Medical Research Council

MRC Environmental Sustainability Programme

Impact Report (2024–25)

Foreword

Over the past 12 months, the MRC environmental sustainability programme has continued to make strong progress, moving increasingly from a planning to delivery phase, and widening the scope of its activities. The feasibility and design work undertaken in previous years is now taking shape through tangible projects; improving building energy efficiency and introducing renewable generation to reduce emissions, and increasingly embedding sustainable practice across our operations.

Improved data completeness this year has brought greater transparency, even if it has revealed higher emissions than had been reported in previous years. Those sites with consistent data show a general trend towards reductions in energy and water consumption, reductions that we can be confident will be continued, because of the projects completed or designed in 2024-25. Overall, we end the year more confident of the pathway to net zero across all of our facilities, and future projects scheduled which will make this transition a reality.

Away from the estate transition work, we have published our first biodiversity and climate adaptation strategies which form an embedded part of the approved MRC Estates plans, created a range of training materials, and developed procurement tools and guidance to support lasting change. Engagement across the wider research sector continues to grow in scale and scope through seminars, conferences, and shared resources. All MRC research facilities have now achieved “Gold” status under the LEAF framework; a hugely significant milestone in our sustainable lab practice.

There is much still to do, but the programme is now well established, with a clear focus on high-impact interventions and cross-sector collaboration. This report sets out the progress made, the remaining challenges, and programmed works we will undertake in the new year, as we continue to work towards a more environmentally sustainable future for life science research.

Susan Simon
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1. Executive Summary

The Medical Research Council (MRC) Environmental Sustainability Programme continued to make significant progress in 2024-25 towards its aim of improving the environmental sustainability of life science research. This report outlines the achievements, challenges, and future direction of the programme across MRC's own research facilities and the wider sector.

Key environmental performance indicators show mixed results. Reported emissions increased slightly due to improved data completeness, masking underlying progress. Energy usage, water consumption, and waste generation have declined by 17.9%, 28%, and 31.5% respectively since the 2017-18 baseline. However, business travel emissions have rebounded to pre-pandemic levels, and unlike other emission sources, lack a clear pathway to net zero.

Notable milestones include all MRC facilities achieving Gold status under the Laboratory Efficiency Assessment Framework (LEAF), indicating strong progress in sustainable laboratory practices. Significant capital projects were undertaken, particularly those focused on fabric efficiency upgrades, solar PV installations, and early-stage transition from gas to electric heating and steam systems.

The programme also published its first climate adaptation and biodiversity strategies. Nature Recovery Plans (NRP) are in progress, guided by extensive site surveys, whilst biodiversity initiatives, such as reduced mowing, pond construction, and native planting, have already enhanced estate habitats.

Supply chain sustainability received increased attention this year, with new model specifications and procurement guidance developed for facilities management services and lab equipment. Training resource, including e-learning and in-person modules, have been launched to embed sustainable practice within the research culture. A growing seminar and events programme continues to engage the wider life science research community.

Looking ahead the programme will intensify work on building-level waste and water audits, biodiversity action plans, sustainable procurement, and targeted training. Collaborative efforts within the wider UKRI team, and through platforms such as the SPARK Hub, will help extend the programme's reach and impact across the sector.

The report demonstrates that while challenges remain, the MRC Environmental Sustainability Programme is increasingly well-placed to deliver systemic, meaningful change in pursuit of its net zero and sustainability goals.

Research labs are responsible for high volumes of single use plastic waste

2. Introduction

2.1 Purpose of the Report

This report provides an overview of the activities undertaken in 2024-25 by the MRC Environmental Sustainability Programme and highlights the impact that these activities have had.

It is intended to provide the context and aims of the programme, and progress towards these aims, by presenting data and associated analysis, narrative, and selected case studies. As well as those activities reported from the central programme team, the report presents the excellent work happening within the owned research facilities which is contributing to the overall aims of the programme.

The impact report transparently highlights areas of strengths and weaknesses of the programme, as well as detailing the future direction activities intended to improve areas where challenges remain.

2.2 Scope of the Report

This report covers the period of financial year 2024-25 (1st April 2024 to 31st March 2025) and the activities and impacts, which are specific to the MRC environmental sustainability programme.

At times the report mentions activities and initiatives which have fallen either side of financial year 2024-25, where it is important to the overall position of the programme or adds to the readability of the narrative of events which have fallen within the reported year.

3. Background

3.1 Medical Research Council

The heart of MRC's mission is to accelerate improves in human health and economic prosperity by supporting world-class biomedical research and innovation.

To achieve this, MRC sets out six objectives within its Strategic Delivery Plan (2022-25)[1]. To support:

- World-class people and careers
- World-class places
- World-class ideas
- World-class innovation
- World-class impacts
- A world-class organisation

The programme aligns to these objectives by supporting MRC's people and facilities to ensure environmental sustainability is incorporated into the organisation and the activities it enables.

With the improvement of the human health at the centre of MRC's work, it is important to the organisation, that MRC's activities should not damage the environment, which is so critical for human survival and wellbeing. The MRC environmental sustainability programme therefore forms a crucial part of the thinking and actions in delivering MRC's overall ambitions.

3.2 MRC Environmental Sustainability Programme

The programme was launched in 2020 in response to the UKRI sustainability strategy[2]. Since that time the scope and scale of the programme has grown to incorporate both the MRC's owned and operated research facilities, but also to provide leadership and support for the community as a whole. The purpose of the programme is:

To improve the environmental sustainability of life science research, both for MRC facilities, and the wider sector.

The programme considers the challenge of environmental sustainability under five key workstream areas, which are shown below:

Estates Transformation

Operations Transformation

Supply Chain

Influence

Engagement

1. MRC Strategic Delivery Plan 2022-2025
2. Environmental sustainability strategy – UKRI

4. Environmental Performance

MRC reports data quarterly on a number of environmental metrics to ascertain its progress against its own targets, those of UKRI, and of the Greening Government Commitment (GGC)[3]. In all cases, the baseline financial year against which data is assessed is 2017-18. All measures of impacts show significant effects of the Covid pandemic in 2019-20 and 2020-21 in particular.

Scope 1 and 2 emissions are reported for the MRC's controlled estate: the Laboratory of Molecular Biology (LMB), the Laboratory of Medical Sciences (LMS), and the Mary Lyon Centre at MRC Harwell (MLC). Scope 3 travel emissions are reported for all staff business travel within MRC.

A concerted effort was made in 2023-24 to close a number of data gaps and improve reporting. This improved accuracy is positive, however it has resulted in an uplift in reported emissions and some other metrics in 2024-25, making it difficult to directly compare to the previous years. To assist the reader, the key data gaps are detailed with explanation in Appendix A.

4.1 Emissions by Scope

Figure 1 shows the total reported emissions for MRC. The GGC obliges MRC to report only scope 1 and 2 emissions, and those scope 3 emissions arising from business travel. It is known that MRC will have significantly greater scope 3 emissions, particularly from purchased goods and services, however these are measured only intermittently and not shown within this analysis.

Figure 2 shows MRC's reported emissions over time since the baseline year 2017-18. Emissions show a steady decrease over that period.

There is a reported increase in emissions from the previous financial year of 1,281tCO2e, however this is explained by missing data in 2023-24 and an improvement is monitoring (this is described further in Appendix A). There has been an increase in business travel (this is described further in section 4.5).

4.2 Energy Usage

Energy consumption is by far the largest single source of MRC's reported emissions. Figure 3 shows the energy usage of the estate, broken down by electricity and natural gas. Since the baseline year, this consumption has shown a decline of 17.9%. Although there is a reported rise in consumption between 2023-24 and 2024-24, this is largely accounted for by missing data. Details of this missing data is given in Appendix A, with further analysis of complete datasets in Appendix B.

For sites with complete datasets throughout the period 2023-25, an overall reduction in emissions has been seen comprising 341tCO2e or 4.2%.

The key focus of the programmed works within the estate are to reduce overall consumption and systematically transition gas-fuelled plant to electricity. These projects will begin to be seen within the 2025-26 data.

Figure 1: Reported emissions by scope

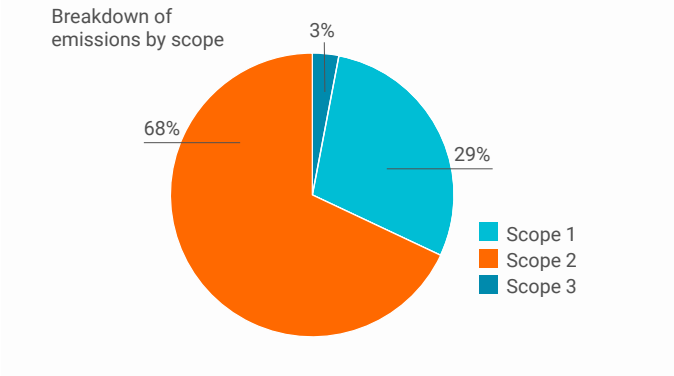


Figure 2: Aggregate scope 1,2& 3 (business travel) emissions by year

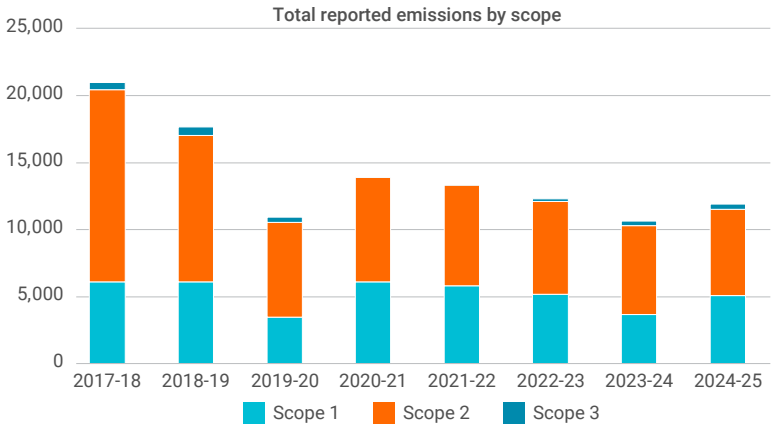
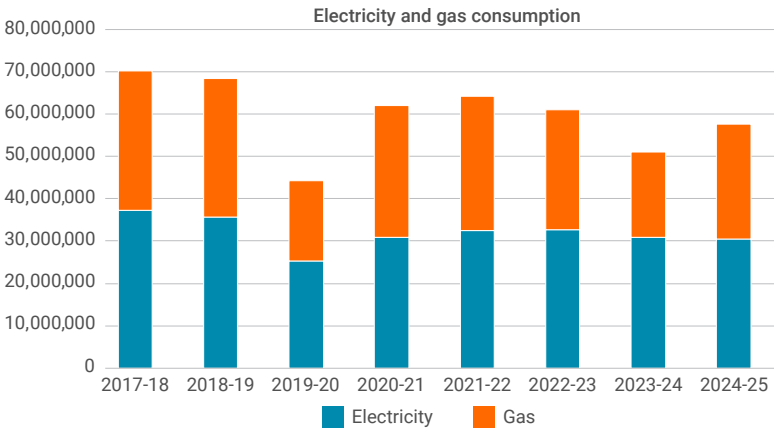


Figure 3: Aggregate energy consumption by year



3. Greening government commitments: reporting requirements for 2021 to 2025 – GOV.UK

4.3 Water Usage

MRC's estate, and life science research in general, is water intensive. A number of MRC's operated facilities have a requirement for tightly controlled internal environmental conditions, including humidification, cleaning loads, and the provision of water from reverse osmosis.

Figure 4 shows the aggregate water consumption across the MRC estate since the baseline year. This has consistently fallen, by 28% since the baseline year to 2024-25.

4.4 Waste

Waste has shown a general trend downwards since the baseline year with a reduction of 31.5% over the period to 2024-25. The way in which waste is dealt with has shown a marked change in that time, with punitive landfill taxes meaning that well under 1% of the total tonnage now dealt with by this method.

Since 2021-22 waste has remained fairly constant in aggregate, although an increasing volume has been redirected away from high temperature incineration to low temperature heat incineration with heat recovery, a much lower carbon method of treatment.

The uptick in aggregate waste in 2024-25 in comparison to previous years is largely explained by data gaps in previous years. A more detailed explanation of this is given in Appendix A.

4.5 Business Travel

As well as scope 1 and 2 emissions, scope 3 business travel emissions are the other carbon metric reported under the GGC requirements. Emissions from all modes of business travel increased in 2024-25, meaning that they are now higher than immediately prior to the pandemic and have shown an upward trend since that period.

The majority of the jump in emissions in 2024-25 is attributed to a 22% increase in long haul travel compared to the previous financial year; increasing emissions by 37.8tCO2e.

Figure 6 shows the scope 3 emissions arising from business travel.

Although business travel emissions represent only around 3% of the MRC's total, it is a source of emissions there is no pathway to net zero established, although work will be undertaken to reduce travel within 2025-26.

Figure 4: Aggregate water consumption by year

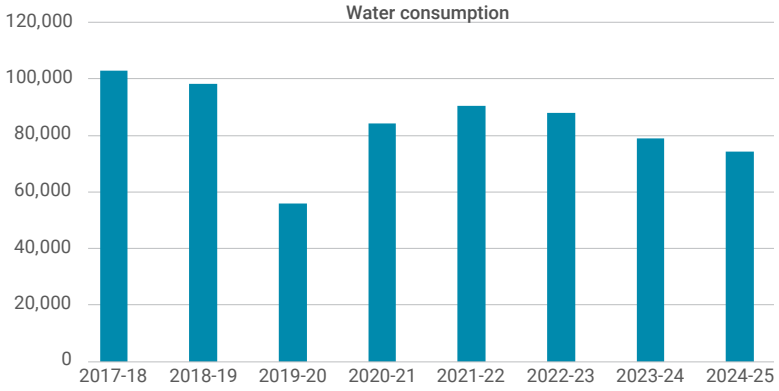


Figure 5: Waste by disposal method

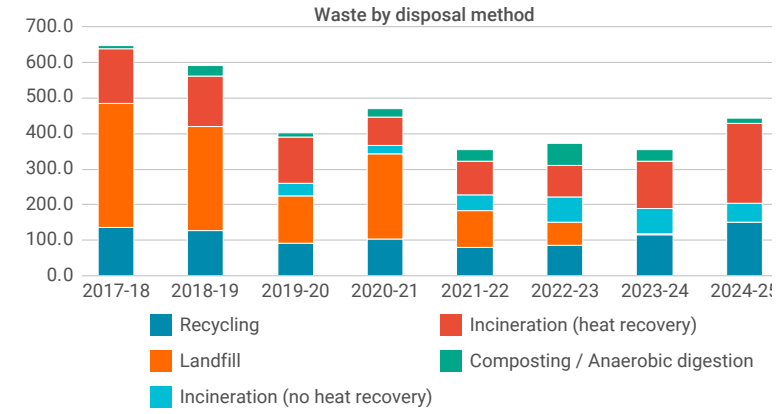
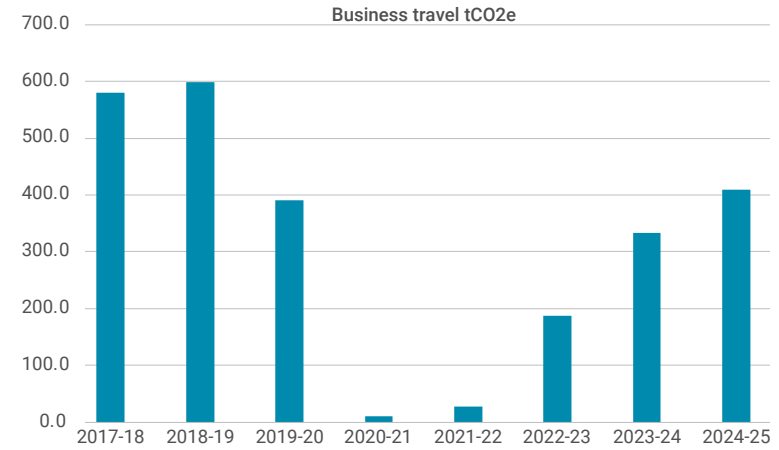


Figure 6: Total emissions arising from business travel



4.6 Additional Metrics

GGC requires MRC to accede to a number of additional criteria, which are not reported in a quantitative way, but by the presence of monitoring and reporting protocols and plans to ensure their improvement.

4.6.1 Climate Adaptation

MRC understands that they have limited control over the global and local climate, and that despite their active climate mitigation programme, they must also prepare for a changing climate, with increased frequency of extreme conditions.

In 2024-25 MRC published its first climate change plan[4], which sets out the MRC's approach to ensure business continuity by communicating the issues, maintaining the existing facilities, and considering the risk of climate when building new facilities or plant.

4.6.2 Biodiversity

MRC has a significant amount of green spaces surrounding its facilities, in which work is already underway to improve. MRC published its first biodiversity plan[5] in 2024-25 which sets out the framework for baselining, monitoring, and ultimately improving our grounds.

One of the mandates within both the GGC and biodiversity plan was to undertake survey work to create Nature Recovery Plans (NRP) for the estate. Much of this work was undertaken in 2024-25, with finalised NRPs to be produced in 2025-26 and a programme of activities and interventions to be created.

5. Programme Workstreams

5.1 Estates Transformation

The past twelve months have included capital projects related to energy efficiency, renewable generation, and improving biodiversity across the estate. Strategies have been produced, further feasibility work done to refine the decarbonisation of heat and steam, and the required interventions scheduled within the overall estates programme in detail to 2030-31.

Energy efficiency and renewable generations projects included the roof insulation, solar, LED lighting replacements, and fume cupboard sash closers. Combined these projects will reduce emissions by around 264 tCO2e per annum.

Pond constructed at Harwell in 2024-25 to provide improved habitat for nature

4. Climate Adaptation Plan 2024
5. Biodiversity Plan 2024

In addition to the completed capital projects, feasibility and design work was undertaken to identify optimisation targets within BMS and control systems. This included the launch of fault detection a diagnosis software to ensure the efficient running of building services. When implemented in its entirety, the optimisation work will reduce emissions by an estimated 500 tCO2e per year, as well as reducing the demand required to be transitioned from gas to electricity.

Further feasibility and design work was undertaken to refine the pathway to heat and steam decarbonsiation. This represents the single largest challenge when decarbonising the estate and thus requires significant design to reduce the risks to science and operations associated with the transition from gas fuelled sources of combustion to electricity. Detailed programmes of work, which have been incorporated into the overall estates capital programme, have now been produced to give confidence in the transition to net zero.

Projects this year have not focussed purely on carbon reduction. Biodiversity projects have included building a pond, bulb, hedgerow, and tree planting, and installing bird nesting boxes. MRC published a biodiversity plan in 2024-25[6], which sets out a formalised plan for monitoring and improving the habitats on the estate and communicating progress within the institutes.

MRC recognises that the climate is changing and that, regardless of the efforts made to decarbonise our own activities, a plan needs to be put in place to adapt to climate extremes. MRC published a climate adaptation plan[7] in 2024-25 to formalise the approach to the changing climate. Climate adaptation has been considered in recent project designs for the zero-carbon security lodge at MRC Harwell, as well as the heat decarbonisation feasibility and design.

5.2 Transformation of Operations

The progress towards greater environmental sustainability within scientific operations is monitored through the actions and accreditation awarded under the Laboratory Efficiency Assessment Framework (LEAF). Steady progress under LEAF has meant that savings of 740 kgCO2e per annum have been made on average per lab group through the actions undertaken. All of the MRC's research facilities have now achieved Gold status under LEAF, a major achievement, although work continues to improve the sustainability of their operations.

Gas will be removed from all MRC buildings in coming years

Single use items are used widely in research

6. Biodiversity Plan 2024
7. Climate Adaptation Plan 2024

Work continues to be done to reduce lab plastic consumables at source, by implementing reuse schemes, and recycling the materials created. This waste stream still remains high, with further work being undertaken currently to identify potential schemes to recycle materials which would ordinarily end up incinerated.

Reduction of chemical associated with cleaning as deionised and aqueous ozone water solutions have been introduced for both lab and general cleaning. Pilot schemes are underway to determine whether this methodology can be rolled out further.

Water consumption remains high, with audit work programmed throughout 2025-26 to better understand the way in which water is being used, and the changes to operations needed to reduce this consumption.

5.3 Supply Chain

Significant focus was given to the sustainability of the supply chain for the first time in 2024-25, building on some initial quantification of the scope 3 emissions arising from purchases, reported in the previous impact report[8].

In summer 2024, an intern worked within the programme to map out the processes by which procurement decisions are made, which services have the biggest environmental impact, and to review the contracts under which said services are being let. In response to this work, the programme developed model contracts for a number of soft facilities management specifications and tender documents to support the contract managers from within the institutes when developing procurement exercises and contract management processes. These contracts included catering, cleaning, grounds maintenance, and waste; with a number of specification criteria being used in tender exercises already.

Another area of high impact is through the purchasing of items of commonly occurring lab equipment. To improve the sustainability of these items, specifications and tender packs have been developed for freezers, fridges, heat blocks, safety cabinets, and water baths. These documents are not just used by our own facilities but have been made available to the wider community to inform their purchasing decisions.

The largest area of spend for MRC's facilities is in lab consumables. In 2024-25, research was done to map environmental practice across the suppliers on the national framework which MRC uses to make such purchases. From this, an understanding of good and bad practice has been built, which will be used to inform the procurement of such frameworks in future.

5.4 Influence

The MRC programme aims to positively influence policy, decisions, and life science research generally, to be more environmentally sustainable. Demonstrating environmental considerations within governance procedures is becoming increasingly important to ensure that exposure to reputational, financial, and operational risk is lessened.

New guidance and protocols have been introduced within the way that senior and executive decisions are made within MRC to ensure environmental consideration is given, without impeding the delivery of world class science, as well as the way funded units and institutes report their environmental performance on an ongoing basis. Investments in infrastructure are similarly assessed for their environmental sustainability, with recommendations to lessen impacts made where appropriate.

Wherever possible, the programme aims to influence others to improvement environmental sustainability. At times this is by providing support, and others by agreeing common standards to which supply chain partners should be held. Much of the output of the programme is openly shared to provide such support, with ongoing work to improve the procurement standards of relevant goods and services across the UK.

5.5 Engagement

The programme published an engagement strategy in July 2024 to formalise the approach to engagement to ensure that the reach and audience was appropriate for the effort of undertaking our events, training, and communication programme[9]. Engagement is taking internally with MRC staff from head office and the institutes, and to the wider community.

The MRC environmental sustainability seminar series continues to be the key mechanism for sector-wide engagement. The seminars focus on shared challenges and best practices within life science research, with presentations being given by expert speakers, on the topics of culture and behaviour change (July 2024, London) and cold storage (November 2024, Bristol). The attendance of these seminars has grown in numbers of attendees from increasingly diverse disciplines over 2024-25, with the events being shaped by the feedback from the attendees to ensure that appropriate topics are covered to achieve highest impact.

8. MRC Environmental Sustainability Programme Impact Report (2023-24)
9. MRC Environmental Sustainability Engagement Strategy

The seminar series brings speakers on best practice from across the community

The addition to the programme of events of the inaugural conference showcasing the Research Outputs in Environmental Sustainability[10], held jointly with the NHS and NIHR in London in April 2024, increased the reach of the programme further. Over 250 people attended the event in person and online to hear presentations on topics including biobanking, reusable PPE, and sustainable prescribing.

A number of training resources were developed in 2024-25 to help to support staff from all backgrounds to embed environmentally conscious practice into their work.

The resources are designed to give different levels of detail, according to circumstances. These resources are to be used internally by MRC and also to be shared with the community for their own training programmes.

The training resources developed include a 40-minute e-learning module, a 1.5-hour long lab-based teaching module as a bolt-on to existing training courses for practical lab skills and research design, and a detailed programme of classroom-based resources to be taught by module over a number of weeks.

6. Updates from the Research Facilities

6.1 Laboratory of Molecular Biology

The past year has seen a large number of sustainability projects at the LMB. One area of focus that we are really excited about is decarbonisation of the building's gas-fired steam. The steam is required for specific lab equipment as well as for humidifying environments for laboratory animals. However, the steam distribution system is extremely inefficient, with up to 90% of the energy required to create the steam being lost during distribution around the building. We therefore plan to move from centralised plant to local electric steam generators for each room or item of equipment. This drastically increases the efficiency and allows us to move from burning non-renewable gas to renewable electricity for steam generation. This year we have installed an electric steam generator on one of our autoclaves and provided humidification to our fly rooms via local electric humidifiers. This will allow us to turn off the steam supply to one half of the building, reducing energy used for steam by 40%. The plan is to completely move to local electric steam generation at the LMB by 2027.

We are continuing to work on our reduced ventilation project in order to reduce the energy used to heat and cool replacement air in the building. We have already made vast reductions in energy use by reducing rates of replacement air out of hours in office and general laboratory spaces. We are now focusing on doing the same in specialist lab areas, as well as looking to make lab spaces where we have local exhaust ventilation (safety cabinets and fume hoods) work more efficiently.

10. MRC, NHS and NIHR conference on research outputs in environmental sustainability – UKRI

The LMB achieved LEAF gold in 2024. This was accomplished with a range of initiatives, communications, events and competitions to encourage a more sustainable way of working. Operations departments such as Media & Glasswash, Stores and Domestic Services, as well as the LMB restaurant, have also been encouraged to roll-out building-wide process changes to improve our environmental sustainability. One particular area of focus over the last year has been to further reducing the amount of clinical waste we dispose of, for example by introducing new recycling and reuse streams, encouraging reusable consumables, improving waste disposal awareness, and educating staff on changes they can make to experimental design to reduce consumable/reagent usage. Through these initiatives, we have achieved a one-third reduction in the amount of clinical waste disposed of at the LMB over the past three years, with a concurrent increase in the proportion of recycled waste. Clinical waste incineration has 10 times the carbon footprint of sending waste to recycling, so this hugely reduces the LMB's scope 3 emissions.

Work continues with our LED replacement project. Having already completed the transition of lamps to LED replacements at Ares and through the LMB plant areas, we are now exploring LED conversion of our occupied laboratory and office spaces. Over the next two to three years we hope to complete the transition to full LED to drive down our carbon emissions beyond the circa 50 tCO2e per year we're already saving.

We have put a lot of work into planning a robust strategy for decarbonisation of the LMB over the next six years and are really excited to put these plans into action.

6.2 Laboratory of Medical Science

November last year LMS Greening was awarded funding from NC3Rs to investigate the use of non-animal derived antibodies and aptamers in research. The funding from the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) is part of a significant investment from the Department for Science, Innovation and Technology (DSIT)[11] into the reduction of the use of animal-derived products and approaches in research. Reagents, such as antibodies or serums used for every day lab protocols, often include animal products or by-products, which contributes to the high resource usage associated with research institutes. Swapping to products which don't require animals for their production is just one way the LMS can lower its carbon footprint, while maintaining high standards in research. This project reflects the LMS's wider commitment[12] to reducing animals in research, both directly and indirectly. Significant barrier to adopting non-animal reagents is the resources and effort required for testing and optimization. Therefore, we have combined this project with internally funded graduate initiatives, providing bespoke product testing tailored to individual research needs over 6-12 months. This approach ensures direct input from our research groups, fostering trust in the results and ensuring that successful products will be incorporated into central protocols.

Use factors being:

1. Compare use of aptamers vs animal derived antibodies against His-tag
2. Compare use of aptamers vs animal derived antibodies vs non-animal derived antibodies for GFP epitopes
3. Anti-actin and anti-tubulin clones coupled to the human IgG1FcCatcher to make Ig-like molecule

The results due end of June, and we hope to have an event on the findings alongside suppliers involved in quarter three of this year.

Auto sash controllers have been installed to optimise our existing systems to reduce energy usage. In an effort to reduce energy consumption in our laboratories, we installed automatic sash controllers on all our fume hoods. These controllers are equipped with sensors that detect when a fume hood has been idle for three minutes, automatically closing the sash to minimize the volume of conditioned air being exhausted. This helps conserve both energy and operational costs while maintaining a safe working environment. The installation of the auto sash controllers was completed in March of this year, and we are pleased to report that the impact has been significant. Since implementation, we have already observed an 18% reduction in energy usage associated with our fume hoods, underscoring the effectiveness of this upgrade and reinforcing our commitment to sustainability and responsible lab management.

We are very pleased with the successful rollout of deionised water, our new chemical-free cleaning solution, now in full use across all surface cleaning operations at the LMS. With upcoming implementation on lab benches, we are excited to expand its benefits even further. Deionised employs an innovative 7-stage filtration process that reengineers water into a highly effective, chemical-free cleaner. The result is a streak-free, residue-free finish suitable for virtually all water-washable surfaces. At a time when chemical exposure and environmental impact are of increasing concern, we are proud to take meaningful steps toward sustainability. The method of removing dirt and contamination through mechanical action – without the use of harmful

11. £4.85M to accelerate the use of non-animal approaches in research | NC3Rs
12. Animals in research

chemicals – not only protects our team and facilities but also aligns with our broader commitment to reducing our environmental footprint. We look forward to continuing this transition and leading by example in responsible, effective cleaning practices.

6.3 Mary Lyon Centre at MRC Harwell

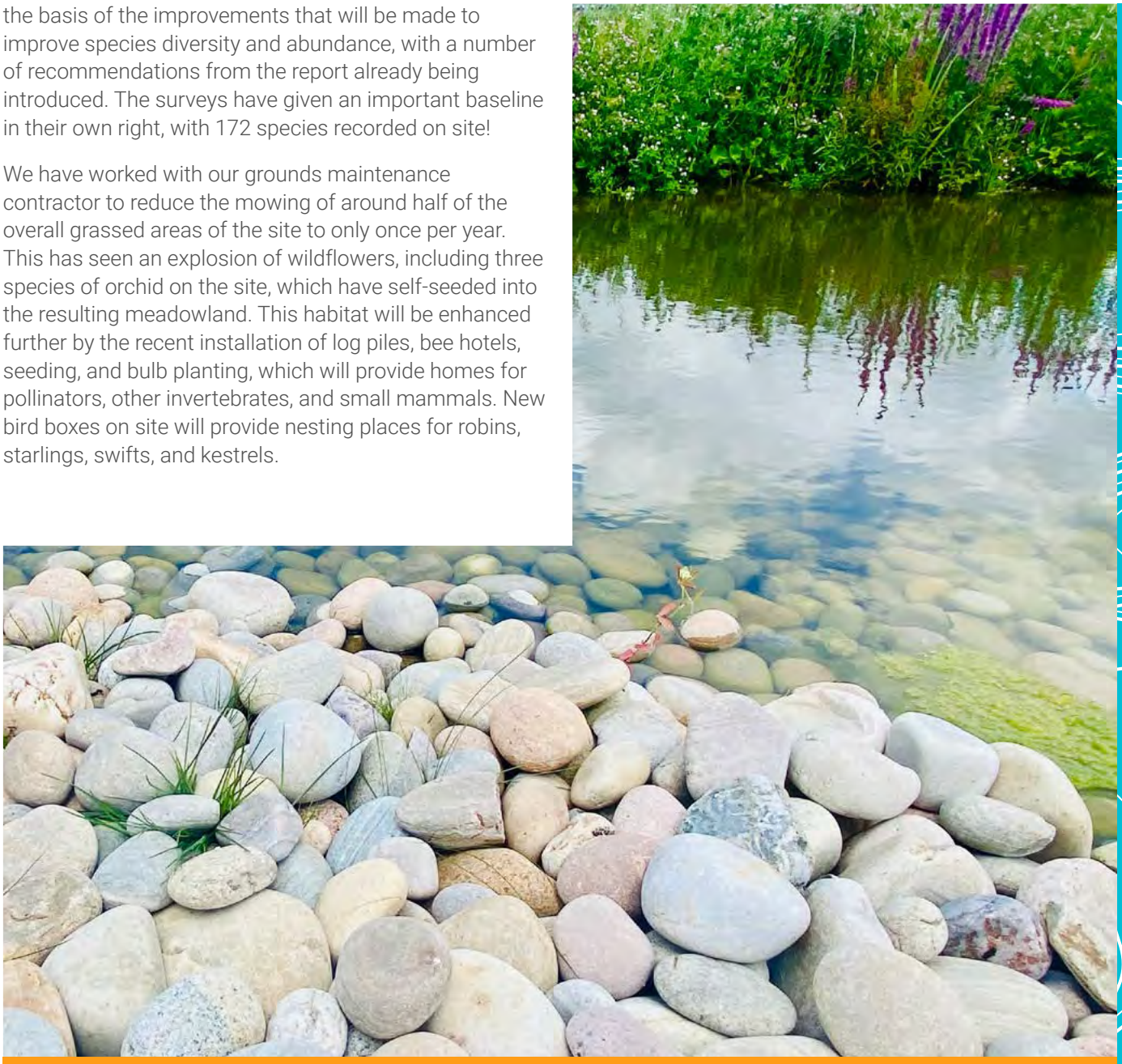
The past twelve months have been exciting at MRC Harwell, with big environmental sustainability projects starting to get underway, and with others in design. The Green Group, which was set up in late 2023, has evolved and started to deliver positive impacts across the facility.

Biodiversity has been a big focus on site this year. In response to the MRC biodiversity strategy, a nature recovery plan (NRP) was published in January, after almost 12 months of baseline surveys of vegetation, pollinators, and other invertebrates. The NRP gives the basis of the improvements that will be made to improve species diversity and abundance, with a number of recommendations from the report already being introduced. The surveys have given an important baseline in their own right, with 172 species recorded on site!

We have worked with our grounds maintenance contractor to reduce the mowing of around half of the overall grassed areas of the site to only once per year. This has seen an explosion of wildflowers, including three species of orchid on the site, which have self-seeded into the resulting meadowland. This habitat will be enhanced further by the recent installation of log piles, bee hotels, seeding, and bulb planting, which will provide homes for pollinators, other invertebrates, and small mammals. New bird boxes on site will provide nesting places for robins, starlings, swifts, and kestrels.

The biggest single biodiversity project was the construction of a large pond in the northwest of the site in January 2025. The pond has been planted with native aquatic and marginal planting, and it is hoped that it will attract amphibians, water birds, and invertebrates such as dragonflies and damselflies, as it matures.

Three large construction projects to decarbonise the estate were undertaken in 2024-25. The first of these was the roof replacement and insulation on Building 383. This is part of a wider decarbonisation project, which will ultimately see all of the roof, windows, and doors replaced, and external wall insulation applied to the whole building to make it ready for heat pumps to replace the gas boilers. The first two phases of roof upgrades, alone, will reduce emissions from the building by 30 tCO2e/a.



Pond constructed at Harwell

The early months of 2025 saw two solar PV systems, totalling 697kWp (around 1,600 individual solar panels!) of generating capacity, installed on the roofs of the Mary Lyon Centre and Advance Training Centre. These systems will reduce emissions from the two buildings by around 130tCO2e/a.

Both the solar PV and the fabric efficiency improvements are being designed into a decarbonisation plan that is aligned to the switch from gas to electrically fuelled heating, hot water, and steam provision. Much of the feasibility and design work to reduce demand and design the future air source heat pump systems has been undertaken over the past year. This is critical to the decarbonisation of the estate, with the first heating system, in Building 383 planned to be switched to heat pumps in 2027-28, with enabling work to be carried out in the run up.

Other feasibility and design work has included the planning for new electrically fuelled autoclaves, reducing the demand from individually ventilated cages, and feeding into the design of a BREEAM Excellent and net zero building for the new security lodge on site.

7. Reflections and Future Improvement

7.1 Reflections from 2024-25

The MRC environmental sustainability programme remains complex and multi-faceted, and the scale of the challenge to get to net zero by 2040, large. The key challenge remains shepherding limited resources to ensure the maximum impact to the organisation and the sector as a whole.

7.1.1 Transformation of Estates and Operations

At high level, the data on the key reporting metrics is now sufficient to accurately report emissions, energy, waste, water consumption, and business travel. Much of this was achieved through changes in the 2023-24 year, which has had the unfortunate consequence of masking much of the achievements made in 2024-25 (see Appendix A). However, in some cases, simply knowing these high-level metrics, without understanding the component parts of how that data is manifested, is not sufficient to allow targeted actions to be undertaken.

Some of this detail has been understood through the work undertaken on BMS and submetering, and water and biodiversity audits for some, though not all, of the buildings within the estate. It is least understood, and consequently most needed, when it comes to waste. Simply knowing the waste category or destination is not sufficient to make a targeted intervention to reduce or redirect that waste stream.

The biggest step forward this year is in the transformation of the estate to net zero. Whereas in 2023-24 a high-level understanding of the pathway to net zero was understood, the work undertaken with the facilities' estates teams in 2024-25 has developed this into a programme of works, with a high level of detail, respecting business continuity, reduced capital expenditure, and other systems boundaries. In some cases, the capital projects required to adhere to this programme have been started already.

Within the scientific operations, Gold LEAF has now been achieved across all sites. This is an enormous achievement from the facilities' environmental sustainability leads and those staff who have taken ownership of making improvements within their respective labs and should be applauded. There are a number of places where LEAF is not satisfactory to describe the environmental sustainability, notably animal facilities, which is a gap which is intended to be closed in 2025-26.

Glassware containing chemicals

7.1.2 Engagement, Influence, and Supply Chain

The programme has worked hard to ensure that the seminars and conferences have a good cross section of attendance from across the life science research sector and wider. An effort has been made to ensure that the topics chosen for the events have reflected sectoral need and requests, as well as their hybrid hosting and variety of geographical locations.

A variety of training types and materials have been developed for the sector in response to a need recognised in 2023-24. These have been well received and will continue to be improved and built upon to embed environmental practice within business as usual life science. The programme has worked to embed best environmental practice within MRC's governance, both within the decisions it makes and the infrastructure it builds and supports.

2024-25 was the first time where significant resource has been applied to MRC's supply chain. MRC's purchased goods and services are enormously varied in nature, so areas where the biggest internal impact can be realised have been prioritised. An improved, more consistent approach is required to ensure that the programme uses its resources efficiently to improve MRC's supply chain as a whole.

7.2 Future Improvements and Focus of the Programme

In response to those identified challenges, and new reporting requirements under GGC and the MRC estates strategy, the programme will focus on a number of areas. The MRC programme also supports the UKRI programme, and vice versa, and so there are a number of projects, of a cross-disciplinary nature, where efforts will be shared.

A more complete list of the projects intended to be undertaken in 2025-26 is shown in Appendix B.

7.2.1 Transformation of Estates and Operations

Projects relating to the design and installation of fabric efficiency, solar PV, air source heat pumps, and steam removal will all be undertaken in 2025-26 across a number of buildings within the estate; totalling in excess of 690 tCO2e/a or around 5.8% of emissions. Alongside this work, further monitoring, fault detection and diagnosis, and building and BMS optimisation are expected to achieve a further 600 tCO2e/a; around 5% of emissions. Not only will this work begin to reduce emissions immediately, but the transition of services from gas-fuelled to electricity will allow the net zero transition to be realised.

2025-26 is intended to be a year in which a greater granularity is gained on a range of environmental metrics, to compliment the work done previously on the end uses of energy within the estate. Much of the biodiversity survey work is now completed, with only those surveys restricted by seasonality still outstanding. From this, a programme will be developed to meet need to improve the habitats across the estate and improve species diversity and abundance.

Desktop and onsite waste and water audits will be understand the makeup of waste volumes and water end processes, as well as identifying opportunities for interventions to make improvements and efficiencies.

Before the end of 2025-26, a programmed schedule of works and interventions will be developed to ensure the greatest environmental impact against resource possible, up to the year 2030-31.

7.2.2 Engagement and Supply Chain

The environmental sustainability seminar series will continue, with the core events programmed biannually, in July and November. As well as the seminars, the joint NHS and NIHR conference will be held in October to showcase best practice across the three organisations and the health and research sectors as a whole. The programme will also work with other organisations to help support their work through events. An example of this is a research sector-wide event which will focus on supply chain and procurement in September to create momentum and organisation behind supplier environmental assurance tools.

The programme will lead UKRI's supply chain sustainability plans, to ensure that the organisation as a whole, is able to assess the environmental performance of their suppliers. This plan will also create the conditions to allow those within UKRI who are making the best decisions and providing tools and guidance, when purchasing goods and services.

8. Challenges and Future Activities

8.1 Challenges

Over the last twelve months, the pathway to achieving net zero through the transformation of the estate has refined and sequenced with the input of the research facilities' teams. However, with some notable exceptions, this has remained a largely paper exercise. The changes required, particularly as this programme of works progresses into changing critical operational systems, will require appropriately resourced teams to deliver the projects.

GGC has previously set the baseline of the MRC's targets at a 2018-19 date. The latest iteration of GGC will use 2025-26 as a baseline, as well as introducing enhanced requirements. This new baselining will require significant survey and audit work to be undertaken concerning waste, water consumption, travel, biodiversity, and procurement.

The major challenge remains the focus of limited resources to gain the highest impact. The programme encompasses internal and external-facing activities, and all aspects of environmental sustainability, from biodiversity to energy management, with everything in between. In order to tackle environmental sustainability holistically across research, it is essential that it is embedded within research culture. This is a big task, but the work being done by the programme is supporting researchers by lowering the ask to incorporate sustainability considerations at all stages of the research cycle, and promoting a message that this strengthens research quality.

Whilst some of the gaps in knowledge from the research institutes which were identified by the Landscape Review[13] can be closed with the training and resourced developed during 2024-25, there still remains much to be done to embed environmental sustainability within research culture.

8.2 Future Activities

The programme team will continue to work with the research facilities to ensure that they are supported to deliver the programme of works required to achieve emissions reductions in line with the carbon budget.

The response to the enhanced GGC requirements will entail designing and agreeing programme of work to achieve reductions in areas outside of carbon emissions. This will require undertaking and/or commissioning audit work to close gaps in data, particularly in waste and recycling, and water consumption. Much of the audit work on biodiversity is underway. The recommendations from the nature recovery plans to be taken forward into plans will be agreed with the facilities in scope.

The GGC requires that MRC has a sustainable procurement plan in place. This plan would have been produced, even in the absence of this requirement, and work is already underway to map the MRC's supply chain and areas where the greatest impact through purchasing activities can be made. This project will require market testing via survey and workshop, the further creation of specifications, and ultimately the implementation of a procurement tool for assessing suppliers' environmental sustainability.

Although training has been developed in 2024-25 as an e-learning module and two classroom or lab-based training modules, work is required to ensure delivery of the training to relevant staff. There will be additional work undertaken to create training modules for technical staff in research environments, working with partners from other research organisations. We will continue to support the work of the UKRI environmental sustainability programme by contributing time and resources to SPARK Hub for use by our own facilities, as well as the rest of the community.

13. MRC Landscape Review Transitioning to environmentally sustainable life science – challenges and opportunities

9. Conclusion

The path to achieving net zero across the MRC estate is becoming increasingly well-defined, thanks to continued collaboration between the programme team and research facilities. However, the transition from planning to implementation marks a critical turning point. The next phase will involve the transformation of essential operational systems, requiring appropriately skilled and adequately resourced teams to deliver meaningful progress.

The revised GGC requirements, with their new 2025-26 baseline and broader environmental focus, present both a challenge and an opportunity. Meeting these standards will demand substantial audit work and the development of robust programmes addressing waste, water, biodiversity, travel, and procurement. These efforts must be prioritised to ensure resources are directed towards actions with the greatest environmental impact.

Embedding environmental sustainability more deeply into research culture also remains a priority. While progress has been made through training and new resources, further work is required to close knowledge gaps and ensure staff are equipped to contribute meaningfully to the MRC's sustainability objectives.

Looking ahead the programme will continue to focus on supporting facilities to deliver emissions reductions in line with the carbon budget. There is also a growing emphasis on areas beyond carbon, including biodiversity, procurement, and water use. Key initiatives, such as the development of a sustainable procurement strategy and the delivery of tailored training for technical staff, will be essential in driving systemic change.

The success of the programme will depend not only on continued collaboration within the MRC but also on active engagement with the wider UKRI community. By contributing to shared platforms such as the SPARK Hub, MRC can ensure its work benefits both its own facilities and the broader life science research community.

In summary, while challenges remain, particularly around capacity, data, and culture change, the programme is well positioned to meet them. The year ahead will be one of focused delivery, building on the strategic groundwork already laid, and accelerating progress towards a more sustainable research estate.

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Appendix A – Missing Data Record

As described in section 4, a number of missing data from the reporting in 2023-24 has the effect of showing rises in emissions in 2024-25. Although this is frustrating, as it has the effect of masking progress and reductions, it is positive from the point of view of showing that the data gaps first identified over a year ago, and now being filled.

The table below is not intended to be an exhaustive list of data uncertainties, but rather to show those material errors in 2023-24 which have resulted in reported emissions rising. The exclusion of just three data lines, or their remaining the same as last year, would result in an approximately 7% reduction in total emission in 2024-25 versus 2023-24, rather than the 12% increase that was actually reported.

Without the single site's data gap in the waste figures in the previous year, the waste figure would still likely have remained higher in 2024-25 than 2023-24; however, they would have likely shown an increase of only 1.4%, rather than the 17.2% increase that was actually reported.

Metric / Location	Reason	Estimated effect in reporting
Gas Consumption, MLC	Gas logger reporting data reads incorrectly or not at all in 2023-24	Responsible for a 10.1% increase in overall emissions 2024-25
District Heating, LMS	Not recorded in 2023-24	3.5% increase in emissions
Electricity, MRS	Not recorded until 2024-25	3.5% increase in emissions
Total Waste, MLC	Data gaps in 2023-24 led to significant underreporting	13.5% increase in total MRC tonnage

Appendix B – Emissions Changes from 2023-24 to 2024-25

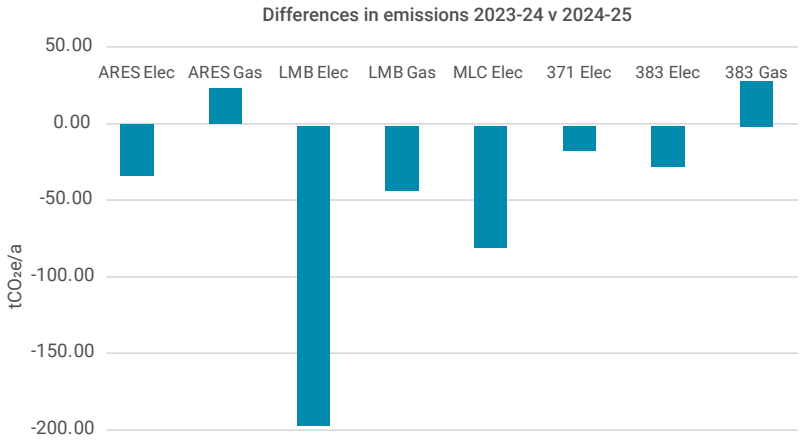
Appendix A describes the reported increase in emissions in 2024-25 attributed to gaps in the reported energy data in 2023-24. Not all sites suffered from this missing data in 2023-24 and this appendix examines changes which have come about due to changes in building performance.

Figure 7 shows the increases and decreases in emissions associated with energy consumption from sites' meters with complete data sets throughout the 2023-2025 period.

The largest reduction in emissions at a single site is at LMB where initiatives have included reducing ventilation and continuous commissioning of plant, the further rollout of low-energy LED lighting, and removing some sterilisation and humidification processes from the centralised steam circuit.

The single largest percentage reduction in any fuel is at Building 371, Harwell; where making a reduction in chilling in the onsite data centre is among that reasons that electricity emissions have reduced by 34.3%.

Figure 7: Differences in emissions from meters with no missing data



The largest increase in emissions against any meter are those from gas at Building 383, Harwell. Here, an increase of 29.6tCO2e was recorded (and increase of 10.8%). This is likely largely due to the increased utilisation of the building, with a significant proportion of the building having been untenanted during 2023-24.

The overall reduction in emissions the sites with complete data throughout 2023-25 is 341tCO2e or a reduction of 4.2%.

Appendix C – Projects List 2025-26

Section 8.2 gives a number of key activities to achieve the aims of the environmental sustainability programme. Below is a table detailing the full list of activities scheduled for 2024-25 at time of writing.

Activity	Description
Rooftop solar PV	Solar panels to Building 383, Harwell
Fabric efficiency	Flat roof insulation and high efficiency windows and external doors
Air Source Heat Pumps	To replace gas-fuelled domestic hot water and industrial hot water within LMB
Humidification design	Design of electrical-fuelled humidification to enable removal of centralised gas-fired steam circuits
RO Plant Installations	To provide infrastructure to support electrically-fuelled humidification and steam sterilisation
Internal environment and BMS optimisation	Implementation of changes to air changes, HVAC strategies, and setpoints
Steam decarbonisation	Transitioning sterilisation and process loads from gas-fuelled steam systems to electricity
Landscape improvements	Improvements to habitats across the estates through planting and provision for biodiversity
Biodiversity Plan	Finalising outstanding NRPs and forward programme of projects and interventions to improve biodiversity to March 2031
Water Plan	Desktop and onsite audits to identify interventions to be programmed to March 2031
Waste Plan	Desktop and onsite audits to identify interventions to be programmed to March 2031
Training	Development of technical leaders training. Distribution of training developed in 2024-25
Seminar series	Continuation of environmental sustainability seminar series, with events in July and November 2025
Supply chain Plan	Development of protocols, tools, and guidance to be used when undertaking procurement exercises and contract management
LED Lighting Replacement	Replacement of fluorescent fittings with LED

Table of Figures

Glossary

The following terms and acronyms are used within this impact report:

CO2e – carbon dioxide equivalent. A levelized measure of all greenhouse gases to ease reporting

EV – pure electric vehicle

GGC – Greening Government Commitment (2020-2025)

GHG – Green House Gases

LEAF – Laboratory Efficiency Assessment Framework

LMB – The Laboratory of Molecular Biology, Cambridge

LMS – Laboratory of Medical Science, London

Metres cubed (m^3) – 1,000 litres, standard measurement of commercial water volumes

MLC – The Mary Lyon Centre at MRC Harwell, Oxfordshire

MRC – The Medical Research Council

Net zero carbon – a state where the emissions of an organisation are in balance with those emissions offset

Scope 1 carbon emissions – direct emissions arising from processes controlled by MRC

Scope 2 carbon emissions – indirect emissions arising through the usage of power or heat by MRC facilities

Scope 3 carbon emissions – emissions created by the goods and services purchased by MRC

ULEV – Ultra low emissions vehicle, as defined in GGC

UKRI – UK Research and Innovation, the non-governmental department under which MRC sits

Medical Research Council

If you are reading this as a non-UKRI employee, and wish to view any of the references which are not publicly accessible; or have any other queries related to the report, please contact sustainableresearch@mrc.ukri.org

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