

#### NATIONAL WASTE PROGRAMME QUARTERLY REPORT Q4 FY17/18

#### What is the National Waste Programme?

The National Waste Programme (NWP) is a cross-UK programme of work to lead the ongoing implementation and delivery of the *UK Strategy for the Management of Solid Low Level Waste from the Nuclear Industry*. The NWP covers all nuclear industry waste producers including those in the NDA estate, the public sector and the private sector. The NWP is led by LLW Repository Ltd on behalf of the NDA (who are responsible for leading strategy implementation for BEIS). The NWP works collaboratively with its stakeholders to produce a Blueprint and Benefit Map to show the direction of travel for strategy implementation. The activities to deliver the strategy are executed by the stakeholders of the NWP; for example by waste producers through their waste management practices.



The vision of the National Waste Programme is:

Optimised LLW management across the UK that delivers value for money.

The purpose of the NWP is to deliver a transformation in the way that LLW is managed in the UK, in accordance with the LLW Strategy. The NWP will deliver five strategic benefits:

NWP Strategic Benefits:

- 1. The life of the LLWR is extended to 2130.
- 2. Overall waste management costs are reduced.
- 3. Optimised LLW management that supports and enables effective hazard reduction and decommissioning.
- 4. Continued application of the Waste Hierarchy.
- 5. Stakeholders to the strategy are increasingly engaged with its delivery.

#### What is the purpose and structure of this report?

This report provides a "snapshot in time" of the progress being made within the National Waste Programme community to achieve the strategic objectives of the programme. The report is divided into five sections broadly aligned with the strategic benefits (to enable visibility of benefit realisation):

- Section 1 (Benefits 1 and 4) waste diversion / disposal metrics and waste route availability map.
- Section 2 (Benefit 2) cost avoidance metrics.
- Section 3 (Benefit 3) updates from waste producers across the UK, key project tracker showing progress against delivery of projects to support priority business changes, an update on Peer Reviews/Assists, an update on the NWP training framework, details of NWP publications over the past quarter and of external publications / consultations from the past quarter.
- Section 4 (Benefit 5) information on stakeholder interactions in the quarter and an update on industry issues/concerns.
- Section 5— look forward—information on the priorities for the NWP community over the next 12 months, look forward notice-board, forward calendar and strategic threats and opportunities.

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# SECTION 1: Benefit 1 — The life of the LLWR is extended to 2130 & Benefit 4—Continued application of the Waste Hierarchy

#### Waste diversion and disposal performance

<u>KEY</u>

Actual waste diversion is less than JWMP or LLW disposal exceeds JWMP.

Actual waste diversion or LLW disposal in line with JWMP.

Actual waste diversion exceeds JWMP or LLW disposal is less than JWMP.

Waste producer	Route	JWMP (for year)	Actual (Year to Date)	Actual Performance against JWMP (Year to Date)	% diversion (Year to Date)
Dounreay Site	Combustible (m <sup>3</sup> )	N/A	0	N/A	N/A
Restoration Ltd	LLW disposal (no. containers)	N/A	33	N/A	
LLW Repository Ltd	Metallic (te)	63	64		100%
	Combustible (m <sup>3</sup> )	174	180		
	VLLW (m <sup>3</sup> )	41	74		
	LLW disposal (no. containers)	0	0		
Magnox Ltd	Metallic (te)	982	1742		98%
	Combustible (m <sup>3</sup> )	1229	1577		
	VLLW (m <sup>3</sup> )	1972	2089		
	LLW disposal (no. containers)	28	11		
Sellafield Ltd	Metallic (te)	2200	2223		92%
	Combustible (m <sup>3</sup> )	1600	2246		
	VLLW off-site (m <sup>3</sup> )	700	1077		
	VLLW on-site at CLESA (m <sup>3</sup> )	3200	3654		
	LLW disposal (no. containers)	73	77		
Non-NDA estate	Metallic (te)	269	66		99%
(total)	Combustible (m <sup>3</sup> )	412	315		
	VLLW (m <sup>3</sup> )	8274	7218		
	LLW disposal (no. containers)	40	5		
NDA estate (total)	Metallic (te)	3245	4029		93 %
	Combustible (m <sup>3</sup> )	3003	4004		Excluding
	VLLW off-site (m <sup>3</sup> )	2713	3240		CLESA
	LLW disposal (no. containers)	101	88		94% Including CLESA
UK nuclear industry	Metallic (te)	3514	4095		95 %
(total)	Combustible (m <sup>3</sup> )	3415	4319		Excluding
	VLLW (m <sup>3</sup> )	10987	10457		CLESA
	VLLW on-site (m <sup>3</sup> ) (CLESA)	3200	3654		96% Including
	LLW disposal (no. containers)	141	93		ULESA

Note: Diversion calculated using National Waste Programme norms and assumptions. Waste producers may use different assumptions in their own calculations.



#### Waste Diversion and Disposal Performance



Waste diversion performance has remained high (>96%) during Q4 FY17/18 within the NDA and non-NDA estate. This is the highest rate of diversion observed over any financial year, and exceeds FY16/17's 93%. Waste Diversion has been strong within the estate, with diversion exceeding forecast data for every waste route for Sellafield, Magnox and LLWR. This year has seen a significant reduction in the number of containers sent for disposal, with 93 sent in FY17/18 compared to 174 in FY16/17.

Availability of Waste Diversion and Disposal Routes

This table provides a summary of the usage of the waste diversion and disposal routes for waste producers across the UK; reflecting the routes used for waste management since 2008 through reclassification to out-of-scope, self-perform, use of direct contracts and use of the LLW Repository Ltd frameworks. This differs to the Waste Metric Dashboard, in that it records information gathered by the National Programme Office and not actuals data provided by the waste producers.

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		DSRL	LLW Repository Ltd	Magnox Ltd	Sellafield Ltd	AWE	Active Collection Bureau	Babcock Marine	Capenhurst Nuclear Services	Cristal Pigment UK Ltd	Doosan Power Systems Ltd	HMNB Clyde	HMNB Devonport	HMNB Rosyth	EDF Nuclear Generation Ltd	EDS	GE Healthcare	Medical Research Council	NNL	Nuvia	Police National Centre	RR MoD	Rutherford Appleton Laboratory	Springfields	Cyclife	Tradebe	Tradebe Inutec	UKAEA Culham	Umicore Coating Services Ltd	UniTech Services Group Ltd	Urenco
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KEY: note that information refers to known route usage (via direct contract, on-site infrastructure or LLWR framework) since 2008.

Waste route is not open (either not permitted or has not been opened by the waste producer).

Waste route is open but is not in use by the waste producer.

- Waste route is open and is in use by the waste producer.
- M Metallic treatment (surface decontamination and / or metal melting).
- C Combustible waste management (incineration).
- V Very Low Level Waste / low-activity Low Level Waste disposal.
- L LLW disposal (to LLWR or to the Dounreay near site disposal repository/demolition waste vault).

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#### SECTION 2: Benefit 2 — Overall waste management costs are reduced

#### **Cost Avoidance from Waste Diversion**



Cost avoidance is calculated by comparing the norm cost for the relevant route against the cost for disposal at the repository for the actual volumes diverted during the guarter.

# SECTION 3: Benefit 3 — Optimised LLW management that supports and enables effective decommissioning and hazard reduction

#### Waste Producer Quarterly Updates

# Magnox

At the end of Quarter 4, Magnox has diverted an impressive 98% of its LLW from the repository, predominantly as Out of Scope Metal and Out of Scope VLLW. This high diversion rate is due to there being minimal disposals or supercompaction campaigns to date, with waste being diverted to other routes. LLWR's operational / nuclear safety case has been successfully revised to set the envelope for future FED shipments to be received, stored, grouted and emplaced, and the TC21 licence has been approved to allow future FED consignments to be transported without the need for concessions. 570 drums containing Bradwell FED have been supercompacted to date and two HHISOs loaded with FED pucks and suitable co-disposal materials for consignment in the New Year. A contract has been awarded for the removal and treatment of the Chapelcross heat exchangers top ducts and consignments have started. Tenders have been assessed for the management of ILW/LLW boundary wet wastes from Dungeness. Contract award will take place early next financial year following the cooling off period, with an Oldbury Wet Waste characterisation tender assessment to follow. Activity assessment work has progressed well on the potential diversion of Harwell NMT to LLW routes.

#### Dounreay Decommissioning excellence

At the end of Q4, DSRL have effected the managerial separation of D3100 Disposal Facility from Dounreay site. This will provide additional regulatory confidence in the waste consignment and acceptance for disposal process. This separation has led to some challenge to the interpretation of waste acceptance criteria for historically consigned wastes and work continues to resolve these. As a consequence, there have been no disposals of LLW in Q4 and the Encapsulation Plant has also been shut down for the duration. WRACS assay and supercompaction operations have continued and 2972 drums have been compacted. Work is ongoing on the DN029 LLW oils and solvents project and to justify disposal of bulk Demolition LLW (DLLW) into the D3130 DLLW Vault - this is currently restricted to DLLW in 1te bags.

### Sellafield Ltd

A strong programme of diversion was completed during Q4, including; 560te of metal diverted for recycling, 930m<sup>3</sup> of VLLW to landfill capabilities, and 610m<sup>3</sup> of material diverted for incineration. During FY17/18 there has been an 80% increase in the volume of material diverted for incineration and a 40% reduction in the number of containers transferred to LLWR for disposal. All JWMP13 targets were exceeded, with 92% of arising LLW diverted from LLWR.

To support enhancing effective LLW management and diversion from LLWR:

• Market engagement progressed to assess forward approach for managing SL metal arising.

• A soft bagged waste trial demonstrated the potential to significantly increase the volume of waste diverted for incineration if an enhanced sort and segregation approach is applied.

• The developed routes to dispose of legacy chemicals have been formalised into standard management arrangements.

The three Boundary LLW/ILW focus areas have all been progressed:

• The approach to segregate material that can be managed as LLW from the PCM stream has been subject to extensive internal and external peer review. Two FH containers of segregated drums have been packed for onward transfer to WAMAC.

• A schedule to transfer 15 WAGR boxes to LLWR has been agreed, as well as a follow-up programme of assessment for a second tranche of boxes.

• Analysis of samples trepanned from AGR graphite sleeves has been completed and an updated fingerprint generated.

The NWP led projects: Buffer Storage assessment, next year's collaborative projects, and the LLWR Disposition Models Gate A paper have all been supported.

## LLW Repository Ltd

Waste Delivery are now fully integrated within the Site Support Team and this is working well. We have completed 29 waste consignments throughout FY 17/18 via the Metals, Combustible and VLLW routes and there has been 100% diversion from the vault achieved. We have successfully achieved the PBIs associated with the Repository Infrastructure Programme and the PBIs associated with the PCM Delivery Programme. We have also been preparing for the first consignment of soft waste associated with the Legacy Drums Project and this is progressing well.

#### Non-NDA estate

Consignments continue as non-NDA estate transactions become routine business across the portfolio of services. Significant volumes of waste have been consigned across the range of services over the course of Q4. New Waste Enquiries have been received, Waste Services Quotations have been signed, and Further Competitions continue to be progressed across the diversion routes. A number of WSQs have been issued to members of the non-NDA estate with live VLLW projects, to provide continuity of service over a few months between the end of the existing VLLW framework and the new framework beginning (expected June / July).

A draft position paper has been produced on loose tipping at landfill of VLLW. This is in response to a proposal by Urenco Nuclear Stewardship at Capenhurst to consign VLLW, that is exempt from Transport regulations but within EPR, unpackaged in covered tipper trucks.



#### National Waste Programme Office Update

The National Waste Programme closed 2017/18 by completing all outstanding PBIs; with submission of the Disposition Models for the LLW Repository Site Gate A paper and The Role of Buffer Storage in Radioactive Waste Management report.

The Problematic Waste IPT completed a number of projects in Q4, with receipt of the finalised reports for Barriers and Blockers; Transport and Packaging of Problematic Waste; Management of Waste Failing the Discrete Item Limit; and HAW and Problematic Waste Treatment.

The Programme Office has also been working to enable implementation of an NWP Group on the NDA's new knowledge sharing platform 'the HUB'. This has involved meetings to understand how the HUB can be used by the National Programme, as well as how to extend this use to the greater NWP community.

NWP governance activities for Q4 included the face-to-face Monthly Managers Meeting, which provided an opportunity to review the programme against the 2020 state in the NWP Blueprint. The 12th Delivery Overview Group Meeting took place, with attendance from 15 organisations. Discussions focussed on gaining stakeholder input for two scopes of work for delivery in the next financial year. These were the assessment of the demand for a professional route for radioactive waste practitioners and exploring how to maximise engagement with the HUB.



#### **Key Project Tracker**

The NWP community agree, on an annual basis, a number of priority business changes from the NWP Benefit Map. These priority business changes are those which are critical to supporting strategy implementation in the near term or are longer term changes which need to be initiated or driven to ensure they are delivered when the nuclear industry need them. This tracker provides a snapshot of performance of delivery of projects (tasks undertaken by waste producers) or enablers (tasks outwith of the control of waste producers, such as those undertaken by the regulators) which support achievement of the priority business changes for the current FY.

#### <u>KEY</u>

Project not yet commenced.

Project has commenced and is on target to deliver on or ahead of schedule.

Project has commenced and is behind schedule; but is expected to recover.

Project has commenced and is behind schedule; but is not expected to recover.

Project is complete.

Priority Business Change	Project	Project Status
A full understanding of the LLWR ESC	<b>Sellafield</b> - Work with LLWR to fully understand the ESC and capacity management and identify where real benefits can be derived from changes.	
assumptions and material limits is available and informs waste producer operations.	<b>LLWR</b> - Develop approach for management of profiling materials on site (including VLLW).	
	<b>LLWR</b> - Develop approach to communicating ESC arguments.	
	<b>LLWR</b> - Deliver a longer term transport solution for FED.	
Appropriate and flexible packaging and transport assets available; with increased use of rail and the ability to use mixed loads	<b>LLWR</b> - Project to develop a cost effective package and logistics business model aligned to the demands of the estate.	
	<b>Magnox</b> - Project to review standard and non-standard packaging requirements.	
Options are being implemented for the management of borderline LLW/ ILW wastes.	<b>Sellafield</b> - Work with LLWR to investigate opportuni- ties to manage boundary ILW waste streams as LLW.	
Site interim and/or end state assump- tions have been developed and en- gagement is underway with key stakeholders.	<b>Sellafield</b> - Undertake development of high level site end state management options to support the deter- mination of appropriate end-states for the Sellafield site.	



Priority Business Change	Project	Project Status
	Sellafield - Investigate the opportunities for decay stor-	
	age.	
	Sellafield - Investigate the opportunities for a risk based	
	approach to disposal.	
	Magnox - Identify size and opportunity for decay stor-	
Options for decay storage and man-	age (as a report).	
agement of short lived ILW are being	Magnox - Develop a set of principles for the execution	
Implemented.	of on-site decay storage.	
	<b>IIWR</b> - Project to establish principles for executing de-	
	cay storage.	
	IIWP - Deliver optioneering for an enhanced disposal	
	capability.	
	Magney Dreigsts to identify solutions for those wastes	
	Magnox - Projects to identify solutions for those wastes	
	Magnox - Project to identify what wastes fall outside	
	the ESCS/WACS for waste foutes.	
	Magnox - Problematic Waste IPT.	
There are solutions in place for prob-	Magnox - Undertake review of the practical aspects of	
lematic LLW, including items that fall	implementing alternate approaches to disposal of	
outside the LLWR ESC.	LLW/ILW boundary waste (building on the work execut-	
	ed in FY16/17).	
	LLWR - Complete sampling and develop management	
	approach for legacy drums.	
	LLWR - Participate in Problematic Waste Integrated	
	Project Team (IPT).	
	Callefield. Develop the next and entities of works and	
	Selianeid - Develop the next generation of waste pro-	
There is a flexible sustainable supply		
chain infrastructure which includes	Sellafield - Investigate opportunities to broaden the	
enhanced options. The supply chain	Calder Landfill Extended Segregated Area Conditions for	Project Status           .
offers sorting, segregation, pre-	acceptance.	
treatment and conditioning infra-	Sellafield - Undertake analysis to determine the best	
structure to complement the infra-	value SL/supply chain balance for the management of	
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	Seliatield - Support LLWR to asses and implement the	
	solutions to the current waste Services pusiness model.	



Priority Business Change	Project	Project Status
	<b>Sellafield</b> - Increase capacity within the process combustible route to allow capacity for increase from 1500m <sup>3</sup> to 2500m <sup>3</sup> .	
	<b>Sellafield</b> - Programme to integrate POCO, decomis- sioning and solid wastes management arrangements.	
	<b>Sellafield</b> - Develop options for the management of redundant chemicals.	
	<b>Sellafield</b> - Undertake a review of the SL BAT for LA- LLW / VLLW metal. Develop and implement a pro- gramme of work to introduce any option(s) deemed to provide a significant benefit.	
	<b>Sellafield</b> - Enhance the use of on-site facilities to manage metal that cannot readily be transported.	
Waste management processes ena-	<b>Sellafield</b> - Further optimise the routing of metals be- tween on-site and off-site capabilities.	
version; with streamlined characteri- sation, sorting, segregation, packag- ing and consignment.	<b>Sellafield</b> - Increase site capability for destructive and non destructive analysis/assay of material.	
	<b>Sellafield</b> - Undertake review of BAT for LA-LLW/VLLW process wastes. Introduce beneficial option(s).	
	<b>Sellafield</b> - Increase segregation of inorganic material currently disposed as LLW, in line with review findings.	
	<b>Sellafield</b> - Implement programme of work to further segregate material from the alpha stream that can be managed as LLW.	
	<b>LLWR</b> - Undertake review of organisational capability, infrastructure and strategic direction of LLWR custom- ers.	
	<b>Magnox</b> - Deliver the Magnox Waste Assurance Pro- gramme.	
	<b>Magnox</b> - Produce an ILW vs. LLW sentencing method- ology for use in accessing the business case for poten- tial opportunities to divert boundary wastes to LLW routes.	



#### **Peer Reviews and Peer Assists**

This provides a summary of the planned and delivered peer reviews / peer assists during the financial year.



#### **NWP Training Framework**









NWP Office publications, reports or training.

Publications or consultations external to the NWP Office.

NWP guidance, publications and information about training available via http://gov.uk/LLWR



SECTION 4: Benefit 5 — stakeholders to the strategy are increasingly engaged with its delivery.

#### Stakeholder interactions in the NWP during the quarter



#### **Stakeholders' Key Issues and Concerns**

The following table provides a summary of the key issues and concerns within the nuclear industry relevant to LLW management, collected by the National Waste Programme through formal and informal interactions with waste producers. The chart provides a summary of each issue, a statement of the change in status for that issue (i.e. whether the issue has become more or less important to the NWP community) and a commentary on actions that are being taken to resolve the issue.

<u>KEY</u>

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No change in issue status since last quarter.

Issue status has increased since last quarter.

 $\mathbf{I}$  Issue status has reduced since last quarter.

Issue	Change since last quarter	Commentary	
Risk of waste mis- consignment	⇔	<ul> <li>There have been some waste mis-consignment near-misses and concerns during FY17/18.</li> <li>LLW Repository Ltd is exploring additional work to support further mitigation of this risk.</li> </ul>	High concern
Paris-Brussels nuclear liability implementati on	Û	<ul> <li>Government working with NDA, LLW Repository Ltd and the supply chain to understand the changes and mitigate impacts.</li> <li>Implementation will be delayed as not all parties are in a position to ratify. Uncertainty remains as to the timescale.</li> </ul>	
BSSD clearance level changes	Û	• Government undertaking work to implement BSSD with legislation expected Spring / Summer 2018.	
Access to supercompac tion facilities for non-NDA estate	Û	<ul> <li>One supercompaction facility not accessible for external waste producers who wish to use it due to challenges with LLWR WAC5 information requirements compliance.</li> </ul>	
Waste packaging and transport	Û	<ul> <li>Issues with Waste Loading Plans, hauliers and the range of waste containers available etc. continue to impact waste producers.</li> </ul>	
Complex projects and problematic waste management	Û	<ul> <li>Greater interest and impetus in this area, with a number of complex projects being delivered.</li> <li>The Problematic Waste Integrated Project Team (involving RWM, NDA and LLW Repository Ltd) is working with waste producers to identify opportunities for problematic waste management.</li> </ul>	



#### SECTION 5: Looking Forward

Magnox 🚺

- TRS Drums: Preparatory work with LLWR for shipments to commence in 2018/19.
- Support new 2018/19 collaborative NWP projects.
- Award contract for management of Dungeness boundary wet wastes, as a first of a kind.
- Gear up for large quantities of VLLW to be shipped from Harwell as a result of the LETP land remediation project.
- Seek disposability approvals from LLWR for FED from Sizewell and Oldbury.

#### Dounreay Decommissioning excellence

- Decant and consignment of LLW oils and solvents for off site incineration.
- Resume DLLW disposals to D3130 Vault, to include bulk items.
- Continue development of business case for LLW Handling Facility to allow waste diversion and better packaging fractions in disposal containers.
- Continue with work on variation to D3100 RSA Authorisation.
- Resume Encapsulation Plant operations and subsequent disposals to D3120 Vault.

#### Sellafield Ltd

- Complete first consignment of LLW drums segregated from the PCM stream through WAMAC, and onward transfer for disposal at LLWR.
- Complete the transfer of WAGR boxes to LLWR in line with agreed transfer schedule and progress next tranche of assessments.
- Progress programme of agreed SL/LLWR workshops to establish BAT approach to manage the identified AGR graphite drums.
- Formalise and progress trials, following on from completion of initial soft bagged waste trial.
- Progress metals treatment market engagement, and formalise and implement pilot trials.

#### LLW Repository Ltd

- Consignment of the remainder of the redundant sources.
- Consignment of soft waste associated with the Legacy Drums Project.
- Consignment of the waste items from the various Magazines and continue making full use of the Diversion Services.
- There will be a lot of focus on waste for the PCM Delivery Programme in FY 18/19 as the project ramps down to wards the end of the year.
- Continue supporting the other areas of site i.e. LLW and Projects with their waste requirements providing advice when needed.

#### **Non-NDA Estate**

- Continue embedding business as usual arrangements for waste diversion.
- Opening new waste management routes as applicable and appropriate.
- Seeking opportunities for management of more complex wastes.

#### National Waste Programme Office

- Finalising the migration of the NWP section of the LLWR website to GOV.UK.
- Exploration and planning for the NWP community on the NDA HUB.
- Discussions with Thermal Treatment IPT as part of PW IPT on potential crossover projects.
- Planning and commencement of procurement for financial year 18/19 scopes of work.





NWP guidance, publications and information about training available via <a href="http://gov.uk/LLWR">http://gov.uk/LLWR</a>



#### **Forward Calendar**

April 2018										
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2	3	4	5	6	7	8				
9	10	11	12	13	14	15				
16	17	18	19	20	21	22				
23	24	25	26	27	28	29				
30										

	May 2018										
М	Т	W	Т	F	S	S					
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14	15	16	17	18	19	20					
21	22	23	24	25	26	27					
28	29	30	31								

03/05/18—Problematic Waste IPT Community of
Practise Meeting (MA)

**21/05/18**—NWP Monthly Managers Meeting (T)

	June 2018									
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11	12	13	14	15	16	17				
18	19	20	21	22	23	24				
25	26	27	28	29	30	31				

06/06/18—LLW Practitioners Forum (BM)
19/06/18—NWP Monthly Managers Face-to-Face
(TBC)



16/04/18—NWP Monthly Managers Meeting (T)



### Strategic Threats

Threat	Impacts	Proximity	Rating (current)	Rating (target)	Mitigation activities
Significant waste mis- consignment event causes partial or full closure of diversion or disposal route(s).	Waste route(s) closed for individual producer or whole industry. Closure of routes reduces supply chain sustainability (supply chain organisation(s) withdraws from market). Increased waste disposal due to loss of diversion routes. Increased waste accumulation due to lack of disposal routes. Loss of radiological / volumetric capacity at LLWR due to potential loss of diversion routes. Increased costs for waste producers. NDA required to invest capital in new facilities.	Near term	High (14)	Low (5)	Waste producers review and improve waste consignment practices/barriers. Guidance on waste consignment developed by LLWR. Peer Reviews and Assists conducted at some sites covering mis- consignment. Highlighted in NWP training modules. External buffer storage capability on line to manage waste flows. Temporary LLWR Task force established for investigation of some recent mis-consignment events.
Insufficient non radiological, radiological or volumetric capacity at LLWR.	Inadequate capacity at LLWR; leads to requirement for new repository. Potential Increase in number/volume of problematic streams. Some waste may have to be managed as HAW. Creates the need for additional storage and potentially higher treatment and disposal costs.	Medium term	Medium (9)	Very low (1)	Increased or enhanced incentivisation for diversion. NDA intervention or direct action to engender different approaches at waste producer sites.



Threat	Impacts	Proximity	Rating (current)	Rating (target)	Mitigation activities
Large volumes of waste from contaminated land remediation are generated and have to be managed as lower activity waste.	Disposal of increased volumes of waste result in inadequate capacity at LLWR; leading to requirement for new repository. Some waste may need to be managed as HAW. Creates need for additional storage. Reduced volumetric capacity at LALLW/VLLW disposal sites.	Medium term	Medium (9)	Very low (2)	NDA working with regulators, planning authorities and other stakeholders to develop de-licensing approach and arrangement. Revised regulatory guidance on in situ disposal drafted (GRR); being trialled at three sites. On-site or near-site disposal of LALLW/VLLW.
Insufficient radiological, non-radiological or volumetric capacity in the supply chain.	Fewer routes available; less capability and less redundancy in marketplace. Higher prices. No/inadequate diversion routes or capacity for waste. Excess volumes being sent to LLWR, so inadequate capacity at repository. NDA required to invest capital in new facilities. Increased waste accumulation due to lack of disposal routes. Increased costs for waste producers.	Near term	Medium (8)	Low (5)	Working with consignors to improve short term forecasting of waste. Introduction of new Waste Treatment Services Framework (estimated 2020).



Threat	Impacts	Proximity	Rating (current)	Rating (target)	Mitigation activities
Changes in legislation, governmental policy and regulatory perspective prevents execution of LLW Strategy.	Could restrict ability to divert or dispose of LLW. Increased volume of waste that needs to be managed as LLW or that is disposable at LLWR. Additional cost to treat and dispose of waste to meet revised regulatory expectations. Adverse impact on LLWR and/or supply chain capacity.	Medium term	Very Low (2)		N/A - risk tolerated.
Stakeholder concerns over radioactive waste management constrain access to existing routes and / or development of new routes and facilities.	Increased volumes of waste have to be disposed of at LLWR. Supply chain cannot secure authorisation for sites/facilities. Transport of waste is constrained. Waste producers unable or unwilling to use the routes because of stakeholder opposition. Inadequate capacity at the LLWR; requiring need for new repository in worst case. Requirement to buffer store more VLLW and LLW.	Near term	Very Low (2)		N/A - risk tolerated.



## Strategic Opportunities

Opportunity	Impacts	Proximity	Rating (current)	Rating (target)	Realisation activities
Optimised use of waste diversion	Diversion is optimised.	Near term	High (16)	High (18)	Execute NWP scope of work and programmes at waste producer sites.
and disposal routes by waste	effective, optimised routes for radioactive				Sellafield Ltd pursue re-Permitting of CLESA and plans for CLESA2.
producers.	waste. Optimised used of				Trialling and roll out of application of GRR by regulators.
	repository capacity (disposal of only those wastes that require				Further studies to understand potential opportunity for re-use of VLLW/LALLW in LLWR cap.
	engineered protections).				Liaising with BEIS, NDA and supply chain organisations to minimise adverse impacts of Paris-Brussels and to further legislative exemption for landfill sites.
Management solutions available	Prompt hazard and risk reduction.	Long term	Medium (8)	High (12)	Work through Problematic Waste IPT to identify and pursue opportunities.
and in use for complex, challenging and	Earlier solution for the management of such wastes.				Work to identify opportunities for SL- ILW and Boundary Waste through NWP projects.
problematic wastes.	Cost savings across industry.				Project on HAW Treatment capability being delivered by LLWR NWP / RWM and additional work through WMS.
	problematic waste. Avoidance of critical path				Waste producers progressing opportunities for reclassification of
	schedule impacts due to inability to sentence problematic wastes that need to be dealt with.				ILW. Waste producers undertake work to progress opportunities for management of complex / problematic wastes.
					LLWR work with suppliers to understand and promote opportunities.



Opportunity	Impacts	Proximity	Rating (current)	Rating (target)	Realisation activities
Improve the sustainability and	Better environment for investment in capacity	Near term	Medium (8)	High (12)	Future competitions for frameworks continue to consider sustainability.
health of the	and capability by supply				Embed aggregating process.
supply chain.	chain. Continued presence for the supply chain.				Supply chain sustainability review undertaken by LLWR on behalf of NDA in FY16/17 and FY17/18.
	Improved value from the supply chain.				During FY17/18, review of customer demand for LLWR WMS Frameworks
	Continued and optimised waste diversion.				and specific focussed engagement on frameworks to be recompeted in near term.
	resource for other activities (no need for				Delivery of inventory improvement tasks.
	liability channelling arrangements).				Implementation of a new design for Waste Services Frameworks
	Reduced prices (landfills may no longer require insurance for nuclear liabilities).				(estimated 2020).
Non-NDA estate consignors and New Build are fully engaged with the Strategy.	Diversion maximised. Waste hierarchy applied and new waste management routes being used.	Near term	Medium (8)	High (12)	Potential to interact with New Build forums to increase visibility of NWP.
Management	Potential reduction in	Medium	Medium (8)	High (16)	Ongoing collaboration work.
solutions for earlier management of ILW employed.	storage and disposal costs for waste producers.	term			Delivery of projects FY17/18 to investigate boundary waste management.
	Prompt hazard and risk reduction.				Work on Near Surface Disposal IPT.
	Diversion from GDF maximised.				complex wastes.
	Improved value from				NWP On-Site Decay Storage Principles project being delivered FY17/18.
	Enables earlier solution for waste producer.				Alignment of permits, WACs and planning consents to safety cases.



Opportunity	Impacts	Proximity	Rating (current)	Rating (target)	Realisation activities
Fit-for-purpose, flexible and agile package fleets available for LLW management.	Optimised use of transport models. Quicker and cheaper LLW management.	Long term	Low (4)	Medium (8)	Execute LTP 13 scope. Develop new and fit-for-purpose packages. NDA work on transport and packaging strategy initiated in FY17/18 under Critical Enablers thematic area.
Buffer storage capabilities available and in use.	Diversion maximised. Improved value from supply chain. Allows variability in waste arisings to be managed to remove peaks and troughs to supply chain. Enables greater aggregation of waste from around the UK for treatment (driving better value). Enables an earlier solution (removal of waste from site) for consignors.	Medium term	Very Low (2)	Low (4)	Undertake work to understand potential for and logistics of buffer storage options (NWP Gate 0 project) and next steps of that project.
Improved use of rail infrastructure to support management of LLW.	Reduced use of road (better carbon footprint, improved safety). Potential for improved value from supply chain.	Medium term	Very Low (2)	Low (4)	DRS and LLWR undertaking some work to establish what might be available. NDA work on transport and packaging strategy initiated in FY17/18 under Critical Enablers thematic area.