assessment Detailed Requirements: Environment Agency expectations for content of a radiological assessment supporting an application for disposal of radioactive waste at an established landfill site

4.5 We believe the application and our decision is consistent with policy, legal considerations and guidance. Further details are provided below.

Conservation and Habitats

4.6 We have considered the conservation objectives set out in sections 6 and 7 of the Environment Act 1995 and our duties under section 85 of the Countryside and Rights of Way Act 2000. Our view is that the limits and conditions of the new permit are sufficient to meet these objectives and our duties and that no other requirements are necessary.

4.7 We have considered our duties under the National Parks and Access to the Countryside Act 1949 and believe the WRL Lillyhall Landfill is not likely to affect any National Parks adversely.

4.8 We have considered our duties under sections 28G & 28I of the Wildlife and Countryside Act 1981. These duties relate to Sites of Special Scientific Interest. Part of a Site of Special Scientific Interest lies within 5km of the Lillyhall site (River Derwent & Tributaries). We consider that the limits and conditions of the new permit are enough to meet our duties. We consider that there are no changes which are likely to damage any of the flora, fauna or geological or physiographical features, by reason of which a Site of Special Scientific Interest is of special interest.

4.9 Under the Conservation (Natural Habitats & c) Regulations 1994 (the Habitats Regulations) we must be satisfied that the integrity of designated "European sites" will not be affected adversely by the authorisations that we issue. We have considered the potential impact of discharges of radioactive waste from the Landfill at Lillyhall on plant and animal life at relevant designated European sites. We are satisfied that the integrity of the designated European sites will not be affected adversely by the proposed activities or our decision.

Best Available Technique (BAT)

4.10 The application for disposal was made under RSA93 and required consideration of Best Practicable Environmental Option (BPEO) and Best Practicable Means (BPM). We consider these two terms to be broadly consistent with Best Available Technique (BAT)[10].

The Best Practicable Environmental Option (BPEO) is a concept initially developed by the Royal Commission on Environmental Pollution. We define this concept as "… The radioactive waste management option, for a given practice, that provides the most benefit or least damage to the environment as a whole in the long term as well as in the short term, taking into account operational doses and risks, and social and economic factors."**.** It is the responsibility of the consigning site to ensure that the BPEO can be demonstrated for the waste stream identified for disposal to landfill.

[10] We consider BAT (Best Available Technique) to serve the same purpose and to be the same concept as best practicable means (BPM) (and including the concept of best practicable environmental option (BPEO) used in the nuclear sector) and to deliver the same level of protection for people and the environment. Where operators are already using BPM/BPEO, they will therefore satisfy the requirements of BAT at the date of change to BAT. We also consider that the process for assessing BAT is the same as that for BPEO/BPM.

4.11 Best Practicable Means (BPM) is a term that we used in the authorisations that we issued under RSA 93. Essentially, it requires operators to take all reasonable measures in the design and operational management of their facilities to minimise discharges and disposals of radioactive waste, so as to achieve a high standard of protection for the public and the environment. BPM is applied to such aspects as minimising waste creation, abating discharges, monitoring the environment. It takes account of such factors as the availability and cost of relevant measures, operator safety and the benefits of reduced discharges and disposals. If the operator is applying BPM, radiation risks to the public and the environment will be As Low As Reasonably Achievable (ALARA).

4.12 WRL's application reflects the principles of BAT (through BPM) for disposal of solid LLW up to HV-VLLW limits. We have considered the level of management options and engineering controls submitted by WRL against BAT requirements. In particular we consider that the requirements of the NS-GRA and other guidance we have provided to the operator have been met and that application of these requirements represents application of BAT and demonstration that radiation risks will be ALARA. We therefore consider that BAT requirements have been met.

Discharges

4.13 The application is for the disposal of HV-VLLW by burial to a landfill site. Such burials, will as a matter of course, degrade with time and mix with water that may infiltrate the landfill cap and other barriers. Through this process the wastes will contribute towards both gaseous and aqueous discharges to the environment, through gas collection and percolation, and through migration of leachate.

4.14 Once the waste is disposed we do not authorise discharges to air, water and land, but instead require their impact to be assessed and justified as acceptable within the constraints of guidance we provide. We believe WRL have provided this justification. We will therefore not set any discharge limits for gaseous or aqueous discharges, but will require a range of environmental monitoring to take place on a periodic basis, including media such as local surface waters, groundwater, leachate discharges and grass/herbage. This monitoring will provide re-assurance that the disposal system is behaving as predicted and provide early warning of any unexpected behaviour.

4.15 The disposal operations will not generate any new solid radioactive waste for disposal elsewhere and so solid waste disposals via transfer to other premises is not authorised.

Radiological Assessment and Environmental Safety Case

Requirements

4.16 For applications to dispose of HV-VLLW to a landfill site we require a site specific radiological impact assessment. We allow this to refer to published generic research and development such as material published by SNIFFER[11] and the HPA-RPD[12]. This assessment must be sufficient to demonstrate that dose impacts will be acceptable, although a simple approach is likely to suffice. We also require consideration, proportionate to the hazard presented by the waste, of the principles

[11] Assessing the capability of controlled landfills to accept the disposal of solid low-level radioactive waste. SNIFFER. UKRSR03. 2006.
[12] Radiological assessment of disposal of large quantities of very low-level waste in landfill sites. QQ Chen, K Rowe, SF Mobbs and KA Jones. HPA-RPD-020. March 2007.

outlined within the NS-GRA and a statement that the requirements within the NS-GRA will be met.

4.17 The NS-GRA also indicates that the approach to assessing safety should be proportionate to the hazard arising. As the concentrations of radionuclides in HV-VLLW are far lower than in LLW, the radiation doses arising are also expected to be correspondingly lower. The impacts may therefore be assessed using a more simplistic, but cautious approach. If such a simplistic, but cautious approach is adopted more stringent radiation dose criteria are set for the operational and post closure periods. These are 0.02 mSv yr^{-1} for scenarios that are expected to occur and 1 mSv yr^{-1} for scenarios that are not certain to occur. WRL have chosen to demonstrate, that using a simplistic approach and cautious assumptions, the above radiation dose criteria can be met.

4.18 We are also required by Government to assess doses to the public from the expected discharges and compare the doses with appropriate criteria. The current criteria are: the source constraint (0.3 mSv yr^{-1}) and the public dose limit (1 mSv yr^{-1}). To put these dose criteria in context, average annual background dose in the UK is about 2.6 mSv.

4.19 A simplified radiological assessment must meet certain requirements. It must:

- Address all the key exposure situations likely to arise from the disposal (some are specified, for example gaseous impacts, effects of leachate and intrusion into the wastes post-closure)
- Consider both the operational and post closure phases of the landfill
- Present a suitable description of the site
- Present a suitable description of the wastes, timeframes over which disposals are made and proposed disposal methods
- Present information on the expected source term (radionuclides and their quantities)
- Describe and justify the radiological assessment methodology adopted
- Be presented clearly and transparently in a manner that can be readily reviewed

4.20 We also required the operator to assess the potential effect of discharges on plant and animal life at relevant designated European sites in accordance with the Habitats Regulations.

Review

4.21 WRL submitted an ESC addressing the above requirements, including a radiological assessment and used that assessment to propose means of operation and limits on disposals. The radiological assessment of dose to the public from future disposals is based on assumed levels of disposals and predicting the behaviour and concentrations of radionuclides once they are in the environment. We reviewed all of the assumptions made and were satisfied they were reasonable.

4.22 We expect WRL to have used the best available science on health and the environmental effects of radiation, and realistic assumptions of the behaviour and dietary patterns of representative members of the exposed public. This is consistent with our Radioactive Substances Regulation – Environmental Principles[13]. Following our review we were content that these principles had been applied in a proportionate manner.

[13] Available at: http://publications.environment-agency.gov.uk/pdf/GEHO0709BQSB-e-e.pdf

4.23 As part of our review of the application we checked that WRL had:

- Applied and considered relevant legislation, policy, guidance and dose criteria
- Used appropriate data in their calculations and assessments (e.g. radionuclide properties)
- Made reasonable assumptions where these were necessary (e.g. dilution factors)
- Used appropriately conservative data, assumptions and approaches given the simplified nature of their approach
- Utilised appropriate models to support their assessment (e.g. reference to SNIFFER and HPA-RPD work)
- Considered a representative range of scenarios during both the operational and post-closure period in a proportionate manner (e.g. affects on house dwellers or impacts on farmers via leachate)
- Proposed limitations on the radioactive waste that could be tracked back and demonstrated to ensure relevant dose criteria would always be met
- Not made transcription or other such errors and that information was presented clearly
- Used logical reasoning and argument in their assessment and application

4.24 Where necessary, as well as carrying out thorough checks on WRL's work, we also repeated certain calculations using our own models and data to ensure reproducibility.

4.25 From this review we concluded that WRL had undertaken a largely conservative assessment that had looked at impacts that are expected to occur (e.g. to anglers, irrigation of food, sewerage workers, farming families and 'bathtubbing' of the landfill) and those that are not certain to occur (e.g. intrusion into the waste by workers, house construction on the waste, agriculture on the waste and fires). The Table below summarises WRL's 'worst case' results in comparison to our criterion and background doses, based upon their model inventory, with disposals of up to 26000 m^3 per year. In all cases the assessment shows doses below our regulatory screening criteria and thus acceptable in the case of a simplistic assessment for HV-VLLW disposal to landfill.

Category	**Maximum Estimated Doses**	**Regulatory Screening Criterion**	**Radiation Doses from other sources**
Scenarios that are expected to occur	0.013 mSv yr^{-1} for a farming family	0.02 mSv yr^{-1}	2.1 mSv yr^{-1} for a member of an average Cumbrian group, taking account of natural and other man-made sources
Scenarios that are not expected to occur	0.019 mSv yr^{-1} for construction workers	1 mSv yr^{-1}	

4.26 Disposals of HV-VLLW will therefore be limited to 26000 m^3 per year. However, WRL also noted in their application that there was a high degree of uncertainty in the future disposal inventory. This is due to the fact that disposals would only actually be agreed following commercial agreements being made between consignors and WRL. Also, it is accepted that the inventory of many HV-VLLW steams is currently not well characterised. Given this uncertainty WRL proposed an approach to control the inventory of radionuclides disposed, to ensure ongoing compliance, in addition to the 26000 m^3 per year limit on HV-VLLW disposals. This

approach is known as the 'Sum of Fractions' approach, which takes account of the types of radionuclide disposed using inventory calculations. It is a standard approach developed by the IAEA[14].

4.27 This approach undertakes calculations, for each relevant scenario, to ensure that radiation doses could never exceed regulatory criteria taking into account the cumulative effect of all radionuclides disposed. The approach involves summing the contributions to radiation dose for any scenario over all the disposed radionuclides. The approach considers the main pathways by which impacts could occur and sets limiting values accordingly. Limiting values are therefore set for impacts that can occur via leachate (e.g. impacts on sewerage works), concentration limits are set for human intrusion scenarios (e.g. workers digging into the waste) and also for gaseous impacts (e.g. affects of radon on someone living in a house on top of the waste). Further details of this approach can be found in the ESC.

4.28 We paid particular attention to this proposed approach to limitation as it has not previously been used as the basis for authorisation of disposals under RSA 93 or EPR. We concluded that the proposed approach was in fact very robust and able to adequately control radionuclide inventory to ensure compliance with regulatory criteria. However, we also noted that the initial proposals were fairly complex, in that they would involve calculating the 'sum of fractions' over a long list of radionuclides and for numerous scenarios. We therefore looked to simplify the approach whilst ensuring limitation was no less robust.

4.29 WRL originally proposed that for leachate impacts, the sum of fractions should be calculated over a total of eleven different scenarios and sub-scenarios. Having examined this data we identified that under any possible combination of radionuclides disposed, only one scenario could actually be limiting. This was for impacts on a farming family under operational conditions. We therefore chose to limit only on this one farming family scenario, resulting in simpler, but as robust regulation.

4.30 Concentration limits for human intrusion scenarios were calculated over three scenarios. Here there was no single scenario that was always more limiting. We have therefore taken the most limiting value for each radionuclide, across each scenario to arrive at one set of limiting values. This approach is more conservative and offers slightly less flexibility in the radionuclides that may be disposed, but we believe will have a small overall impact on WRL's business.

4.31 For both the inventory limits for leachate impacts and concentration limits for human intrusion scenarios we additionally considered the potential impact of other radionuclides not assessed or listed by WRL. We considered that the radionuclides not listed were minor in nature, for instance being extremely rare in the national waste inventory. However, to be robust, we decided that the approach must also take account of any 'other radionuclides'. Taking into account the potential impact of these other radionuclides we set 4 TBq and 4 Bqg^{-1} limits respectively for the leachate and human intrusion scenarios. Additionally, we limited the need to consider other radionuclides to those with half-lives greater than three months, on the basis that radionuclides with half-lives less than three months will have substantially decayed before they could cause any dose impact to the public.

[14] See IAEA TECDOC-1380, Derivation of activity limits for the disposal of radioactive waste in near surface disposal facilities, December 2003.

4.32 WRL also undertook an assessment of the potential impacts on non-human species to satisfy the requirements of the Habitats Regulations. We were satisfied that the assessment demonstrated there would be no unacceptable impacts on non-human species, i.e. there would be no dose rates exceeding our guideline value of 40 micrograys per hour and as a result no further assessment or limitation on disposals was required. The discharges will thus have no significant adverse impact on an European site, Site of Special Scientific Interest or Area of Outstanding Natural Beauty.

4.33 In addition to the quantitative assessments discussed above, we also considered WRL's general approach to making their ESC, consistency of proposed operational measures with the ESC and whether the principles and requirements detailed in the NS-GRA had been addressed in a proportionate manner. We were satisfied that these issues had been adequately addressed and some of these issues are discussed further below.

Summary

4.34 Having completed our review we were satisfied that the assessment and case presented was sound. On this basis, subject to the discussion above, we have in general adopted the proposed limitations on disposal. Details of the limits adopted can be found in the Permit in Annex 1. Overall we were satisfied that:

- All or requirements for the radiological assessment had been met and that the assessment had made use of appropriate data, models, calculation and assumptions
- The limitation adopted will provide for safe disposal and protection of the environment
- All the NS-GRA principles and requirements have been met in a manner proportionate to the hazard presented by the waste
- The overall approach to assessment and making the case was reasonable and with clarifications provided following further information requests was clear and complete. Suitable conservatisms have been applied, allowing a sufficient margin of safety
- Reasonable operational methods have been proposed, consistent with the ESC
- Adequate limitation will be provided by the 26000 m^3 per year HV-VLLW disposal limit, in combination with the 'sum of fractions' approach to limiting cumulative disposals across all radionuclides

Other Considerations

4.35 In addition to the above considerations a number of other key issues were addressed in our determination, during both the review and at the Readiness Reviews undertaken. Many of these considerations have led to specific conditions within the Permit (see Annex 1).

Stakeholder engagement and dialogue with the host community

4.36 Through Requirement 2 of the NS-GRA we expect the applicant to undertake adequate dialogue with the potential host communities and other stakeholders. WRL developed an engagement plan early on in their application process and actively engaged with local community groups and representatives, as well as local businesses. In addition to meeting with local groups and community representatives, press releases were issued, an exhibition was held and community members were invited to visit the site. Overall we were satisfied with the extent of engagement undertaken.

Planning permission

4.37 We sought confirmation from Cumbria County Council and WRL that the proposed activities would be adequately covered by existing planning permissions. We were advised that, as the proposals would not involve a material change to use, they could take place without the need for a further planning application. However, we do understand from the consultation response provided by Cumbria County Council, that the current planning permission at Lillyhall only runs to June 2014, by which time restoration of the site is required to have been completed. Any continuation of landfill after that date would require a further planning permission to be granted.

Compliance history

4.38 Although WRL are applying for a new Environmental Permit for radioactive waste disposal, the company has held an Environmental Permit for disposal of non-radioactive waste at the site for a number of years. We therefore engaged with the current Environment Agency site inspector on past performance and considered past compliance history.

4.39 For 2008 and 2009 Lillyhall Stage 3 Landfill has had a Compliance Band "B" applied to its Operator Pollution Risk Appraisal (OPRA) score to reflect compliance at the site. Compliance Band "B" does not alter the overall OPRA score for the site and as a result no extra regulatory effort is required by the Agency to ensure the site is compliant. That is to say the site is being well managed and is not viewed as being a risk (however, note the Compliance Rating is applied retrospectively on an annual basis).

4.40 No Enforcement Notices have been served by the Environment Agency on WRL for this site whilst they have held the Permit (Permit transferred to Waste Recycling Ltd on 26 May 2006), nor has the Environment Agency issued any formal cautions for the same period. There are no prosecutions pending for this site and no investigations currently ongoing with respect to the site.

4.41 Historically the site has had issues regarding odour, however this was in the mid 90's to 2000 and at the time the site was operated by another Company (Alco Waste Management Ltd). The only significant odour event regarding this site whilst operated by WRL was in December 2006 when a hydrogen sulphide/mercaptan odour was released from site. WRL initiated and completed significant engineering work to control and manage the odour being released i.e. installation of gas wells, laying of a network of slotted pipes on the surface of a flank and completely lining a flank of the landfill in a four day period completing it on Christmas eve 2006.

Existing Environmental Permit and non-radiological protection

4.42 WRL currently hold an Environmental Permit (EPR/GP3037SJ) for the Lillyhall Landfill Site which places limits and conditions on the disposal of controlled (non-radioactive) waste and hazardous asbestos waste. This permit will not be affected in any way by this decision.

4.43 The HV-VLLW to be disposed of at the Lillyhall Site may also be harmful, partly because of its non-radioactive properties, although the same legislation and standards for disposal do not always apply to it. However, we consider that a level of protection should be provided against the non-radiological hazards of the radioactive waste that is no less stringent than would be provided if the waste were non-radioactive.

4.44 To ensure comparable protection from the non-radiological impacts of the radioactive waste the permit will require that:

- Radioactive waste types acceptable for disposal are of a type that would be acceptable under the current Environmental Permit if that permit applied to radioactive waste (except for treatment)
- All the relevant waste acceptance procedures must be completed as if the radioactive waste is subject to the current variation of the Environmental Permit (except for treatment)
- The waste fulfils the relevant waste acceptance criteria or basic characterisation requirements as if the radioactive waste is subject to the current variation of the Environmental Permit (except for treatment)
- Asbestos can only be disposed of into an asbestos cell as required under the current variation of the Environmental Permit

4.45 Any requirement for treatment of radioactive waste going to the landfill will be regulated at the consigning site, not at the receiving site. We will expect the consigning site to demonstrate satisfactorily that the waste management hierarchy has been applied. We will encourage and require through our regulation of consigning sites beneficial treatment where practicable.

Best available techniques (BAT)

4.46 Irrespective of the other limitations and conditions applied through the permit issued to WRL, there is a requirement for WRL to apply BAT. This applies to:

- The manner in which waste is disposed, so as to minimise the radiological effects on the environment and members of the public
- The taking of samples and conducting measurements, tests, surveys, analyses and calculations, to determine compliance with the limitations and conditions of the permit

Groundwater Regulations 2009

4.47 The Groundwater Regulations 2009 issued late in 2009 bring radioactive substances into the regulations and are now replaced by EPR 2010 Schedule 22. As a result of these regulations we needed to confirm that the requirements of the regulations were met in relation to radioactive waste disposal. We therefore reviewed the relevant information on prior investigations undertaken at the site, site understanding (e.g. hydrogeology), potential impacts on groundwaters and groundwater pathways (operational and post-closure phase), optimisation of groundwater releases and monitoring provisions. We are satisfied that the proposals are consistent with the Groundwater Regulations 2009 requirements and that appropriate ongoing monitoring and review is in place.

Operational methods and procedures

4.48 We reviewed WRL's proposed operational methods and procedures for the receipt and disposal of HV-VLLW. These issues were also addressed at our Readiness Reviews. As the Lillyhall Landfill is already an established landfill for the disposal of non-radioactive wastes, many of the methods and procedures are already in place, well documented and tested. We are therefore able to take confidence from this past experience, but also looked at issues specific to radioactive waste disposal.

4.49 As WRL will not be authorised to dispose of any aqueous waste we expect that transfers of waste to the site and handling of waste on the site will prevent any contamination of vehicles or equipment, potentially leading to the need for decontamination. We have therefore required that all wastes should be contained so as not to contaminate vehicles or handling equipment.

4.50 WRL are not authorised to store waste on site and must also minimise any wind blown waste and scavenging by animals. We have therefore required that all waste must be disposed within eight hours of receipt and then must be covered within eight hours or by the end of the working day, whichever is the soonest. We require that coverage of the waste must be adequate to prevent any dispersal by the wind and to prevent scavenging. There are existing site procedures to cease disposals in high wind conditions.

4.51 WRL intend to dispose of radioactive waste in a separate area of the current disposal cell from the non-radioactive wastes, to maintain a degree of separation and to ease management of disposals. We are satisfied with this approach which allows disposals to be readily located should this become necessary in the future. We are satisfied that this segregation is consistent with the radiological assessment.

4.52 We considered the procedures WRL had developed, or were developing, for the management of radioactive waste receipt and disposal, including ensuring compliance with the limits and conditions of the permit. This covered areas such as Waste Acceptance Criteria, records management, reporting procedures, notification procedures, procedures for monitoring, operational procedures and inventory management. We reviewed documents addressing these areas supplied by WRL (some in draft form) and also addressed these issues at a Readiness Reviews at the Lillyhall Site. We were satisfied that WRL had developed (or were developing prior to first disposals) a suitable management system for themselves and consignors to ensure compliance with limits and conditions of the permit and to ensure operations that are safe and will protect the environment. Through our regulation of the site we will monitor development of the management system to ensure it is suitably developed and able to ensure compliance with the permit.

Monitoring

4.53 The permit requires that WRL have a management system that identifies and minimises the risk of non-conformances. It also requires that waste is inspected both before and after deposit to assure themselves, as far as reasonably practicable, that it conforms to the consignor's characterisation documentation provided for that radioactive waste. Through these requirements we expect WRL to have robust procedures to confirm waste received for disposal is as expected and that appropriate procedures are in place to audit and check consignments before receipt. We are satisfied with the procedures in place and through our regulation of the site we will continue to monitor these systems to ensure compliance with the permit.

4.54 We have decided that as part of our permitting of WRL we will require routine environmental monitoring at the Lillyhall Site to provide re-assurance that discharges remain low and as predicted by the radiological assessment. WRL will be required to take a number of samples and measurements on a routine basis and to report the results to us, which we will make available to the public through our Public Registers. The required monitoring includes surface waters, ground waters, grass/herbage, perimeter dose rate monitoring, leachate, discharges to the sewer and treatment plant sludge. This monitoring will provide broad coverage of potential discharge pathways and allow identification of any adverse trends developing.

Records and reporting

4.55 We have decided that as part of our permitting of WRL we will require WRL to maintain certain specified records and to report some of these to us on a regular basis. In particular we will require WRL to maintain records relating to the amounts, nature and radioactive content of disposals on a consignment basis, such that there

is clarity of the waste inventory at any time. We will require summary reports of this information on an annual basis, such that we can confirm disposals remain within permitted limits.

Improvements

4.56 We have included two improvement requirements in the permit as summarised below:

1. A review of how WRL have demonstrated compliance with the permit, application of BAT and generation of an action plan as necessary to be provided every three years
2. To provide an update to the ESC every five years

4.57 It is intended that these requirements will drive continual improvement and ensure understanding and operation of the site remains up to date with current best practice.

5. DECISION AND CONCLUSIONS

5.1 Disposal of HV-VLLW to Lillyhall Landfill will help to reduce the volume of waste going to the Low Level Waste Repository (LLWR) at Drigg. In general we support the intention to reduce the overall volume of waste going to the LLWR, to preserve its limited capacity for wastes which contain higher levels of radioactivity and require higher levels of engineered containment. However, waste disposal should be the option of last resort and we expect to see the waste management hierarchy applied as far as possible to minimise waste disposal to any location. This intention aligns with the government LLW Policy.

5.2 We have decided to issue a permit as described in this Decision Document and as detailed in the permit in Annex 1. We recognise that a number of objections have been raised with regards to this application by consultees (see Section 3). However, many of the issues raised are not directly relevant to the technical assessment of this application, but relate more to government policy and strategy for LLW disposal, or relate to matters more relevant to planning and development control. As such we have responded to these comments as best we are able to, taking account of government policy, and have referred the comments to the relevant government department.

5.3 The permit is based on a template permit for a landfill site. We have developed the template to make sure that it is up to date and effective, and that the permit properly protects people and the environment. The permit conditions are consistent with our Radioactive Substances Regulation – Environmental Principles. The permit consists, principally, of:

- The permit itself
- A schedule (Schedule 1) of standard conditions and limitations applicable to solid radioactive waste disposals and intended to be broadly common at all disposal sites
- A number of tables containing the limitations and conditions specific to each individual disposal site

5.4 The permit for WRL contains a number of conditions and tables specific to the Lillyhall Landfill Site. These specify the limits on disposal and the permit should be referred to for details. However, key decisions are to:

- Authorise disposal of up to 26000 m^3 of HV-VLLW per year and to regulate this by requiring reports on disposed waste
- Further limit disposals by application of a 'Sum of Fractions' approach to assess and limit the impact of cumulative disposals over the lifetime of the site. We will regulate this by requiring regular reports on disposal data
- Specify requirements on the period allowed before disposal, coverage of waste after disposal, record keeping and reporting of data to us
- Require certain environmental monitoring to be carried out on a routine basis and to report the findings to us

5.5 A number of changes have been made to the permit issued for consultation as an illustrative draft. Most of these changes are minor in nature. Key changes have been to:

- Only allow 'high volume very low level waste' for disposal, as opposed to 'very low level waste'. This will ensure clarity of the scope of the certificate
- To update relevant values in Tables 3, 4 and 5 of the certificate to align with updated and revised calculations provided by WRL
- To reduce the three scenarios presented in Table 3 of the permit to one by taking the 'worst case' value for each radionuclide, so as to simplify the certificate, but remain conservative in terms of limitation
- Modifications have been made to monitoring frequency and requirements listed in Table 8 of the permit to ensure proportionate regulation

5.6 Additionally, following transition of regulation to EPR and following discussion with the operators, we have made a number of changes for consistency with this regulatory regime, as follows:

- The front certificate pages and introductory note to the permit has been updated to align with EPR format
- Condition 1.1.8 requires posting of copies of the permit on the premises
- Condition 1.1.9 defines the site boundary by use of a site plan
- Conditions 1.4.17 and 1.4.18 require the operators to notify the local authority of first receipt of radioactive waste from a new consignor for the purposes of disposal
- Condition 1.4.19 specifies activities the operator may undertake
- Condition 1.7.2 provides a clear mechanism for the Agency to require samples of waste to be taken and supplied to us, primarily for the purposes of checking
- All references to the certificate of authorisation (under RSA93) now refer to the 'permit' under EPR
- All references to BPM now refer to BAT

5.7 We have concluded that:

- Overall, we consider the application to be sound and to be consistent with relevant policy, legislation and guidance
- We believe the permit will ensure the protection of the public and the environment from the effects of radioactive waste disposals
- The permit will introduce stringent controls on disposal of radioactive waste
- The permit conditions are proportionate and risk based
- Our decision will not place a grossly disproportionate burden on WRL's resources in meeting the requirements of the permit, or require grossly disproportionate expenditure for sampling, monitoring and managerial control of disposals.

- The existing Environmental Permit will not be affected and will continue to provide proportionate regulation of non-radiological disposals to the site

6. NEXT STEPS

6.1 We have made DECC and DoH aware of this application and the consultation responses received. The Secretaries of State have powers of direction under EPR concerning the application and our decision. Subject to consideration by the Secretaries of State, we will implement our decisions by issuing the permit shown in Annex 1.

6.2 We will specify or approve further detailed compliance requirements as required by the permit prior to first disposals.

6.3 Both the permit and this Decision Document will be placed on the public register.

6.4 We note that permitting of the Lillyhall Site to receive and dispose of HV-VLLW does not in itself guarantee disposals can take place. Nuclear sites wishing to consign waste to the Lillyhall Landfill for disposal will have to apply to vary their existing permits under EPR. These applications will be considered on a case-by-case basis and where necessary involve further consultation. At the time of writing the only available routes for HV-VLLW to the Lillyhall Landfill is via the LLWR at Drigg on the basis that all nuclear sites in England and Wales are permitted to transfer waste to the LLWR and the LLWR have a route established to transfer waste to the Lillyhall Landfill.

7. GLOSSARY OF TERMS AND ABBREVIATIONS

ALARA	As low as reasonably achievable
BAT	Best Available Technique
Bq	Becquerel: The standard international unit of radioactivity equal to one radioactive transformation per second. A Megabecquerel (MBq) equals 1 million transformations per second. A Gigabecquerel (GBq) equals 1 thousand million transformations per second. A Terabecquerel (TBq) equals 1 million million transformations per second.
BPEO	Best Practicable Environmental Option
BPM	Best Practicable Means
DfT	Department for Transport
DoH	Department of Health
DECC	Department for Energy and Climate Change
Disposal	Defined under RSA 93, in relation to waste, to include its removal, deposit, destruction, discharge (whether into water or into the air or into a sewer or drain or otherwise) or burial (whether underground or otherwise).

Dose	A general term used as a measure of the radiation received by man and usually measured in Sieverts.
Dose Constraint	A restriction on annual dose to an individual from a single source applied at the design and planning stage of any activity in order to ensure that when aggregated with doses from all sources, excluding natural background and medical procedures, the dose limit is not exceeded. The dose constraint places an upper bound on the outcome of any optimisation study and will therefore limit any inequity that might result from the economic and social judgements inherent in the optimisation process.
Dose Limit	A limit of 1mSv/y to members of the public is applied for all man-made sources of radiation (other than from medical exposure). This limit is incorporated within UK law.
ESC	Environmental Safety Case
FSA	Food Standards Agency
Half-life	The time required for the activity of a radionuclide to decrease to half of its initial value.
HSE	Health and Safety Executive
HPA-RPD	Health Protection Agency – Radiological Protection Division
HV-VLLW	High Volume Very Low Level Waste
IAEA	International Atomic Energy Agency
LLW	Low level waste: Waste containing levels of radioactivity greater than those acceptable for disposal with normal refuse but not exceeding 4 GBq/tonne alpha-emitting radionuclides or 12 GBq/tonne beta-emitting radionuclides.
LLWR	Low Level Waste Repository
NDA	Nuclear Decommissioning Authority
NS-GRA	Guidance on Requirement for Authorisation of Near-surface Disposal Facilities on Land for Solid Radioactive Wastes
PPC	Pollution Prevention and Control
RSA 93	The Radioactive Substances Act 1993
Radioactivity	The property of some radionuclides to spontaneously disintegrate emitting radiation such as alpha particles, beta particles and gamma rays.

Radiological assessment An assessment of the radiation dose to members of the public including that from discharges, which will result from operation or decommissioning of a facility.

Radionuclide A general term for an unstable atomic nuclide that emits ionising radiation.

Sv Sievert: A measure of radiation dose received. A millisievert (mSv) is one thousandth of a sievert.

WRL Waste Recycling Limited

Annex 1 – Environmental Permit

Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Waste Recycling Limited

Lillyhall Landfill Site
Joseph Noble Road
Lillyhall
Workington
Cumbria
CA14 4JH

Permit number

CD7914

Lillyhall Landfill Site
Permit number CD7914

Introductory note

This introductory note does not form a part of this permit

This Permit allows the Operator to receive and dispose of radioactive waste by burial on the specified premises.

The Permit is issued under the provisions of regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010. Those Regulations are concerned, amongst other things, with the control of radioactive material and the receipt, transfer, accumulation and disposal of radioactive waste.

The operator must also comply with other legislation to which the keeping or use of radioactive material and the transfer, accumulation and disposal of radioactive waste is subject. This includes legislation enforced by the Health and Safety Executive and by the Department for Transport.

The main features of the facility are as follows. The Lillyhall Landfill Site receives High Volume Very Low Level Waste from nuclear and non-nuclear sites for disposal. The Landfill Site receives and checks the waste, followed by disposal into waste cells designed, to standard landfill practice, for the purpose of waste disposal. The site also receives and disposes of other non-radioactive waste under a separate Environmental Permit.

This document is a newly issued Permit. The status log of the Permit sets out the permitting history, including any changes to the permit reference number .

Status Log of the permit

Detail	Date	Response Date
Application CD7914	Received 22/05/2009	
Additional Information Received	Received 30/07/2009	
Additional Information Received	Received 05/10/2009	
Permit determined	06/04/2011	

End of Introductory Note

Permit

Permit number
CD7914

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2010

Waste Recycling Limited ("the operator"),

whose registered office is

Ground Floor West, 900 Pavilion Drive, Northampton Business Park, Northampton, NN4 7RG

company registration number 2674166

to carry on radioactive substance activities described in Schedule 23 Part 2 paragraph 5(4)(a) and Schedule 23 Part 2 paragraph 5(2)(b) of the Environmental Permitting (England and Wales) Regulations 2010, being receipt and disposal of high volume very low level waste, on the premises used by the operator at

Lillyhall Landfill Site
Joseph Noble Road
Lillyhall
Workington
Cumbria
CA14 4JH

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Mr Stephen Hardy 	06/04/2011

Authorised on behalf of the Environment Agency

The permit shall take effect from 06/04/2011

Schedule 1

CONDITIONS AND LIMITATIONS

GENERAL MANAGEMENT

1.1.1 Subject to conditions 1.1.4, 1.1.6 and 1.1.7 the disposal of radioactive waste shall be managed:

(a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents and non-conformances and those drawn to the attention of the operator as a result of complaints; and
(b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the disposal of radioactive waste.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this Permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall make provision for consultation with such suitable RPAs, or other such qualified experts as the Agency may approve in writing, as are necessary for the purpose of advising the operator as to compliance with the limitations and conditions of this Permit.

1.1.5 The operator shall use the best available techniques to dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.

1.1.6 The operator shall maintain in good repair the systems and equipment provided for the disposal of radioactive waste.

1.1.7 The operator shall check, at an appropriate frequency, the effectiveness of systems, equipment and procedures provided for the disposal of radioactive waste.

1.1.8 The operator shall post copies of this Permit on the premises, in such characters and in such positions to be conveniently read by persons who have duties on the premises which are or could be affected by the matters set out in this Permit.

1.1.9 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at Figure 1 to this Permit.

ACCIDENTS THAT MAY CAUSE POLLUTION

1.2.1 The operator shall:

(a) maintain and implement an accident management plan;
(b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;
(c) make any appropriate changes to the plan identified by a review.

SITE SECURITY

1.3.1 Site security measures shall prevent unauthorised access to the radioactive waste, as far as practicable.

WASTE ACCEPTANCE AND DISPOSAL

1.4.1 Radioactive waste shall only be accepted for disposal if:

(a) it is high volume very low level waste;
(b) the radioactive waste is of a type which would be acceptable for disposal under the current variation of Environmental Permit EPR/GP3037SJ if that Permit applied to radioactive waste (except to requirements for treatment);

(c) all the relevant waste acceptance procedures have been completed as if the radioactive waste is subject to the current variation of Environmental Permit EPR/GP3037SJ (except to requirements for treatment);
(d) it fulfils the relevant waste acceptance criteria or basic characterisation requirements as if the radioactive waste is subject to the current variation of Environmental Permit EPR/GP3037SJ (except to requirements for treatment); and
(e) it has not been diluted or mixed for the purpose of meeting the definition of high volume very low level waste or the relevant waste acceptance criteria.

1.4.2 The operator shall visually inspect radioactive waste:

(a) without unloading it, on arrival at the landfill; and
(b) at the point of deposit;

and shall satisfy himself as far as reasonably practicable that it conforms to the consignor's characterisation documentation provided for that radioactive waste.

1.4.3 Radioactive waste found not to meet the requirements of condition 1.4.1 shall be returned to the consignor as soon as practicable and within 24 hours of the quarantine area becoming full, and in any event within 5 days of receipt at the premises.

1.4.4 The operator shall use the best available techniques when taking samples and conducting measurements, tests, surveys, analyses and calculations, to determine compliance with the limitations and conditions of this Permit, unless particular means are specified in writing by the Agency.

1.4.5 Where the operator has taken samples or undertaken tests, surveys or measurements to establish that the radioactive waste is in conformity with the documentation submitted, then the samples taken shall be retained for at least one month and results of any analysis for at least two years.

1.4.6 The quantity of radioactive waste disposed of shall not exceed the relevant values specified in Table 2.

1.4.7 The operator shall calculate, for each radionuclide or group of radionuclides listed in Table 3, the ratio of the activity (in TBq) of the radioactive waste disposed of at the premises under this Permit, to the relevant value in Table 3. The sum of these ratios shall be less than 1.

1.4.8 The operator shall calculate, for each radionuclide or group of radionuclides listed in Table 4, the ratio of the specific activity by mass (in Bq/g) of all the radioactive waste disposed of to an individual disposal cell under this Permit, to the relevant value in Table 4. The sum of these ratios shall be less than 1.

1.4.9 The operator shall calculate, for each radionuclide listed in Table 5, the ratio of the specific activity by mass (in Bq/g) of the radioactive waste in an individual consignment, to the relevant value in Table 5. The sum of these ratios shall be less than 1.

1.4.10 The operator shall dispose of radioactive waste as specified in Table 6.

1.4.11 The operator shall, on accepting each delivery of radioactive waste, provide a receipt to the person delivering it. The receipt shall include the details specified in record numbers 2 to 8 of Table 9.

1.4.12 The operator shall not accept delivery of radioactive waste while landfill disposal activities under the current variation of Environmental Permit EPR/GP3037SJ have ceased.

1.4.13 The operator shall so far as is reasonably practicable prevent the loss or escape of any radioactive waste.

1.4.14 If the operator believes or has reasonable grounds for believing that any radioactive waste has been lost or stolen he shall:

(a) without delay inform the Police and the Agency;
(b) so far as is reasonably practicable recover the radioactive waste; and
(c) as soon as is practicable notify the Agency in writing of the circumstances of the occurrence and the means taken to recover the radioactive waste.

1.4.15 If the operator believes or has reasonable grounds for believing that any radioactive waste is escaping or has escaped from any container or location he shall:

(a) without delay inform the Agency;
(b) so far as is reasonably practicable:

(i) prevent any further escape; and
(ii) minimise the spread of any contamination; and

(c) as soon as is practicable report the circumstances in writing to the Agency.

1.4.16 The operator shall dispose of radioactive waste so as to prevent or where that is not practicable, to minimise, any pollution risk on closure.

1.4.17 Before the operator first receives radioactive waste from a consignor for the purpose of final disposal of that waste from or on the premises, the operator shall, at the earliest opportunity, inform the local authority, in whose area of responsibility the premises is situated, of the origin and nature of the radioactive waste.

1.4.18 The provisions of condition 1.4.17 do not apply:

(a) where the waste consignor is exempt from the requirement to hold an Environmental Permit for the disposal of radioactive waste;
(b) to the extent that it would require the disclosure of information relating to sealed radioactive sources;
(c) to low volume very low level waste.

1.4.19 The operator is only authorised to carry out the activities specified in Table 1 (the “activities”).

IMPROVEMENT PROGRAMME

1.5.1 The operator shall complete the improvements specified in Table 7 by the date specified in that table unless otherwise agreed in writing by the Agency.

1.5.2 Except in the case of an improvement which consists only of a submission to the Agency, the operator shall notify the Agency within 14 days of completion of each improvement.

SAMPLING AND MONITORING

1.7.1 The operator shall, unless otherwise agreed in writing by the Agency, undertake the sampling and monitoring specified in Table 8.

1.7.2 If required by the Environment Agency, the operator shall keep samples, provide samples, or dispatch samples for tests at a laboratory, as the Environment Agency specifies, and ensure that the samples or residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the relevant legislation are complete.

RECORDS

1.8.1 The operator shall make records as specified in Table 9. Any information regarded by the operator as commercially confidential shall be clearly identified in the record.

1.8.2 All records required to be made by this Permit shall:

(a) be legible;
(b) be made as soon as reasonably practicable;
(c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
(d) be retained, unless otherwise agreed in writing by the Agency, for at least 2 years from the date when the records were made, or as specified in Table 10.

1.8.3 Records of acceptance and disposal of each radioactive waste consignment required to be made by this Permit shall be made on the day of acceptance and disposal.

1.8.4 The operator shall supply within 14 days and without charge such copies or copies of all or part of records kept as referred to in this certificate as the Agency may reasonably require.

1.8.5 All records required to be made by this Permit shall be held on the premises and shall be available for inspection by the Agency at any reasonable time.

REPORTING

1.9.1 Within 28 days of the end of the relevant reporting period or by the date specified in Table 11 the operator shall, unless otherwise agreed in writing by the Agency, submit reports as specified in that Table.

1.9.2 All reports and notifications required by this Permit shall be sent to the Agency using the contact details supplied in writing by the Agency.

NOTIFICATIONS

1.10.1 The Agency shall be notified without delay following the detection of:

(a) any malfunction, breakdown or failure of equipment or techniques, accident, or release of radioactive waste which has caused, is causing or may cause significant pollution from radioactive waste;
(b) the breach of a limit or condition specified in this Permit; or
(c) any significant adverse environmental effects.

1.10.2 If the operator believes or has reasonable grounds for believing that the acceptance or disposal of radioactive waste is occurring, has occurred or might occur which does not comply with the limitations and conditions of this Permit he shall:

(a) without delay inform the Agency;
(b) so far as is reasonably practicable prevent the further acceptance or disposal of radioactive waste; and
(c) as soon as is practicable report the circumstances in writing to the Agency.

1.10.3 Written notification shall be given to the Agency of the following events and in the specified timescales:

(a) as soon as practicable prior to the permanent cessation of disposal of radioactive waste; and
(b) at least 28 days prior to a change of name of the operator; and
(c) as soon as practicable after the date of the first disposal of radioactive waste under this Permit.

1.10.4 Where the Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Agency when the relevant monitoring is to take place. The operator shall provide this information to the Agency at least 14 days before the date the monitoring is to be undertaken.

INTERPRETATION

1.11.1 In this Permit -

“activity”, expressed in becquerels, means the number of spontaneous nuclear transformations occurring in a period of one second in a radioactive substance;

“Bq and TBq” are used as abbreviations meaning becquerels and terabecquerels respectively;

"calendar year" means a period of 12 consecutive months beginning on 1 January.

“consignment” means an individual shipment of radioactive waste not greater in volume than 40 cubic metres or such volume as specified by the Agency in writing;

“high volume very low level waste” means radioactive waste in which the maximum activity is 4 MBq/te of total activity. For radioactive waste containing tritium, the concentration limit for tritium is 40MBq/te;

“low volume very low level waste” means solid radioactive waste, each $0.1m^3$ containing less than 400 kBg of total activity or single items containing less than 40 kBg of total activity;

"quarter" means any period of three consecutive months;

“RPA” means a Radiation Protection Adviser appointed under Regulation 13 of the Ionising Radiations Regulations 1999;

"samples" includes samples that have been prepared or treated to enable measurements of activity to be made;

"sealed radioactive source" means a source whose structure is such as to prevent, under normal conditions of use, any dispersion of radioactive material into the environment;

“techniques” include both the technology used and the way in which the installation is designed, built, maintained, operated and dismantled;

“the Agency” means the Environment Agency;

"year" means any period of 12 consecutive months.

1.11.2 *“best available techniques”* means the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available techniques in general or individual cases, special consideration shall be given to:

(a) comparable processes, facilities or methods of operation which have recently been successfully tried out;
(b) technological advances and changes in scientific knowledge and understanding;
(c) the economic feasibility of such techniques;
(d) time limits for installation in both new and existing plants; and
(e) the nature and volume of the discharges and emissions concerned.

OPERATIONS

Table 1

Activity reference	Activity listed in Schedule 23 of the Environmental Permitting Regulations	Description of specified activity
A1	Sch 23 Part 2 para 5(2)(b)	Disposal of radioactive waste on or from the premises
A2	Sch 23 Part 2 para 5(4)(a)	Receipt of radioactive waste for the purpose of disposal

DISPOSAL OF RADIOACTIVE WASTE

Table 2

Time Period	Volumetric Limit
Annual limit	26000 cubic metres
Lifetime of the landfill	582000 cubic metres

Table 3: Relevant values to be used in Condition 1.4.7 for calculating limitation of total disposals

Radionuclide or Group of Radionuclides	Relevant Value
H-3	1900
C-14	84
Cl-36	0.82
Mn-54	3.6
Fe-55	650
Co-60	0.31
Ni-63	4000
Zn-65	4.9
Sr-90	2.6
Zr-95	72
Nb-95	150
Tc-99	0.02
Ru-103	430
Ru-106	78
Ag-108m	1.3
Ag-110m	1.3
Sb-125	2.2
I-129	0.15
Cs-134	9.8
Cs-137	12
Ce-144	610
Pm-147	4000
Eu-152	3.8
Eu-154	3.8
Po-210	2.9
Pb-210	2.2
Ra-226	3.7
Th-230	990
Th-232	9.2
U-234	120
U-235	19
U-238	71
Np-237	0.31
Pu-238	120
Pu-239	100
Pu-240	100
Pu-241	4000
Pu-242	100
Am-241	220
Am-243	76
Cm-242	4000
Cm-243	250
Cm-244	950
Other radionuclides[1]	4.0

1 "Other radionuclides" means any radionuclide not listed in this table and with a half-life greater than three months, or as specified in writing by the Agency

Table 4: Relevant values to be used in Condition 1.4.8 for calculating limitation of radionuclide concentration per disposal cell

Radionuclide or Group of Radionuclides	Relevant Value
H-3	1800
C-14	21
Cl-36	1.8
Ni-63	4000
Sr-90	7.6
Tc-99	0.33
I-129	1.8
Cs-137	18
Ce-144	4000
Sm-147	49
Sm-151	4000
Eu-154	240
Pb-210	1.9
Ra-226	0.31
Ac-227	5.2
Th-229	3.9
Th-230	33
Th-232	0.88
Pa-231	0.4
U-233	130
U-234	130
U-235	21
U-236	140
U-238	61
Np-237	8.9
Pu-238	17
Pu-239	9.4
Pu-240	9.5
Pu-241	4000
Am-241	12
Cm-244	170
Other radionuclides[1]	4.0

1 "Other radionuclides" means any radionuclide not listed in this table and with a half-life greater than three months, or as specified in writing by the Agency

Table 5: Relevant values to be used in Condition 1.4.9 for calculating limitation of radionuclide concentration per consignment

Radionuclide	Relevant Value
C-14	0.9
Ra-226	1.0

Table 6

Requirement	Specification
Requirements for coverage by non-radioactive material or waste	Adequate cover to prevent the dispersal of any disposed waste by the wind or scavenging
Maximum delay before disposal of radioactive waste	8 hours
Maximum delay before coverage after disposal	8 hours, or by the end of that working day, whichever is the soonest
Containment of wastes	All wastes should be contained so as not to contaminate vehicles or handling equipment
Radioactive waste shall only be disposed of in the parts of the landfill specified	Asbestos into an asbestos cell as agreed under the current variation of Environmental Permit EPR/GP3037SJ

IMPROVEMENTS

Table 7

Reference	Improvement	Due Date
1.	The operator shall provide the Agency with a report of a review of the activities undertaken to demonstrate compliance with the limits and conditions specified within this Permit for the disposal of radioactivity (e.g. checks, monitoring, sampling and audits). The review shall consider whether best available techniques are being applied. A programme for carrying out any necessary changes identified by the review should be included	Every 3 years from the effective date of this Permit or as otherwise agreed in writing by the Agency
2.	The operator shall update the Environmental Safety Case for the site	Every 5 years from the effective date of this Permit or as otherwise agreed in writing by the Agency

SAMPLING AND MONITORING

Table 8

Sample / Monitoring Type	Location / Frequency	Sampling / Monitoring Method and Analysis
Groundwater	**Quarterly** at downstream boreholes WMBH2 (Easting 302532, Northing 524693) and WMBH11 (Easting 302321, Northing 524920). **Annually** at upstream boreholes WMBH9 (Easting 303081, Northing 524685) and WMBH12 (easting 302902, Northing 525187).	Spot sample. Each sample to be analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides).
Leachate	**Annual** at the main combined flow of leachate into the treatment plant (pre-treatment) (Easting 302438, Northing 524963).	Spot sample. Each sample to be analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides).
Treatment plant sludge	**Annual** sample from the treatment plant, representative of the bulk sludge, samples points at: ▪ Easting 302438, Northing 524934 and ▪ Easting 302353, Northing 524925	Composite sample. Each sample to be analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides).
Discharge to sewer	**Quarterly** sample from the treatment plant final discharge point to sewer (Easting 302360, Northing 5240908).	24- hour flow proportional sample. Each sample to be analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides).
Surface water within the site	**Bi-annual** sample from the lagoon receiving water from the vehicle wheel wash facility (Easting 302417, Northing 524868).	Spot sample. Each sample to be analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides).
Surface water	**Bi-annual** sample from Distington Beck downstream of the site, Ref LIWP00PD (Easting 302500, Northing 524669).	Spot sample. Each sample to be analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides). .
Grass / Herbage	**Annual** sample (in quarter 3) to be taken at 4 locations adjacent to the site boundary, ▪ WMBH12 (North) (Easting 302902, Northing 525187) ▪ WMBH9 (East) (Easting 303081, Northing 524685) ▪ WMBH3 (South) (Easting 302574, Northing 524516) ▪ GBH13 (West) (Easting 302562, Northing 525067).	Sample of trimmed unwashed grass/herbage to within 10mm of the soil surface from a known area. Sampling of leaf litter and soil should be avoided and areas of poor vegetation cover or dominance of woody species should be avoided. Each sample to be bulked and analysed for total alpha and beta, tritium, gamma spec (report all detected radionuclides). Results shall be reported as activity concentration and loading (Bq/kg and Bq/m^2).
Gamma dose rate monitoring	**Quarterly** dose rate monitoring at: (i) four locations where the public can gain closest access to the waste to the NE, NW, SE and SW of the premises at points: A (Easting 302568, Northing 525077) B (Easting 303027, Northing 525065) C (Easting 303100, Northing 524665) D (Easting 302589, Northing 524665) (ii) at the premises exit to Joseph Noble Road (monitoring point E as defined in drawing 153M2671 Dated 14/03/11).	Using continuous measurement with a thermoluminescent dosimeter (measurement of TLD by Approved Dosimetry Service). Or a spot dose rate measurement made in accordance with TGN-M5 (Her Majesty's Inspectorate of Pollution, Technical Guidance Note (Monitoring) M5, Routine Measurement of Gamma Ray Air Kerma Rate in the Environment. HMSO, September 1995.). Measurements to be made at 1 metre above ground level.

RECORDS

Table 9

Record Number	Record	Frequency of making record
1	A report stating the current environmental safety case for disposal of radioactive waste and summarising how the operator has met the requirements of this Permit	Each year
2	Date of delivery	Each consignment
3	Identity of the waste consignor	Each consignment
4	Site of origin of the waste	Each consignment
5	Quantity of radioactive waste (m^3 and tonnes)	Each consignment
6	Activity of each radionuclide or group of radionuclides listed in Table 3	Each consignment
7	Concentration of each radionuclide or group of radionuclides listed in Table 4	Each consignment
8	General description of the physical and chemical form of the radioactive waste	Each consignment
9	The cell used for disposals of radioactive waste	Each consignment
10	The sum of ratios calculated in condition 1.4.9	Each consignment
11	Total activity of each radionuclide or group of radionuclides listed in Table 3 disposed of under this Permit: (a) for the whole site (b) for each disposal cell since the Permit came into effect.	Each consignment
12	The sum of the ratios calculated in condition 1.4.7	Each consignment
13	Total specific activity by mass of the radioactive waste, of each radionuclide or group of radionuclides listed in Table 4 disposed of to each individual disposal cell under this Permit.	Each consignment
14	The sum of the ratios calculated in condition 1.4.8	Each consignment
15	Quantity of radioactive waste disposed of under this Permit (m^3 and tonnes): (a) this calendar year (b) since the Permit came into effect	Each year
16	Total activity of each radionuclide or group of radionuclides listed in Table 3 disposed of under this Permit: (a) for the whole site (b) for each disposal cell since the Permit came into effect.	Each year
17	The sum of the ratios calculated in condition 1.4.7	Each year
18	Total specific activity by mass of the radioactive waste, of each radionuclide or group of radionuclides listed in Table 4 disposed of to each individual disposal cell under this Permit.	Each year
19	The sum of the ratios calculated in condition 1.4.8	Each year
20	Results from sampling and monitoring specified in Table 8.	As completed
21	Fingerprint of each wastestream received	As received
22	Tests, measurements, surveys or audits undertaken to demonstrate compliance with this Permit.	As completed
23	Assessments or evaluations based on samples, measurements, tests and surveys	As completed

Table 10

Record Number within Table 9	Length of time for retention of record
1-10, 15-21	Until surrender of the Permit for the site

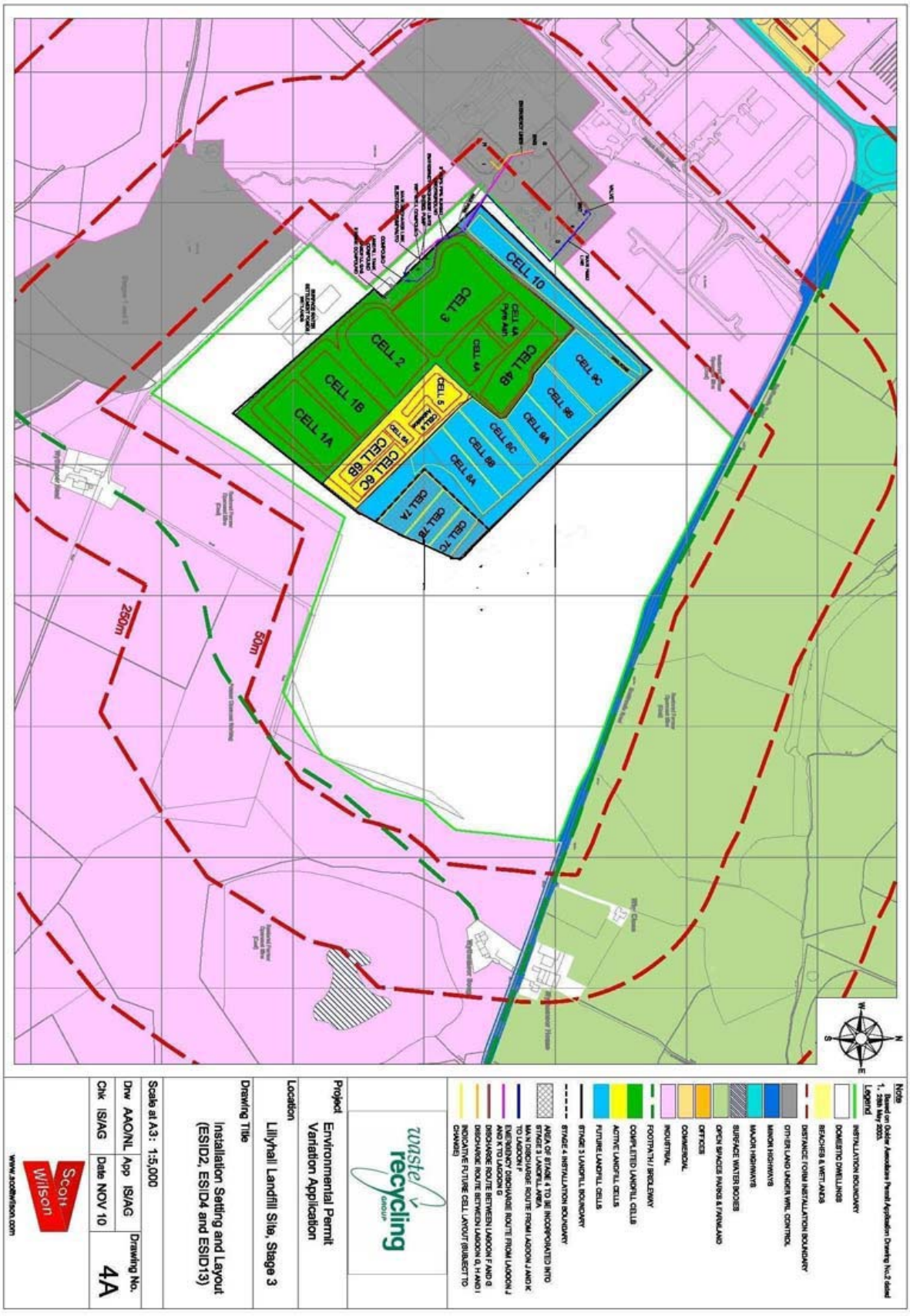
REPORTING

Table 11

Parameters	Reporting Period or Date for reporting
Records 1, 15-19 in Table 8	By 28 February each year
A statement of the maximum ratio identified in Record 10 in Table 8 for the previous year	By 28 February each year
Consignors identified in Record 3 in Table 8	By 28 February each year
Cells identified in Record 9 in Table 8	By 28 February each year
Results from Record 20 in Table 8 for each quarter of a calendar year	For each quarter results should be provided within two month of the end of that quarter

SITE PLAN

Figure 1



END OF PERMIT

Annex 2 – Article 37 Opinion

I

(Resolutions, recommendations and opinions)

OPINIONS

EUROPEAN COMMISSION

COMMISSION OPINION

of 10 March 2011

relating to the plan for the disposal of radioactive waste arising from the Lillyhall Very Low-level Radioactive Waste Disposal Facility, located in Cumbria, United Kingdom, in accordance with Article 37 of the Euratom Treaty

(Only the English text is authentic)

(2011/C 77/01)

On 1 September 2010, the European Commission received from the British Government, in accordance with Article 37 of the Euratom Treaty, General Data relating to the plan for the disposal of radioactive waste arising from the Lillyhall Very Low-level Radioactive Waste Disposal Facility.

On the basis of these data and additional information requested by the Commission on 8 October 2010 and provided by the British authorities on 13 December 2010, and following consultation with the Group of Experts, the Commission has drawn up the following opinion:

1. The distance between the disposal facility and the nearest point on the territory of another Member State, in this case Ireland, is 180 km.

2. During the disposal facility's operational period:

— radioactive waste will be emplaced in the disposal facility without intention of retrieval,

— the disposal facility will not be subject to a discharge authorisation for liquid and gaseous radioactive effluents. However, radioactive gases will emanate from the disposal facility; these are not liable to affect the health of the population of another Member State,

— in the event of unplanned releases of radioactive effluents, which may follow an accident of the type and magnitude considered in the General Data, the doses received in another Member State will not be liable to affect the health of the population.

3. After the disposal facility's operational period:

The measures envisaged for the final closure of the disposal facility as described in the General Data, provide reliance that the conclusions under point 2 above will remain valid in the long term. EN 11.3.2011 Official Journal of the European Union C 77/1

In conclusion, the Commission is of the opinion that the implementation of the plan for the disposal of radioactive waste in whatever form arising from the Lillyhall Very Low-level Radioactive Waste Disposal Facility in the United Kingdom, during its normal operational life and after its final closure, as well as in the event of an accident of the type and magnitude considered in the General Data, is not liable to result in the radioactive contamination of the water, soil or airspace of another Member State.

Done at Brussels, 10 March 2011.

For the Commission

Günther OETTINGER

Member of the Commission

(Official Journal of the European Union 11.3.2011)