A woman in a dark purple dress and glasses is presenting on a stage. Behind her is a large screen displaying the Nuclear Waste Services logo and the text "Nuclear Waste Services". The stage is lit with blue and white lights.

# Nuclear Waste Services Joint Waste Management Plan

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20	03/23	First Issue	D Maguire and J Robbins	H Cresswell	M Rigby

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**Change Log**

Page No.	Change	Reason for change
4	TRS Drums 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	Non-Resourced Opportunities updated.	Updated to reflect current opportunities.
20	Forecast Summary updated.	Updated to reflect the updated five-year forecast.
21	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. Its purpose is to demonstrate how the SLC is engaging with the National Low Level Waste (LLW) Programme to improve their implementation of and compliance with the UK LLW Strategy, through the delivery of the Programme Blueprint. The National Programme is a sub-programme of the Integrated Waste Management Programme (IWMP).

This JWMP provides an overview of the waste management activities performed by an SLC over the previous financial year (section 1) and highlights the key transformational activities (section 2) to be undertaken either independently or in collaboration with Nuclear Waste Services, and other organisations. Transformational activities are those that will make a step change in SLC LLW management arrangements to deliver the National Programme Blueprint future state, and ultimately progress the organisation towards integrated waste management as described in the 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., CO<sub>2</sub> 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 National Programme governance arrangements to:

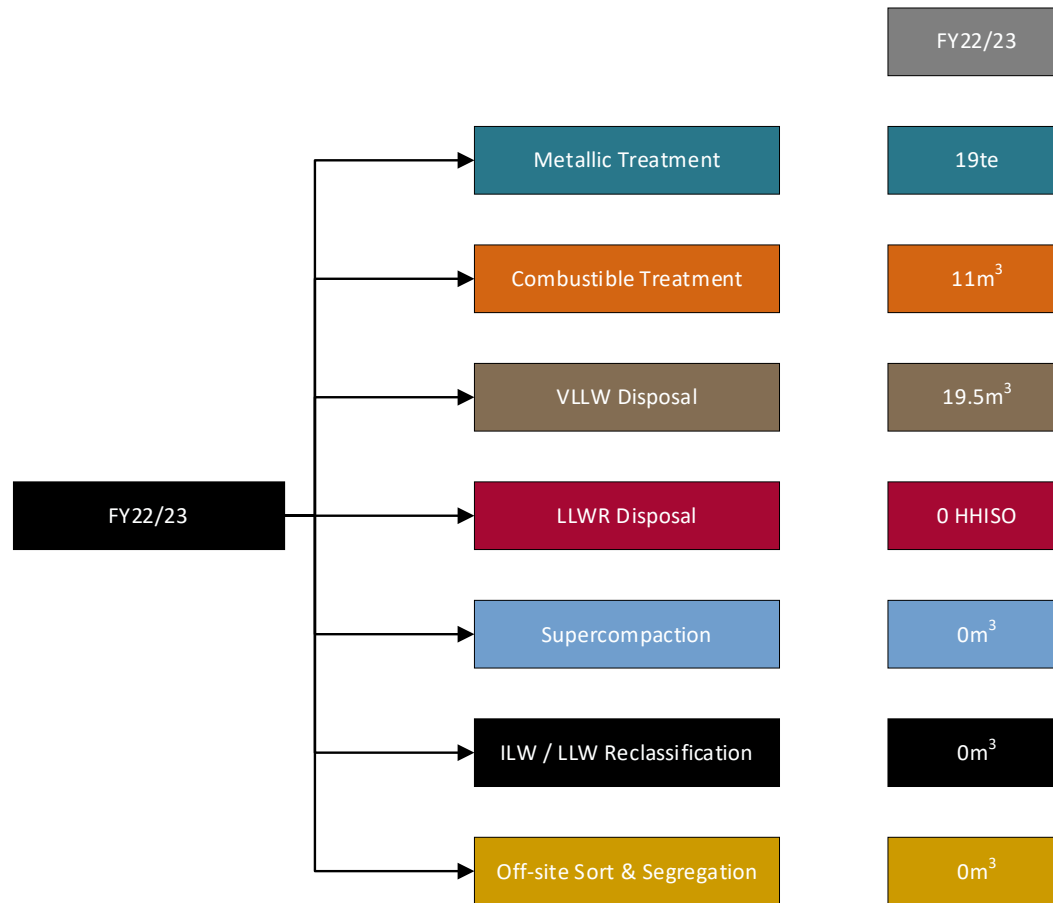
- Assess performance;
- Highlight success; and
- Deliver an integrated approach to dealing with the UK's LLW.

It contains activities and waste forecasts for the 5-year period of 2023/24 to 2027/28.



**Section 1 – Business-as-usual Summary**

**1.1 FY22/23 Business-as-usual LLW management and waste flow**



**Nuclear Waste Services**  
 On the 31<sup>st</sup> 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 Nuclear Decommissioning Authority (NDA) group’s Integrated Waste Management Programme.  
 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 – TRS Drums**  
 The Magnox Treated Radwaste Store (TRS) was constructed in the late 1980s to store encapsulated waste from the Steam Generating Heavy Water Reactor (SGHWR) at Winfrith, it held 1068 500ltr drums of encapsulated sludge. The baseline position was to consign the TRS drums to Harwell for Interim Storage pending GDF disposal. From 2016, LLW Repository staff worked with Winfrith Site to explore alternatives; this was achieved via a risk-informed approach which involved optioneering of credible options, a BAT assessment and a disposability assessment. As a result, it was confirmed that the TRS Drums could be disposed of at the LLW Repository.  
 The benefits of this approach are:

- For Magnox Ltd, early disposal of the TRS Drums to the LLW Repository results in a significant financial benefit and liability reduction.
- For Nuclear Waste Services, this utilises unusable space within Vault 8 at the LLW Repository prior to its closure, thus preserving valuable future disposal space in Vault 9.
- For NDA, provides opportunities to either demolish the TRS or realise new commercial revenue from sale or lease of the facility.

## Section 2 – FY23/24 Transformational Activities

### 2.1 Transformational Projects List

Transformational projects 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
20.01	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	Ongoing	In progress
20.02	Development and implementation of Thermal Treatment and Conditioning Framework.		01/04/2021	Phase 1 – 31/03/2024	In Progress
20.03	Lead delivery of the Asbestos Innovation Partnership.		01/04/2021	ITT – Q3 23/24 Overall Completion Q4 FY 32/33	In Progress
20.04	Develop, scope and manage implementation of IWMP Irradiated Graphite Management Programme (IGraMP).		01/04/2022	TBC	In progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.05	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.	01/04/2022	31/03/2024	In progress
20.06	Develop, scope and manage implementation of IWMP Sustainability Programme (across the full radiological spectrum, not just LLW).	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	31/03/2025	In Progress
20.07	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 / ILW boundary</i> .	31/01/2022	30/06/2023	In Progress
20.08	Delivery of the Metallic Treatment Outline Business Case.		03/01/2023	30/09/2023	In Progress
20.09	Delivery of the Metallic Treatment Full Business Case.		02/01/2024	30/11/2024	Not yet started
20.10	Manage the procurement of the Waste Services Frameworks (Packaging & Metallic).		03/01/2023	30/09/2024	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.11	Support the Business Case for an NDA group-wide waste tracking system, as part of the Waste Records Programme. Review the requirements for Waste Services including disposal at the LLWR site, and explore the interfaces with NDA and non-NDA organisations.	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.	01/04/2022	Business Case - 31/03/2023 Implementation of preferred option - TBC	In Progress
20.12	Support and/or lead key activities identified within the NDA Knowledge Management Steering Group's work programme.		01/04/2022	31/03/2025	In Progress
20.13	Deliver the Preliminary Design Phase for the Standard Waste Transport Container (SWTC) - 255 and progress the design maturity of the container. Lead on the development and delivery of the Strategic Outline Case to enable earlier implementation of the SWTC.	Packaging is developed in a coordinated, cross-industry way; with standardisation introduced where appropriate. There is a flexible and resilient container fleet available for all wastes.	01/03/2021	30/06/2023	In Progress



Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.14	Develop a Waste Containers Implementation Plan that delivers the forward recommendations that were captured within the Waste Container SMS Gate B Preferred Options Paper.	Packaging is developed in a coordinated, cross-industry way; with standardisation introduced where appropriate. There is a flexible and resilient container fleet available for all wastes.	01/09/2022	31/12/2031	In Progress
20.15	Deliver IWMP Cost Norms project.	Cost norms models for LLW & boundary waste management are up to date and are subject to periodic review. Where needed, these are supported by tools and resources to facilitate their consistent application in decision making.	10/01/2021	31/03/2024	In progress
20.16	Deliver the Management of Change activity to unify the Higher Activity & Lower Activity Inventory teams from RWM and LLWR respectively, as a result of the formation of Nuclear Waste Services (NWS). This will support the creation of an Enterprise Inventory Office across NWS.	Reliable and appropriate local and national inventories are available that support and underpin decision making.	01/04/2022	Management of Change - 01/04/2023  Implementation phase – 31/03/2024	In Progress
20.17	Perform an upgrade to the waste tracking system - eMWaste.		01/11/2022	31/03/2024	In Progress



Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.18	Develop a customer portal on the CRM system to enable customers to log their Waste Enquiries onto the system themselves.	Reliable and appropriate local and national inventories are available that support and underpin decision making.	01/04/2023	31/03/2025	Not yet started
20.19	Review of the options for future data tracking logistics systems (e-logistics) to meet customer requirements.		01/04/2021	31/03/2023	In Progress
20.20	Support the development of the Enterprise Model. Define the scope of the future development of the model, and how this interacts with other models/ software across the group.		01/04/2019	Ongoing	In Progress
20.21	Support the NDA and BEIS to identify the organisation that will deliver future UKRWI exercises.		01/09/2022	Governance Committee decision – 30/06/2023 Implementation activities – 31/03/2024	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.22	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
20.23	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 (to be completed 31 <sup>st</sup> March 23).		01/04/2021	Waste routes identified - 31/03/2023 Waste consigned off site - 31/05/2025	In Progress
20.24	Deliver the Conventional Waste programme.		01/07/2021	31/03/2030	In progress
20.25	Deliver the Infrastructure project to map the radioactive waste management infrastructure available versus need over time.		01/01/2021	31/03/2023	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.26	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.	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.	01/11/2021	TBC	In Progress
20.27	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	31/03/2023	In Progress
20.28	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).		01/04/2018	31/03/2024	In Progress

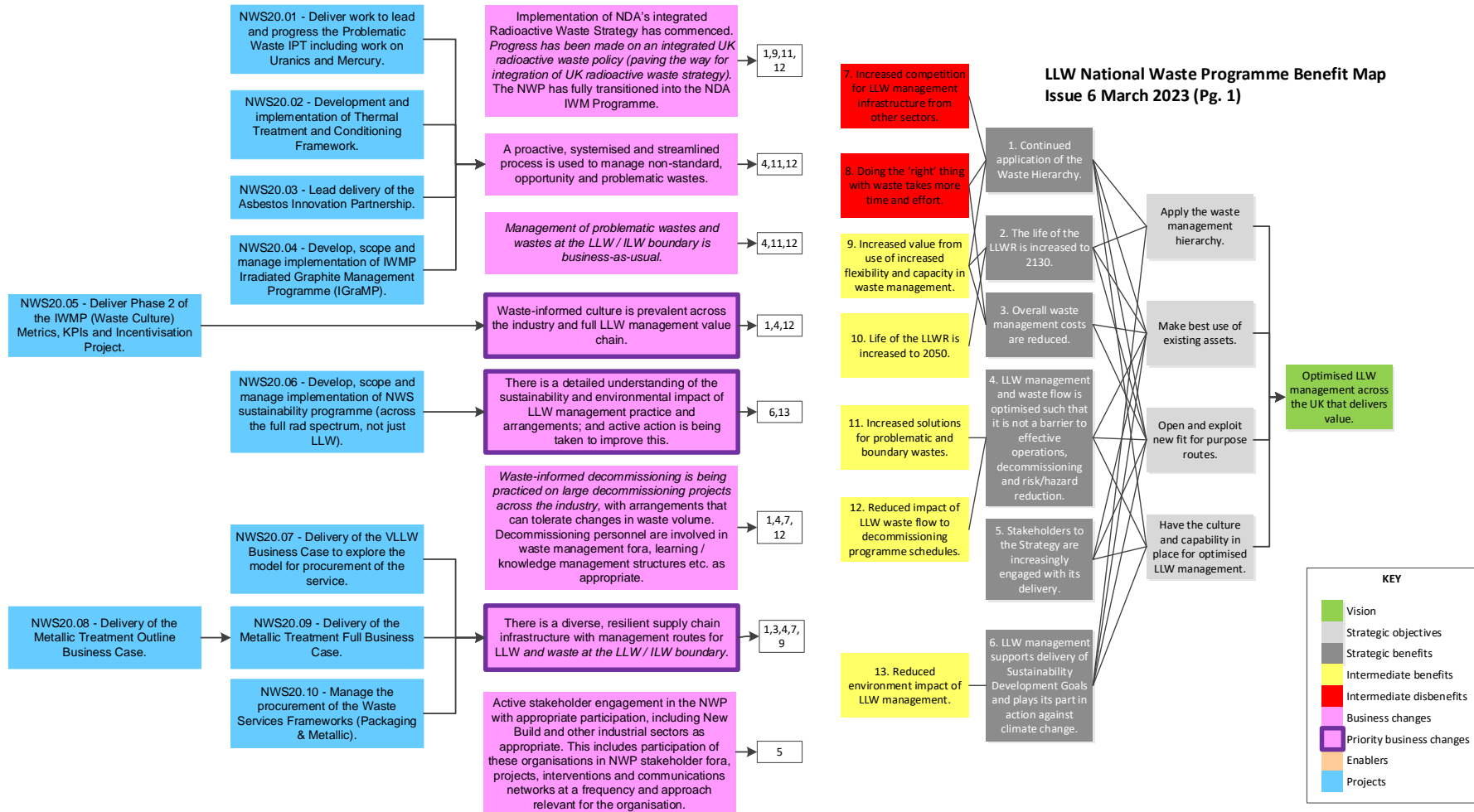
Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.29	Design and implement the capping and closure of Vault 8 and adjacent trenches as part of RDP.		01/04/2019	31/03/2038	In Progress
20.30	Complete the data gathering exercise to develop the Site Strategic Development Plan scope.	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	Data capture complete and high level SSDP presented to waste ops portfolio board - 31/03/2023  SSDP defined and implemented - 31/03/2024	In Progress

Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.31	Implement the RACER team and define the remediation scope (B718 demolition and P29 and magazine 5 contaminated land remediation). Remediation scope will be finalised following funding/budget discussions.	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	31/03/2023	In Progress
20.32	BAT Optioneering for on / off-site treatment of Legacy Drums (Gate A and Gate B paper production). Gate A paper to be presented to the NWS Strategy Governance Committee (SGC).		01/04/2022	Phase 1 31/02/2023 Phase 2 31/07/2023	In Progress
20.33	TRS Drum emplacement Phase 5 – Vault gap preparation and emplacement of the TRS Drums. 268 of 1068 emplaced in Vault 8 as of January 2023.		25/06/2022	29/04/2024	In Progress
20.34	Management of contaminated Stockpile C Material. To be delivered by the Waste Delivery team and Repository Development Team.		01/04/2021	31/12/2024	In Progress
20.35	Historic Waste project to remove waste that has been on site for 15+ years and has previously lacked funding to manage.		01/05/2022	01/11/2023	In Progress

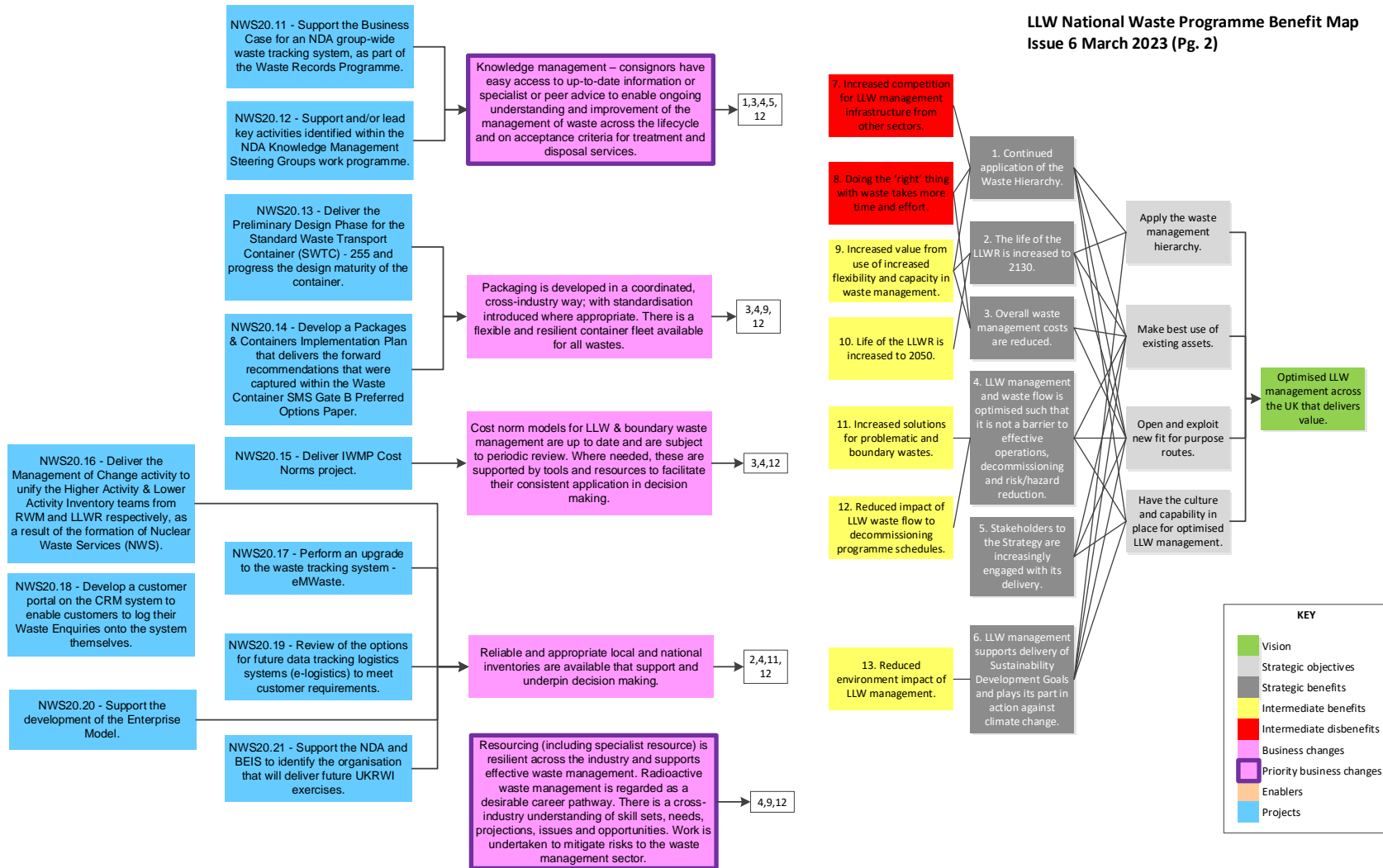
Project Number	Project Description	Contributes to the Delivery of which Business Change?	Start Date	End Date	Status
20.36	B720 demolition rubble disposal BAT.	Waste management processes enable agile, efficient and effective waste flow management to support operations, decommissioning and site restoration. Waste management is fully risk-informed, enabling effective management of waste at the LLW / ILW boundary.	01/04/2016	31/03/2023	In Progress
20.37	B720 demolition rubble disposal. Rubble will be disposed of following the outcome of the BAT.		01/04/2016	31/03/2024	In Progress
20.38	ESC Development Programme (Overarching programme).		01/04/2020	30/04/2026	In Progress
20.39	ESC Major Review Production.		01/04/2024	30/04/2026	Not yet started
20.40	ESC Programme Site Optimisation Activities.		01/04/2020	30/06/2023	In Progress
20.41	ILW Skip Treatment – Development of a Feasibility and Execution Plan for ILW Pond Skips from Sellafield. This links to the IWMP ILW Treatment Programme.		01/04/2022	31/03/2024	In Progress
20.42	Develop, scope and manage implementation of IWMP Characterisation programme.		10/12/2020	31/03/2030	In Progress



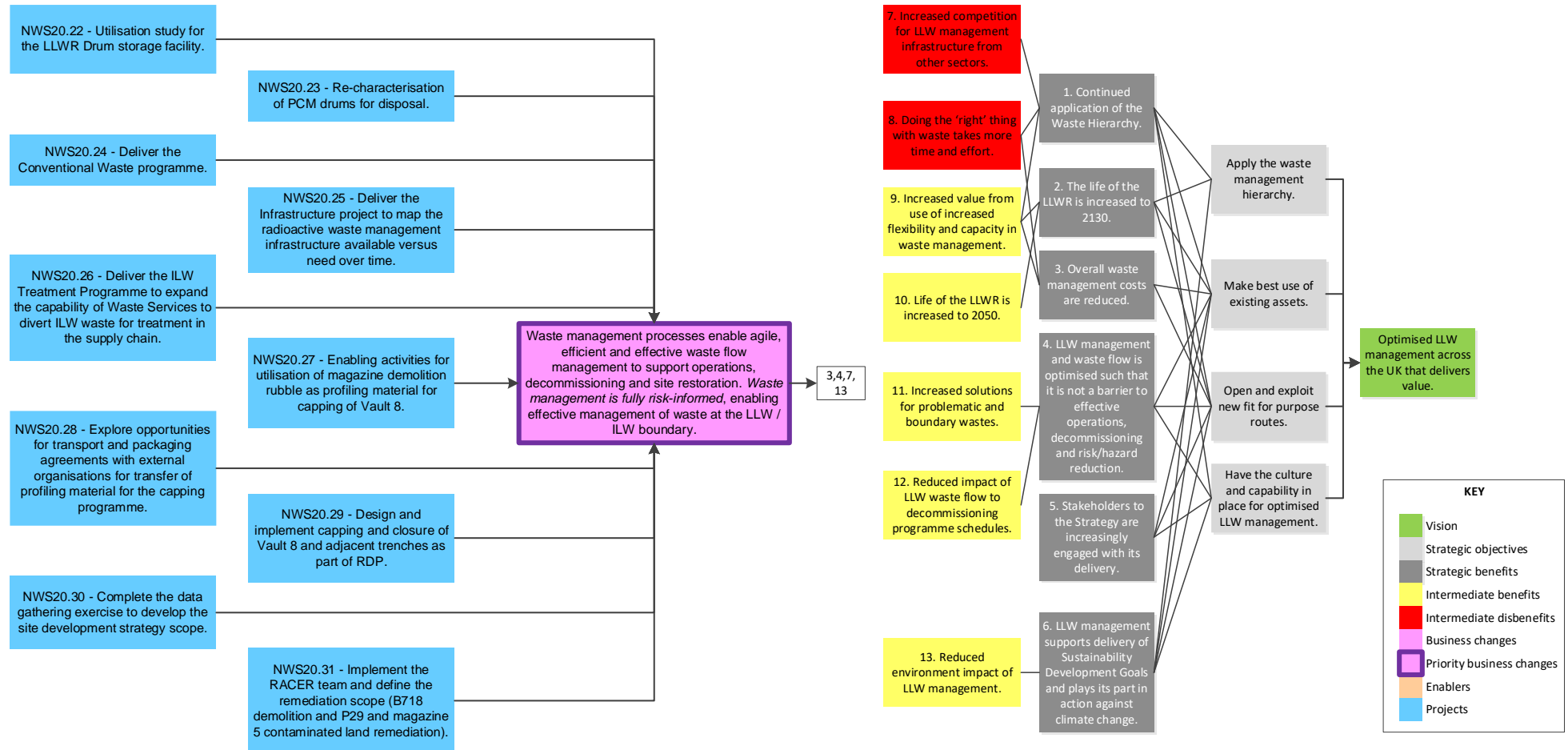
2.2 – FY23/24 Benefit Map



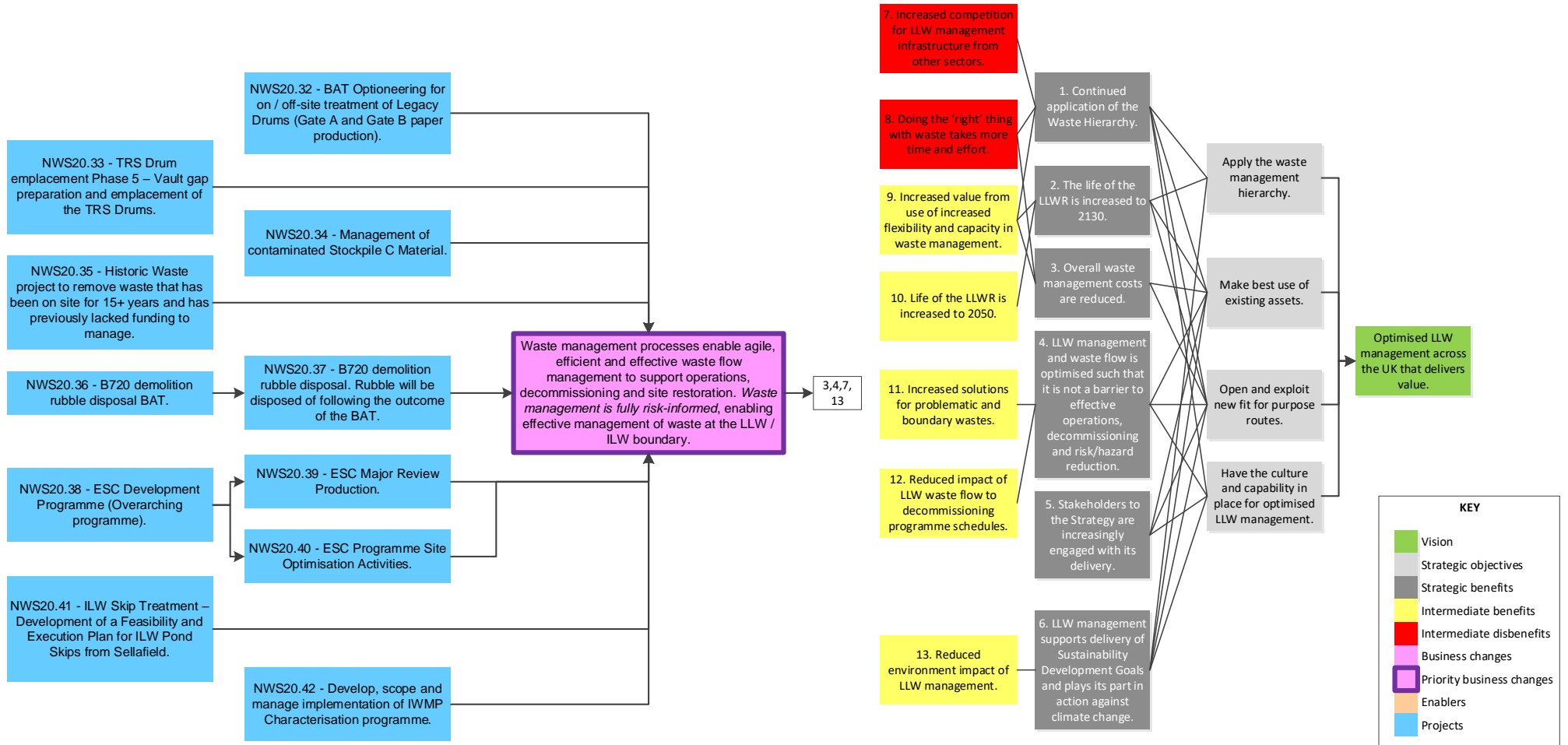




**LLW National Waste Programme Benefit Map  
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LLW National Waste Programme Benefit Map  
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### Section 3 – Non-Resourced Opportunities

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 Repository Development Programme (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	Rationalise the two separate inventory software models currently in use across NWS. DiQuest is currently used for HAW inventories, and NIM is currently used for LAW inventories. This project will seek to utilise one system for the entire inventory.	Reliable and appropriate local and national inventories are available that support and underpin decision making.	1-3 years	Priority, funding	Not yet planned




**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 Repository. 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	4te	0te	0te	0te	0te
	Combustible Treatment	10m <sup>3</sup>	40m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>
	VLLW Disposal	291m <sup>3</sup>	160m <sup>3</sup>	20m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>
	LLWR Disposal	1 HHISO	2 HHISO	1 HHISO	1 HHISO	0 HHISO
	Supercompaction	0m <sup>3</sup>	28m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>
	ILW / LLW Reclassification	112m <sup>3</sup>	168m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>
	Off-site Sort & Segregation	0m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>	0m <sup>3</sup>

### 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 <sub>2</sub> avoidance)	The quantity of CO <sub>2</sub> 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.

