

Birmingham City University / Students' Union Aspects and Impacts Register

Waste

| Aspects | Impacts description |
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| Production of non - hazardous waste | Potential for waste to be disposed of to landfill. Waste degradation produces methane, a greenhouse gas 10 times more powerful than CO ₂ , and leachate potentially leading to the contamination of land and controlled waters. Pests may also be attracted to the landfill potentially causing a nuisance to neighbouring areas and spreading disease or contaminants. There is also a risk to human health from contaminants leaving the site via air, land or water. Waste production, and the sending of waste to landfill, also contributes to resource depletion as these resources are not then available for reuse or recycling. Biodiversity will also be negatively affected in areas that have been turned over to landfill activities. |
| Production of hazardous waste | The production, handling and storage of hazardous wastes pose a risk to human health and the environment because of the hazardous properties of the waste. Potential for waste to be disposed of to a hazardous waste landfill. Waste degradation produces methane, a greenhouse gas 10 times more powerful than CO ₂ , and contaminated leachate potentially leading to the contamination of land and controlled waters with hazardous substances. Pests may also be attracted to the landfill potentially causing a nuisance to neighbouring areas and spreading disease or contaminants. There is also a risk to human health from contaminants leaving the site via air, land or water. Waste sent to landfill also contributes to resource depletion as these resources are not then available for reuse or recycling. Biodiversity will also be negatively affected in areas that have been turned over to landfill activities. |
| Storage of non - hazardous waste | The inadequate segregation and storage of waste can lead to leaks and spillages that can pose a risk to the local environment. Controlled waters and the local land and air may become contaminated. There is also a risk to human health from the uncontrolled release of waste. Inadequate storage can also attract vermin to an area increasing the risk of contaminants and disease being spread. |

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| Storage of hazardous waste | Hazardous wastes must be segregated and stored appropriately otherwise they pose a serious risk to the environment and human health. The inadequate storage of hazardous waste can lead to leaks and spillages that can pose a serious risk to the environment. Controlled waters and the local land and air may become contaminated. Poor segregation of these wastes can also lead explosions and the increased risk of fires on site which would lead to the contamination of air, and potentially land and water. There is also a risk to human health from the poor storage or uncontrolled release of hazardous waste. Inadequate storage can also attract vermin to an area increasing the risk of contaminants and disease being spread. |
| Disposal of non - hazardous wastes | Final disposal of non hazardous waste is likely to involve waste being disposed of to landfill or burnt in an incinerator. Waste degradation in a landfill produces methane, a greenhouse gas 10 times more powerful than CO ₂ , and leachate potentially leading to the contamination of land and controlled waters. Pests may also be attracted to the landfill potentially causing a nuisance to neighbouring areas and spreading disease or contaminants. There is also a risk to human health from contaminants leaving the site via air, land or water. Waste sent to an incinerator is likely to result in pollution of the air. The unnecessary production, and sending it to landfill or an incinerator, also contributes to resource depletion as these resources are not then available for reuse or recycling. Biodiversity will also be negatively affected in areas that have been turned over to landfill or incinerator activities. |
| Disposal of Hazardous waste | Final disposal of hazardous waste is likely to involve waste being disposed of to a hazardous waste landfill. Waste degradation in a hazardous waste landfill produces methane, a greenhouse gas 10 times more powerful than CO ₂ , and hazardous leachates which pose a high risk in terms of both the contamination of land and controlled waters. Pests may also be attracted to the landfill potentially causing a nuisance to neighbouring areas and spreading disease or contaminants. There is also a significant risk to human health in the event of contaminants leaving the site via air, land or water. The unnecessary use of hazardous materials and therefore the production of hazardous waste leads to an increased risks to both human health and the environment. It can also contribute to resource depletion as these resources are not then available for reuse or recycling. Biodiversity will also be negatively affected in areas that have been turned over to landfill activities. |

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| Recycling of waste | Recycling of waste materials, both hazardous and non-hazardous, reduces the amount of waste sent to landfill and therefore resource depletion (as these waste materials displace the need for some or all raw materials in a process). Recycling is likely to require some input of energy and potentially water into the process which, if not from renewable sources, will result in pollution of the air and the use of water. There may also be a requirement to transport the waste to the site where reprocessing can take place resulting in further air pollution. |
| Reuse of waste | Reuse of waste in it's current state is beneficial for the environment. It does not require the input of further energy, water, transport etc and it reduces the use of raw materials to produce new products. |

Energy

| Aspects | Impacts description |
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| Use of Electricity from the National grid | Production of CO ₂ leading to climate change and global warming resulting in sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Depletion of finite gas and oil resources. Production of oxides of nitrogen leading to photochemical smog formation, resulting in damage to human health, damage to plants and reduction of biodiversity. Production of sulphur dioxide leading to damage to human respiratory health and formation of acid rain resulting in forest decline and lake acidification. |
| Use of Gas from National Supply | Production of CO ₂ leading to climate change and global warming resulting in sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Depletion of finite gas and oil resources. Production of oxides of nitrogen leading to photochemical smog formation, resulting in damage to human health, damage to plants and reduction of biodiversity. Production of sulphur dioxide leading to damage to human respiratory health and formation of acid rain resulting in forest decline and lake acidification. |

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| <p>Reduction of electricity use from national grid through programme of energy efficiency and reduction measures.</p> | <p>Reduction of CO2 emissions reducing the contribution to climate change, global warming and resulting sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Reduction of nitrogen oxide emission reducing the production of photochemical smog and associated reduction in air quality. This reduces the damage to human health, damage to plants and reduction of biodiversity. Reduction of sulphur dioxide generation, reducing the damage to human respiratory health and formation of acid rain and associated forest decline and lake acidification.</p> |
| <p>Reduction of gas use from national supply through programme of energy efficiency measures including improved monitoring of gas use in all buildings</p> | <p>Conservation of finite gas and oil resources. All impacts generated in upstream life-cycle but in particular natural resource depletion is directly associated with consumption; and harm to human health can be reduced by ensuring systems are maintained in accordance with applicable legislation. Reduction of CO2 emissions reducing the contribution to climate change, global warming and quality of life and biodiversity.</p> |
| <p>Use of electricity derived from renewable sources via Green Electricity Contracts</p> | <p>(+) Reduction of CO2 emissions reducing the contribution to climate change, global warming and resulting sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity.(+) Reduction of nitrogen oxide emission reducing the production of photochemical smog and associated reduction in air quality. This reduces the damage to human health, damage to plants and reduction of biodiversity. (+) Reduction of sulphur dioxide generation, reducing the damage to human respiratory health and formation of acid rain and associated forest decline and lake acidification.</p> |
| <p>Use of Air Conditioning</p> | <p>Production of CO2 leading to climate change and global warming resulting in sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Depletion of finite oil resources. Production of oxides of nitrogen leading to photochemical smog formation, resulting in damage to human health, damage to plants and reduction of biodiversity. Noise: Noise pollution can cause human health problems such as annoyance, stress, circulation of germs etc. CFC and Ozone depleting substances.</p> |

Water

| Aspects | Impacts description |
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| Use of Water | Fresh water resource depletion. Use of chlorine / ozone in treatment and potential risk of damage to human health and ecosystems. |
| Production of waste water | Production of potentially polluting effluents requiring treatment prior to discharge back into controlled waters. |

Transport

| Aspects | Impacts description |
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| Provision and use of car parking on campuses | Loss of habitat and green areas resulting in reduced localised species diversity and the potential for increased flooding due to depleted ground area for water to be absorbed into. Potential contamination of surface and groundwater with petrol, diesel, oil, salt and heavy metals such as lead and platinum contained in run off some vehicles and road. Potential entry of above into freshwater and soil ecosystems leading to reduction in species diversity. |
| Use of fossil fuel for transport, generating equipment and machinery etc. | Production of CO2 leading to climate change and global warming resulting in sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Production of oxides of nitrogen leading to photochemical smog formation, resulting in damage to human health, damage to plants and reduction of biodiversity. Production of sulphur dioxide leading to damage to human respiratory health and formation of acid rain resulting in forest decline and lake acidification. Production of carbon monoxide and volatile organic carbons resulting in damage to human respiratory health. Production of PM10 and PM2.5 particulates resulting in damage to human respiratory health. Depletion of finite natural resources. |

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| Reduction in the use of unsustainable modes of transport (through Sustainable Travel Plan) | Reduction of emissions of CO ₂ , SO _x and NO _x and a reduced impact on local air quality and human health, plants and biodiversity. Production of CO ₂ leading to climate change and global warming resulting in sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Depletion of finite natural resources. |
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Emissions

| Aspects | Impacts description |
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| Emissions (from heating flues), boilers for heating and hot water, engine test systems, oil run emergency generator. Also from fire protection equipment etc | Depletion of finite gas reserves. Gas boilers require high maintenance standards to prevent risk to human health. Production of CO ₂ leading to climate change and global warming resulting in sea level rise, changing weather patterns, increased incidence of pest / diseases, damage to human health / quality of life and biodiversity. Depletion of finite oil resources. Production of oxides of nitrogen leading to photochemical smog formation, resulting in damage to human health, damage to plants and reduction of biodiversity. Production of sulphur dioxide leading to damage to human respiratory health and formation of acid rain resulting in forest decline and lake acidification. Production of PM ₁₀ and PM _{2.5} particulates resulting in damage to human respiratory health. |
| Emissions from fume cupboard and use of chemicals. Solvents (arts, photography, printing etc), use of some cleaning materials | Solvents and Chemicals: Various health problems can be caused if these substances enter the body, damage can also occur to the local ecosystems and food chains e.g. DDT |

Discharges

| Aspects | Impacts description |
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| Discharges to water | Negative impact on local environment (contamination/potential pollution of local fresh water courses and soil eco systems). Possible soil erosion – leading to contamination/silting of fresh water stream/lake - threat to local stream/lake and wildlife therein/on including significant fishing amenity. Potential damage to eco systems/reduction in biodiversity. All have negative impact on quality of water supply, requiring cleaning and potential threat to human and animal health |
| Effluent disposal - (use of municipal water - bathrooms/cleaners, discharge of effluent to sewers) | Possible breaches of disposal agreements. • Human health and safety issues, potential for spillage into the surrounding environment. Inadequate storage/containment leading to increased risk of pollution to local and wider environment. • Contribution to global warming through landfill gas or incinerator emissions leading to production of CO2 into atmosphere. • Pollution through emissions/effluent to air, land or water from production process, production related energy usage which releases emissions and discharges to land, water or air causing pollution to the environment. • Increased risk of damaging bio-diversity at a local and national level. Potential release of nitrates, phosphates and organic effluents to local watercourses, leading to fish death and reduced species diversity. Loss of water as a natural resource use of chlorine / ozone in treatment and potential risk of damage to human health and ecosystems • Aesthetics, nuisance |
| Surface water run-off to ground water | Contamination of groundwater and surface water with petrol, diesel, oil, salt and heavy metals such as lead and platinum (e.g. from car parking areas). Loss of ground water as a resource. Possible entry of the above into drinking water supplies – damaging human health. Possible entry into soil ecosystems leading to reduction in species diversity. |

Construction

| Aspects | Impacts description |
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| Asbestos survey | Potential release of asbestos fibres into the atmosphere resulting in potential damage to human health. Potential waste disposal issues - disposal in a stable non reactive hazardous landfill cell - potential for local contamination if fibres released. |
| Construction, refurbishment and maintenance of buildings | Depletion of natural resources. Contribution to global warming through transport emissions and emissions during construction resulting from the release of CO ² into atmosphere. Release of contaminants, through leaks and spillages, into the atmosphere resulting in potential damage to human health and localised species. Depletion of natural resources such as timber, aggregates, metal products and water etc. Local atmospheric contamination from the use of hazardous substances such as solvents, lubricants and adhesives can lead to damage to human health. Many impacts generated in upstream life-cycle. For example, solvent based paints are known to emit VOCs during use, thereby aggravating local air quality (through contributing to smog formation). There is scope to influence or control this aspect by specifying sustainable materials and adoption of BREEAM guidance etc. |
| Use of non - sustainable construction materials | Depletion of natural resources. Negative contribution to global warming through transport emissions and emissions during construction resulting from the release of CO ₂ into atmosphere, increased waste generation, low cost may be indicative of poor quality and less attention to detail in meeting the required need, resulting in e.g.high repair costs – increased waste, frequent replacement – increased waste, Cheap raw materials or components could mean no attention has been paid to difficulty of waste disposal (e.g. Hazardous or WEEE waste thus increasing environmental risk). In the case of Electrical and Electronic Equipment cheaper product may have higher energy consumption). |
| Use of sustainable building materials | Use of sustainable materials decreases the depletion of natural resources |

Purchasing

| Aspects | Impacts description |
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| Purchase of non-sustainable goods and services | Depletion of natural resources. Negative contribution to global warming through transport emissions and emissions during construction resulting from the release of CO2 into atmosphere, increased waste generation, low cost may be indicative of poor quality and less attention to detail in meeting the required need, resulting in e.g. high repair costs – increased waste, frequent replacement – increased waste, Cheap raw materials or components could mean poorer environmental performance, no attention has been paid to difficulty of waste disposal (e.g. Hazardous or WEEE waste thus increasing environmental risk) etc. In the case of Electrical and Electronic Equipment cheaper product may also have higher energy consumption). |
| Purchase of sustainable products and services | Minimum purchasing standards can be specified that have the effect of moving university away from negative environmental as listed above. Compliance and proactive approach to legislation, e.g. Hazardous waste, WEEE. Waste disposal charges, also planning laws, noise, pollution. Recommend positive purchasing policies that encourage positive effects on environmental and sustainability. Efficient use of funds means that University can focus on continuous improvement in Environmental and Sustainability issues. 'Rogue' purchasing can be quickly identified and risk of negative environmental impacts listed can be avoided. |

Biodiversity

| Aspects | Impacts description |
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| Promotion and protection of biodiversity | Improved biodiversity protection for flora and fauna. Provision of Green spaces leads to benefits for human and animal health and greater environmental awareness. Compliance with legislative requirements, policies and grounds management agreements leading to beneficial impacts on environment. |

Health and Safety

| Aspects | Impacts description |
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| Smoking in public areas | Production of cancer causing airborne chemicals, litter production, air pollution for nearby students/staff. |

Community

| Aspects | Impacts description |
|---|--|
| Noise pollution from equipment used on site, student activity etc | Generation of nuisance in the local environment including disturbance to neighbours and habitats |
| Environmental awareness raising initiatives for staff, students and the wider community | Increase in environmental awareness in the local community, support for environmental projects has a positive impact on local habitats and biodiversity. |
| Light Pollution | May cause a nuisance to the local community. Likely to affect some aspects of biodiversity. |