

Nuclear Waste Services Joint Waste Management Plan

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Change Log

Page No.	Change	Reason for change
4	Characterisation Trial Case Study and Waste Flow diagram updated.	Update new case study and reflect the previous year of waste management.
5-14	Transformational Projects updated.	Updated to reflect onward programme of work.
15-18	Benefit Map updated.	
19-21	Non-Resourced Opportunities updated.	Updated to reflect current opportunities.
22	Forecast Summary updated.	Updated to reflect the updated five-year forecast.
23	Benefits Summary updated.	



Introduction to Joint Waste Management Plans

A Joint Waste Management Plan (JWMP) is a proactive management plan for the next 5 years that has been developed by a Site License Company (SLC) in conjunction with Nuclear Waste Services (NWS). Its purpose is to demonstrate how the SLC is progressing implementation of and compliance with the UK LLW Strategy. The was originally led by the National Low Level Waste (LLW) Programme, which has been subsumed into the Integrated Waste Management Programme (IWMP).

This JWMP provides an overview of the waste management activities performed by an SLC, in this case the Low Level Waste Repository (LLWR) site, over the previous financial year (section 1) and highlights the key transformational activities (section 2) to be undertaken either independently or in collaboration with NWS, and other organisations. Transformational activities are those that will make a step change in SLC LLW management arrangements to deliver the original National Programme Blueprint future state, and ultimately progress the organisation towards integrated waste management as described in the Nuclear Decommissioning Authority (NDA) Integrated Radioactive Waste Strategy. Section 3 provides an opportunity to identify specific step change projects that are not within the current scope of work, but which could be undertaken either if funding became available or if internal or collaborative resource could be identified to support the

project. Section 4 provides a high-level summary of the information provided in the most recent submission of the Waste Forecast Form, providing a concise summary of the volumes of waste expected to be managed, as well as the routes expected to be employed to facilitate this management over the next five-year period. A consolidated summary of the benefits that the Programme delivers is provided (section 5), which contextualises waste management in the form of three key areas:

- Cost avoidance to the UK taxpayer;
- Disposal capacity of the Repository saved; and
- Environmental benefit (i.e., CO₂ avoidance).

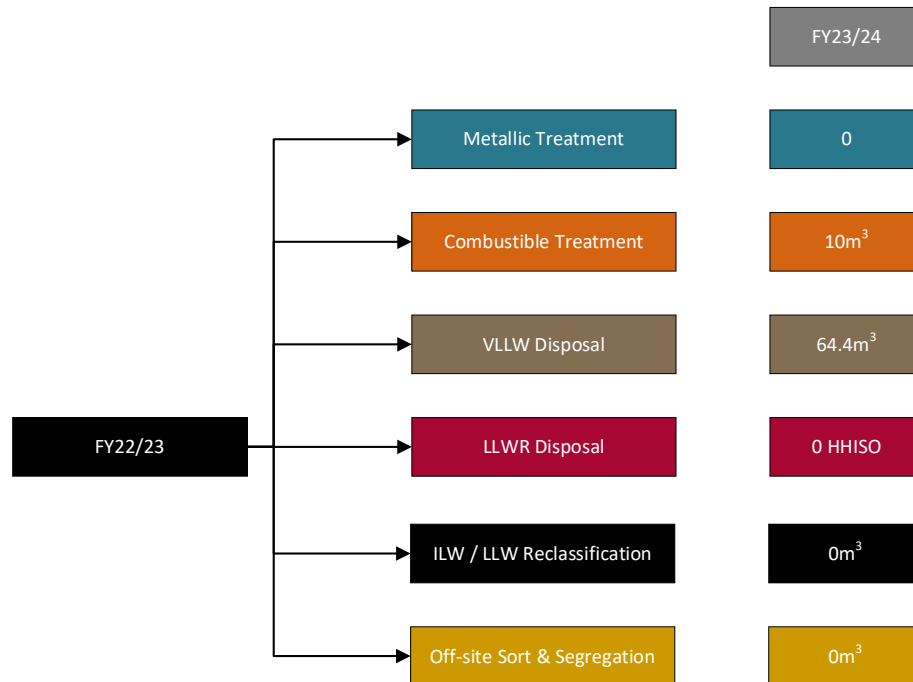
This JWMP has been agreed by senior management as a commitment to the delivery of the activities listed within. Key transformational activities will be tracked within the IWMP governance arrangements to:

- Assess performance;
- Highlight success; and
- Deliver an integrated approach to dealing with the UK's LLW.

It contains activities and LLW waste forecasts for the 5-year period of 2024/25 to 2028/29. The purpose and format of the JWMP will be reviewed for 2025 to consider a more integrated approach across waste classifications.

Section 1 – Business-as-usual Summary

1.1 FY23/24 Business-as-usual LLW management and waste flow



Nuclear Waste Services
 On the 31st of January 2022, Nuclear Waste Services launched, bringing together into one organisation the long-established expertise of site operator LLW Repository Limited, Geological Disposal Facility (GDF) developer Radioactive Waste Management Limited and the NDA group's IWMP.

The business will maintain its current commitments to the Low Level Waste Repository and to the GDF programme and the communities involved with both. It also creates a business with new capability to manage UK nuclear waste safely and securely for generations to come. Nuclear Waste Services will build on work delivered over many decades, while adding more essential services for customers in the nuclear energy, defence, industrial, medical and research sectors.

Case Study – Characterisation Trial
 Characterisation is the analysis of material properties to inform decommissioning, waste handling and routing over the full waste lifecycle. The IWMP Characterisation Programme aims to transform the Characterisation Services available to the NDA Group. Part of the Programme's remit is to undertake trials of technologies to ensure that the UK has an adequately diverse suite of characterisation technologies to support the needs of decommissioning.

A population of soil and sediment bags was identified on LLWR site, generated under the Repository Development Programme (RDP), as a candidate stream for UK deployment of Antech's Characterisation Assay and Radiation Monitoring Stations (CHARMs). CHARMs is a mobile assay for measuring drums, waste bags and other waste objects in the field with benefits of measuring packaged waste quickly, allowing categorisation in real time at the LLW / Very Low Level Waste (VLLW) boundary and the VLLW / out-of-scope boundary.

In completing this trial in March 2024, the learning can be captured and shared amongst SLCs to make best use of available technologies and for future trials.

Section 2 – FY23/24 Transformational Activities

2.1 Transformational Projects List

Transformational projects in the context of this JWMP are activities to be undertaken by the SLC that will make a step change in the management of LLW. They are discrete packages of work, with defined start and end dates, which aim to introduce improvements to work practices, and deliver financial and non-financial benefits. Each transformational project is also shown on the Benefit Map in section 2.2.

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.01	Deliver work to lead and progress the Problematic Waste Integrated Project Team (IPT) including work on Uranics and Mercury.	A proactive, systemised and streamlined process is used to manage non-standard, opportunity and problematic wastes.	01/04/2021	31/03/26	In progress
21.02	Development and implementation of Thermal Treatment and Conditioning Framework. Interim activities still to be determined ahead of consideration of phase 2.		01/04/2021	Phase 1 – 31/03/2024 Strategic decision 30/09/2024	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.03	Lead delivery of the Asbestos Innovation Partnership.		01/04/2021	R&D phase launch – Q1 FY 24/25 Overall Completion Q4 FY 32/33	In Progress
21.04	Develop, scope and manage implementation of IWMP Irradiated Graphite Management Programme (IGraMP).		01/04/2022	TBC	In progress
21.05	Manage implementation of IWMP Sustainability Programme in line with the NWS Sustainability Strategy (across the full rad spectrum not just LLW). Focus of the programme to include the development of National Integrated Strategic Waste (Best Available Techniques (BAT) / Best Practicable Means (BPM) Studies.	There is a detailed understanding of the sustainability and environmental impact of LLW management practice and arrangements; and active action is being taken to improve this.	01/04/2021	31/03/2027	In Progress



Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.06	Support the development of the Group Waste Model. Define the scope of the future development of the model, and how this interacts with other models/ software across the group.	Waste-informed decommissioning is being practiced on large decommissioning projects across the industry, with arrangements that can tolerate changes in waste volume. Decommissioning personnel are involved in waste management fora, learning / knowledge management structures etc. as appropriate.	01/04/2023	TBC	In Progress
21.07	Delivery of the VLLW Business Case to explore the model for procurement of the service.	There is a diverse, resilient supply chain infrastructure with management routes for LLW <i>and waste at the LLW / Intermediate Level Waste (ILW) boundary.</i>	31/01/2022	30/06/2024	In Progress
21.08	Delivery of the Metallic Treatment Programme Level Business Case.		03/01/2023	14/05/2024	In Progress
21.09	Delivery of the Metallic Treatment Outline Business Case.		21/05/2029	30/04/2030	Not yet started
21.10	Delivery of the Metallic Treatment Full Business Case.		20/08/2030	13/06/2031	Not yet started

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.11	Manage the procurement of the Waste Services Frameworks (Packaging & Metallic).		03/01/2023	20/08/2024	In Progress
21.12	Support the Business Case for an NDA group-wide waste tracking system. Review the requirements for Waste Services including disposal at the LLWR site, and explore the interfaces with NDA and non-NDA organisations. Waste records programme now sits under NDA ownership rather than NWS.	Knowledge management – consignors have easy access to up-to-date information or specialist or peer advice to enable ongoing understanding and improvement of the management of waste across the lifecycle and on acceptance criteria for treatment and disposal services.	01/04/2024	Business Case - 31/03/2025 Implementation of preferred option - TBC	In Progress
21.13	Perform an upgrade to the waste tracking system - eMWaste.	Reliable and appropriate local and national inventories are available that support and underpin decision making.	01/11/2022	31/03/2024	In Progress
21.14	Develop a customer portal on the CRM system to enable customers to log their Waste Enquiries onto the system themselves.		01/04/2023	31/03/2025	Not yet started
21.15	Review of the options for future data tracking logistics systems (e-logistics) to meet customer requirements.		01/04/2021	31/03/2025	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.16	NWS to develop the Group Waste Model on behalf of the Group and appropriately deploy it to provide support to the analysis of strategic options.	Reliable and appropriate local and national inventories are available that support and underpin decision making.	01/04/2019	31/03/2025	In Progress
21.17	Carry out an inventory toolkit review to determine which inventory software tools can be rationalised and deliver implementation of the preferred option.		01/04/23	31/03/24 Implementation of preferred option – TBC	In Progress
21.18	Utilisation study for the LLWR Drum storage facility. This is to be included in the Site Strategic Development Plan (SSDP).	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	01/04/2021	31/03/2024	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.19	Re-characterisation of PCM drums for disposal. This involves Assay operations (completed August 22), development of BAT, (approved December 22), and radiological and chemical assessments (completed March 23). All characterisation activities now complete.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	01/04/2021	Waste routes identified - 31/03/2023 Waste consigned off site - 31/05/2025	In Progress
21.20	Deliver Controlled Waste Management programme of work.		01/07/2021	31/03/2030	In progress
21.21	Deliver the ILW Treatment Programme to expand the capability of Waste Services to divert ILW waste for treatment in the supply chain. This may include addressing any ILW-related recommendations from a Boundary Waste Position Paper.		01/11/2021	TBC	In Progress
21.22	Enabling activities for utilisation of magazine demolition rubble as profiling material for capping of Vault 8. BAT assessment has been completed to determine the use and practices to utilise the rubble.		01/06/2018	31/03/2028	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.23	Explore opportunities for transport and packaging agreements with external organisations for transfer of profiling material for the capping programme. Explore options across the NDA estate (Sellafield option deemed unlikely).	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	01/04/2018	31/03/2024	In Progress
21.24	Design and implement the capping and closure of Vault 8 and adjacent trenches as part of Repository Development.		01/04/2019	31/03/2038	In Progress
21.25	Deliver the first SSDP		01/04/2022	Data capture complete and high level SSDP presented to waste ops portfolio board - 31/03/2023	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
				SSDP defined and implemented - 31/03/2024	
21.26	Delivery of remediation activities related to buildings and contaminated land including, magazines, and associated contaminated land.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	01/04/2022	Ongoing programme to drive towards end state	In Progress
21.27	Carry out reactive metals Waste Acceptance Criteria (WAC) review and optioneering exercise.		01/04/23	Hold Point 31/03/24 Implementation of preferred option – TBC	In Progress
21.28	BAT Optioneering for on- / off-site treatment of Legacy Drums (Gate A and Gate B paper production). Gate A paper was signed off by the Strategic Governance Committee (SGC) in November 2023. Gate B paper is now in development.		01/04/2022	Phase 2 (Gate B) - 31/03/2025	In Progress

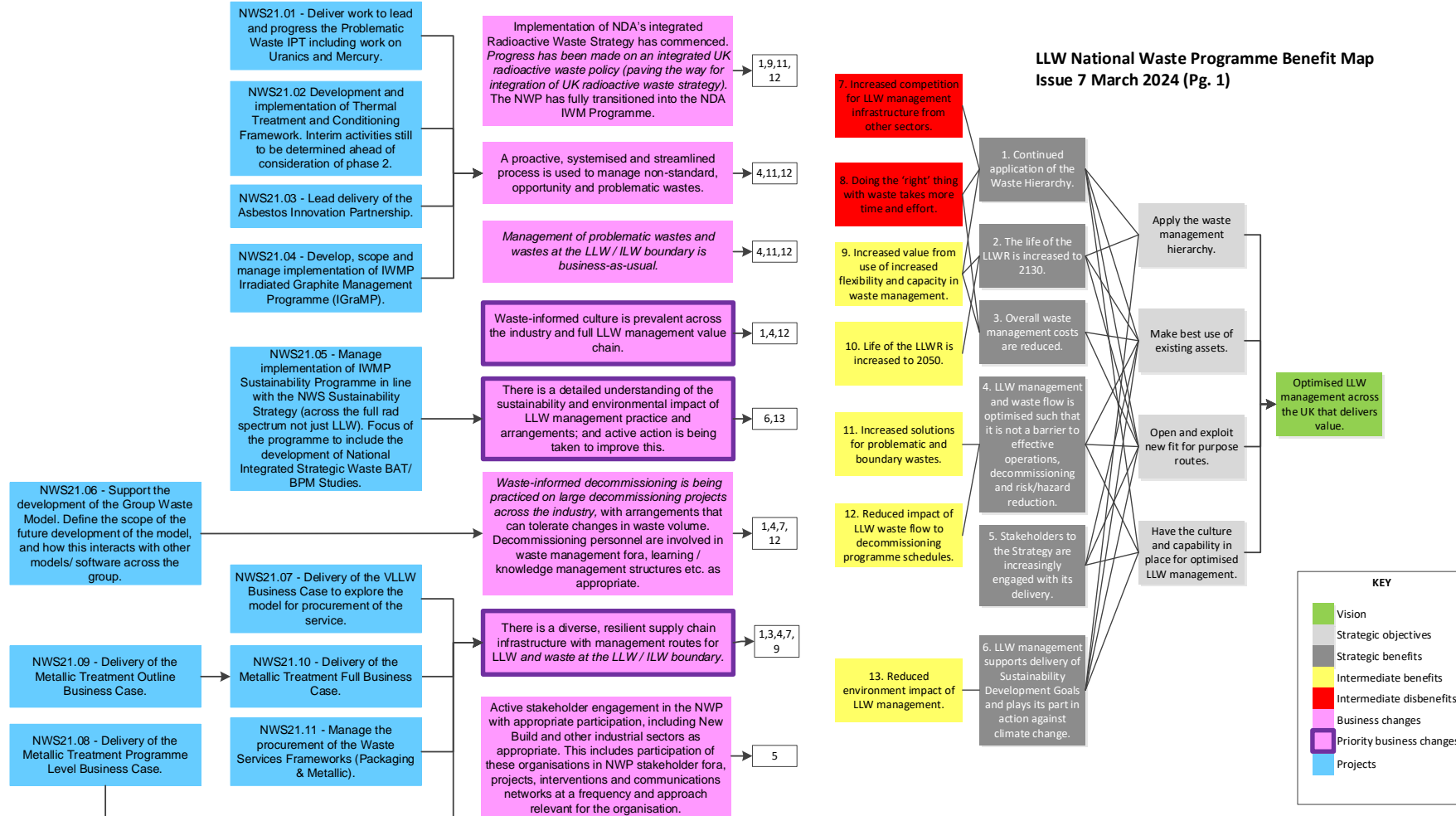
Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.29	Treated Radwaste Store (TRS) Drum emplacement Phase 5 – Vault gap preparation and emplacement of the TRS Drums. On target for final drum emplacement April 24.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	25/06/2022	29/04/2024	In Progress
21.30	Management of contaminated Stockpile C Material. To be delivered by the Waste Delivery team and Site Operations Team.		01/04/2021	Start re-packing of material - March 24 Final Consignment - 31/03/2025	In Progress
21.31	Historic Waste Project to remove waste that has been on site for 15+ years including the mobilisation of new bag assay equipment.		01/05/2022	Schedule developed – 31/03/2024 Final Consignments – 31/03/2026	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
21.32	B720 demolition rubble disposal. Rubble will be disposed of following the outcome of the BAT. Material to be included in Vault 8 closure as far as possible in line with the identified capacity.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	01/04/2016	31/03/2025	In Progress
21.33	Environmental Safety Case (ESC) Development Programme (Overarching programme).		01/04/2020	30/04/2026	In Progress
21.34	ESC Major Review Production.		01/04/2024	30/04/2026	Not yet started
21.35	Develop, scope and manage implementation of IWMP Characterisation programme.		10/12/2020	31/03/2030	In Progress
21.36	Review and harmonise waste activities across the classification spectrum (radioactive, hazardous, conventional). Develop a Process Map and deliver a Gap Analysis to determine follow on actions.		01/02/2024	Process map & Gap Analysis – 30/09/2024	In Progress
21.37	Remediation of contaminated soils identified on the LLWR Site, including Lagoon C and F proposed sites and Northern Trenches		01/03/2024	TBC	Assessment underway to determine

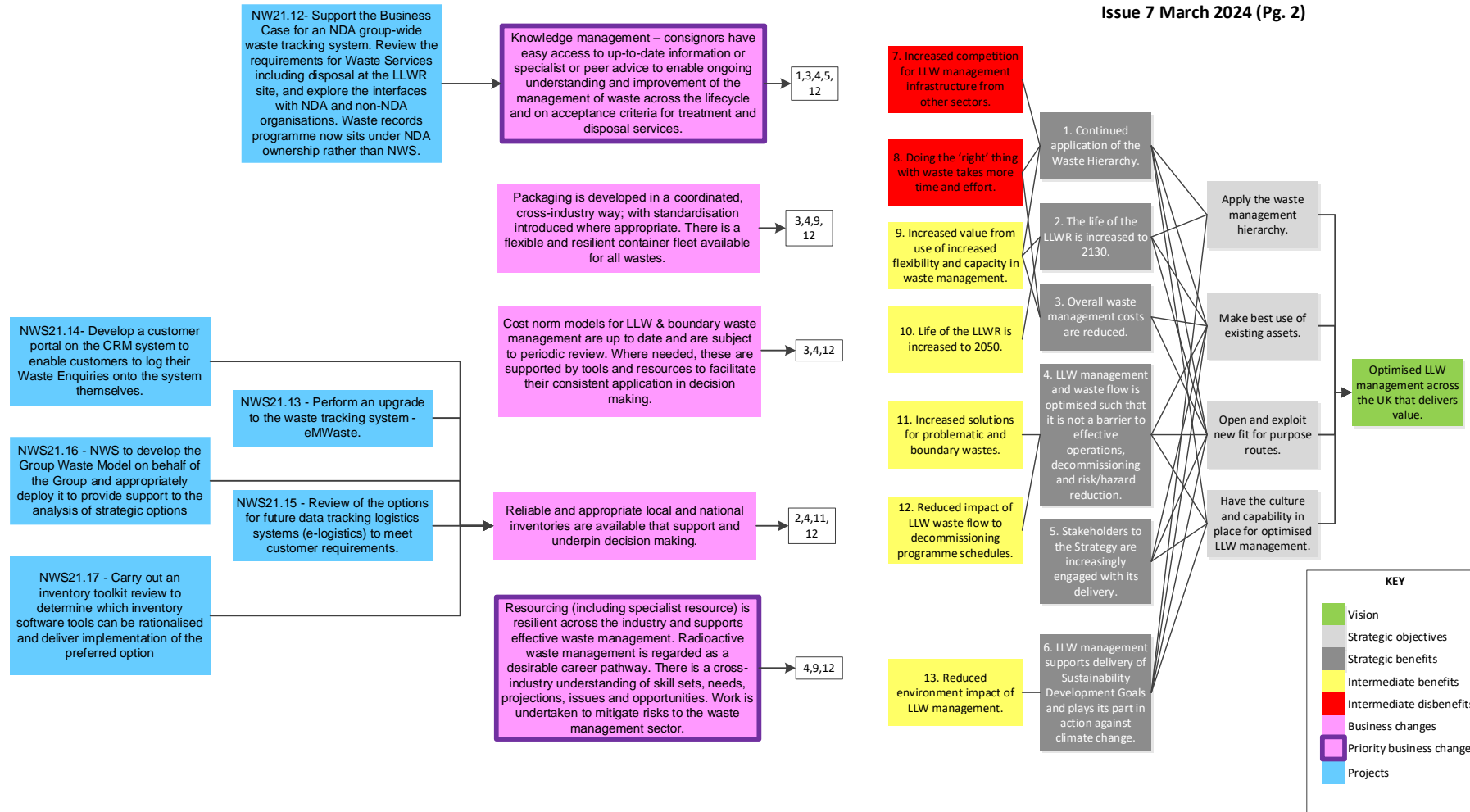


Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
					the scope of works required for delivery

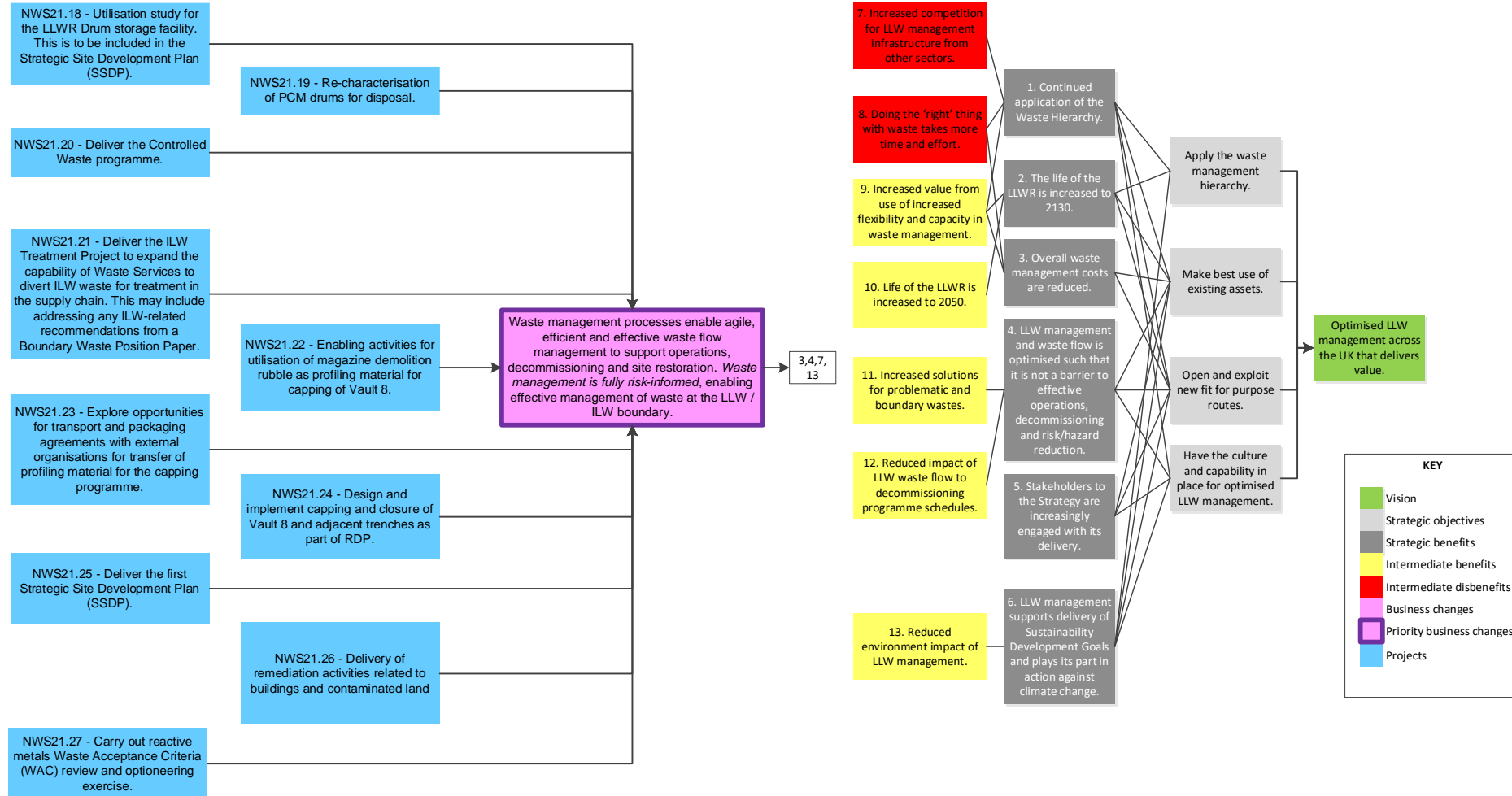
2.2 – FY23/24 Benefit Map



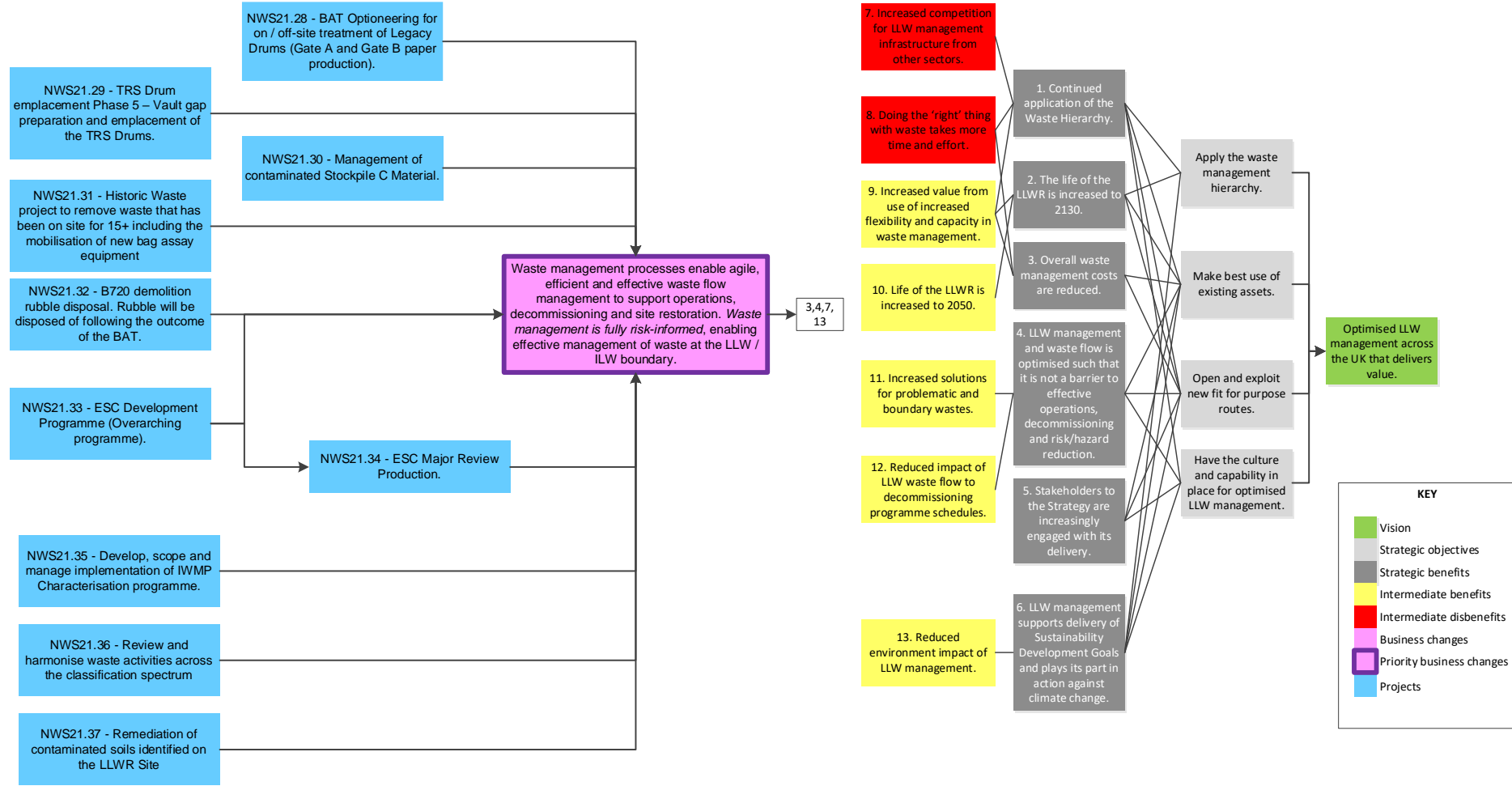
**LLW National Waste Programme Benefit Map
Issue 7 March 2024 (Pg. 2)**



**LLW National Waste Programme Benefit Map
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**LLW National Waste Programme Benefit Map
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Section 3 – Non-Resourced Opportunities

Opportunities are those specific step change projects that are not within the current scope of work but which could be undertaken either if funding became available or if internal or collaborative resource could be identified to support the project; and which would further optimise the management of LLW. These may be identified as enablers on the Benefit Map.

Opp. Number	Project Description	Contributes to the Delivery of which Business Change?	Duration	Resources Required	Status
NWSO1	Characterisation and demolition of the magazines and processing of material for re-use. If funding becomes available, the magazines will be demolished just in time for the RDP.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	1-3 years	Priority, funding	Not yet planned
NWSO2	Process and dispose of legacy drums. This will depend on the outcome of the Gate B paper mentioned in project, 20.28 but funding is not available to implement the recommendations.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	1-3 years	Priority, funding	Not yet planned

Opp. Number	Project Description	Contributes to the Delivery of which Business Change?	Duration	Resources Required	Status
NWSO3	Project to identify strategic vulnerabilities in the supply chain and waste management infrastructure.			Priority, Funding	Not Started
NWSO4	Deliver IWMP Cost Norm project. Cost Norms to be developed to cover more of the Rad-waste spectrum and the Waste Lifecycle.	Cost norm models for LLW management are up to date and are subject to periodic health checks. These are supported by tools and resources to facilitate their consistent application in decision making.		Priority, Personnel	Not Started
NWSO5	Deliver Phase 2 of the IWMP (Waste Culture) Metrics, KPIs and Incentivisation Project.	Waste-informed culture is prevalent across the industry and full LLW management value chain.		Priority, Personnel	Not Started

Opp. Number	Project Description	Contributes to the Delivery of which Business Change?	Duration	Resources Required	Status
NWSO6	Support and/or lead key activities identified within the NDA Knowledge Management Steering Groups work programme.	Knowledge management – consignors have easy access to up-to-date information or specialist or peer advice to enable ongoing understanding and improvement of the management of waste across the lifecycle and on acceptance criteria for treatment and disposal services.	3 Years	Priority, Personnel	Not Started
NWSO7	Deliver the Infrastructure project to map the radioactive waste management infrastructure available versus need over time.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	2-3 Years	Priority, Personnel	Not Started




Section 4 – Forecast Summary

The Waste Forecast Form (WFO) is used to capture the estimated 5-year forward view of waste that is expected to be managed via the supply chain, or directly disposed to the LLWR. The forecast summary provides a high-level summary of the forecast waste flow and highlights the total waste volumes expected to be consigned via the various waste management routes each year.

	Year 1	Year 2	Year 3	Year 4	Year 5
LLWR Site					
Metallic Treatment	8te	0te	0te	0te	0te
Combustible Treatment	10m ³	40m ³	40m ³	0m ³	0m ³
VLLW Disposal	145.2m ³	158.4m ³	0m ³	0m ³	0m ³
LLWR Disposal	1 HHISO	0 HHISO	0 HHISO	0 HHISO	0 HHISO
Supercompaction	0m ³	0m ³	39.6m ³	0m ³	0m ³
ILW / LLW Reclassification	145.2m ³	158.4m ³	39.6m ³	0m ³	0m ³
Off-site Sort & Segregation	0m ³	0m ³	0m ³	0m ³	0m ³

Section 5 – Benefits Summary

This section provides a summary of the benefits expected to be delivered through execution of the transformational activities and waste management captured in the previous section.

Benefit	Commentary
 Cost avoidance	The cost avoided from managing waste via thermal treatment, metallic waste treatment, VLLW disposal or other alternative waste management route rather than disposing of the waste at the LLWR.
 Environmental benefit (CO ₂ avoidance)	The quantity of CO ₂ saved from managing waste via thermal treatment, metallic waste treatment, VLLW disposal or other alternative waste management route rather than disposing of the waste at the LLWR.
 Disposal capacity savings	The amount of space in the LLWR, in terms of the number of disposal containers avoided, from managing waste via thermal treatment, metallic waste treatment, VLLW disposal or other alternative waste management route rather than disposing of the waste at the LLWR.

