

SEA Topic	Overall Evaluation of Effect	Nature, Duration and Timeframe of Effects (Cumulative / Synergistic) / (Temporary or Permanent) / (Short / Medium / Long)	Proposed Mitigation and/or Enhancement Measures
<b>CES Strategic Priority 1 – Reduce and Reuse</b>			
<b>Biodiversity, flora and fauna</b>	<b>+</b>	<p><b>Permanent – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Reduced pesticide use benefits non-target species quickly</li> <li>• Less pollution (especially plastic)/waste entering habitats</li> <li>• Cutting textile waste reduces virgin fibre demand, protecting forests</li> <li>• Education &amp; behaviour change accelerates sustainable consumption and circular practices</li> <li>• Local food sourcing, waste reduction, and sustainable farming practices will help prevent habitat destruction and species loss while promoting regenerative land management</li> <li>• Improved soil, water, and air quality enables species recovery</li> <li>• Stronger ecosystem services (pollination, carbon sequestration) and accelerated biodiversity resilience cumulatively</li> </ul>	<ul style="list-style-type: none"> <li>• Use local/native species</li> <li>• Enforce disposal standards, with monitoring</li> <li>• Local sourcing helps prevent habitat conversion</li> <li>• Sustainable land use planning and safeguards</li> <li>• Support certified sustainable fibres and closed loop systems</li> <li>• Ongoing outreach, feedback loops, community partners</li> <li>• Maintain habitat corridors; restoration programmes</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Immediate benefits from waste reduction, native planting, pesticide reduction, and food waste diversion</li> <li>• Regenerative farming, circular procurement, biodiversity corridors, and local sourcing reduce upstream habitat disturbance and improve ecosystem health</li> </ul>	<ul style="list-style-type: none"> <li>• Clear guidance, education campaigns, pilot biodiversity-friendly estate management</li> <li>• Embed circular procurement standards, training for SMEs/farmers, expand biodiversity corridors, develop repair hubs</li> </ul>
<b>There is no significant direct harm anticipated and risks remain negligible.</b>			

<b>Population and human health</b>	<b>+</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Cleaner, safer public spaces through waste reduction</li> <li>• Immediate wellbeing increase with local food access</li> <li>• Better physical &amp; mental health from cleaner air and water</li> <li>• Repair hubs, recycling facilities, and circular businesses generate green jobs</li> <li>• Accessible recycling services reduce local nuisances</li> <li>• Local food programmes improve nutrition and tackle food poverty</li> <li>• High cumulative and synergistic benefits leading to reduced health inequalities and improved living conditions</li> <li>• Sustainable behaviours embedded across communities into everyday behaviour</li> <li>• inclusive growth via community-led networks and reuse initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Ongoing litter management and public awareness campaign</li> <li>• Skills training; inclusive hiring; enterprise support</li> <li>• Good facility siting; community engagement; clear signage</li> <li>• Partnerships with health agencies and food banks</li> <li>• Continuous monitoring and adaptive policy</li> <li>• Education campaigns, incentives, feedback</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Immediate benefits from local food sourcing, reduced waste, and biodiversity-friendly spaces improve air quality and community wellbeing</li> <li>• Regenerative farming and circular procurement reduce pollution and improve food security</li> <li>• Expansion of green infrastructure and repair hubs supports wellbeing and access</li> </ul>	<ul style="list-style-type: none"> <li>• Clear health messaging on benefits of local, healthy eating</li> <li>• Community engagement to promote active travel and green spaces</li> <li>• Expand access to repair hubs, local food markets, and biodiversity corridors</li> </ul>
<b>Potential negative effects are minimal, limited to risks from new infrastructure or resource pressures, and can be mitigated through robust planning and monitoring.</b>			

<b>Soil</b>	<b>+</b>	<p><b>Permanent - Short and Medium term</b></p> <ul style="list-style-type: none"> <li>• Composting food waste immediately boosts soil fertility</li> <li>• Proper disposal &amp; landfill diversion reduces soil contamination</li> <li>• Regenerative practices build stable soil carbon and structure</li> <li>• Diverting textile waste limits chemical residues &amp; synthetic fibres entering soils</li> <li>• Circular consumption lowers demand for intensive agriculture and chemical inputs</li> <li>• Local food initiatives and council best practice reinforces soil stewardship</li> <li>• Enhanced ecosystem services (infiltration, drought buffering) &amp; climate resilience</li> <li>• Strong cumulative benefits for soil health and long-term sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure correct composting practices to avoid pests/odours</li> <li>• Enforce disposal standards, routine audits</li> <li>• Farmer training, incentives, and technical support</li> <li>• Monitor textile recycling compliance and inputs</li> <li>• Consumer education; reuse &amp; repair programmes</li> <li>• Embed best-practice guidance and monitoring in programmes</li> <li>• Long-term monitoring and adaptive management</li> </ul>
		<p><b>Temporary - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Clear health messaging on benefits of local, healthy eating.</li> <li>• Community engagement to promote active travel and green spaces.</li> <li>• Embed health and wellbeing criteria in procurement and planning.</li> <li>• Expand access to repair hubs, local food markets, and biodiversity corridors</li> </ul>	<ul style="list-style-type: none"> <li>• Promote soil-friendly practices in community campaigns (composting, reduced chemical use)</li> <li>• Pilot regenerative farming and biodiversity-friendly estate management</li> <li>• Support training and grants for farmers and SMEs to adopt soil conservation techniques</li> <li>• Embed soil health criteria in procurement and planning policies</li> </ul>
<p><b>Overall risks are minimal. Any temporary soil disturbance during construction upgrades are likely to be low and mitigated through standard measures.</b></p>			

Water	+	<p><b>Permanent - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Circular practices reduce water use and pollution by lowering demand for water-intensive production and preventing chemical discharges</li> <li>• Reduced microplastic release due to reduced consumption</li> <li>• Local food initiatives and composting minimise water waste and nutrient runoff</li> <li>• Council-led measures (water-efficient fixtures, rainwater harvesting, sustainable landscaping) directly cut consumption and protect aquatic ecosystems</li> <li>• Systemic adoption of circular economy principles reduces upstream water demand and contamination risks from resource extraction and manufacturing</li> <li>• High positive cumulative impact improves water efficiency, safeguards water quality, and strengthens resilience</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen recycling protocols</li> <li>• Embed water efficiency in procurement; incentivise closed-loop systems</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Quick wins from early estate measures (fix leaks, efficient fixtures)</li> <li>• Immediate reductions in litter, microfibre leakage, and pesticide use in council grounds; improved food waste management lowers nutrient pollution</li> <li>• Regenerative farming improves soil water retention and reduces irrigation needs</li> <li>• Circular procurement focus on water-efficient products</li> </ul>	<ul style="list-style-type: none"> <li>• Council estate quick wins: leak fixes, low-flow fixtures, pesticide-free management</li> <li>• Targeted campaigns: healthy local diets, textile reuse/repair to cut high-water/chemical products</li> <li>• Procurement standards: specify water-efficient appliances, low-water agricultural inputs, recycled-content textiles with low wet-processing impacts</li> </ul>
<p><b>Minor water use for cleaning during recycling processes and temporary runoff during infrastructure upgrades can occur but risks to water resources are minimal and mostly temporary, negligible and easily managed.</b></p>			

Air	+	<p><b>Permanent - Short and Medium term</b></p> <ul style="list-style-type: none"> <li>• Reduced odour and dust through localised waste reduction and cleaner practice</li> <li>• Lower emissions of methane, VOCs, particulate matter, and NOx via reduced landfill and circular economy practice adoption</li> <li>• Cleaner production practices cut upstream pollutants</li> <li>• Community initiatives (low-emission fleets, renewable energy use, local supply chains) reduce transport-related nuisances</li> <li>• Education and engagement drive systemic behaviour change</li> <li>• Reinforces Scotland’s air quality objectives and climate commitments</li> <li>• Creates cleaner, healthier communities with sustained air quality improvements</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce operational standards; monitor nuisance levels</li> <li>• Continuous emissions monitoring; compliance audits</li> <li>• Support best available technologies (BAT) and eco-design</li> <li>• Fleet maintenance; route optimisation; renewable sourcing</li> <li>• Long-term policy alignment; adaptive governance</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Immediate reduction in waste burning and landfill emissions</li> <li>• Early adoption of active travel and EVs lowers local air pollutants</li> <li>• Quick wins from optimised waste collection routes and reduced pesticide spraying</li> <li>• Regenerative farming reduces ammonia and particulate emissions</li> <li>• Circular procurement lowers upstream emissions and nuisance from extraction/processing</li> </ul>	<ul style="list-style-type: none"> <li>• Promote active travel and EV adoption</li> <li>• Optimise waste collection routes to reduce vehicle emissions and noise</li> <li>• Public campaigns on air quality benefits of circular practices</li> <li>• Embed low-emission standards in procurement and council operations</li> <li>• Support regenerative farming to cut ammonia and dust emissions</li> <li>• Introduce noise and odour control measures in waste and food systems</li> </ul>

**Short term risks to air quality or nuisance are minimal, mostly temporary, negligible and easily managed.**

Climatic factors	++	<p><b>Permanent – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Immediate GHG reductions from reduced landfill</li> <li>• Significant emissions cuts from circular economy adoption (repair, reuse, recycling)</li> <li>• Lower emissions from raw material extraction and transport due to systemic efficiency</li> <li>• Council leadership in renewable energy and low-emission operations accelerates decarbonisation</li> <li>• Community initiatives embed circular behaviours and resilience</li> <li>• Strong contribution to Scotland’s net zero target by 2045</li> <li>• Improved regional air quality as co-benefit of systemic decarbonisation</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure robust waste diversion systems; monitor methane capture</li> <li>• Provide infrastructure and incentives for participation</li> <li>• Promote local supply chains; optimise logistics</li> <li>• Maintain renewable sourcing contracts; monitor fleet</li> <li>• Education campaigns; community engagement; feedback loops emissions</li> <li>• Long-term policy alignment; adaptive governance</li> <li>• Continuous monitoring and reporting</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Immediate reductions from waste prevention, food waste diversion, and optimised council operations</li> <li>• Early adoption of active travel and energy efficiency measures</li> <li>• Circular procurement and local sourcing reduce upstream emissions</li> <li>• Regenerative farming lowers methane and nitrous oxide emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Public campaigns on low-carbon behaviours (reuse, repair, active travel)</li> <li>• Optimise waste collection routes and reduce energy use in council estates</li> <li>• Embed low-carbon procurement standards and circular economy clauses</li> <li>• Support regenerative farming and local food networks to cut agricultural emissions</li> </ul>
<p><b>Risks from implementing circular practices are low and short-term, mainly linked to temporary construction or transport adjustments. Any additional emissions or energy use are minimal and mitigable, with long-term benefits far outweighing short-term impacts.</b></p>			

<b>Material assets</b>	<b>++</b>	<b>Permanent - Short and Medium term</b> <ul style="list-style-type: none"> <li>• Lowers demand for virgin materials through circular production and consumption</li> <li>• Reduced pressure on water, energy, and flood-protection infrastructure through lower waste generation and better resource use</li> <li>• Reduces leakage of food waste to landfill through diversion, composting and better segregation, and less strain on water systems due to reduced nutrient runoff</li> <li>• Supports sustainable land and water use, improves soil health, and reduces pressure on agricultural resources through food system circularity</li> <li>• Reduces extraction of natural fibres, water, chemicals and energy by minimising textile production</li> <li>• Embeds circular procurement and sustainable practices across council operations, cutting resource use and supporting long-term sustainability</li> <li>• Supports infrastructure resilience and sustainable resource management</li> <li>• Delivers cumulative reductions in resource throughput</li> <li>• Creates systemic improvements in resilience and environmental quality</li> </ul>	<ul style="list-style-type: none"> <li>• Embed circular principles in infrastructure planning and procurement</li> <li>• Policy incentives and monitoring of material flows</li> <li>• Cross-sector collaboration and adaptive governance frameworks</li> <li>• Provide technical support and enforce quality standards</li> <li>• Promote eco-design and resource-efficient technologies</li> <li>• Develop regulatory frameworks and consumer protection measures</li> </ul>
		<b>Temporary - Medium term</b> <ul style="list-style-type: none"> <li>• Minimises material leakage by prioritising reuse, repair, and recycling</li> <li>• Stimulates markets for secondary materials and service-based models</li> </ul>	<ul style="list-style-type: none"> <li>• Expand reuse hubs, repair cafés, and salvage points and provide repair skills training and community repair workshops</li> <li>• Use circular procurement to prioritise reused and repaired items</li> <li>• Offer incentives (grants, reduced disposal fees) for organisations that reuse or repair</li> <li>• Run public engagement campaigns promoting reuse over disposal</li> <li>• Support secondary-material marketplaces (reclaimed timber, fixtures, etc.)</li> </ul>

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|  |  |  | <ul style="list-style-type: none"><li>• Encourage service-based models such as leasing, hire, and sharing schemes</li><li>• Improve data tracking and reporting on reuse, repair and recycling</li></ul> |
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**There are no inherent negative impacts on material assets from circular behaviours. Any minor risks, such as increased local repair activity or temporary storage of reusable items, are negligible and easily managed through good practice and appropriate infrastructure.**

<b>Cultural heritage and the historic environment</b>	<b>+</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Minor positive effects from promoting reuse and repair culture</li> <li>• Council services modelling best practice in historic premises</li> <li>• Adaptive reuse and green energy integration in Council-owned assets sets a strong precedent</li> <li>• Sustainability culture indirectly supports heritage conservation by encouraging resource efficiency and localism</li> <li>• Positive cumulative and synergistic effect: reinforces a narrative valuing existing assets and enabling resilience measures</li> <li>• Aligns climate action with cultural heritage objectives, amplifying benefits across sectors</li> </ul>	<ul style="list-style-type: none"> <li>• Provide heritage-sensitive guidance for repair practices</li> <li>• Ensure compliance with conservation standards during upgrades</li> <li>• Use heritage-compatible technologies; consult conservation officers</li> <li>• Embed circular economy principles in planning and procurement</li> <li>• Maintain long-term monitoring; adaptive design aligned with heritage goals</li> <li>• Integrate heritage considerations into climate adaptation frameworks</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Immediate benefits from awareness campaigns and council-led examples (repair, adaptive reuse)</li> <li>• Quick wins from energy-saving measures in historic estates</li> <li>• Scaling of circular procurement and repair hubs supports adaptive reuse</li> <li>• Integration of low-carbon technologies and climate adaptation measures in historic environments</li> </ul>	<ul style="list-style-type: none"> <li>• Promote adaptive reuse and repair through public campaigns and council projects</li> <li>• Begin energy audits and efficiency upgrades in historic buildings</li> <li>• Embed circular procurement standards for heritage-sensitive materials</li> <li>• Provide grants and technical support for climate adaptation in historic assets</li> </ul>
<b>Overall risks are very low and short-term, with minor emissions or inefficiencies possible during construction, material recovery, or transport; these are mitigable through renewable energy, efficient design, and robust planning, ensuring long-term benefits far outweigh temporary drawbacks</b>			

SEA Topic	Overall Evaluation of Effect	Nature, Duration and Timeframe of Effects (Cumulative / Synergistic) / (Temporary or Permanent) / (Short / Medium / Long)	Proposed Mitigation and/or Enhancement Measures
<b>CES Strategic Priority 2 – Modernise Recycling</b>			
<b>Biodiversity, flora and fauna</b>	<b>0/+</b>	<p><b>Permanent - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Modernising recycling and improving waste handling reduces landfill demand, preventing habitat loss from new waste sites</li> <li>• Minimises pollution risks to wildlife (litter, chemicals, microplastics)</li> <li>• Protects ecosystems and species health by preventing contamination of soils and waterways</li> <li>• Reduces illegal dumping of waste through improved systems and enforcement</li> <li>• Promotes circular economy practices and sustainable consumption, lowering resource extraction and global habitat destruction</li> <li>• Enhanced recycling systems lessen pressure on ecosystems and promote conservation of natural habitats. Collectively fosters environmental stewardship and biodiversity-friendly sourcing across supply chains</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure robust recycling infrastructure and clear public guidance</li> <li>• Strict contamination controls; education campaigns on right recycling and monitoring of recycling streams</li> <li>• Implement best practice for waste storage and transport</li> <li>• Continuous improvement; adaptive planning; performance audits</li> <li>• Embed sustainability criteria in procurement and supplier contracts</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Rapid gains from rollout include cleaner surroundings, immediate reduction in mismanaged waste/litter, initial contamination control</li> <li>• Benefits as services bed in, including improved routing, sustained lower leakage, better business compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal timing for works (outside breeding/migration)</li> <li>• Construction best practice: dust/noise control, spill prevention, invasive species biosecurity</li> <li>• Adaptive routing and scheduling using performance data to avoid peak-sensitive periods/locations</li> </ul>
<b>Any potential negative impacts (such as temporary disturbance to local habitats during facility upgrades and construction works) are short-term and can be effectively mitigated through standard planning measures.</b>			

<b>Population and human health</b>	<b>+</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Cleaner, safer communities by reducing waste-related hazards, litter, and illegal dumping</li> <li>• Immediate improvements in physical environments and mental wellbeing</li> <li>• Enhanced reuse options make sustainable goods more affordable, supporting equity</li> <li>• Expanded infrastructure creates local jobs and strengthens circular economy resilience</li> <li>• Lower pollution, improved air and water quality</li> <li>• Cultural shift toward sustainability through education and engagement</li> <li>• Strong cumulative and synergistic benefits for reduced health inequalities, inclusive economic growth, and resilience</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain robust collection systems; clear public communication</li> <li>• Rapid deployment of services; monitor community feedback</li> <li>• Ensure accessibility and affordability</li> <li>• Workforce training; inclusive hiring practices</li> <li>• Continuous monitoring; enforce environmental standards</li> <li>• Ongoing outreach campaigns; community-led initiatives</li> <li>• Long-term policy alignment; adaptive governance; periodic reviews</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Initial service changes, quick wins in cleaner streets, early engagement campaigns</li> <li>• Adoption phase: improved participation, reduced contamination, better service reliability</li> <li>• Visible improvements during rollout, litter reduction, initial reuse initiatives</li> <li>• Continued service optimisation, community reuse hubs, improved aesthetics</li> <li>• Early employment opportunities, pilot reuse schemes, initial service expansion</li> <li>• Growth of reuse networks, sustained job creation, improved rural access</li> </ul>	<ul style="list-style-type: none"> <li>• Launch community engagement campaigns highlighting immediate health and cleanliness benefits</li> <li>• Offer training and onboarding for new jobs in recycling and reuse sectors</li> <li>• Expand reuse hubs and repair cafés to sustain engagement and employment</li> <li>• Implement contamination-reduction programmes for businesses and households</li> <li>• Monitor service equity and accessibility</li> <li>• Integrate feedback loops to refine services and maintain health/environment gains</li> </ul>
<b>Potential negative impacts (from temporary disruptions during service changes or infrastructure upgrades) are minimal and short-term and can be mitigated through clear communication and planning.</b>			

<b>Soil</b>	<b>+</b>	<p><b>Permanent - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Reducing landfill waste prevents soil contamination from leachate and hazardous substances</li> <li>• Modern recycling systems curb illegal dumping, reducing localised contamination risks</li> <li>• Promoting resource efficiency and circular practices reduces raw material extraction and land disturbance</li> <li>• Safeguards carbon-rich soils and their ecological functions by easing pressure on high-value land</li> <li>• Positive cumulative effect strengthens long-term soil protection and ecosystem resilience</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce landfill diversion targets; monitor compliance</li> <li>• Strengthen enforcement and community reporting channels</li> <li>• Embed circularity in procurement; incentivise reuse and repair</li> <li>• Apply sustainable land-use planning and monitoring</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Early gains from reduced litter and illegal dumping during rollout; initial contamination control</li> <li>• Continued improvements as reuse and recycling systems mature, reducing soil exposure to pollutants</li> </ul>	<ul style="list-style-type: none"> <li>• Rapid litter and fly-tipping clean-up campaigns during service transition to prevent soil contamination</li> <li>• Communicate clear guidance on waste segregation to households and businesses to minimise contamination risks</li> <li>• Expand reuse hubs and organic waste treatment capacity to reduce residual waste streams</li> <li>• Introduce business audits and incentives for sustainable material management to prevent soil degradation</li> <li>• Maintain adaptive routing and logistics to avoid sensitive agricultural zones during collection expansions</li> </ul>
<p><b>Most potential risks will be localized and manageable through careful siting, design, and operational controls. The benefits of waste reduction and recycling generally outweigh these risks, but soil-sensitive areas would require planning safeguards.</b></p>			

<b>Water</b>	<b>0/+</b>	<p><b>Permanent - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Circular practices reduce water use and pollution by lowering demand for virgin materials and preventing industrial effluent discharge</li> <li>• Modern recycling and reuse services amplify benefits by reducing contamination risks</li> <li>• Business engagement fosters systemic reductions in water stress and contamination</li> <li>• Positive cumulative impact on water efficiency and quality, strengthening resilience</li> </ul>	<ul style="list-style-type: none"> <li>• Apply best-practice cleaning protocols; water recycling within facilities</li> <li>• Provide guidance on water-efficient technologies; incentivise adoption</li> <li>• Encourage sustainable irrigation and soil moisture management</li> <li>• Long-term monitoring; adaptive water management strategies</li> </ul>
		<p><b>Temporary - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Early operational improvements, reduced water use in waste processing during rollout</li> <li>• Optimisation of water-efficient systems</li> <li>• Initial litter reduction and containment measures during service changes</li> <li>• Continued contamination control and improved business compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Apply best-practice construction controls (spill prevention, sediment traps, drainage protection) during site upgrades</li> <li>• Deploy rapid litter and fly-tipping clean-up campaigns to prevent waterway contamination</li> <li>• Provide clear segregation guidance to households and businesses to reduce liquid waste contamination</li> <li>• Expand reuse hubs and water-efficient processing capacity to reduce residual waste streams</li> <li>• Introduce business audits and incentives for water-efficient practices</li> </ul>
<p><b>Overall, any negatives are negligible and far outweighed by long-term benefits for water conservation and pollution reduction.</b></p>			

Air	0/+	<p><b>Permanent -Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Eliminates open burning and illegal dumping, removing major sources of methane, VOCs, and particulate matter</li> <li>• Advanced logistics and enclosed facilities reduce odour and dust</li> <li>• Improved waste handling and segregation prevent hazardous emissions</li> <li>• Reducing landfill and incineration lowers harmful gases and particulate emissions</li> <li>• Modernising household recycling and supporting business reuse cut transport-related emissions and odour</li> <li>• Behavioural change fosters cleaner production and circular practices</li> <li>• Major cumulative and synergistic benefits for improved air quality and healthier communities across Perth and Kinross</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce bans; strengthen monitoring and penalties</li> <li>• Staff training; compliance audits; robust operational protocols</li> <li>• Continuous emissions monitoring; adaptive planning</li> <li>• Route optimisation; low-emission fleet adoption</li> <li>• Education campaigns; incentives for sustainable choices</li> <li>• Long-term policy alignment; periodic performance reviews</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Early litter abatement, rapid contamination reduction, initial routing improvements reduce localised dust and fumes</li> <li>• Maturing operational efficiency, better material capture, sustained compliance by businesses</li> <li>• Consolidated gains via cleaner fleets, contamination reduction, and consistent business compliance</li> <li>• Refined scheduling, equipment upgrades, and community feedback loops reduce remaining nuisance</li> </ul>	<ul style="list-style-type: none"> <li>• Construction best practice (noise/time limits, vibration monitoring, wheel-wash, covers on loads); odour management plans during transitions; clear notifications of works to nearby residents</li> <li>• Fleet renewal plans (Euro VI/EV), driver eco-training, performance dashboards for air-quality sensitive areas, and business audits to phase out polluting practices (e.g., solvent-heavy disposal)</li> <li>• Low-emission procurement clauses for suppliers; continuous monitoring near sensitive receptors (schools, healthcare settings) with adaptive operations</li> </ul>
<p><b>Negligible, short-term risks-such as temporary dust, noise, or emissions during upgrades-that are easily mitigated and far outweighed by long-term air quality and nuisance reduction benefits.</b></p>			

<b>Climatic factors</b>	<b>+</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Cuts methane emissions from landfill and avoids incineration-related emissions</li> <li>• Reduces demand for energy-intensive manufacturing through reuse and recycling</li> <li>• Embedding circular economy principles in households and businesses lowers upstream emissions from raw material extraction and processing</li> <li>• Fosters climate-conscious behaviours and systemic efficiency</li> <li>• Public engagement and business adoption drive cultural and economic shifts toward sustainable consumption</li> <li>• Creates an interconnected system that prevents new emissions sources and strengthens resource efficiency</li> <li>• Significantly advances Scotland’s net zero target by 2045</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce landfill diversion targets; monitor methane capture systems</li> <li>• Support local repair hubs; incentivise recycled content in products</li> <li>• Education campaigns; procurement policies favouring circularity</li> <li>• Community engagement; reward schemes for sustainable practices</li> <li>• Continuous outreach; partnerships with local enterprises</li> <li>• Long-term monitoring; adaptive governance frameworks</li> <li>• Align local strategies with national climate plans; periodic performance reviews</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Early operational efficiency gains, immediate diversion from residual waste, initial fleet/routing improvements</li> <li>• Rapid diversion wins, early behaviour change, initial operational decarbonisation steps</li> <li>• Maturing logistics, sustained contamination reduction, growing reuse networks that lock in avoided emissions</li> <li>• Consolidated fleet upgrades, stable high capture rates, business compliance programmes reducing residuals</li> </ul>	<ul style="list-style-type: none"> <li>• Operational quick wins that implement no-idling policies, micro-routing improvements, driver eco-training</li> <li>• Communications &amp; behaviour change with clear, multilingual guidance for households and businesses; targeted campaigns for high-residual sectors.</li> <li>• Repair/reuse pop-ups and networks, take-back schemes, and business audits to unlock immediate avoided emissions</li> <li>• Fleet &amp; infrastructure upgrades: phased EV adoption, depot charging, efficient plant retrofits, and digital route optimisation</li> <li>• Supplier engagement: embed low-carbon requirements in contracts</li> </ul>
<p><b>Upgrading facilities or logistics may cause minor, temporary, short-term emissions during construction and transport, but these are quickly offset by avoided methane from landfill, reduced incineration, and lower demand for energy-intensive manufacturing-ensuring a net positive impact toward Scotland’s 2045 net zero target.</b></p>			

<b>Material assets</b>	<b>++</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Modern recycling and reuse systems reduce leakage of materials to landfill, energy recovery, and litter by improving collection efficiency and public engagement</li> <li>• Lowers demand for virgin resources, easing pressure on energy and water infrastructure</li> <li>• Extends product life and minimizes resource extraction, reducing upstream environmental impacts</li> <li>• Prevents blockages that could affect drainage and flood protection, improving local environmental quality</li> <li>• Community engagement and business innovation embed circular economy principles across supply chains</li> <li>• Strengthens infrastructure resilience and systemic resource efficiency</li> <li>• Delivers measurable greenhouse gas reductions and supports Scotland's Net Zero 2045 target</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain robust collection systems; clear public communication</li> <li>• Promote resource-efficient technologies; enforce procurement standards</li> <li>• Incentivise repair and reuse; support local circular businesses</li> <li>• Regular maintenance; monitoring of waste streams</li> <li>• Education campaigns; partnerships with enterprises; feedback loops</li> <li>• Long-term planning; adaptive governance; performance audits</li> <li>• Align local strategies with national climate plans; periodic reviews</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Quick wins in operational efficiency</li> <li>• Rapid diversion campaigns, early contamination control</li> <li>• Optimisation of routing and infrastructure integration</li> <li>• Service refinements and sustained behaviour change</li> <li>• Initial reuse initiatives, early business engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Clear guidance for households and businesses to prevent leakage and minimise contamination</li> <li>• Temporary containment measures for stockpiled materials to prevent litter and runoff</li> <li>• Implement adaptive routing and logistics to optimise resource flows and reduce pressure on infrastructure.</li> <li>• Embed supplier engagement programmes to sustain low-impact procurement practices</li> <li>• Maintain monitoring and feedback loops for leakage rates and resource efficiency</li> <li>• Introduce business audits and incentives for sustainable material management</li> </ul>
<b>Overall risks are low and temporary, with minor emissions or disruptions possible during construction, infrastructure upgrades, or recycling processes; these are mitigable through renewable energy, efficient design, and robust planning, ensuring long-term benefits far outweigh short-term drawbacks.</b>			

<b>Cultural heritage and the historic environment</b>	<b>0</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>Minimal direct impact on historic buildings; indirect benefits begin immediately (reduced landfill pressure near heritage sites)</li> <li>Encourages adaptive reuse culture in historic premises</li> <li>Lower demand for new construction materials via reuse/repair reduces extraction and manufacturing impacts on heritage settings</li> <li>Modernising household recycling and supporting business innovation reduce leakage and conserve resources - indirectly strengthening climate resilience around historic assets</li> <li>Actions cut emissions and help mitigate climate risks (e.g., flooding) that threaten historic environments</li> <li>Cultural shifts toward sustainability and heritage-led regeneration build a durable conservation ethos</li> <li>Cumulative, synergistic effects improve the long-term viability of historic environments (resilience to climate and economic pressures)</li> </ul>	<ul style="list-style-type: none"> <li>Coordinate waste routes/facilities to avoid sensitive heritage areas</li> <li>Provide heritage-sensitive guidance for repairs/adaptations (materials, methods)</li> <li>Embed circular procurement standards that prioritise reclaimed materials where appropriate</li> <li>Targeted engagement with owners / managers of historic sites; capacity-building workshops</li> <li>Integrate heritage considerations into local climate adaptation plans (drainage, SUDS, green infrastructure)</li> <li>Long-term monitoring; adaptive heritage management aligned with climate strategy</li> <li>Maintain conservation officer involvement; periodic reviews of retrofit outcomes</li> <li>Heritage-sensitive design of bins/signage; clear communication with occupants/visitors</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>Gains during rollout and adoption phases from early engagement with owners and pilot reuse schemes.</li> <li>Initial and mid-term benefits from early retrofitting projects and awareness campaigns.</li> </ul>	<ul style="list-style-type: none"> <li>Provide technical support and grants for early retrofitting and reuse projects</li> <li>Pilot heritage reuse hubs for salvaged materials and components</li> <li>Apply best-practice construction controls during works to minimise dust, vibration, and accidental damage</li> <li>Engage communities through heritage workshops and climate resilience training for local trades</li> </ul>
<b>Overall, risks are low, but some concerns remain. Poorly placed recycling facilities could affect historic settings, and changes to buildings may cause minor disruption or harm their character. Temporary emissions from infrastructure work are negligible compared to long-term benefits. These risks can be managed through careful planning and heritage-sensitive design</b>			

SEA Topic	Overall Evaluation of Effect	Nature, Duration, and Timeframe of Effects (Cumulative / Synergistic) / (Temporary or Permanent) / (Short / Medium / Long)	Proposed Mitigation and/or Enhancement Measures
<b>CES Strategic Priority 3 – Decarbonise Disposal</b>			
<b>Biodiversity, flora and fauna</b>	<b>+</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Environmentally sound waste management prevents harmful disposal methods (uncontrolled burning, landfill leachate, marine litter)</li> <li>• Reduces pollution, habitat degradation, and invasive species spread</li> <li>• Innovative solutions (advanced recycling, waste-to-resource technologies, decarbonisation) cut emissions, microplastic pollution, and raw material extraction</li> <li>• Safeguards ecosystems locally and globally by reducing resource pressures and contamination risks</li> <li>• Cumulative benefits: lower greenhouse gas emissions, improved resource efficiency, and strengthened ecological resilience</li> <li>• Accelerates progress toward long-term sustainability and biodiversity protection</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce bans; strengthen monitoring and compliance systems</li> <li>• Apply strict waste segregation and containment protocols</li> <li>• Adopt best available technologies; lifecycle assessments.</li> <li>• Embed sustainability criteria in procurement; monitor supply chains.</li> <li>• Long-term monitoring; adaptive management; policy alignment.</li> <li>• Integrate biodiversity and climate goals into strategic planning</li> </ul>
		<b>Temporary - Short and Medium term</b> <ul style="list-style-type: none"> <li>• Better waste segregation and handling reduces contamination and habitat disturbance</li> <li>• Increased capacity and oversight lowers illegal dumping near sensitive ecosystems</li> <li>• Cleaner technologies and pilot projects cut pollutant discharges and leachates</li> <li>• Decarbonisation incentives reduce landfill use and toxin exposure</li> <li>• Targeted identification of high-risk waste prevents acute harm to species</li> <li>• Early circular practices (reuse/repair) ease extraction pressure on habitats</li> <li>• Optimised routing, storage, and timing reduce disturbance during breeding/nesting</li> <li>• Evidence-based treatment pathways minimise ecological footprint</li> <li>• Scaling circular economy innovations reduces resource extraction and habitat fragmentation</li> <li>• Low-carbon waste systems mitigate climate stressors, supporting species resilience</li> <li>• Integrated monitoring enables adaptive management to prevent cumulative impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct waste audits, material flow analyses, and map biodiversity-sensitive areas; create risk registers for high-impact waste streams</li> <li>• Develop handling protocols for operations near protected sites; timing restrictions to avoid breeding seasons; contamination thresholds</li> <li>• Expand local recycling/repair/reprocessing capacity; invest in resilient storage/containment; site facilities to avoid habitat fragmentation</li> <li>• Install sensors and tracking for waste flows; enforce anti-dumping</li> <li>• Targeted training for operators; community programmes to reduce contamination and littering near sensitive habitats</li> </ul>
<b>Minor emissions or nuisance make occur during infrastructure upgrades or decarbonisation retrofits but these temporary negative impacts are generally minimal compared to the significant environmental benefits from improved waste management and decarbonisation measures.</b>			

<b>Population and human health</b>	<b>+</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Prevents harmful disposal methods (uncontrolled burning, landfill leachate, marine litter), improving sanitation and creating cleaner, safer environments - especially for vulnerable communities</li> <li>• Enhances air and water quality by reducing pollution sources</li> <li>• Fosters circular economy practices that generate green jobs and strengthen access to essential services</li> <li>• Indirectly lowers emissions and mitigates climate risks through improved waste management</li> <li>• Promotes mental wellbeing through cleaner spaces and access to nature</li> <li>• Strong cumulative and synergistic benefits: reduces health inequalities, improves environmental quality, and builds resilient, sustainable communities</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce bans; strengthen monitoring and compliance systems</li> <li>• Apply strict operational controls; monitor emissions and effluent</li> <li>• Workforce training; inclusive hiring; community engagement</li> <li>• Adopt best available technologies; lifecycle assessments</li> <li>• Maintain green infrastructure; integrate community feedback</li> <li>• Long-term policy alignment; adaptive governance; periodic reviews</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Immediate health protection from reduced exposure to harmful pollutants via better segregation and cleaner treatment</li> <li>• Healthier local environments from less littering and illegal dumping, and from deployment of cleaner technologies and controls (odour, dust, noise)</li> <li>• Early decarbonisation actions (e.g., diverting organics) reducing odours</li> <li>• Accessible employment from immediate job and training opportunities in repair/reuse pilots</li> <li>• Integrated low-carbon waste systems leading to reduced climate-related health risks and improved urban liveability</li> <li>• Equitable access to services and natural spaces through enhanced access networks (collection points, repair hubs) aligned with sustainable transport</li> </ul>	<ul style="list-style-type: none"> <li>• Create conveniently located collection points, repair/reuse hubs, and mobile services; align with public transport; ensure step-free access</li> <li>• Design vehicle routes/times to minimise exposure (near schools/hospitals, peak pedestrian hours); designate low-emission fleets</li> <li>• Apprenticeships and targeted hiring for local residents; skills training in repair, remanufacturing, and digital tracking</li> <li>• Co-produce service design with residents; provide multilingual communications; establish local feedback loops and rapid response teams</li> <li>• Buffer zones, planting, acoustic screening, and active travel links around facilities to improve amenity</li> <li>• Coordinate clean-up, litter prevention, and circular materials for site maintenance; create nature-positive volunteer pathways</li> </ul>
<b>Potential negative impacts are minimal, mainly involving minor resource use for research and implementation, temporary construction-related nuisances such as noise, dust, traffic, and possible visual intrusion or perceived environmental injustice, all of which are short-term and mitigable compared to the overall health and sustainability benefits.</b>			

<b>Soil</b>	<b>+</b>	<p><b>Permanent - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>Identifying best environmental outcomes for waste reduces harmful disposal and prevents leachate infiltration into soils</li> <li>Improved treatment and composting return organic matter to soils, enhancing fertility and reducing chemical inputs</li> <li>Circular practices lower pressure on land from raw material extraction, safeguarding carbon-rich soils, and ecological functions</li> <li>Decarbonisation incentives support sustainable waste systems and climate resilience</li> <li>High positive cumulative impact: strengthens soil health, safeguards agricultural land, and promotes long-term ecosystem stability</li> </ul>	<ul style="list-style-type: none"> <li>Enforce landfill diversion; monitor compliance</li> <li>Apply quality standards for compost; avoid contamination</li> <li>Promote reuse and repair; embed circular procurement</li> <li>Align incentives with low-impact technologies; monitor emissions</li> <li>Long-term soil monitoring; adaptive land-use planning</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>Reduces soil contamination from better segregation/containment.</li> <li>Prevents illegal dumping and leachate to soils and improved soil health through reduced pollutant loads</li> <li>Cuts litter and surface debris on farmland and peatlands.</li> <li>Rapid organics diversion reduces soil stress</li> <li>Protects high-value agricultural land from land-take</li> <li>Safeguards carbon-rich soils (peat/woodland) from disturbance</li> <li>Lowers resource extraction, reducing soil erosion and habitat loss</li> </ul>	<ul style="list-style-type: none"> <li>Soil protection protocols: spill plans, impermeable pads, covered storage</li> <li>Site facilities away from high-value soils; use permeable surfaces where suitable</li> <li>Install drainage, silt traps, and vegetated swales; maintain bunds.</li> <li>Limit heavy vehicle movements; enforce dry-weather routing where possible.</li> <li>Require compost quality standards to avoid soil contamination.</li> <li>Green procurement for low-toxicity materials and tyres (less microplastics).</li> <li>Restore disturbed soils: decompaction, organic amendments, re-vegetation.</li> </ul>
<p><b>Potential for temporary risk to soils from disturbance, compaction, and erosion risk during facility upgrades or new infrastructure works, or increased sediment load and nutrient loss during construction, but overall negative effects are expected to be low and manageable through strategic planning and environmental safeguards. Long-term benefits far outweigh short-term drawbacks.</b></p>			

<b>Water</b>	<b>+</b>	<p><b>Permanent - Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Avoids inefficient processes and harmful disposal methods (e.g., uncontrolled burning, landfill reliance), reducing water contamination risks.</li> <li>• Advanced treatment and closed-loop recycling minimize leachate infiltration and chemical runoff</li> <li>• Innovative technologies and decarbonisation mitigate climate impacts on water resources and ecosystems</li> <li>• Adequate waste capacity and infrastructure discourage illegal dumping, improving soil health and protecting aquatic habitats</li> <li>• Systemic benefits: lowers industrial water demand, safeguards aquatic ecosystems, and reinforces SEA objectives for sustainable water use and pollution prevention</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce disposal standards; monitor compliance</li> <li>• Apply best-practice treatment protocols; water recycling systems</li> <li>• Mitigation: Adopt low-carbon technologies; integrate water efficiency in design.</li> <li>• Strategic siting; community engagement; compliance audits</li> <li>• Long-term monitoring; adaptive water management strategies</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Reduces water contamination through better segregation and reduced pollutant loads</li> <li>• Prevents illegal dumping and leachate into watercourses</li> <li>• Diverts organics from landfill to reduce nutrient runoff</li> <li>• Optimised storage and routing avoids spills near water</li> <li>• Lowers water demand in waste processes via innovation</li> <li>• Reduces climate-driven water stress through decarbonisation</li> </ul>	<ul style="list-style-type: none"> <li>• Map water-sensitive areas and set exclusion buffers</li> <li>• Install impermeable pads, bunds, and covered storage</li> <li>• Monitor effluent, runoff, and water quality indicators</li> <li>• Fit drainage systems, silt traps, and vegetated swales</li> <li>• Require water-efficient tech and closed-loop systems</li> <li>• Enforce spill response plans and operator training</li> <li>• Set strict discharge limits and compliance checks</li> <li>• Promote green procurement for low-toxicity materials</li> <li>• Restore riparian zones and wetlands near facilities</li> </ul>
<p><b>Potential impacts from recycling, decarbonisation, and facility development-such as minor water use, runoff, or habitat disturbance-are short-term, low in magnitude, and mitigable through best-practice controls, making them negligible compared to long-term benefits for water sustainability.</b></p>			

Air	+	<p><b>Permanent - Short and Medium term</b></p> <ul style="list-style-type: none"> <li>• Environmentally sound disposal methods and adequate waste capacity reduce emissions of methane, VOCs, NOx, and particulate matter from landfills and incineration</li> <li>• Modern facilities with emission controls minimize odour, dust, and hazardous pollutants</li> <li>• Innovative solutions (anaerobic digestion, resource recovery) cut emissions and improve air quality</li> <li>• Circular economy practices and improved waste strategies prevent illegal dumping and open burning</li> <li>• Behavioural change through education and incentives fosters cleaner production and sustainable consumption</li> <li>• Coordinated implementation of innovation, decarbonisation, and best practice delivers major cumulative benefits</li> <li>• Strongly supports Scotland’s Clean Air Strategy, regional air quality targets, and long-term public health standards</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce emission standards; monitor compliance</li> <li>• Apply best-practice design; maintain filtration systems</li> <li>• Adopt best available technologies; lifecycle assessments</li> <li>• Strengthen enforcement; community engagement; education campaigns</li> <li>• Continuous outreach; reward schemes for participation</li> <li>• Long-term policy alignment; adaptive governance; periodic reviews</li> <li>• Integrate air quality objectives into waste and climate planning</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Reduces dust and odour through better waste segregation and containment</li> <li>• Prevents illegal burning or dumping that worsens air quality</li> <li>• Deploys cleaner tech to cut emissions and particulates</li> <li>• Diverts organics from landfill to reduce methane and odour</li> <li>• Optimises routing to lower vehicle emissions and noise near communities</li> <li>• Improves overall air quality by reducing pollutant loads</li> <li>• Lowers nuisance impacts (noise, vibration, odour) through design and tech upgrades</li> <li>• Reduces traffic-related emissions via efficient logistics and low-emission fleets</li> </ul>	<ul style="list-style-type: none"> <li>• Emission and nuisance limits for facilities</li> <li>• Dust suppression, odour control, and acoustic barriers</li> <li>• Require low-emission vehicles and route optimisation</li> <li>• Enforce spill and incident response plans for airborne pollutants</li> <li>• Engage communities on nuisance reporting and mitigation</li> </ul>
<p><b>Only minor, short-term risks-such as temporary dust, noise, or emissions during construction-that are easily mitigated and far outweighed by long-term air quality and nuisance reduction benefits.</b></p>			

Climatic factors	+	<p><b>Permanent - Short and Medium term</b></p> <ul style="list-style-type: none"> <li>• Diverting biodegradable waste from landfill to anaerobic digestion or composting prevents methane emissions</li> <li>• Modern recycling and reuse systems reduce demand for virgin material production, cutting energy-intensive processes and associated emissions</li> <li>• Adequate waste management capacity eliminates uncontrolled decomposition and open burning</li> <li>• Advanced facilities integrate methane capture, renewable energy generation, and carbon capture technologies</li> <li>• Innovative solutions like closed-loop recycling and anaerobic digestion enable energy recovery and systemic efficiency</li> <li>• Combined measures accelerate systemic efficiency, prevent new emissions sources, and deliver sustained reductions in lifecycle emissions</li> <li>• Substantial contribution to Scotland’s 2045 net zero target</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce diversion targets; monitor methane capture systems</li> <li>• Support repair hubs; incentivize recycled content in products</li> <li>• Strategic siting; compliance audits; community engagement</li> <li>• Apply best available technologies; lifecycle assessments</li> <li>• Continuous improvement; performance monitoring</li> <li>• Long-term policy alignment; adaptive governance; periodic reviews</li> <li>• Integrate local strategies with national climate plans; transparent reporting</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Cuts methane by diverting organics from landfill</li> <li>• Reduces transport emissions through route optimisation</li> <li>• Deploys cleaner tech to lower energy use and GHG output</li> <li>• Prevents illegal burning or dumping that releases GHGs</li> <li>• Starts low-carbon practices in waste handling and treatment</li> </ul>	<ul style="list-style-type: none"> <li>• Increase food and garden waste collection</li> <li>• Support community composting</li> <li>• Help households and businesses separate organics properly</li> <li>• Use smarter route-planning.</li> <li>• Electric or low-emission collection vehicles</li> <li>• Improve energy efficiency at waste sites</li> <li>• Track and report emissions from waste activities</li> </ul>
<p><b>While implementation may cause short-term emissions from construction, transport, and energy use, risks are low and mitigable; renewable energy integration, efficient design, and future-proofed technologies ensure that long-term benefits from improved recycling, reuse, and waste management far outweigh initial impacts.</b></p>			

<b>Material assets</b>	<b>++</b>	<b>Permanent - Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Reduces leakage to landfill, energy recovery, and litter, conserving natural resources and easing pressure on energy and water infrastructure</li> <li>• Prioritizing reuse, recycling, and correct disposal pathways minimizes contamination risks and prevents uncontrolled waste near critical infrastructure</li> <li>• Innovative solutions (advanced sorting, closed-loop recycling, biogas generation) enhance resource recovery and support renewable energy integration</li> <li>• Reduces flood-related hazards by preventing blockages and safeguarding drainage systems</li> <li>• Embeds systemic efficiency, prevents new emissions sources, and delivers long-term reductions in lifecycle emissions</li> <li>• Substantial contribution to Scotland’s Net Zero 2045 target and SEA objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen collection systems; enforce diversion targets</li> <li>• Apply strict operational controls; monitor compliance</li> <li>• Adopt best available technologies; lifecycle assessments</li> <li>• Regular maintenance; ecological assessments for siting</li> <li>• Long-term policy alignment; adaptive governance; performance audits</li> <li>• Integrate waste and climate strategies; transparent reporting</li> </ul>
		<b>Temporary – Short, Medium and Long term</b> <ul style="list-style-type: none"> <li>• Prevents damage to water, energy, and flood protection infrastructure through better waste handling</li> <li>• Reduces risk of spills and blockages affecting drainage and flood systems</li> <li>• Lowers leakage of materials to landfill via improved segregation and quick diversion</li> <li>• Cuts litter and fly-tipping near public assets and transport routes</li> <li>• Starts circular practices to keep materials in use and reduce resource strain</li> <li>• Deploys cleaner tech to minimise accidental discharge to infrastructure</li> <li>• Optimises routing and storage to avoid interference with utilities and sensitive assets</li> <li>• Reduces immediate demand for virgin resources through reuse and repair pilots</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen segregation and rapid diversion processes to minimise leakage of materials to landfill</li> <li>• Litter and fly-tipping prevention campaign with monitoring and enforcement near public assets and transport routes</li> <li>• Embed circular economy practices (reuse, repair, remanufacturing) to keep materials in use and reduce resource strain</li> <li>• Adopt cleaner technologies and best available treatment systems to minimise accidental discharge to infrastructure</li> <li>• Optimise routing and storage logistics to avoid interference with utilities and sensitive assets</li> <li>• Provide incentives and technical support for reuse and repair pilots to reduce demand for virgin resources</li> </ul>
<b>Overall risks are low and short-term, with minor emissions or disruptions possible during facility construction, infrastructure upgrades, or waste transport; these are mitigable through sustainable design, renewable energy integration, and robust planning, ensuring long-term benefits far outweigh temporary drawbacks.</b>			

**Cultural heritage and the historic environment**

**0/+**

**Permanent - Short, Medium and Long term**

- Cleaner surroundings near heritage sites through improved waste management, preventing pollution and illegal dumping
- Circular principles (e.g., adaptive reuse) reduce demolition and landfill expansion, preserving historic landscapes and reducing construction waste
- Indirect benefits: lower emissions and climate-related risks, supporting Scotland’s net zero goals
- Strengthens climate resilience and promotes long-term sustainability for cultural assets
- Aligns economic incentives with heritage conservation through circular economy strategies

- Enforce disposal standards; monitor compliance near sensitive areas
- Long-term monitoring; adaptive management aligned with conservation objectives
- Embed conservation priorities in procurement and planning frameworks
- Heritage-sensitive design guidance; listed building consent where applicable
- Integrate heritage considerations into climate adaptation plans

**Temporary – Short, Medium and Long term**

- Prevents waste-related damage to historic buildings and infrastructure
- Reduces litter and fly-tipping around heritage sites
- Diverts reusable materials for restoration and repair projects
- Deploys cleaner tech to minimise dust, vibration, and odour near historic assets
- Optimises routing to avoid heavy traffic near sensitive heritage areas
- Starts circular practices that supply reclaimed materials for heritage use
- Lowers emissions from waste operations near historic environments

- Coordinate early with conservation officers; secure necessary permits
- Use temporary barriers/sheeting to protect sensitive fabric during nearby works
- Manage moisture and ventilation to avoid short-term damage to historic materials
- Route heavy vehicles away from heritage zones; schedule off-peak deliveries
- Rapidly sort and channel reclaimed materials to heritage repair projects
- Quick clean-ups for litter/fly-tipping around heritage precincts
- Awareness raising on heritage sensitivities and climate risks (heat, moisture, freeze–thaw)

**Risks are generally localised to historic environments and are typically low and mitigable through careful siting, design, and heritage-sensitive planning.**

SEA Topic	Overall Evaluation of Effect	Nature, Duration, and Timeframe of Effects (Cumulative / Synergistic) / (Temporary or Permanent) / (Short / Medium / Long)	Proposed Mitigation and/or Enhancement Measures
<b>CES Strategic Priority 4 – Strengthening the Circular Economy</b>			
<b>Biodiversity, flora and fauna</b>	<b>+</b>	<p><b>Permanent - Short term and Medium term</b></p> <ul style="list-style-type: none"> <li>• Integrating biodiversity into circular economy practices reduces landfill expansion, pollution risks, and raw material extraction - minimizing habitat loss and ecosystem disturbance</li> <li>• Prioritizing reuse and refurbishment in circular construction lowers land take and demand for virgin materials, reducing quarrying, mining, and deforestation</li> <li>• Cleaner processes and reduced waste limit soil and water contamination</li> <li>• Eco-design and nature-based solutions (e.g., green roofs) create opportunities for habitat enhancement</li> <li>• Improved reporting and monitoring establish feedback loops for better decision-making, delivering cumulative benefits like lower emissions, land preservation, and stronger ecosystem resilience</li> <li>• Aligns economic growth with biodiversity protection, fostering healthier ecosystems and long-term sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Enforce diversion targets; monitor compliance; ecological screening for projects</li> <li>• Embed circular procurement standards; promote reclaimed materials</li> <li>• Apply best-practice waste handling; monitor effluent and runoff</li> <li>• Use native species; maintain biodiversity corridors</li> <li>• Implement adaptive management; integrate biodiversity KPIs into circular economy strategies</li> <li>• Policy integration; incentives for biodiversity-friendly practices</li> <li>• Timing works outside sensitive seasons; buffer zones; dust and noise controls.</li> <li>• Route optimization; phased implementation; contingency planning</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Diverts construction and bulky waste from illegal dumping hotspots</li> <li>• Boosts reuse and repair activity to ease pressure on habitats</li> <li>• Optimises logistics and timing to prevent disturbance during breeding/nesting</li> <li>• Mainstreams circular construction to cut soil and water contamination</li> <li>• Use of data-driven adaptive management to reduce ongoing habitat risks</li> <li>• Build partnerships to promote low-impact practices and materials</li> </ul>	<ul style="list-style-type: none"> <li>• Operational controls for dust/odour/noise/vibration/runoff limit</li> <li>• Route optimisation, no-idling, and scheduling outside breeding/nesting periods; avoid sensitive corridors</li> <li>• Quick set-up of drop-off points, deconstruction plans, and reclaimed-materials channels for construction projects</li> <li>• Short-run collaborations with conservation bodies to trial habitat-friendly innovations and site buffers</li> <li>• Training for contractors/operators on habitat sensitivities and immediate protective practices</li> </ul>
<p><b>Strategic planning and circular economy initiatives generally pose minimal risks to biodiversity as they focus on reducing resource extraction and waste. Any habitat disturbance during facility upgrades or construction are likely to be temporary and minor and can be easily mitigated through works planning and management.</b></p>			

<b>Population and human health</b>	<b>+</b>	<b>Permanent - Medium term</b> <ul style="list-style-type: none"> <li>Improved living environments, such as energy-efficient housing upgrades</li> <li>Reduced pollution such as low-emission transport systems</li> <li>Creation of green jobs</li> <li>Cumulatively embed sustainability into everyday life</li> <li>Inclusive growth and resilience for healthier communities</li> <li>Healthier behaviours and reduced health inequalities</li> <li>Synergistically, when combined with complementary initiatives such as active travel and green infrastructure, benefits are amplified across sectors</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing maintenance and community engagement</li> <li>Continuous monitoring and emission standards enforcement</li> <li>Workforce training and long-term job security planning</li> <li>Education campaigns and policy reinforcement</li> <li>Inclusive planning and equity-focused policies</li> <li>Maintain infrastructure and promote behaviour change programs</li> <li>Protect spaces from future development pressures</li> <li>Ensure affordability and reliability of services</li> <li>Coordinate cross-sector planning and funding</li> </ul>
		<b>Temporary – Medium term</b> <ul style="list-style-type: none"> <li>Reduces exposure to pollutants (dust, odour, noise) near communities via clearer standards and quick controls</li> <li>Discourages illegal dumping and littering with early policy signals and rapid enforcement</li> <li>Improves service convenience (drop off points, repair hubs) in underserved areas</li> <li>Creates immediate local jobs and training in reuse/repair/circular logistics</li> <li>Lower vehicle emissions and traffic nuisance via optimised routing and low emission fleets</li> <li>Use reclaimed materials to reduce construction site disruption and nuisance near residents</li> <li>Develop accessible networks (repair/reuse hubs aligned with public transport and walking/cycling) to increase sustainable access to services and nature</li> <li>Use data-driven monitoring to target interventions in high need areas, preventing cumulative nuisance impacts</li> </ul>	<ul style="list-style-type: none"> <li>Enforce dust/odour/noise/vibration limits</li> <li>Route optimisation, no-idling, off-peak deliveries; avoid school/hospital corridors; align with breeding/nesting and community quiet times</li> <li>Pop-up drop-off points; mobile collections; quick setup of repair/reuse events in high-need areas</li> <li>Target fly-tipping hotspots; rapid litter response; community reporting channels</li> <li>Short-run trials for low-nuisance tech, ULEV fleets, and reclaimed-materials construction methods</li> <li>Toolbox talks for site teams; public campaigns on correct disposal and local access options</li> </ul>
<b>Potential negative impacts include minor resource use, transitional disruption during retrofitting or construction, and possible diversion of priorities or funding during implementation. These risks are limited and short-term and can be mitigated through careful planning and stakeholder engagement.</b>			

<b>Soil</b>	<b>+</b>	<b>Permanent - Medium Term</b>	<ul style="list-style-type: none"> <li>• Improved waste planning and circular practices reduce hazardous waste and promote composting</li> <li>• Safeguards carbon-rich soils, embeds sustainable land management into regional norms, and strengthens soil health, carbon storage, and climate resilience</li> <li>• High positive cumulative impact, strengthening soil health, supporting carbon storage, and enhancing climate resilience, with negligible negative impacts when mitigation measures are applied</li> <li>• Synergistically, when combined with complementary measures such as sustainable farming practices and habitat restoration, this action amplifies benefits by promoting holistic land stewardship.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement robust waste segregation and composting guidelines</li> <li>• Enforce soil protection standards, integrate circular principles into planning, and maintain monitoring systems</li> <li>• Regular audits and community education programs</li> <li>• Promote material recovery and enforce resource efficiency standards</li> <li>• Maintain robust data systems and transparent reporting</li> <li>• Integrated land stewardship frameworks</li> </ul>
		<b>Temporary – Medium term</b>	<ul style="list-style-type: none"> <li>• Improved waste planning and management reduces hazardous waste</li> <li>• Prevents illegal dumping and leachate affecting agricultural land and peat soils</li> <li>• Reduces soil contamination through better waste segregation and quick diversion of organics</li> <li>• Minimises resource extraction and eases pressure on land</li> <li>• Optimises routing and storage to prevent soil compaction and erosion near sensitive areas</li> <li>• Systematic monitoring and evaluation prevents soil erosion and contamination</li> </ul>	<ul style="list-style-type: none"> <li>• Optimise vehicle routing and restrict heavy loads during wet conditions to avoid compaction</li> <li>• Rapid monitoring of soil pH, contaminants, and moisture; trigger thresholds for corrective action</li> <li>• Pilot compost quality checks to prevent contamination of soils</li> <li>• Toolbox talks for contractors on soil sensitivity and emergency response</li> </ul>

**No direct soil impacts are anticipated. With proper planning and safeguards, negative impacts remain low and manageable.**

<b>Water</b>	<b>+</b>	<p><b>Permanent - Medium term</b></p> <ul style="list-style-type: none"> <li>• Strategic planning and policy incentives and innovation embed water-sensitive design and closed-loop systems into development, lowering industrial demand and preventing runoff</li> <li>• Systemic improvements in water sustainability and quality strengthen ecosystem resilience and safeguard aquatic ecosystems</li> <li>• Advances recycling and decarbonisation, reducing water use, contamination risks, and pollutant discharge while safeguarding aquatic ecosystems</li> <li>• Coordinated action-through clear direction, enabling environments for circular businesses, and robust monitoring-amplifies these benefits, aligning infrastructure and business models with water quality standards</li> <li>• Collectively delivers systemic change, strengthens ecosystem resilience, and achieves major cumulative and synergistic impacts for sustainable water management and pollution prevention over time</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure compliance with water efficiency standards and provide technical support for implementation</li> <li>• Continuous monitoring, enforce pollution controls, and maintain adaptive governance frameworks</li> <li>• Training programs for businesses and monitoring systems (SUDS basics, spill response, wash-water control)</li> <li>• Clear governance frameworks and stakeholder engagement</li> </ul>
		<p><b>Temporary – Short, Medium and Long term</b></p> <ul style="list-style-type: none"> <li>• Reduces immediate effluent/runoff risks via clearer standards and quick operational controls near water bodies</li> <li>• Diverts organics and problem wastes rapidly, lowering nutrient loads and microbial contamination</li> <li>• Optimises logistics and storage to avoid spills near rivers, lochs, wetlands, and groundwater recharge zones</li> <li>• Deploys cleaner tech pilots (filters, closed-loop rinses) to cut microplastics and chemical discharges</li> <li>• Early monitoring and rapid response flag water-quality risks</li> <li>• Embeds water-use efficiency and pollution prevention in regional strategies and procurement</li> <li>• Circular business models lower process water demand and discharge volumes</li> <li>• Data-driven adaptive management prevents cumulative pollution and protects ecological flows</li> <li>• Partnerships and siting/buffer practices reduce edge effects on riparian and wetland systems</li> </ul>	<ul style="list-style-type: none"> <li>• Pop-up collection for organics/problem wastes; on-site segregation to prevent contaminated runoff</li> <li>• Short-term effluent/runoff sampling; trigger thresholds; incident reporting and immediate containment</li> <li>• Maintenance of drainage systems and soil infiltration capacity</li> </ul>
<p><b>Circular business and construction practices generally reduce water use and pose minimal water-quality risks, with any minor issues easily managed through standard best-practice measures.</b></p>			

Air	+	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Reduces emissions from landfill and incineration through cleaner technologies, strategic diversion, and modern infrastructure design that minimises odour, dust, and noise</li> <li>• Circular economy practices and local supply chains cut pollutants by reducing resource-intensive manufacturing, heavy transport, and raw material extraction</li> <li>• Community initiatives and reuse networks lower nuisance impacts and foster behavioural change</li> <li>• Coordinated action-combining strategic leadership, enabling environments for circular businesses</li> <li>• Robust monitoring helps embed low-emission principles into planning and operations</li> <li>• Positive cumulative and synergistic benefits over time delivers systemic improvements in air quality, reduce nuisance, and supports regional health and sustainability goals</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous monitoring and compliance with air quality standards</li> <li>• Policy enforcement and periodic reviews</li> <li>• Public health monitoring and adaptive strategies</li> <li>• Best practice construction and operational standards</li> <li>• Incentives for local sourcing and reuse initiatives</li> <li>• Governance frameworks and stakeholder engagement</li> </ul>
		<p><b>Temporary – Medium to Long term</b></p> <ul style="list-style-type: none"> <li>• Reduces nuisance impacts (odour, dust, noise) through modern infrastructure design</li> <li>• Reduces pollution via circular economy practices and local supply chains</li> <li>• Amplifies benefits through coordinated action and enabling environments for circular businesses</li> <li>• Mainstreaming circular construction reduces quarrying and site activities that generate PM10/PM2.5 and vibration</li> <li>• Scaling circular businesses lowers combustion-related emissions and heavy vehicle movements</li> <li>• Data-driven adaptive management targets hotspots, improving neighbourhood air quality and amenity</li> <li>• Use of reclaimed materials reduces high-impact deliveries and site disturbances</li> <li>• Rapid diversion of organics and problem wastes lowers odour and uncontrolled burning</li> </ul>	<ul style="list-style-type: none"> <li>• Dust suppression (misting, covers), odour abatement (biofilters/activated carbon), acoustic barriers, vibration limits, light shielding</li> <li>• Route heavy vehicles away from sensitive receptors (schools/hospitals); enforce no-idling; consolidate deliveries; ULEV/electric where feasible</li> <li>• Short-term air/nuisance monitoring with trigger thresholds; incident reporting; immediate containment/correction</li> <li>• Awareness &amp; training on nuisance minimisation; driver/operator training on eco-routing and idling; quick guidance for contractors</li> </ul>
<p><b>Strategic actions to enable circular businesses and promote best practices offer long-term benefits for air quality and community well-being, with only minor, short-term, and easily mitigated construction-related impacts.</b></p>			

Climatic factors	++	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Embedding low-carbon standards into infrastructure, design and construction planning</li> <li>• Localised supply chains decrease transport emissions</li> <li>• Systemic efficiency and sustained lifecycle emissions reductions</li> <li>• Substantial contribution to Scotland's Net Zero 2045 target</li> <li>• Strong cumulative and synergistic benefits that align policies, resources, and actions across sectors for long-term climate mitigation</li> </ul>	<ul style="list-style-type: none"> <li>• Regular compliance checks and future-proofed design guidelines</li> <li>• Policy integration and continuous innovation incentives</li> <li>• Ongoing monitoring and adaptive policy frameworks</li> <li>• Support for local businesses and low-carbon transport options</li> <li>• Quality assurance and material certification systems</li> </ul>
		<p><b>Temporary - Short to Medium term</b></p> <ul style="list-style-type: none"> <li>• Immediate greenhouse gas reductions by diverting waste from landfill - cutting methane and CO<sub>2</sub> emissions</li> <li>• Efficient and cleaner logistics and renewable-powered operations</li> <li>• Standardised low-carbon operations region-wide reduces cumulative emissions across the system</li> <li>• Scaling circular businesses lowers upstream extraction/processing emissions and downstream disposal emissions</li> <li>• Mainstream circular construction (deconstruction, reclaimed materials) cuts concrete/steel demand and associated GHGs</li> <li>• Data-driven adaptive management targets high-emission hotspots and improves efficiency</li> <li>• Better siting and logistics reduce heavy-vehicle miles and energy intensity.</li> <li>• Reduced raw material extraction, energy-intensive manufacturing, and waste processing, lowering emissions across supply chains while saving energy and resources</li> </ul>	<ul style="list-style-type: none"> <li>• Rapid organics diversion; halt open burning; optimise loading, storage, and handling to minimise energy use and fugitive emissions</li> <li>• Route consolidation, eco-driving, no-idling enforcement; schedule off-peak to reduce congestion emissions; river/operator coaching; site energy housekeeping (switch-off, maintenance)</li> </ul>
<p><b>Overall risks are minimal and short-term, with minor emissions possible during construction, material recovery, or transport; these are far outweighed by long-term benefits and can be mitigated through renewable energy, efficient design, and future-proofed technologies.</b></p>			

**Material assets**

**++**

**Permanent - Long term**

- Circular businesses reduce waste to landfill and energy recovery through reuse, repair, and recycling
- These actions cut material leakage, litter, and demand for virgin resources like minerals, timber, and fossil fuels
- Lower reliance on resource-intensive manufacturing eases pressure on energy and water systems
- Supporting circular businesses and innovation strengthens infrastructure resilience and promotes sustainable design
- Embedding circular principles into policy and planning enables closed-loop supply chains
- Over time, these measures reduce leakage, conserve natural resources, and improve systemic efficiency
- Collectively, they make a meaningful contribution to Scotland's Net Zero 2045 target and long-term sustainability

- Expand local reuse, repair, and refurbishment facilities to keep materials in circulation
- Provide incentives for circular businesses and secondary-material use
- Strengthen design standards for durability, recyclability, and design-for-disassembly
- Embed circularity requirements into planning and procurement policies
- Support closed-loop supply chains and industrial symbiosis between businesses
- Improve waste segregation and high-quality recycling systems
- Promote skills development in repair, remanufacturing, and sustainable design
- Encourage adaptive reuse of existing buildings to reduce need for new construction
- Use digital tools (e.g., material passports) to track resources and enable reuse
- Align circular economy actions with Net Zero planning and infrastructure strategies

Overall risks to material assets from this strategic priority are minimal, with only minor, short-term challenges such as infrastructure upgrades, resource use, or transitional inefficiencies, all of which are mitigable through sustainable design, renewable energy integration, and careful planning, ensuring long-term benefits far outweigh any drawbacks.

<b>Cultural heritage and the historic environment</b>	<b>+</b>	<b>Long term</b> <ul style="list-style-type: none"> <li>• Advanced heritage conservation within sustainability frameworks</li> <li>• Safeguards historic environments and cultural assets</li> <li>• Enhances climate resilience and aligns heritage protection with decarbonisation goals</li> <li>• Embeds heritage considerations into waste and climate strategies, reducing landfill pressure, encouraging adaptive reuse of historic buildings, and lowering emissions</li> <li>• Positive cumulative and synergistic benefits that strengthen climate resilience and integrate heritage into a low-carbon future</li> </ul>	<ul style="list-style-type: none"> <li>• Heritage-sensitive design and compliance with conservation standards Use reversible interventions and consult heritage specialists</li> <li>• Clear planning guidance and monitoring frameworks</li> <li>• Careful dismantling and cataloguing of heritage components</li> <li>• Quality assurance and structural integrity checks</li> <li>• Stakeholder engagement and capacity-building programs</li> </ul>
<p><b>Risks from circular economy and sustainability strategies for the historic environment are generally low but include potential disruption or loss of character if heritage considerations are overlooked. Through robust planning and heritage-sensitive design these impacts are mitigable and as such are deemed low risk.</b></p>			

SEA Topic	Overall Evaluation of Effect	Duration and Timeframe of Effect (Temporary or Permanent) (Short / Medium / Long)	Proposed Mitigation and/or Enhancement Measures
<b>CES Strategic Priority 5 – Behaviour Change</b>			
<b>Biodiversity, flora and fauna</b>	<b>+</b>	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Reduces pressure on habitats by cutting demand for virgin materials and avoiding land-take, fragmentation, and disturbance.</li> <li>• Lowers waste and pollution, reducing risks like litter, leachate, and harm to wildlife.</li> <li>• Extends product life and encourages repair, lowering emissions and supporting healthier, nature-friendly supply chains and end-of-life practices.</li> <li>• Broad uptake of circular practices reduces cumulative habitat loss and multiple biodiversity pressures over time.</li> <li>• Works even better when paired with other sustainability actions like renewables and eco-design.</li> <li>• Supports and strengthens conservation efforts and nature-based solutions for greater biodiversity benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Heritage-sensitive design and compliance with conservation standards</li> <li>• Use reversible interventions and consult heritage specialists</li> <li>• Clear planning guidance and monitoring frameworks</li> <li>• Careful dismantling and cataloguing of heritage components</li> <li>• Quality assurance and structural integrity checks</li> <li>• Stakeholder engagement and capacity-building programs</li> </ul>
<p>Circular behaviours generally reduce extraction and waste, so direct harm is unlikely. Any negatives tend to be indirect and minor and are generally minimal compared to the significant environmental benefits.</p>			

<b>Population and human health</b>	<b>+</b>	<b>Permanent - Long term</b> <ul style="list-style-type: none"> <li>• Circular behaviours improve health by reducing pollution and exposure to harmful emissions</li> <li>• Cleaner air, water, and soil support better physical and mental wellbeing</li> <li>• Less waste and cleaner environments improve quality of life in communities</li> <li>• Circular practices create local green jobs and make goods more affordable</li> <li>• Reuse and repair initiatives build community resilience and reduce climate-related health risks</li> <li>• Cleaner streets and reduced litter improve urban environments</li> <li>• Lower resource extraction protects natural and historic places</li> <li>• Widespread circular behaviours reduce pollution, emissions, and waste-related health hazards</li> <li>• They help lower respiratory and waterborne illnesses and reduce health inequalities</li> <li>• Circularity strengthens local economies and improves access to services through sharing networks</li> <li>• Benefits increase when combined with other sustainable practices (e.g., clean energy, green infrastructure, active travel, heritage conservation)</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain strict environmental standards and monitoring</li> <li>• Workforce training and equitable job access policies</li> <li>• Policy incentives and compliance frameworks</li> <li>• Heritage-sensitive planning and resource efficiency standards</li> <li>• Community engagement and enforcement of waste regulations</li> <li>• Support for small businesses and fair wage policies</li> <li>• Ensure equitable access and digital inclusion initiatives</li> <li>• Provide funding and technical support for local initiatives</li> </ul>
<p>Minor risks from circular behaviours are likely to be indirect, negligible, and easily mitigated through regulation, occupational health standards, equitable service distribution, and decarbonised logistics.</p>			

Soil	+	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Aligns with climate mitigation and land-use planning strategies</li> <li>• Reduces soil contamination by cutting landfill disposal and leachate risks</li> <li>• Lowers illegal dumping, helping protect soil quality</li> <li>• Reduces demand for virgin materials, preventing land disturbance and soil damage</li> <li>• Helps maintain soil structure and natural soil functions</li> <li>• Cuts long-term pressures on soil, reducing contamination and erosion</li> <li>• Supports soil health, carbon storage, and productive land use</li> <li>• Works well alongside composting, climate mitigation, and good land-use planning to boost soil and carbon benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain strict landfill diversion targets and monitoring systems</li> <li>• Quality control for compost and soil amendments</li> <li>• Policy enforcement and adaptive planning</li> <li>• Public awareness campaigns and enforcement of anti-dumping laws</li> <li>• Certification systems for reused materials and sustainable sourcing policies</li> <li>• Provide technical guidance and ensure safe composting practices</li> </ul>
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There are no inherent negative impacts on soil quality or function from circular behaviours, and any minor risks (e.g., temporary storage of reusable materials) are negligible and easily mitigated through best-practice handling and site management.

Water	+	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Enhances water security and aquatic ecosystem health</li> <li>• Supports biodiversity by reducing contamination risks</li> <li>• Creates systemic improvements in water sustainability and quality</li> <li>• Circularity lowers water demand by reducing the need for virgin material extraction and manufacturing</li> <li>• Reuse, repair, and recycling help conserve water resources and reduce pollution from industry</li> <li>• Less landfill and incineration means lower risk of contaminated runoff entering water bodies</li> <li>• Eco-design and cleaner production reduce the embedded water in products and limit hazardous substances</li> <li>• Circular practices cut waste disposal and industrial discharges, improving water quality</li> <li>• When combined with water-efficiency standards and pollution-prevention policies, circularity strengthens overall water sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous monitoring and enforcement of water efficiency standards</li> <li>• Robust pollution control systems and eco-design requirements</li> <li>• Regular audits and technology upgrades for water recycling systems</li> <li>• Promote water-efficient technologies and incentivize reuse networks</li> <li>• Best-practice landfill management and leachate containment</li> <li>• Standards for water-efficient product design and certification</li> </ul>
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Circular behaviours pose no inherent risks to sustainable water use or quality; any minor, localized impacts are negligible and easily mitigated through best-practice efficiency, closed-loop reuse, and robust pollution controls.

Air	+	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Circular behaviours reduce emissions from virgin material extraction and manufacturing</li> <li>• Lower industrial activity cuts pollutants such as NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, and VOCs</li> <li>• Reduced heavy machinery use decreases noise, vibration, and dust</li> <li>• Circularity promotes eco-design and cleaner, more efficient production across supply chains</li> <li>• More local repair and reuse reduce freight intensity and transport-related emissions</li> <li>• Smaller, controlled environments for repair minimise dust and odour impacts</li> <li>• Cumulatively improves ambient air quality and enhance community well-being across Perth and Kinross</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain strict air quality standards and continuous monitoring</li> <li>• Enforce eco-design regulations and incentivize innovation</li> <li>• Support local circular hubs and decarbonised logistics</li> <li>• Best-practice operational standards and dust suppression measures</li> <li>• Cleaner technologies and renewable energy integration</li> <li>• Ventilation systems and odour control technologies</li> </ul>
<p>There are no inherent negative impacts on air quality or nuisance levels from circular behaviours when implemented with proper standards; any minor risks, such as emissions from informal repair or reverse logistics, are negligible and easily mitigated through best practice and clean technologies.</p>			

<b>Climatic factors</b>	<b>++</b>	<b>Permanent - Long term</b> <ul style="list-style-type: none"> <li>• Circular behaviours cut emissions by reducing the need for virgin material extraction and manufacturing</li> <li>• Repair, reuse, and remanufacturing lower industrial energy use and fossil fuel combustion</li> <li>• Eco-design and efficiency improvements reduce operational emissions and support low-carbon supply chains</li> <li>• Less freight for new goods and more local repair decrease transport-related emissions</li> <li>• These actions systematically reduce material throughput and energy demand across sectors</li> <li>• Circularity complements renewable energy deployment and transport electrification</li> <li>• Widespread adoption helps accelerate progress toward Scotland’s Net Zero 2045 target</li> </ul>	<ul style="list-style-type: none"> <li>• Continuous policy alignment and monitoring of emissions reductions</li> <li>• Incentivize circular business models and enforce eco-design standards</li> <li>• Cross-sector collaboration and infrastructure investment</li> <li>• Promote renewable-powered recycling facilities and efficient logistics</li> <li>• Provide technical support and incentives for repair networks</li> <li>• Decarbonised logistics and route optimization</li> </ul>
<p>There are no inherent negative impacts on greenhouse gas emissions from circular behaviours; any minor risks, such as emissions from reverse logistics, are negligible and easily mitigated through clean transport and efficiency measures.</p>			

<p><b>Material assets</b></p>	<p><b>++</b></p>	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Circular behaviours reduce pressure on material assets and ease strain on energy and water infrastructure</li> <li>• Reuse, repair, remanufacturing, and high-quality recycling keep materials in circulation and minimise leakage to landfill or incineration</li> <li>• Eco-design, resource-efficient processes, and service-based models lower material intensity and improve recyclability across value chains</li> <li>• Extending product lifetimes reduces the need for new assets, supporting infrastructure resilience and sustainable resource management</li> <li>• At scale, these practices deliver cumulative reductions in resource throughput and long-term pressure on natural resources</li> <li>• Circularity complements measures like renewable energy adoption and water-efficiency initiatives</li> <li>• Collectively, these actions create systemic improvements in resilience and environmental quality</li> </ul>	<ul style="list-style-type: none"> <li>• Embed circular principles in infrastructure planning and procurement</li> <li>• Policy incentives and monitoring of material flows</li> <li>• Cross-sector collaboration and adaptive governance frameworks</li> <li>• Provide technical support and enforce quality standards</li> <li>• Promote eco-design and resource-efficient technologies</li> <li>• Develop regulatory frameworks and consumer protection measures</li> </ul>
<p>There are no inherent negative impacts on material assets from circular behaviours; any minor risks - such as increased local repair activity or temporary storage of reusable items - are negligible and easily managed through good practice and appropriate infrastructure.</p>			

<p><b>Cultural heritage and the historic environment</b></p>	<p><b>+</b></p>	<p><b>Permanent - Long term</b></p> <ul style="list-style-type: none"> <li>• Circular behaviours help retain historic buildings by reducing demand for demolition and new construction</li> <li>• Repair, reuse, and refurbishment extend building lifetimes and preserve cultural and historical value</li> <li>• These practices cut embodied carbon by avoiding the emissions linked to new builds</li> <li>• Adaptive reuse and sensitive retrofitting improve energy efficiency without compromising heritage integrity</li> <li>• Maintaining historic structures supports resource conservation and improves climate resilience</li> <li>• Embedding reuse and low-carbon retrofitting in development aligns heritage protection with climate and decarbonisation goals</li> <li>• Preserved historic environments strengthen cultural identity, enhance tourism, and support Scotland’s net-zero ambitions</li> </ul>	<ul style="list-style-type: none"> <li>• Apply heritage-sensitive design standards and conservation best practices</li> <li>• Use reversible interventions and consult heritage specialists</li> <li>• Robust planning and stakeholder engagement</li> <li>• Provide technical guidance and funding for heritage-sensitive retrofits</li> <li>• Ensure compliance with conservation regulations and energy standards</li> <li>• Climate adaptation planning and reversible design solutions</li> </ul>
<p>There are no inherent negative impacts on historic environment assets from circular behaviours; any minor risks are negligible and can be mitigated through heritage-sensitive design standards and robust planning,</p>			