Volume 3, Chapter 20: Waste

Appendices

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Appendix 20.1

Draft Resources management plan
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1. **INTRODUCTION**

1.1 **Purpose and structure**

1.1.1 The Development Consent Order (DCO) Project would result in an increased demand for energy, water and material resources (collectively referred to as ‘resources’) for both the construction and operational phases. This would result in the generation of emissions, waste water and waste arisings, both solid / liquid.

1.1.2 This document, the draft Resource Management Plan (RMP), has been prepared to ensure that appropriate environmental measures for sustainable resource and waste management are secured for the DCO Project. It addresses energy, water and waste resources.

1.1.3 A material resources section will be developed for the RMP as part of the Environmental Statement (ES). The production, sourcing, transport, handling, storage and use of materials to be used in construction of the DCO Project has the potential to affect the environment adversely. The beneficial re-use of materials arising on site during construction will prevent these materials from becoming wastes that would require off-site transport and disposal and reduce the use of finite resources obtained from elsewhere.

1.1.4 The RMP is a live document that will be updated and refined as the DCO Project design progresses, to guide and influence the inclusion of effective resource management measures. This PEIR version is a draft which will be finalised for the ES.

1.1.5 The draft RMP has been produced with regard to the requirements of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (‘The EIA Regulations’), the Airports National Policy Statement (ANPS) and the National Networks National Policy Statement (NNPS). The relevance of each of these to the DCO Project is explained in general terms in Chapter 2: Legislative and policy overview of the PEIR.

1.1.6 A Scoping Report requesting a Scoping Opinion was submitted to the Secretary of State, administered by the Planning Inspectorate on behalf of the Secretary of State on 21 May 2018. The need for an RMP was highlighted in the Scoping Opinion:

“Mitigation and enhancement for waste and resources management during construction is proposed to be set out in an overall CoCP, Resource Management Plan and contractor site waste management plans. A draft of the relevant plans used to inform the assessment including the Resource Management Plan should be provided as part of the ES.’ (Scoping Opinion, June 2018 ID-209)”
The structure of this draft RMP is shown in Table 1.1.

### Table 1.1 Draft RMP structure

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tr>
<td>Section 1 – Introduction</td>
<td>Sets out the purpose, structure and the need for the RMP. Outlines the relevant legislative and policy requirements which have informed the RMP and the wider context for producing an RMP. Sets out the circular economy framework for Heathrow’s approach to resource management.</td>
</tr>
</tbody>
</table>
| Section 2 – Energy resources | These sections each set out:  
  1. Introduction  
  2. Scope  
  3. Relevant policy and drivers  
  4. Heathrow’s vision and approach  
  5. Baseline and projected generation / consumption  
  6. Environmental measures  
  7. Monitoring measures. |
| Section 3 – Water resources |                                                                                                                                           |
| Section 4 – Waste resources |                                                                                                                                           |

### 1.2 Relevant legislation and policy to the RMP

1.2.1 There are three key documents which set out requirements that this RMP seeks to address:

1. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017
2. Airports National Policy Statement (ANPS) June 2018

1.2.2 Details of the how the relevant requirements from each of these have been addressed in the RMP are outlined in Table 1.2.

### Table 1.2 Relevant legislation and policies

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Relevance to the RMP</th>
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</table>
| Schedule 4 1(c), EIA Regulations | 1. A description of the development, including in particular:  
  (c) A description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used. | A general description is provided in the PEIR (Chapter 6: DCO project description)  
Specific characteristics of the development are addressed in Section 2 – Energy resources  
Section 3 – Water resources. |
<table>
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<tr>
<th>Name</th>
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<tr>
<td>Schedule 4 1(d), EIA Regulations</td>
<td>(d) An estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases).</td>
<td>An estimate of the quantities and types of waste is provided in Section 4 – Waste resources.</td>
</tr>
<tr>
<td>Paragraph 4.30, ANPS (subsection: Assessment principles; Criteria for ‘good design’ for airports infrastructure)</td>
<td>Visual appearance should be an important factor in considering the scheme design, as well as functionality, fitness for purpose, sustainability and cost. Applying ‘good design’ to airports projects should therefore produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction, and matched by an appearance that demonstrates good aesthetics as far as possible.</td>
<td>Design measures to promote sustainable built infrastructure are set out in; Section 2 – Energy resources, Section 3 – Water resources, Section 4 – Waste resources. Material resources will be addressed in a new section of the RMP within the Environmental Statement.</td>
</tr>
<tr>
<td>Paragraph 5.80, ANPS (subsection: Carbon emissions; Mitigation)</td>
<td>Mitigation measures at the construction stage should also be provided and draw on best practice from other major construction schemes, including during the procurement of contractors. Specific measures could include but are not limited to: [...] 3. Increased efficiency in use of construction plant 4. Use of energy efficient site accommodation 5. Reduction of waste, and the transport of waste 6. Construction site connection to grid electricity to avoid use of mobile generation 7. Selection of construction material to utilise low carbon options 8. Selection of construction material to minimise distance of transport.</td>
<td>Items 3, 4 and 6 are outlined in the draft Code of Construction Practice. Item 5 is covered in Section 4 – Waste resources. Items 7 and 8 will be addressed in a new Material resources section of the RMP within the Environmental Statement.</td>
</tr>
<tr>
<td>Paragraph 5.135, ANPS (subsection: Resource and waste)</td>
<td>Government policy on hazardous and non-hazardous waste is intended to protect human health and the environment by producing less waste and using it as a resource wherever possible is set out in Section 4 – Waste resources.</td>
<td>The approach to producing less waste and by using it as a resource wherever possible is set out in Section 4 – Waste resources.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
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<tr>
<td>management; Introduction)</td>
<td>possible. Where this is not possible, waste management regulation ensures that waste is disposed of in a way that is least damaging to the environment and to human health.</td>
<td></td>
</tr>
<tr>
<td>Section 5 – Waste resources Paragraph 5.137, ANPS (subsection: Resource and waste management; Introduction)</td>
<td>The targets for preparation for reuse and recycling of municipal waste (50%), and for construction and demolition waste (70%) set out by the Waste Framework Directive (2008/98/EC) should be considered ‘minimum acceptable practice’ for the construction and operation of any new airport infrastructure. Exceeding these targets if possible by aiming for exemplar performance in resource efficiency and waste management is recommended, to align with the principles of the EU Action Plan for the Circular Economy.</td>
<td>The ANPS targets will be met for each waste stream through the environmental measures set out in Section 4 – Waste resources; with an aspiration to exceed them. Heathrow’s proposed approach to adopting the principles of the Circular Economy is set out in Section 1.4.</td>
</tr>
<tr>
<td>Paragraph 5.140, ANPS (subsection: Resource and waste management; Introduction)</td>
<td>Waste generated and sent to landfill during construction and operation will be an ongoing management issue and will continue to have adverse effects on the environment into and beyond the operational phase. The principal adverse effects of sending waste to landfill include: 1. Permanent loss of materials from potential use higher up the waste management hierarchy 2. Reduction of local and regional landfill capacity</td>
<td>The proposed environmental measures to reduce the adverse effects on landfill are set out in Section 4 – Waste resources. The impacts on landfill capacity are assessed within the PEIR (Chapter 20: Waste).</td>
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<td>3.</td>
<td>Visual, noise, health and other nuisance impacts on local communities</td>
<td></td>
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<td>4.</td>
<td>Environmental degradation and pollution</td>
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<td>5.</td>
<td>Greenhouse gas emissions</td>
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<tr>
<td>6.</td>
<td>Environmental implications of transporting waste to landfill sites.</td>
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</tr>
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</table>

**Paragraph 5.141, ANPS**
(subsection: Resource and waste management; Applicant’s assessment)

The applicant should set out the arrangements that are proposed for managing any waste produced in the application for development consent. The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental, social and economic outcome when considered over the whole lifetime of the project.

The proposed waste recovery and disposal system, and measures to minimise the volume sent for disposal are set out in **Section 4 – Waste resources**.

**Paragraph 5.143, ANPS**
(subsection: Resource and waste management; Mitigation)

The applicant should set out a comprehensive suite of mitigations to eliminate or significantly reduce the risk of adverse impacts associated with resource and waste management.

Environmental measures to manage the risk associated with resource and waste management are set out in:
- **Section 2 – Energy resources**;
- **Section 3 – Water resources**; and
- **Section 4 – Waste resources**.

Material resources will be addressed in a new section of the RMP within the Environmental Statement.

**Paragraph 5.145, ANPS**
(subsection: Resource and waste management; Decision making)

The Secretary of State will consider the extent to which the applicant has proposed an effective process that will be followed to ensure effective management of hazardous and non-hazardous waste arising from all stages of the lifetime of the development. The Secretary of State should be satisfied that the process set out provides assurance that:

1. Waste produced will be properly managed, both onsite and offsite

The management techniques for waste, and steps to minimise the amount for disposal are set out in **Section 4 – Waste resources**.

An assessment of impacts on existing waste management infrastructure is set out in the PEIR (Chapter 20: Waste).
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<td>2.</td>
<td>The waste from the proposed development can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arising should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arising in the area.</td>
<td>This document fulfills the requirement to develop a Resource Management Plan.</td>
</tr>
<tr>
<td>3.</td>
<td>Adequate steps have been taken to ensure that all waste arising from the site is subject to the principles of the waste hierarchy and are dealt with at the highest possible level within the hierarchy.</td>
<td></td>
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<tr>
<td>Paragraph 5.146, ANPS (subsection: Resource and waste management; Decision making)</td>
<td>Where necessary, the Secretary of State will require the applicant to develop a Resource Management Plan to ensure that appropriate measures for sustainable resource and waste management are secured.</td>
<td></td>
</tr>
<tr>
<td>Paragraph 5.175, ANPS (subsection: Water quality and resources; Mitigation)</td>
<td>The applicant should make sufficiently early contact with the relevant regulators, including the Environment Agency, for abstraction licensing and environmental permitting, and with the water supply company likely to supply the water. Where the proposed development is subject to an Environmental Impact Assessment and the development is likely to have significant adverse effects on the water environment, the applicant should ascertain the existing status of, and carry out an assessment of, the impacts of the proposed project on water quality, water resources and physical characteristics as part of the environmental statement.</td>
<td>The proposed environmental measures to reduce the adverse effects on the water environment are set out in <strong>Section 3- Water resources.</strong> An assessment of impacts on water quality is set out in the PEIR (<strong>Chapter 21: Water Environment</strong>).</td>
</tr>
<tr>
<td>Paragraph 5.176, ANPS (subsection: Water quality and resources; Mitigation)</td>
<td>Any environmental statement should describe: 1. The existing quality of water affected by the proposed project</td>
<td>A description of water quality and existing water resources is set out in the PEIR (<strong>Chapter 21</strong>). The measures to manage on-site water resources and to mitigate for an increase in potential</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Relevance to the RMP</td>
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<tr>
<td>2.</td>
<td>Existing water resources affected by the proposed project and the impacts of the proposed project on water resources</td>
<td>Demand from the DCO Project, are set out in Section 3 – Water resources.</td>
</tr>
<tr>
<td>Paragraph 5.177, ANPS (subsection: Water quality and resources; Mitigation)</td>
<td>The applicant should assess the effects on the surrounding water and wastewater treatment network in cooperation with the relevant water and sewerage undertaker(s). It should also address any future water infrastructure needed for the preferred scheme, including for supplies and sewerage treatment, and the effects on the surrounding water and wastewater treatment network. This assessment would be based on the additional wastewater flows which would need to be treated at sewage treatment works and should be developed through liaison with the relevant water and sewerage undertaker(s).</td>
<td>An assessment of impacts on water infrastructure is set out in the PEIR (Chapter 21). The measures to mitigate the increase in water demand are set out in Section 3 – Water resources.</td>
</tr>
<tr>
<td>Paragraph 5.178, ANPS (subsection: Water quality and resources; Mitigation)</td>
<td>The impact on local water resources can be minimised through planning and design for the efficient use of water, including water recycling.</td>
<td>Water efficiency measures are set out in Section 3 – Water resources.</td>
</tr>
<tr>
<td>Paragraph 5.186, ANPS (subsection: Water quality and resources; Mitigation)</td>
<td>The Secretary of State will need to consider proposals put forward by the applicant to mitigate adverse effects on the water environment, taking into account the likely impact of climate change on water availability, and whether appropriate requirements should be attached to any development consent and / or planning obligations. If the Environment Agency continues to have concerns, and objects to the grant of development consent on the grounds of impacts on water quality / resources, the Secretary of State can grant consent, but will need to be satisfied that all reasonable steps have been taken by the applicant and the Environment Agency to try to resolve the concerns.</td>
<td>The measures to manage on-site water resources and to mitigate for an increase in potential demand from the DCO Project, are set out in Section 3 – Water resources.</td>
</tr>
<tr>
<td>Paragraph 4.29, NN NPS</td>
<td>Visual appearance should be a key factor in considering the design of new</td>
<td>The requirements of paras 4.29 NN NPS are consistent with those in paras</td>
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<tr>
<td>Name</td>
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<td>Relevance to the RMP</td>
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<td>(Subsection: Criteria for ‘good design’ for national network Infrastructure)</td>
<td>Infrastructure, as well as functionality, fitness for purpose, sustainability and cost. Applying ‘good design’ to national network projects should therefore produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction, and matched by an appearance that demonstrates good aesthetics as far as possible.</td>
<td>4.30 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 4.30 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.19 NN NPS (Subsection: Carbon emissions; Mitigation)</td>
<td>Evidence of appropriate mitigation measures (incorporating engineering plans on configuration and layout, and use of materials) in both design and construction should be presented. The Secretary of State will consider the effectiveness of such mitigation measures in order to ensure that, in relation to design and construction, the carbon footprint is not unnecessarily high. The Secretary of State’s view of the adequacy of the mitigation measures relating to design and construction will be a material factor in the decision making process.</td>
<td>The requirements of paras 5.19 NN NPS are consistent with those in paras 5.80 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.80 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.39 NN NPS (Subsection: Waste management; Introduction)</td>
<td>Government policy on hazardous and non-hazardous waste is intended to protect human health and the environment by producing less waste and by using it as a resource wherever possible. Where this is not possible, waste management regulation ensures that waste is disposed of in a way that is least damaging to the environment and to human health.</td>
<td>The requirements of paras 5.39 NN NPS are consistent with those in paras 5.135 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.135 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.40 NN NPS (Subsection: Waste management; Introduction)</td>
<td>Sustainable waste management is implemented through the ‘waste Hierarchy’: 1. prevention 2. preparing for reuse 3. recycling 4. other recovery, including energy recovery 5. disposal</td>
<td>The requirements of paras 5.40 NN NPS are consistent with those in paras 5.136 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.136 of the ANPS.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Relevance to the RMP</td>
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<tr>
<td>Paragraph 5.42 NN NPS (Subsection: Waste management; Applicant’s assessment)</td>
<td>The applicant should set out the arrangements that are proposed for managing any waste produced. The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental outcome.</td>
<td>The requirements of paras 5.42 NN NPS are consistent with those in paras 5.141 and 5.143 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.141 and 5.143 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.43 NN NPS (Subsection: Waste management; Decision making)</td>
<td>The Secretary of State should consider the extent to which the applicant has proposed an effective process that will be followed to ensure effective management of hazardous and non-hazardous waste arising from the construction and operation of the proposed development. The Secretary of State should be satisfied that the process sets out: 1. Any such waste will be properly managed, both on-site and off-site 2. The waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area 3. Adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where an alternative is the most sustainable outcome overall.</td>
<td>The requirements of paras 5.43 NN NPS are consistent with those in paras 5.145 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.145 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.44 NN NPS (Subsection: Waste management; Decision making)</td>
<td>Where necessary, the Secretary of State should use requirements or planning obligations to ensure that appropriate measures for waste management are applied.</td>
<td>The requirements of paras 5.44 NN NPS are consistent with those in paras 5.146 of the ANPS and their relevance to the RMP are therefore as set out in</td>
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<tr>
<td>Name</td>
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<td>Relevance to the RMP</td>
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<tr>
<td>Paragraph 5.221 NN NPS (Subsection: Water quality and resources; Applicant’s assessment)</td>
<td>Applicants should make early contact with the relevant regulators, including the Environment Agency, for abstraction licensing and with water supply companies likely to supply the water. Where a development is subject to EIA and the development is likely to have significant adverse effects on the water environment, the applicant should ascertain the existing status of, and carry out an assessment of the impacts of the proposed project on water quality, water resources and physical characteristics as part of the environmental statement.</td>
<td>The requirements of paras 5.221 NN NPS are consistent with those in paras 5.175 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.175 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.223 NN NPS (Subsection: Water quality and resources; Applicant’s assessment)</td>
<td>Any environmental statement should describe: 1. the existing quality of waters affected by the proposed project 2. existing water resources affected by the proposed project and the impacts of the proposed project on water resources 3. existing physical characteristics of the water environment (including quantity and dynamics of flow) affected by the proposed project, and any impact of physical modifications to these characteristics 4. any impacts of the proposed project on water bodies or protected areas under the Water Framework Directive and source protection zones (SPZs) around potable groundwater abstractions 5. any cumulative effects.</td>
<td>The requirements of paras 5.223 NN NPS are consistent with those in paras 5.176 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.176 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.225 NN NPS (Subsection: Water quality and resources;)</td>
<td>The Secretary of State will generally need to give impacts on the water environment more weight where a project would have adverse effects on the achievement of the environmental objectives.</td>
<td>The requirements of paras 5.225 NN NPS are consistent with those in paras 5.178 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.178 of the ANPS.</td>
</tr>
<tr>
<td>Name</td>
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<td>Relevance to the RMP</td>
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<tr>
<td>Applicant’s assessment)</td>
<td>objectives established under the Water Framework Directive.</td>
<td>this table above for para 5.178 of the ANPS.</td>
</tr>
<tr>
<td>Paragraph 5.226 NN NPS (Subsection: Water quality and resources; Applicant’s assessment)</td>
<td>The Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the Water Framework Directive (including Article 4.7) and its daughter directives, including those on priority substances and groundwater. The specific objectives for particular river basins are set out in River Basin Management Plans. In terms of Water Framework Directive compliance, the overall aim of projects should be no deterioration of ecological status in watercourses, ensuring that Article 4.7 of the Water Framework Directive Regulations does not need to be applied. The Secretary of State should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans, Shoreline/Estuary Management Plans and Marine Plans.</td>
<td>The requirements of paras 5.226 NN NPS are consistent with those in paras 5.186 of the ANPS and their relevance to the RMP are therefore as set out in this table above for para 5.186 of the ANPS.</td>
</tr>
</tbody>
</table>
1.3 The need for effective resource management

1.3.1 The DCO Project incorporates a range of activities as set out in Chapter 5: DCO Project Description, many of which would have a direct effect on resource usage, including:

1. Construction and operation of new infrastructure, including roads, buildings, hardstanding and landscaping etc
2. Maintenance, upgrade and demolition of physical assets
3. Maintenance and servicing of more planes
4. Accommodation and processing of more passengers.

1.3.2 Heathrow’s current approach to guiding resource management uses a model based on what it can ‘control’, ‘guide’ and ‘influence’. This is defined as;

1. Heathrow has direct control over the consumption of resources by its own operations and managed through Heathrow contracts
2. Heathrow guide the consumption of resources by third parties at Heathrow but are managed through Heathrow contracts
3. Heathrow can influence the consumption of resources by third parties at Heathrow and managed through independent contracts.

1.3.3 Heathrow 2.0 – Our plan for sustainable growth (Heathrow, 2018) is a strategy for sustainability leadership which seeks to go beyond simply reducing negative effects to delivering a positive impact that enables others to thrive as Heathrow grows. It sets out a series of ambitious objectives and goals, most relevant to this draft RMP being Objective 10: Zero Carbon Airport. Under this objective there are three goals related to energy, water and waste resources:

1. 10.1 Operate zero carbon airport infrastructure (buildings and other fixed assets) by 2050 with clear interim targets
2. 10.2 All the water Heathrow uses will come from sustainable sources by 2050 and we will work to enhance our local water catchment
3. 10.3 Deliver a resource efficient, zero waste airport and support a circular economy

1.3.4 These goals are supported by four policies that set out the framework to deliver the strategy (Heathrow, 2018):

1. Sustainability Policy
2. Environment and Energy Policy
3. Health and Safety Policy and
4. Sustainable Procurement Policy.

1.3.5 These policies apply to the management and operation of Heathrow and its subsidiaries. This includes the activities of all who work for and on behalf of Heathrow (including contractors, subcontractors and temporary staff).

1.3.6 The Water Resources section (Section 3) of this draft RMP covers the use of, and any increase in, water demand resulting from the DCO Project and proposes measures to manage these demands. It differs from Chapter 21 in the PEIR, which focuses on designing solutions to manage impacts on the local water environment resulting from the new on-site infrastructure.

1.4 The role of the circular economy

1.4.1 One of Heathrow’s goals is to support a circular economy, and this draft RMP will help to facilitate this. Heathrow has adopted the Ellen MacArthur Foundation\(^1\) definition of a circular economy:

*A circular economy is a restorative and regenerative system which aims to optimise the value and utility of products, components and materials at their highest utility and value at all times*.

1.4.2 A circular economy therefore seeks to make the most of natural resources, and reduce the consumption of energy, water and materials. This approach contrasts with the traditional linear economy model of ‘take, make, dispose’, as illustrated for waste management in Graphic 1.1

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\(^1\) The Ellen MacArthur Foundation [https://www.ellenmacarthurfoundation.org/circular-economy/overview/concept](https://www.ellenmacarthurfoundation.org/circular-economy/overview/concept) is the leading independent organisation in the UK that is championing the circular economy
1.4.3 The European Commission adopted a circular economy package in 2015 (see Table 4.1), including an action plan and revised legislative proposals on waste. It also sets binding recycling targets for municipal waste at member state level (55% by 2025 and 65% by 2035). Whilst there are currently no circular economy targets specific to individual organisations, the package creates a framework for the introduction of future legislative proposals and targets.

1.4.4 Adopting circular economy thinking at this stage of the DCO Project design process will allow Heathrow to strengthen its resolve to be a zero carbon and zero waste airport, together with building resilience to future policy changes. It will also bring business opportunities to create value through innovation, cost savings and market stimulation.

1.4.5 A circular economy requires system-level change and as such, it is not possible for a single entity, such as Heathrow, to achieve it alone. Heathrow recognises the need to engage widely with third parties, and, where possible, to identify specific partners with whom to develop key circular economy opportunities.
2. **ENERGY RESOURCES**

2.1 **Introduction**

2.1.1 The DCO Project would introduce more infrastructure, aircraft and passengers to Heathrow, which would in turn increase energy demands and their associated carbon emissions. At the same time, the Government’s Aviation Policy Framework outlines that the aviation sector must make significant contributions towards reducing carbon emissions\(^2\).

2.1.2 This RMP describes how the DCO Project can be designed and operated while keeping new energy demands low, contributing to reducing existing demands where possible, and curtailing overall energy consumption and associated carbon emissions.

2.1.3 To clarify the difference between demand and consumption as used in this document:

1. Demand refers to the basic need to be satisfied. For example, kilowatt hour (kWh) of heat required, kilometre (km) to be travelled

2. Consumption refers to the energy required to satisfy the demand. For example, kWh of gas or electricity to deliver so much heat, kWh of diesel or electricity to travel so far

3. Energy consumed to satisfy a given demand is dependent on the efficiency of the supply technology. Therefore, changing the supply technology will change the energy consumption, even if the demand is unchanged.

2.1.4 Guidance on energy use during construction is covered in the draft CoCP.

2.2 **Scope for energy resources**

2.2.1 Energy resources used by Heathrow and third parties for the operation of ground-based functions at Heathrow Airport are:

1. Electricity

2. Gas, fuel oil and biomass for heating

3. Petrol, diesel, and ultra-low sulphur gas (ULSG, also known as red diesel) for airside transport

4. Jet fuel for auxiliary power unit (APU) use by aircraft on stand.

---

Energy that is purchased by Heathrow for its own use, or purchased through, or from Heathrow by third parties is included. Energy purchased by third parties, from third parties is excluded, as this energy is not visible to Heathrow.

Third-party energy use at Heathrow Airport is often outside Heathrow's direct control (see paragraph 1.3.2), and therefore this energy use is identified separately from energy usage by Heathrow. However, Heathrow often has considerable power to guide and influence, e.g. heat supply to retail tenants is delivered by Heathrow systems, fixed electric ground power (FEGP) and pre-conditioned air (PCA) connections are provided by Heathrow for aircraft on most stands, and Heathrow approve vehicles for airside use through provision of airside vehicle passes.

### Relevant policy and legislative drivers

2.3.1 Many international, European and national policies relevant to energy resources have no direct implication for individual UK businesses; rather, they provide targets for combined reductions in carbon emissions at a national level. For example, the UK Climate Change Act 2008 commits the UK to an 80% reduction in carbon emissions by 2050 against a 1990 baseline, but has no explicit targets for Heathrow or any other individual company.

2.3.2 The Climate Change Act and international agreements do, however, create an environment where businesses can choose to contribute to carbon emission and energy use reductions ahead of legislative requirements for reasons of corporate social responsibility and preparedness for future legislative change.

2.3.3 A summary of the key legislation and policy that are applicable to energy resource management for the DCO Project are listed in the Table 2.1. These relate specifically to energy management and are in addition to those drivers set out in Section 1.2.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Relevance to Heathrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part L of the Building Regulations</td>
<td>Part L of the Building Regulations sets minimum energy consumption and carbon emission standards for regulated energy consumption in new and refurbished buildings.</td>
<td>Compliance with the Building Regulations is a legal requirement for all buildings, including the DCO Project.</td>
</tr>
<tr>
<td>Climate Change Levy (CCL)</td>
<td>A Government imposed tax on energy delivered to non-domestic users, used to reduce greenhouse gas emissions and improve efficiency of energy use.</td>
<td>Heathrow pays the CCL and reduced carbon emissions will reduce amount due.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Relevance to Heathrow</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Energy Saving Opportunity Scheme (ESOS)</td>
<td>Part of the EU’s Energy Efficiency Directive and mandates that every four years large non-public organisations in the UK carry out a comprehensive assessment of energy use across all areas of operation. The aim is to identify energy efficiency opportunities and reduce overall demand. There is no obligation to act on the recommendations.</td>
<td>Heathrow is obliged to carry out this assessment and it could be used to inform future efficiency opportunities.</td>
</tr>
<tr>
<td>The London Plan</td>
<td>Includes expectations relating to the energy performance of all new buildings in Greater London in policy 5.2 (Minimising carbon dioxide emissions).</td>
<td>While the ANPS and NN NPS provide the primary policy framework for the DCO Project, the London Plan, is an important and relevant consideration because the DCO Project falls partially within Greater London.</td>
</tr>
<tr>
<td>The draft new London Plan</td>
<td>Policy SI2 (Minimising greenhouse gas emissions) of the draft new London Plan includes a requirement that a 35% reduction in carbon emissions beyond the minimum requirements of Part L of the building regulations be delivered on site, and all major developments in London be zero carbon from 2019.</td>
<td>When it replaces the current adopted London Plan (above) the provisions of the draft London Plan will be an important and relevant consideration.</td>
</tr>
<tr>
<td>Renewable Heat Incentive (RHI)</td>
<td>A financial incentive to increase the use of renewable heat. Technologies that qualify include biomass, heat pumps and deep geothermal.</td>
<td>Heathrow could claim RHI with a compliant heat pump installation.</td>
</tr>
</tbody>
</table>

### 2.4 Heathrow’s vision and approach to energy resources

#### 2.4.1 Heathrow has outlined its vision for sustainable energy resources management in Heathrow 2.0 - Goal 10.1 Operate zero carbon airport infrastructure (buildings and other fixed assets) by 2050 with clear interim targets.

#### 2.4.2 This goal is supported in Heathrow 2.0 by underlying strategies and targets that include references to energy efficiency and use of low carbon energy.

#### 2.4.3 Heathrow is making progress towards the zero carbon goal through the purchase of 100% renewable electricity. However further progress towards the target will
require phasing out of all on-site combustion, including from heat generation, airside vehicles and aircraft on stand. This is because combustion, by its very nature, generates carbon emissions.

2.4.4 Heathrow has invested in an ongoing programme of energy efficiency works to reduce energy demand from the existing airport. Heathrow is also purchasing green gas and has on-site generation through a biomass combined heat and power (CHP) plant and photovoltaic (PV) arrays.

2.4.5 Heathrow will continue to use its powers to enable and encourage energy efficient choices. For example, Heathrow has plans to implement an airside ultra-low emission zone (ULEZ) by 2025.

2.4.6 The approach to energy resources management defined in this RMP responds to Heathrow’s Goal 10.1, while following the priorities of the energy hierarchy; to reduce demand, supply efficiently and generate renewably, in that order, as shown in Graphic 2.1. For the DCO Project these would be delivered through the following actions:

1. Demand reduction achieved through highly efficient new buildings and services

2. Energy supply efficiency improved through adoption of heating / cooling networks, and electrification of heating, airside transport and on-stand aircraft activities

3. Renewable generation realised through adoption of photovoltaics for power, and ground and water source heat pumps for heat.

Graphic 2.1: Hierarchy for energy resources management
2.4.7 Reducing energy demand is the foundation of the energy hierarchy because it reduces the need to supply energy in the first place. As such it reduces both energy consumption and the associated energy costs.

2.4.8 Electrifying energy supplies offer inherent efficiency savings, reducing both energy consumption and on-site combustion, with associated benefits for local air quality. Purchase of renewably generated electricity would remove carbon emissions associated with Heathrow’s electricity consumption.

2.4.9 It is important to note that while plans to electrify energy sources would result in reduced consumption of some energy sources (e.g. diesel for vehicles, jet-fuel for APUs), it would also result in increased consumption of others, primarily electricity (e.g. electricity for vehicles, electricity for FEGP and PCA).

2.5 **Baseline and projected energy consumption during operations**

2.5.1 In 2017 Heathrow used energy in the following ways:

1. Electricity for buildings, including mechanical plant, people movement (lifts, escalators, travellators), lighting, baggage processing, IT equipment, display screens, and other plug-in loads
2. Electricity for electric vehicle charging
3. Power for on-stand aircraft services through FEGP and PCA
4. Biomass for a CHP plant
5. Gas and fuel-oil for heating
6. Diesel, petrol and ULSG for airside vehicles and
7. Jet fuel for APUs for on board power and heating/cooling/ventilation services.

2.5.2 Total energy consumption in 2017 at Heathrow was 1.15TWh. A breakdown is provided in [Graphic 2.2](#).
The 2017 terminal floor areas, passenger and air transport movement (ATM) numbers were used, together with 2017 energy consumption figures, to establish Heathrow specific energy demand benchmarks for existing buildings and services.

These demand benchmarks were used to project future energy demands and energy consumption for the DCO Project. These projections are shown in Graphic 2.3.
The DCO Project increases Heathrow’s energy demand. **Graphic 2.3** shows the estimated additional energy demand of the DCO Project on top of the demand of the existing airport. Energy demand closely follows the increase in passenger and flight numbers that follows the opening of the third runway and associated terminal buildings.

With the environmental measures outlined in this RMP in place, the effect of the DCO Project on energy resources would be a reduction in consumption of gas, diesel and jet-fuel, and a corresponding increase in electricity consumption. Overall total energy consumption is projected to fall, despite increased demand, due to the increased efficiency of energy supply resulting from the electrification of heating, transport and on-stand activities.

The data represented in the previous chart and which underpins the energy projections presented in the RMP is preliminary and subject to change.

**2.6 Environmental measures**

Without management of energy resources, the DCO Project could lead to a substantial increase in Heathrow’s energy consumption.

This section lists the energy management measures that are incorporated in the DCO Project.

Measures to reduce energy consumption during construction are addressed in the draft CoCP.
2.6.4 Energy demand and consumption would be reduced through the following measures, which are grouped under five headings:

1. Building energy efficiency:
   a. Ambitious energy efficiency for buildings built for the DCO Project would include, where reasonably practicable, passive design measures to reduce the need for mechanical and electrical systems in new buildings
   b. Ambitious energy efficiency for buildings built for the DCO Project would include, where reasonably practicable, highly efficient equipment and system choices and advanced monitoring and control systems
   c. Ambitious energy efficiency for buildings built for the DCO Project would include adoption of operational procedures that act to maintain efficient building operation over time.

2. Electrification of heat supply:
   a. Heathrow will develop site-wide heating and cooling networks, with heat supplied from water and ground sources via heat pumps, to capture waste heat and coolth for reuse and to deliver efficient heating and cooling to new buildings associated with the DCO Project, where reasonably practicable
   b. Heathrow will incorporate thermal storage into heating and cooling systems built or extended for the DCO Project, where reasonably practicable, and where such storage provides system resilience and contributes to ambitious energy efficiency performance of heating and cooling systems.

3. Electrification of aircraft activities on stand:
   a. Heathrow will provide FEGP for parked aircraft on new pier served and remote stands. This will minimise the need for aircraft to use their APUs whilst on stand
   b. Heathrow will provide PCA for new aircraft stands, where there is a clear business case and environmental benefit, given the intended occupancy of the stand
   c. In addition to providing infrastructure to facilitate the adoption of operational efficiency measures, Heathrow will continue to implement further operational measures to reduce aircraft emissions on the ground. Heathrow will work with NATS and airlines to increase the application of reduced engine taxiing and reduced APU use and ensure that the airfield operates efficiently. This includes use and enforcement of appropriate operating standards for airlines.

4. Electrification of airside vehicles:
a. Heathrow will provide infrastructure to facilitate the use of low emission airside equipment, such as electric vehicles. This includes for example, the provision of charging points within GSE compounds

b. Heathrow will develop and implement an ultra-low emissions zone for airside vehicles by 2025, to improve the emissions performance of the airside vehicle fleet.

5. Renewable generation:

a. Heathrow will incorporate solar power generation of roofs and façades of buildings built for the DCO Project, where reasonably practicable and consistent with other sustainable design priorities

b. Heathrow will harvest heat from local ground and water sources to supply heat via the heat network to buildings built for the DCO Project, where reasonably practicable

c. Heathrow will capture waste heat and coolth in the appropriate heating or cooling network, for reuse, where reasonably practicable.

2.6.5 Many of these management measures are detailed and specific and cannot be applied to the design of the DCO Project at the preferred masterplan stage.

Summary of approach

2.6.6 An overview of the energy resource management components that would be deployed is provided in Graphic 2.4.

Graphic 2.4: Proposed approach to energy resources for the DCO Project
2.6.7 The location of the energy resource assets is flexible and under review. These will be finalised during later design stages.

2.7 Monitoring measures

2.7.1 Energy consumed in the operation of Heathrow is not fixed, i.e. it changes during the life of a building or a service. Many of the measures previously listed are not actions that take place in one step.

2.7.2 Therefore, it is important to monitor progress on delivering the environmental measures as previously described to ensure that continual progress is made to reduce both energy demand and consumption associated with the operation of Heathrow Airport.

2.7.3 ISO 50001 – Energy Management is an international standard that supports organisations to use energy more efficiently through the development of an energy management plan. Heathrow has implemented an ISO 50001 compliant system for energy management, is certified as such and is committed to maintaining this certification. Continued certification to this standard will ensure that Heathrow continues to demonstrate best practice in monitoring energy throughout the DCO Project.
3. WATER RESOURCES

3.1 Introduction

3.1.1 There would be an increase in water demand at Heathrow following construction of the DCO Project. This section of the RMP presents the approach for managing the increase in demand on water resources arising from the increase in passenger numbers and aircraft movements.

3.2 Scope for water resources

3.2.1 Heathrow directly manages water resources used in its own operational activities, which includes:

1. Administrative functions
2. Operational functions
3. Terminal areas
4. Cleaning and hygiene purposes
5. Landscape and irrigation
6. Firewater usage.

3.2.2 In addition, Heathrow is responsible for water resource utilisation and wastewater generated within its buildings (including by tenants connected to internal building plumbing services), arriving and departing aircraft, cargo operations, and some external third party uses, such as London Underground and some hotels. It is recognised that third party water use is often not monitored and is outside Heathrow’s direct control (see paragraph 1.3.2). However, Heathrow does have an element of influence through tenancy agreements and provision of services.

3.2.3 The water demand uses as previously outlined can be met from a combination of the following sources:

1. Potable water (i.e. drinking quality water)
2. Borehole water
3. Rooftop Rainwater
4. Surface Rainwater
5. Greywater (i.e. lightly used water from hand basins and showers)
6. Blackwater (i.e. used water that includes outflows from WCs).
3.2.4 The RMP also takes into consideration the wastewater generated from the on-site uses and discharged into on-site or off-site drainage systems.

3.2.5 The guidance on water use during construction are covered in the draft CoCP.

3.3 Relevant policy and legislative drivers

3.3.1 There are no legislative drivers on water efficiency, leakage reduction or water resource management on consumers of water. However, a water utility may promote water efficiency through the planning process to meet their regulatory obligations on increasing water efficiency in their service delivery areas.

3.3.2 The full list of key legislation and policies that have a direct or indirect bearing on the water resources are listed in Table 3.1. These relate specifically to water management and are in addition to those drivers set out Section 1.2.

Table 3.1 Water related legislation and policies

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Relevance to Heathrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK legislation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Resources Act 1991</td>
<td>Overarching regulation governing water resources and concerning prevention and mitigation of environmental impacts</td>
<td>Sets requirements on water use, water abstraction and discharges.</td>
</tr>
<tr>
<td>Water Act 2014</td>
<td>The reformed the water industry to make it more innovative and responsive to customers and to increase the resilience of water supplies to natural hazards such as droughts and floods.</td>
<td>Sets requirements for water abstraction, which is relevant due to on-site water abstraction for non-potable uses.</td>
</tr>
<tr>
<td>Standards, guidance and measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional policy drivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The London Plan</td>
<td>Water Efficiency (SI 5) mandates that water efficiency in new commercial buildings should to achieve BREEAM excellent Drainage Hierarchy (SI 13)</td>
<td>While the ANPS and NN NPS provide the primary policy framework for the DCO Project, the London Plan, is an important and relevant consideration in these areas</td>
</tr>
</tbody>
</table>
### 3.4 Heathrow’s vision and approach to water resources

#### 3.4.1 Heathrow has outlined its vision for sustainable water resources management in Heathrow 2.0 - Goal 10.2: All the water Heathrow uses will come from sustainable sources by 2050 and we will work to enhance our local water catchment.

#### 3.4.2 This goal is supported in Heathrow 2.0 by underlying strategies and targets that include references to water efficiency and use of non-potable water.

#### 3.4.3 Heathrow intends to achieve these goals through the implementation of the initiatives outlined in this section. Achievement of Heathrow’s long-term goals will require innovation in water efficiency measures. It is anticipated this will be stimulated by increasing water efficiency standards and sustainability rating schemes.

#### 3.4.4 The approach to water resource management defined in this RMP responds to Heathrow’s Goal 10.2, while following the priorities of the water hierarchy, as shown in Graphic 3.1:

1. Embed leading edge water efficiency thinking in the design of new infrastructure
2. Reduce total and potable water consumption
3. Maximise use of renewable non-potable water sources to meet non-potable demands
4. Reduce leakage rate across the Airport

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<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Relevance to Heathrow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mandates a management hierarchy for capture and local use of rooftop rainwater and surface rainwater. Greenhouse Gas (GHG) Emissions (SI 2) should use less energy during construction and operation. Indirect impact from water use.</td>
<td>because the DCO Project falls partially within Greater London rating.</td>
</tr>
<tr>
<td>The draft new London Plan</td>
<td>The draft new London Plan retains the targets set in the current London Plan.</td>
<td>When it replaces the current adopted London Plan (above) the provisions of the draft London Plan will be an important and relevant consideration.</td>
</tr>
</tbody>
</table>
3.5 Baseline and projected water generation / consumption during operation

3.5.1 Table 3.2 outlines the end uses of water, and corresponding Heathrow facilities, that have been considered.

Table 3.2 Facility type and end uses for water

<table>
<thead>
<tr>
<th>Facility</th>
<th>Example of end uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>Toilets, urinals, bathroom and kitchen taps, dishwashers</td>
</tr>
<tr>
<td>Office Building</td>
<td>Window cleaning, interior plant watering, toilets, urinals, taps</td>
</tr>
<tr>
<td>Ground Transportation</td>
<td>Vehicle washing</td>
</tr>
<tr>
<td>Fire and Police Stations</td>
<td>Fleet vehicle washing, fire suppression</td>
</tr>
<tr>
<td>Central Heating / Cooling Plant</td>
<td>Boilers, cooling</td>
</tr>
<tr>
<td>Maintenance and Services</td>
<td>Runway and taxi way cleaning, employee break rooms and restrooms</td>
</tr>
</tbody>
</table>
Facility | Example of end uses
--- | ---
Airline / Aircraft / Cargo | Aircraft cleaning, airline catering / on-board aircraft water, de-icing

3.5.2 **Graphic 3.2** compares the Airport baseline water consumption with the estimates of the increase in water demand from forecast increases in ATMs and passengers (PAX) with the DCO Project.

**Graphic 3.2: Mains water demand – Current baseline and DCO Project**

3.5.3 There would be an increase in on-site non-potable water supply to satisfy an increase in potable and non-potable water demands. It is assumed that adequate water would be available from various available sources.

3.5.4 The data represented in the previous chart and which underpins the water projections presented in the RMP is preliminary and subject to change.

3.6 **Environmental measures**

3.6.1 The local water supplier (Affinity Water) has advised that there are adequate water resources to meet the increase in water demand due to the DCO Project.

3.6.2 The environmental measures focus on currently available and proven solutions and technologies, specifically in an airport context. This ensures that these measures are not based on speculative approaches that may not meet performance standards or reduce passenger user experience. However, Heathrow
will continue to seek to encourage adoption of innovative solutions as part of its overarching goals to embed leading edge water efficiency thinking. Despite this, operational validation will need to confirm outcomes can be delivered before solutions are implemented.

3.6.3 The proposed approach to managing water resources in the DCO Project is through the following measures:

1. Using new approaches and technology to reduce water use and improve water efficiency for all uses, both potable and non-potable. Water efficiency measures will include use of best in class technologies, where reasonably practicable

2. Proactively influence business partners’ development and operations and growth to improve water efficiency

3. Implement measures to achieve leakage best in class leakage rates within both potable and non-potable water supply networks (owned and operated by Heathrow) and the potable and non-potable water supply pipework within new terminals and buildings, constructed as part of DCO Project, where reasonably practicable

4. Implement a non-potable water supply network to connect non-potable water uses with non-potable water supplies, where reasonably practicable

5. Deliver a surface rainwater treatment plant to treat captured surface rainwater for supply into the non-potable water supply network.

3.6.4 Many of these management measures are detailed and specific and cannot be applied to the design of the DCO Project at the preferred masterplan stage.

Summary of approach

3.6.5 An overview of the water resource management components that would be deployed is provided in Graphic 3.3.
3.6.6 Using more water efficient fixtures and fittings are key part of ensuring more efficient use of potable and non-potable water supplies.

3.6.7 Better leakage management will reduce the wasted resources and make the system operate more efficiently.

3.6.8 Capture of rainwater from rooftop and ground surfaces, they greywater, and borehole water will increase the use of on-site renewable water sources and meet many of the uses that do not require potable quality water.

3.6.9 The locations of the water resources assets, such as a harvesting treatment plant and new boreholes, are flexible and under review. These will be finalised during later design stages.

3.6.10 Collectively these measures will reduce the volume of potable water supply used at the Airport.

3.7 Monitoring measures

3.7.1 The proposed approach to monitoring water performance is through the measures set out below.

1. Implementing sub-metering to enable effective monitoring of water use by area and / or function with regular reporting to show trends of consumption

2. Establishing baselines for demand and means for measuring in the future

3. Setting targets and monitoring progress against these targets, with periodic reviews of the targets themselves
4. Setting appropriate standards for water consumption of new buildings through reference to improvement over Part G of the Building Regulations for England and Wales, or using schemes such as BREEAM or LEED.

5. Measuring the amount of non-potable water put into supply.
4. WASTE RESOURCES

4.1 Introduction

4.1.1 Heathrow will seek to design, build and operate the DCO Project in such a way as to reduce the impact of additional waste arisings, with anticipated environmental benefits, and deliver a more circular and resilient airport.

4.1.2 This section sets out the arrangements that are proposed for managing waste arisings, during construction of the DCO Project and for the future operations. It includes information on the proposed waste recovery and disposal system for all waste generated by the development, including measures to minimise the volume of waste sent for disposal.

4.2 Scope of waste resources

4.2.1 For ease of reading this section is divided into two sub-sections:

1. Section 4A - arisings and management for the construction phase
2. Section 4B – arisings and management for the operational phase.

4.2.2 Heathrow produces waste via its own activities and directly controls how this waste is managed. This includes arisings from:

1. Administrative functions
2. Operational functions
3. Terminal areas.
4. Landscape activities
5. Sweeping activities (roads and runways) and
6. Security operations

4.2.3 Heathrow also guides the management of wastes from other organisations (see paragraph 1.3.2) located within the terminals (e.g. retail premises, airline lounges, Border Force operations), and aircraft cabin cleaning wastes. Heathrow does not directly control the business activities and choice of materials and packaging used by these third-parties. Heathrow is therefore reliant on them to correctly identify and segregate waste via tenancy agreements. However, as the manager of the waste produced, Heathrow has control over how this waste is then stored, transported and treated.
4.2.4 The previously listed waste streams are all directed through Heathrow’s waste contracts and are collectively termed ‘Heathrow operations’ in this RMP. Heathrow is reliant on the waste management industry to maintain and develop the recycling and treatment technologies, capacity and markets to effectively deal with waste arisings.

4.2.5 Heathrow can also guide and influence the management of waste from services it directly sub-contracts such as waste arising from construction activities associated with the DCO Project.

4.2.6 This RMP also considers waste arisings from various third-party organisations whose activities may increase with the DCO Project. This includes the following:

1. Airline offices
2. Aircraft maintenance
3. Hotels
4. Aircraft in-flight catering
5. Cargo
6. Goods consolidation centre
7. Heathrow Express
8. Retail and catering warehouses

4.2.7 Heathrow can seek to influence these organisations through supplier engagement activities such as collaborative forums or partnerships.

4.3 **Legislative and policy drivers relevant to waste resources**

4.3.1 The following legislative and policy drivers set out relate specifically to waste resources management and are in addition to those drivers set out in Section 1.2.

4.3.2 There are no statutory recycling or landfill diversion rates that are applied directly to individual UK businesses. Instead, there are overarching policy targets for all construction and demolition waste, and for commercial and industrial waste.

4.3.3 As set out in Table 4.1, the ANPS:

1. considers that the Waste Framework Directive (2008/98/EC) targets should be considered ‘minimum acceptable practice’ for the construction and operation of any new airport infrastructure
2. recommends exceeding these targets by aiming for exemplar performance in resource efficiency and waste management and

3. aligns with the principles of the EU Action Plan for the Circular Economy.

4.3.4 A list of legislation and policies that have a direct or indirect bearing on waste resources management is found in Table 4.1.

4.3.5 Recent UK policy indicates a growing momentum to achieve a circular economy (also see Section 1.4); ‘closing the loop’ of product lifecycles by means of greater recycling and reuse, and in turn providing benefits for both the environment and the economy. It is anticipated that the mechanisms to fully enable a circular economy will require collaboration locally, nationally and even internationally between governments and businesses within complex global supply chains.

### Table 4.1 Waste resources related legislation and policies

<table>
<thead>
<tr>
<th>Legislation/policy</th>
<th>Description</th>
<th>Relevance to Heathrow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>International and EU legislation and policy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revised Waste Framework Directive 2008/98/EC as last amended by Council Regulation (EU) 2017/997/EU</td>
<td>Aims to protect the environment and human health by setting out a waste management framework. Key articles include the principles of the waste hierarchy (Article 4), national targets for recycling (Article 11), and the proximity principle (Article 16).</td>
<td>The Revised Waste Framework Directive (rWFD 2008) was implemented in the UK by the Waste (England and Wales) Regulations 2011 (as amended 2012), which Heathrow must conform to.</td>
</tr>
<tr>
<td>The Hazardous Waste Directive (Hazardous Waste (England and Wales) (Amendment) Regulations, 2016)</td>
<td>Provides guidance on labelling, record keeping, monitoring and control obligations for everyone from waste production to the final recovery / disposal. It forbids mixing of hazardous substances and items to prevent risk to the environment and human health.</td>
<td>Implemented in the UK in the Hazardous Waste (England and Wales) Regulations 2005 (as amended) which Heathrow must conform to as a producer of hazardous waste.</td>
</tr>
<tr>
<td>EU Control Regulation: No 1069/2009</td>
<td>Define animal by-products which can spread animal diseases or chemical contaminants and can be dangerous to animal and human health if not properly disposed of. Regulates their movement, processing and disposal.</td>
<td>Implemented in the UK in Animal By-Products (Enforcement) (England) Regulations 2011. Heathrow must conform to as a producer of animal by-products (e.g. from restaurants, canteens and aircraft catering)</td>
</tr>
<tr>
<td>EU Circular Economy Package (European Commission, 2018)</td>
<td>The European Commission adopted its circular economy</td>
<td>The importance of the circular economy and the</td>
</tr>
</tbody>
</table>

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### Legislation/policy

<table>
<thead>
<tr>
<th>Legislation/policy</th>
<th>Description</th>
<th>Relevance to Heathrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control of Pollution (Amendment) Act 1989</td>
<td>Requires carriers of controlled waste to register with the Environment Agency or SEPA and outlines the penalties (including seizure and disposal) for vehicles shown to have been used for illegal waste disposal.</td>
<td>Heathrow will be required to continue to use registered waste carriers.</td>
</tr>
<tr>
<td>The Environment Protection Act 1990 (as amended)</td>
<td>Requires waste producers to store, transport, treat and dispose of waste in such a way as to prevent it from causing damage to the environment or posing a risk to human health.</td>
<td>Heathrow is required to continue to meet and conform to its provisions in managing its waste and selecting waste contractors.</td>
</tr>
<tr>
<td>Environment Act 1995</td>
<td>Places a duty on defined businesses that manufacture, import and sell packaged products for the end of life environmental impact of the resulting packaging waste including the collection and recycling of products from these businesses.</td>
<td>Heathrow is required to continue to meet and conform to provisions of the Act.</td>
</tr>
<tr>
<td>Clean Neighbourhoods and Environment Act 2005</td>
<td>Introduces additional noise, litter and waste controls. Introduces penalties for dumping waste.</td>
<td>Heathrow is required to continue to meet and conform to provisions of the Act.</td>
</tr>
<tr>
<td>Hazardous Waste (England and Wales) Regulations 2005 (as amended)</td>
<td>These Regulations control the movement and subsequent management of hazardous waste, restrict the co-mingling of hazardous waste types and the mixing of hazardous waste with non-hazardous waste.</td>
<td>Heathrow is required to continue to meet and conform to its provisions.</td>
</tr>
<tr>
<td>Legislation/policy</td>
<td>Description</td>
<td>Relevance to Heathrow</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Producer Responsibility Obligations (Packaging Waste) Regulations 1997 (as amended)</td>
<td>Sets packaging recycling targets on larger UK businesses.</td>
<td>Heathrow is home to a number of tenants that are packaging producers (e.g. large retailers), and who have corporate plans to reduce, re-use and recycle their packaging from the Airport.</td>
</tr>
<tr>
<td>Building Regulations for England and Wales Requirement - Part H6</td>
<td>Requires adequate provision for the storage of solid waste including consultation of the waste collection authority.</td>
<td>Heathrow will design the DCO Project in accordance with these regulations.</td>
</tr>
<tr>
<td>The Waste (England and Wales) Regulations 2011</td>
<td>Requirement for businesses to follow the waste hierarchy. Requires carriers of controlled waste to register with regulator and outlines penalties for vehicles shown to have been used for illegal waste disposal.</td>
<td>Heathrow is required to continue to meet and conform to its provisions in applying the waste hierarchy, and using registered waste carriers.</td>
</tr>
<tr>
<td>The Waste (England and Wales) (Amendment) Regulations 2012: Regulation 13</td>
<td>In accordance with the rWFD 2008, this regulation sets out a requirement for all businesses to take measures for the separate collection of recyclable materials (waste paper, metal, plastic, glass), as are available to the establishment and are – (a) technically, environmentally and economically practicable and (b) appropriate to meet the necessary quality standards for the relevant recycling sectors.</td>
<td>Heathrow is required to make provision for the separation of recyclable materials where practicable.</td>
</tr>
<tr>
<td>The Controlled Waste (England and Wales) Regulations 2012</td>
<td>States that household, industrial and commercial waste are classed as ‘controlled waste’ and are subject to the Environmental Protection Act 1990.</td>
<td>Heathrow’s waste streams are categorised as commercial waste so must be managed in accordance with the regulations.</td>
</tr>
<tr>
<td>The Animal By-Products (Enforcement) (England) Regulations 2013 SI 881</td>
<td>Implements health rules about animal by-products and derived products not intended for human consumption.</td>
<td>Heathrow must ensure food waste is treated in accordance with the regulations.</td>
</tr>
<tr>
<td>The Products of Animal Origin (Third Country Imports) (England) Regulations 2006</td>
<td>Sets out the community requirements for the import of products of animal origin into the UK from outside the EU. This</td>
<td>Heathrow must ensure food waste from International flights outside the EU is treated in accordance with the regulations.</td>
</tr>
<tr>
<td>Legislation/policy</td>
<td>Description</td>
<td>Relevance to Heathrow</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>regulation implements the import provisions of Regulation (EC) No 1774/2002 in the UK. Regulation 30-33 control the approval of landfill sites for disposal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Waste (Miscellaneous Amendments) (EU Exit) Regulations 2019 and The Waste (Miscellaneous Amendments) (EU Exit) (No. 2) Regulations 2019</td>
<td>Sets out amendments to 12 domestic waste regulations, which implement different European directives related to waste management to ensure that the waste regime can continue to operate effectively after the UK leaves the EU.</td>
<td>Heathrow is required to continue to meet and conform to provisions of the various regulations.</td>
</tr>
<tr>
<td>Standards and Guidance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>British Standards BS</td>
<td>Waste standards including BS 5906:2005 Code of practice for waste management in buildings – methods of storage, collection, segregation for recycling and recovery, and on-site treatment of waste from residential and non-residential buildings and healthcare establishments.</td>
<td>Heathrow will design the DCO Project in accordance with these standards.</td>
</tr>
<tr>
<td>CL:AIRE Definition of Waste: Development Industry Code of Practice.</td>
<td>Industry code of practice developed to enable the transfer or reuse of excavated material and provides a framework for proactively managing contaminated materials on the sites of production or their movement between sites.</td>
<td>Heathrow will manage construction wastes in accordance with this code.</td>
</tr>
<tr>
<td>National Strategy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste, Our Resources: A Strategy for England (Defra, 2018)</td>
<td>Sets out intention on how England will preserve stocks of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. Sets the direction of travel for waste management in accordance with the rWFD 2008.</td>
<td>The importance of the circular economy and the requirement to consider waste as a resource is an underlying principle that has been incorporated into the RMP (see Section 1.4).</td>
</tr>
<tr>
<td>A Green Future: Our 25 Year Plan to Improve the Environment' (HM Government, 2018)</td>
<td>Sets out UK government goals for improving the environment, within a generation, and leaving it in a better state than we found it. Lays out plans for working with businesses and includes reference to</td>
<td>Heathrow will seek to build circular economy principles into the DCO Project, as set out in Section 1.4.</td>
</tr>
<tr>
<td>Legislation/policy</td>
<td>Description</td>
<td>Relevance to Heathrow</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Industrial Strategy: building a Britain fit for the future</td>
<td>Sets out a long-term plan to boost the productivity and earning power of people throughout the UK.</td>
<td>The RMP will contribute to the industrial strategy through a range of waste measures, as set out in Section 4.4.</td>
</tr>
<tr>
<td>Waste Management Plan for England December 2013 (WMPE)</td>
<td>The WMPE provides the waste management policy framework for England and fulfils the requirements of revised Waste Framework Directive Article 28.</td>
<td>The WMPE requires assessment against the principle of ‘proximity’ requiring an adequate network of waste disposal installations which Heathrow must conform to this, and an assessment of the impacts on surrounding infrastructure is set out in Chapter 20: Waste of the PEIR.</td>
</tr>
</tbody>
</table>

### Regional waste policy drivers

<table>
<thead>
<tr>
<th>The London Plan</th>
<th>The Plan sets out ambition for London to be a zero waste city. By 2026 no biodegradable or recyclable waste will be sent to landfill, and by 2030 65 per cent of London’s municipal waste will be recycled. Encourages the take up of circular business models.</th>
<th>While the ANPS and NN NPS provide the primary policy framework for the DCO Project, the London Plan, is an important and relevant consideration because the DCO Project falls partially within Greater London. Heathrow will contribute towards city wide targets by improving rates of recycling and diversion from landfill for DCO Project waste arisings, as summarised in Table 4.6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The draft new London Plan</td>
<td>The draft new London Plan retains the waste targets set in the current adopted London Plan</td>
<td>When it replaces the current adopted London Plan</td>
</tr>
</tbody>
</table>
Heathrow Expansion
RESOURCES MANAGEMENT PLAN

<table>
<thead>
<tr>
<th>Legislation/policy</th>
<th>Description</th>
<th>Relevance to Heathrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>London Plan, however it defines municipal waste as being household waste and other waste similar in composition to household waste. This includes local authority collected waste and waste collected by the private sector.</td>
<td>(above) the provisions of the draft London Plan will be an important and relevant consideration.</td>
<td></td>
</tr>
</tbody>
</table>

### 4.4 Heathrow’s vision and approach to waste resources management

#### 4.4.1 Heathrow has outlined its vision for sustainable waste resources management in Heathrow 2.0 – ‘Goal 10.3: Deliver a resource efficient, zero waste airport and support a circular economy’. The need for effective resource management is discussed in Section 1.3. The waste resources goals and targets outlined in Heathrow 2.0 inform this section within the RMP.

#### 4.4.2 Heathrow recognises its responsibilities to manage potential increases in waste arisings effectively, and to be an exemplar organisation. Airport arisings will also impact upon local and regional waste infrastructure (an assessment of the effects arising from these potential impacts is presented within the PEIR in Chapter 20: Waste).

#### 4.4.3 This RMP frames Heathrow’s approach to managing waste arisings from the DCO Project through the priorities of the waste hierarchy; prevention, reuse and preparation for reuse, recycle, recovery and disposal (primarily landfill), in that order, as illustrated in Graphic 4.1. This focus encourages consideration of circular economy opportunities to achieve zero-waste, via the prevention of waste and/or improvement of resource use.

Heathrow is committed to an approach that considers managing materials rather than purely as managing waste, as the word ‘waste’ suggests something that is unwanted. It is recognised that some resources present in residual waste are essentially unusable either due to their nature (e.g. hazards) or complexity (e.g. composites) and cannot (currently) be replaced, but other materials do have the potential to be moved up the waste hierarchy. Notwithstanding this conceptual distinction all waste arising from the DCO Project would be managed in compliance with relevant legislation.
Heathrow intends to achieve its resource goals largely through implementation of the environmental measures outlines in Section 4.6 for construction, and Section 4.9 for operations. However, achievement of Heathrow’s long-term zero-waste goal will require substantial innovation, a shift in global manufacturing practice towards a circular economy, and changes to the regulatory regime on International Catering Waste.

SECTION 4A – Waste resources in the construction phase

Baseline and projected waste generation/consumption

Heathrow constantly carries out construction work to maintain and upgrade existing assets. The historic tonnages vary dramatically depending on the nature of works undertaken on the Airport (typically 5,000-10,000 tonnes per year). Contractors have also been achieving high recycling rates (66% in 2017) with very little to landfill (~10 tonnes in 2017), which has therefore had minimal impact on regional disposal capacity. The projected arisings for the DCO Project do not include these wastes, as they relate to different activities outside the scope.
4.5.2 The management of waste arising in the construction phase of the DCO Project will be in accordance with the priorities established by the waste hierarchy (see Section 4.4). Table 4.2 outlines the approach to various types of waste, which are illustrative and non-exhaustive. Specific management routes for specific waste types will be identified in the Site Waste Management Plans. Circular economy principles, to fundamentally change the approach to materials and waste in construction, will be pursued as far as reasonably practicable.

Table 4.2 Waste arising from construction by management type

<table>
<thead>
<tr>
<th>Management type</th>
<th>Waste types</th>
</tr>
</thead>
</table>
| Prevention      | Avoiding generation through off-site fabrication  
                   Surplus excavation material used on-site  
                   Packaging |
| Reuse           | Some forms of construction waste e.g. timber  
                   Packaging (e.g. pallets and bagged construction goods) |
| Recycling       | Inert demolition waste (e.g. crushed concrete)  
                   Rebar in demolition waste  
                   Inert construction waste  
                   Metals and plastics in construction waste  
                   Packaging waste  
                   Worker accommodation site waste |
| Recovery        | Combustible demolition waste  
                   Combustible construction waste  
                   Combustible worker accommodation site waste |
| Disposal        | Non-recyclable and non-combustible demolition waste  
                   Non-recyclable and non-combustible construction waste  
                   Non-recyclable and non-combustible worker accommodation site waste |

4.5.1 For the DCO Project, solid waste would be generated by site excavations, demolition and construction activities, and from on-site worker accommodation. The projected waste arisings from construction of the DCO Project are presented in Table 4.3.
## Table 4.3 Modelled CDE waste arisings from the DCO Project

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated total waste arisings (tonnes)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total arisings</td>
<td>Diverted from landfill</td>
</tr>
<tr>
<td><strong>Excavations of inert and non-hazardous materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surplus material(^3) arising from excavation and earthworks activities which cannot be reused on-site. Range of natural, uncontaminated and contaminated excavated material.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Excavated landfill waste</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste excavated from historical landfill sites, comprises a wide range of inert, non-hazardous and hazardous materials from the disposal of municipal, commercial or industrial waste.</td>
<td>271,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Demolition activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste generated as a result of site clearance works and typically comprise rubble, wood, steel, glass, plasterboard and various fixtures and fittings.</td>
<td>3,279,000</td>
<td>2,804,000</td>
</tr>
<tr>
<td><strong>Construction activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste from buildings and infrastructure works, such as spoil from foundations and waste building materials such as concrete, wood, glass, plasterboard and packaging.</td>
<td>1,278,000</td>
<td>1,093,000</td>
</tr>
<tr>
<td><strong>Workforce accommodation</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^3\) Most arisings are not formally classified as waste if used for the purposes of construction in its natural state on the site from which it was excavated.
### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated total waste arisings (tonnes)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste arising from the domestic activities of the workforce domiciled on-site, largely comprising waste from the preparation and consumption of meals, such as packaging and food.</td>
<td>Total arisings: 1100</td>
<td>Diverted from landfill: 500</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,829,100</td>
<td>3,897,500</td>
</tr>
</tbody>
</table>

4.5.2 The DCO Project would promote a cut and fill balance, whereby the need to import and/or export excavated material is reduced through design. Excavated material that can be used in its natural state for on-site engineering and restoration purposes, is excluded from the construction arisings in **Table 4.3**. This is in accordance with the scope of Article 2 of the EU Waste Framework Directive (EU, 2008) which excludes ‘uncontaminated soil and other naturally occurring material excavated during construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated.’ It is also assumed that materials re-used on site will meet the requirements of the **CL:AIRE Definition of Waste: Development Industry Code of Practice** as defined in **Table 4.1**.

4.5.3 Hazardous surplus (waste) excavation material from the DCO Project would require off-site disposal to landfill. There is no surplus inert or non-hazardous excavation material predicted from the DCO Project.

4.5.4 The hazardous component of demolition waste and construction waste is also assumed to require off-site disposal to landfill. A proportion of the non-hazardous component of these waste streams is also assumed to require disposal to landfill.

4.5.5 However, unlike the hazardous component, which would require off-site disposal to landfill from the commencement of work, the proportion of the non-hazardous component requiring disposal to landfill would initially be disposed of on-site in landfill sites, which would be constructed within the boundary of the DCO Project. When on-site landfill is no longer available off-site landfill facilities will be used. This is considered to be a worst-case scenario as some specialist treatment options may be viable in the future to further reduce the disposal of waste to landfill.
4.6 **Environmental measures – construction phase**

4.6.1 General measures to manage waste during construction are addressed in the draft CoCP, and practises will comply with relevant key legislation and industry guidance, including those listed in Table 4.1.

4.6.2 The proposed environmental measures for the construction phase are set out as follows:

1. Heathrow will incorporate circular measures to ensure assets, products and materials are used at their highest potential, which may include, where reasonably practicable:
   a. using just-in-time logistics and good housekeeping procedures
   b. Adopting techniques such as off-site pre-fabrication and the use of standardised products and components
   c. working with suppliers to deliver better resource management including avoiding unnecessary packaging
   d. identifying specific materials where there are viable alternate circular economy options.

2. Heathrow will only use off-site disposal (landfill) as a worst-case management measure by applying the waste hierarchy and circular economy principles to construction wastes

3. Heathrow will pursue a cut and fill balance approach to minimise the off-site disposal of excavation arisings.

4.7 **Monitoring measures – construction waste**

4.7.1 The proposed approach to monitoring waste management performance is through the following measures.

1. Effective monitoring of waste generation by contractors with regular reporting to show trends of arisings

2. Establishing baselines for construction waste generation rates using appropriate metrics for different asset types

3. Setting targets and monitoring progress against these targets with periodic review of the targets themselves and

4. Monitoring the extent of the change towards the circular economy – e.g. percentage of sub-contracts with end-of-life design requirements.
4.7.2 Monitoring and reporting waste management performance will be the responsibility of Heathrow and its main contractors.

SECTION 4B – Waste in the operational phase

4.8 Baseline and projected waste generation/consumption

4.8.1 The management of waste arising in the operational phase of the DCO Project would be in accordance with the priorities established by the waste hierarchy (see Section 4.4); as indicated in Table 4.4 by ‘management type’. The types of waste are illustrative and non-exhaustive.

Table 4.4 Operational waste arisings by management type

<table>
<thead>
<tr>
<th>Management type</th>
<th>Example waste types</th>
</tr>
</thead>
</table>
| Prevention        | Packaging  
Paper towels  
Disposable cutlery  
Single use cups    |
| Reuse             | Wooden pallets  
Packaging (e.g. plastic crates)  
Crockery and cutlery |
| Recycling         | Paper and cardboard  
Metals  
Plastic bottles  
Plastic film  
Drink cups  
Packaging  
Glass  
Food  
Grass cutting, and shrub trimmings |
| Energy recovery   | Combustible residual waste                                                          |
| Disposal          | Non-combustible residual waste  
Specialist hazardous waste |

4.8.2 Table 4.5 outlines the baseline operational waste arisings for Heathrow that would be affected by the DCO Project. The data has been normalised to a metric considered most suitable to enable the future arisings to be projected for the DCO Project.
### Table 4.5 Baseline waste arisings in 2017

<table>
<thead>
<tr>
<th></th>
<th>Airport operations waste (tonnes)</th>
<th>Aircraft cabin waste (tonnes)</th>
<th>Airline operations (tonnes)</th>
<th>Hotels (tonnes)</th>
<th>In-flight catering companies (tonnes)</th>
<th>Cargo-handling companies (tonnes)</th>
<th>Other businesses (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling (a)</td>
<td>7,700</td>
<td>900</td>
<td>2,600</td>
<td>200</td>
<td>400</td>
<td>1,100</td>
<td>0</td>
</tr>
<tr>
<td>Residual (tonnes)</td>
<td>10,700</td>
<td>7,400</td>
<td>1,600</td>
<td>600</td>
<td>1,800</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Total waste (tonnes)</td>
<td>18,400</td>
<td>8,300</td>
<td>4,200</td>
<td>800</td>
<td>2,200</td>
<td>1,800</td>
<td>0</td>
</tr>
<tr>
<td>Waste metric (d)</td>
<td>0.236 tonnnes/ PAX</td>
<td>0.107 tonnnes/ PAX</td>
<td>0.102 tonnnes/ PAX</td>
<td>0.480 tonnes/ room</td>
<td>1,133 tonnes/ Hectare</td>
<td>0.021 tonnes/ PAX</td>
<td>64 tonnnes/ Hectare</td>
</tr>
</tbody>
</table>

All figures are rounded.

- (a) Logistics centre / consolidation centre/ general offices.
- (b) Source-segregated recycling- this does not include recycling extracted from residual waste or metals post-combustion.
- (c) No existing waste arisings are included for 2017 as they are outside the scope of the DCO Project.
- (d) The future arisings associated with the DCO Project (as set out in Table 4.6) are projected from these waste metrics (which are based on historic surveys).
- (e) For cargo companies, a standard metric of tonnes/PAX is used to calculate arisings, but the rate of future growth is related to ATM projections.

4.8.3 Increased PAX, ATMs and associated growth in Heathrow and partner operations will increase consumption of materials and related waste. Based on these forecast in future waste arisings have been estimated.

4.8.4 The projected airport waste arisings for the DCO Project (for both the DCO Project and improvement within the existing airport) are summarised in Graphic 4.2. Total annual managed arisings are projected to grow due to the greater usage of materials within the expanded airport; from 36,000 tonnes in 2017, to around 67,000 tonnes in 2050 (excluding prevention). Whilst some of this increase is due to forecast growth in passenger numbers at the existing airport, around 27,000 tonnes are attributable to the DCO Project.
4.8.5 Table 4.6 shows the projected waste flows (all airport), with recycling performance for the DCO Project anticipated to exceed 50% by 2035. The selected years shown in the table relate to the assessment of effects in Chapter 20: Waste of the PEIR.

**Table 4.6 Modelled operational waste arisings (all airport)**

<table>
<thead>
<tr>
<th></th>
<th>2025</th>
<th></th>
<th>2027</th>
<th></th>
<th>2035</th>
<th></th>
<th>2050</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tonnes</td>
<td>%*</td>
<td>Tonnes</td>
<td>%*</td>
<td>Tonnes</td>
<td>%*</td>
<td>Tonnes</td>
<td>%*</td>
</tr>
<tr>
<td>Prevention</td>
<td>500</td>
<td>900</td>
<td>2,700</td>
<td>4,100</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling and Composting</td>
<td>16,400</td>
<td>21,800</td>
<td>34,900</td>
<td>36,700</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Waste</td>
<td>23,200</td>
<td>27,600</td>
<td>28,900</td>
<td>30,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40,100</td>
<td>50,300</td>
<td>66,500</td>
<td>71,300</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Does not include Waste Prevention within the percentage derived from total waste.

4.8.6 Projected waste arisings and the methods used to manage them (airport) are show in Graphic 4.3. This includes the effect of waste prevention measures, which avoids waste requiring physical management.
4.8.7 The data represented in the previous chart and which underpins the waste projections presented in the RMP is preliminary and subject to change.

4.9 **Environmental measures – operational phase**

4.9.1 This section covers the environmental measures that are proposed as part of the operational phase of the DCO Project to manage the increase in waste arisings.

4.9.2 Heathrow will actively manage waste arisings from operations within its areas of control and seek to guide and influence the waste arisings from third-parties (see **Section 4.1**). Waste arisings requiring off-site management will also impact upon existing waste infrastructure (as assessed in the PEIR in **Chapter 20: Waste**).

4.9.3 The waste management measures outlined for the operational phase of the DCO Project focus on currently available and proven solutions. In practice, Heathrow will adopt a flexible approach which does not lock the Airport into long-term reliance on solutions lower down the waste hierarchy, or those which cannot adapt to anticipated future changes in waste composition, policy and guidance. New innovations, technologies and techniques will be considered as they arise.
4.9.4 Proposed waste management practices will continue to comply with relevant legislation and industry guidance, including those listed in Table 4.1.

4.9.5 The proposed environmental measures for waste generated during operations of the DCO Project are as follows, grouped within the themes of the circular economy, waste prevention and reuse, recycling, recovery and disposal:

1. Heathrow will treat additional operational wastes associated with the DCO Project in accordance with the waste hierarchy. Specialist airport waste streams will be managed in on-site facilities, and other waste streams will be sent to third-party off-site waste management facilities. On-site facilities to support the DCO Project may include, where reasonably practicable:
   a. Waste segregation points for the reception and bulking of collected fractions, including bin stores and waste management compounds, and bins at aircraft stands
   b. Cabin waste inspection facilities and
   c. A resource recovery centre.

2. Heathrow will promote resource efficiency and a circular economy in the DCO Project by:
   a. identifying and targeting specific material streams to investigate alternative circular options
   b. promoting and communicating resource and waste management best practise, and
   c. proactively guiding and influencing to continually improve their performance through the use of performance metrics.

3. Heathrow will promote the prevention and re-use of waste in the operations of the DCO Project by:
   a. Researching and implementing new approaches to eliminate waste demand and improve material management
   b. Identifying opportunities to reduce or prevent waste streams where possible
   c. Identifying alternative practicable opportunities for those waste streams where no viable recycling solution currently exists, to avoid measures lower down the waste hierarchy such as energy recovery or landfill
   d. Investigating opportunities for the re-use of assets / materials / products, including charitable donation where practicable
e. Providing a consolidation centre to reduce the amount of packaging and enable back-hauling of used packaging

f. Providing water filling stations.

4. Heathrow will promote the recycling of waste in the operations of the DCO Project which may include, where reasonably practicable:

a. Providing a range of waste segregation bins within new infrastructure

b. Improving waste management systems to enhance the segregation of recyclables and reduce contamination rates

c. Working in partnership with airlines and their contractors to ensure the separation of International Catering Waste from other cabin waste

d. Providing dedicated areas to segregate commonly arising hazardous or specialist waste

e. Composting landscape waste.

5. Heathrow will recover value from remaining residual waste from operations (i.e. that waste left after re-use, segregation for recycling and energy recovery) of the DCO Project by:

a. Identifying viable options for extracting suitable recyclable materials from residual waste

b. Utilising energy from waste (in preference to landfill).

6. Heathrow will manage remaining wastes requiring disposal (i.e. that waste left after re-use, segregation for recycling and energy recovery) from operations of the DCO Project by:

a. Seeking to dispose only those waste streams with no practicable alternative, such as specialist hazardous waste, or those which cannot be accepted for energy recovery

b. Training staff responsible for the disposal of hazardous waste to understand the difference between hazardous waste and non-hazardous waste, and the legislative requirements for its management

c. Assessing the properties of each type of hazardous waste streams to determine the relevant methods for storage, handling and treatment or disposal, and prevent risk of harm to humans and the environment

d. Providing dedicated covered storage areas for hazardous waste
e. Providing interceptors on hard-standing drainage, designed to retain oils and greases (e.g. from aircraft servicing and maintenance). Liquids pumping from these interceptors will be tankered to licensed treatment facilities.

**Summary of approach**

4.9.6 A range of waste management facilities and procedures will be used for operation of the Airport, including the DCO Project. These are summarised in Table 4.7.

**Table 4.7 Facilities and procedures used to manage waste at Heathrow**

<table>
<thead>
<tr>
<th>Onsite assets and facilities</th>
<th>Offsite facilities (third party operators)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segregated and mixed containers for retailers and airport operations</td>
<td>Mixed recyclables sorting (materials recycling facility)</td>
</tr>
<tr>
<td>Segregated and mixed containers for passengers</td>
<td>Composting of green waste</td>
</tr>
<tr>
<td>Terminal bin-stores, inspection areas, and compactors</td>
<td>Food waste treatment (anaerobic digestion or in-vessel composting)</td>
</tr>
<tr>
<td>Landside sweepings reception</td>
<td>Pre-sorting of residual waste</td>
</tr>
<tr>
<td>Airside sweepings reception</td>
<td>Thermal treatment (including statutory high temperature treatment of International Catering Waste)</td>
</tr>
<tr>
<td>Resource consolidation centre (RCC)</td>
<td>Landfill</td>
</tr>
<tr>
<td>Cabin waste inspection</td>
<td>Clinical waste treatment</td>
</tr>
<tr>
<td>Construction and demolition waste screening / crushing / sorting</td>
<td>Specialist hazardous waste treatment</td>
</tr>
</tbody>
</table>

4.9.7 The extent to which each of these types of facility will be used depends on the level of success in implementing the waste hierarchy by the various airport users and waste producers, much of which is outside Heathrow’s direct control (see paragraph 1.3.2).

4.9.8 An overview of waste resource components that will be deployed and their location in relation to the Airport is provided in Graphic 4.4.
Graphic 4.4: Proposed approach to waste resources for the DCO Project

The DCO Project would provide a range of new waste management facilities:

1. A network of aircraft waste inspection facilities to encompass all flights and facilitate higher recycling rates\(^4\). The detailed design of these will draw on lessons from the Terminal 5 unit, and from ongoing EU research into best practice\(^5\).

2. A new resource recovery centre to promote future innovations across the whole airport, and facilitate modular waste treatment systems as they become viable. It will be used to support the separation of new re-usable or recyclable waste streams and facilitate circular economy innovations (e.g. the return of used items / equipment to the original manufacturers). Some functions may be transferred from the existing waste transfer station (which will be retained for continuity).

3. A new reception point for airside sweepings. This may include replacement or renovation of the current airside sweeping facility.

These facilities will be consented and operated by specialist service providers under contract to Heathrow.

The DCO Project will involve the relocation of one current short-haul catering premises. The replacement facility has been enlarged to allow for some related passenger growth, but as previously noted Heathrow does not control whether the current operator will continue to be awarded tenders.

Aircraft Catering Waste (meal trays and trolleys) will continue to be managed by the respective airline catering companies at their own premises. Heathrow will

\(^4\) The decision on whether these should be dispersed at each apron, or partially or fully centralised will be a future Business Case decision prior to construction

continue to work with airlines to promote waste prevention measures (pre-booking of meals measurement of arisings at catering kitchens) to reduce associated waste.

4.9.13 Heathrow will consider the potential benefits in terms of cost and sustainability of providing centralised storage areas at the resource recovery centre for use by third parties, subject to resolving legal requirements on duty of care. These areas could be used for targeting materials for recycling or re-use for which there is a lack of space by producers and to benefit from economies of scale in generating an economic vehicle load.

4.10 Monitoring measures – operational phase

4.10.1 The proposed approach to monitoring waste management performance is set out through the following measures.

1. Implementing sub-metering to enable effective monitoring of waste generation by area and/or function with regular reporting to show trends of arisings

2. Establishing baselines for waste generation rates using appropriate metrics (per passenger, per m², per ATM)

3. Setting targets and monitoring progress against these targets with periodic review of the targets themselves

4. Undertaking regular waste composition surveys to track the success of waste prevention measures and identify trends and areas for intervention

5. Periodic physical surveys to identify where bins contain the wrong materials and the types of contamination. The location, branding and signage at these collection and storage points will then be reviewed to check it provides clear and consistent messages, and targeted education provided to staff

6. Calculating material capture rates (e.g. for paper, glass, plastics, food) to report on the effectiveness of recycling programmes, and target lower performing areas and/or functions

7. Setting appropriate standards for construction waste generation from new buildings through reference to improvement over minimum standards laid out by policy, or relative to non-mandatory schemes such as BREEAM

8. Monitoring the extent of the change towards the circular economy – e.g. percentage of sub-contracts with end-of-life requirements.
5. REFERENCES


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