

Unit EMC2: Assessing environmental aspects and associated impacts

Declaration: By submitting this assessment for marking I declare that it is entirely my own work. I understand that falsely claiming that the work is my own is malpractice and can lead to NEBOSH imposing severe penalties (see the NEBOSH Malpractice Policy for further information).

Important note: You must refer to the document Unit EMC2 guidance document while completing all parts of this assessment. Your Learning Partner should provide you with a copy, but it can also be downloaded from the relevant resources section for this qualification on the NEBOSH website.

SAMPLE

1. Introduction to the organisation and methodology used

You should aim to complete this section in 200 - 250 words.

Name of organisation*	NPD University
Site location (town / area)	Neboshville
Number of workers	450 staff across the whole university, a mixture of full/part time faculty as well as non-teaching staff.
General description of the organisation	NPD is a small university with the campus located on the outskirts of the city. The university campus facilities are also used by the public for sports events, as well as other regular talks / events in lecture halls and the library.
Description of the area or process to be included in the assessment	<p>There are five café booths across campus serving takeaway hot drinks (teas and coffees), cold drinks in bottles/cans, and packaged snack foods. All booths are owned by the university and manned by directly employed university workers. These are located on the ground floor of University buildings close to offices, classrooms, and lecture theatres. One cafe is located in the library building. Most of the café's customers work or study at the university, although some locations are also open to the public. Opening times vary by location and some are closed over the weekend.</p> <p>Each booth has one or two large open refrigerators which contain cold drinks and food items. Each has a large coffee machine and hot water dispenser. Behind the counter there is a small storage area, which leads to shared service / waste collection areas behind the buildings. Each booth is located next to an open seating area, which are available for anyone to use.</p>
Any other relevant information	<p>The University has a facilities management team who have day-to-day responsibility for environmental issues. The catering manager oversees the café booths as well as all other catering facilities in the university campus. There is a full-time manager of each booth along with several part-time workers – usually students at the university.</p> <p>Legal compliance is assessed by the facilities management team; the main environmental issues which catering activities contribute to are waste and use of refrigerants.</p> <p>Environmental performance criteria also now form part of the national 'University Guide' which is highly publicised and can positively or negatively affect the number of new student applications. Senior management are therefore keen to make and publicise improvements wherever possible.</p>

* If you're concerned about confidentiality, you can invent a false name and location for your organisation. All other information provided must be factual.

You should aim to complete this section in 100 - 200 words.

<p>How the aspect and impact assessment was carried out, including:</p> <ul style="list-style-type: none">- sources of information consulted;- who you spoke to; and- how existing controls were identified	<p>I spoke with the catering manager to get a general overview of the café booths, locations, volume of sales etc. I then visited a couple of the locations during a busy morning period to observe activities that took place. Whilst there I spoke to one of the café managers and one of the part-time workers, for more information on the day-to-day running.</p> <p>After my initial observations I looked at a few internal documents for more information on the controls which are currently in place:</p> <ul style="list-style-type: none">- NPD Environmental policy (this applies across the whole university and is available on the public website);- waste management procedures, equipment inspection records, and monitoring records (requested from facilities management team); and- procurement policy / supplier approval process (received from catering manager). <p>I also looked at last year's national 'University Guide' to see what environmental criteria were considered, and for beneficial practices done by other Universities that we might be able to implement. I did a small amount of general online research when making my recommendations. For example, I looked at some environmental labelling schemes that are used on tea and coffee, and possible alternative packaging options.</p>
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Note: this section can be completed after you have completed your full assessment.

2. Identifying environmental aspects, associated impacts, and existing controls

Activity, product, or service	Aspect	Operating condition(s)	Associated impacts	Existing controls	Significance rating	Criteria
Packaged food / cold drinks						
Refrigerators – running	electricity usage	Normal	Depletion of non-renewable resources for electricity generation	none	3 (significant)	‘aspect is not fully controlled under normal conditions’ ‘multiple instances of same issue’
	refrigerant usage	Normal	Ozone depletion / global warming in event of leak	Register of refrigerants has been compiled and is regularly reviewed to ensure only legal refrigerants are used Contracted maintenance company carry out servicing and refrigerant leak testing annually	3 (significant)	‘potential breach of legislation’ ‘multiple instances of same issue’
Refrigerators - disposal	Hazardous (electrical) waste	Abnormal	Ozone depletion / global warming in event of leak Land contamination in event of waste to landfill	Waste is stored securely before collection Suitable waste contractors approved/used for disposal	3 (significant)	‘potential breach of legislation’ ‘business threat from impacts’ (if not disposed of properly)
Food / drink sourcing	Resource use / environmental damage during manufacture	Normal	Depletion of natural resources Deforestation Changes in land use leading to biodiversity loss	Purchasing policy is in place for entire business to favour products with environmental certification and/or that are sourced from local businesses	2 (minor)	‘aspect controlled under normal conditions’ ‘no potential for breach of legislation or other compliance obligation’
	Fuel use as part of distribution/delivery network	normal	Generation of greenhouse gases / contribution to global warming			
Food / drink packaging	Generating waste on and offsite - Delivery packaging - Consumer waste - Litter on campus	Normal	Depletion of resources Waste to landfill / incineration Local water / land pollution	Waste is separated into ‘recyclable’ and ‘general waste’ Waste is stored securely before collection	3 (significant)	‘aspect is not fully controlled under normal conditions’

Activity, product, or service	Aspect	Operating condition(s)	Associated impacts	Existing controls	Significance rating	Criteria
				Licensed waste carriers used for all types of waste		'multiple instances of the same issue / large volumes involved'
Hot drinks						
Single-use cups	Use of natural resources during manufacture and distribution	Normal	depletion of natural resources	None - offered as standard to all customers (customers own reusable cups accepted but not promoted / encouraged)	3 (significant)	'Aspect is not currently controlled under normal conditions' 'interested parties aware of issue'
	Generating waste on and offsite - Delivery packaging - Consumer waste (non-recyclable)	normal	Waste to landfill / incineration Local water / land pollution	'Recyclable' and 'general waste' bins available Waste is stored securely before collection Licensed waste carriers used for all types of waste	3 (significant)	'large volumes involved'
Single-use / individual items available to customers (stirrers, sachets) at counter	Use of natural resources during manufacture and distribution	Normal	depletion of natural resources	Purchasing policy is in place for entire business to favour products with environmental certification	3 (significant)	'aspect is not fully controlled under normal conditions' 'interested parties aware of issue'
	Generating waste on and offsite - Delivery packaging - Consumer waste - Litter on campus	normal	Waste to landfill / incineration Local water / land pollution	'General waste' bins available at counters Waste is stored securely before collection Licensed waste carriers used for all types of waste		'large volumes involved'

Activity, product, or service	Aspect	Operating condition(s)	Associated impacts	Existing controls	Significance rating	Criteria
Consumables – sourcing (coffee, teabags, milk)	Resource use / environmental damage during manufacture Fuel use as part of distribution/delivery network	Normal	Depletion of natural resources Deforestation Changes in land use leading to biodiversity loss Global warming	Purchasing policy is in place for entire business to favour products with environmental certification and/or that are sourced from local businesses	2 (minor)	‘aspect controlled under normal conditions’ ‘no potential for breach of legislation or other compliance obligation’
Consumables – disposal (coffee, teabags)	Large volumes of food waste Generation of greenhouse gases (during decomposition)	Normal	Waste to landfill Global warming	‘Recyclable’ and ‘general waste’ bins available No guidance on food waste Waste is stored securely before collection Licenced waste carriers used for all types of waste	3 (significant)	‘aspect is not fully controlled under normal conditions’ ‘large volumes involved’
Promotional displays / branding						
Replacing seasonal signage	Paper use Ink use Electricity use Generation of greenhouse gases as part of the distribution/delivery network	Normal	Depletion of natural resources for energy use Deforestation Global warming	None	3 (significant)	‘aspect is not fully controlled under normal conditions’
	Waste generation (Mixture of recyclable and non-recyclable printed materials)	normal	Waste to landfill	None - no guidance on what materials are recyclable		
Branded uniforms – new for all team members	Raw materials for textile manufacture Dye / processing Electricity use during embroidery (branding)	Abnormal	Depletion of natural resources Deforestation Changes in land use leading to biodiversity loss Global warming	Purchasing policy is in place for entire business to favour products with environmental certification	2 (minor)	‘no potential for breach of legislation or other compliance obligation’ ‘multiple instances of the same issue’

Activity, product, or service	Aspect	Operating condition(s)	Associated impacts	Existing controls	Significance rating	Criteria
	Fuel use as part of distribution/delivery network					
	Textile waste generated	Abnormal	Waste to landfill	Currently no guidance for staff on disposal		'no potential for breach of legislation or other compliance obligation' 'small quantities involved'

SAMPLE

3. Significant aspects, key issues, and recommended additional measures

You should aim to complete this section in 300 - 400 words for each aspect.

Significant aspect 1: Electricity usage (refrigerators – running)			
<p>Explanation of significance:</p> <p>Including reference to:</p> <ul style="list-style-type: none"> - environmental receptors that may be affected through associated impacts - business concerns, relevant compliance obligations, needs and expectations of interested parties - the link to key environmental issues - the likelihood and severity of identified impacts (with current controls in place) 	<p>This aspect of fridges running is present under normal operating conditions and is a key part of the function of the café booths, as most of the cold foods, snacks and drinks are stored there. Electricity usage and its impacts is an issue as the equipment is present in all locations covered in this assessment, and this usage contributes to the university's wider statistics. The electricity used by the university is produced from non-renewable carbon, which is a depleting natural resource, and also produces CO₂ - a greenhouse gas which contributes to global warming.</p> <p>Global warming is a current focus internationally as an urgent environmental issue, with national targets to minimise temperature increases. The severity of global warming has been demonstrated, with its knock-on effects to many other global environmental issues including damage to ecosystems as well as rising sea levels.</p> <p>The refrigerators run all day and night. Three of the five café booths are closed over the weekend; however the fridges are left running. Café staff indicated that they have never been instructed to turn them off over the weekend, but there would be no issue with this (based on what items are left over the weekend). This would immediately reduce the energy consumption for the cafes.</p> <p>The refrigerators are open cabinets which means that cold air is constantly escaping. These particular models are relatively old and therefore are likely to be replaced soon; a different style of fridge with doors is recommended to reduce energy use further.</p> <p>There is the potential to reduce impacts still by considering energy from renewable sources, or even on-site generation (this is a wider issue for the organisation as a whole). This would reduce reliance on non-renewable resources, and likely reduce CO₂ emissions.</p>		
Recommended additional measures	Intended outcomes	Timescale for implementation	Resource requirement
Change procedure for locations which close over the weekend to turn off refrigerators.	Reduce energy usage, and associated emissions.	Immediate	Zero cost to change procedures
Consider increased monitoring in order to determine benefit/reduction in usage	Be able to quantify benefits from the changes made	1-2 months	Time – facilities team (if monitoring is increased)
Select replacements with glass doors to reduce energy and refrigerant consumption	Greatly reduce usage at all five locations	Replacement fridges – as required, based on current equipment will likely be replaced within 12 months	Financial cost of replacing fridges at all five locations = \$5000 (rough estimate). Cost could be spread through gradual replacement

Significant aspect 2: Waste generation (single-use / individual items available to customers (stirrers, sachets))

<p>Explanation of significance:</p> <p><i>Including reference to:</i></p> <ul style="list-style-type: none"> - <i>environmental receptors that may be affected through associated impacts</i> - <i>business concerns, relevant compliance obligations, needs and expectations of interested parties</i> - <i>the link to key environmental issues</i> - <i>the likelihood and severity of identified impacts (with current controls in place)</i> 	<p>The hot drinks available from the café booths are considered 'takeaway only'. Individual sachets (sugar/sweeteners), and disposable stirrers are therefore available for customers to take as required. The average customer takes one stirrer and three sachets per hot drink, across all five locations this adds up to incredibly large volumes within normal operation.</p> <p>The main issue associated is the generation of waste. Although the wooden stirrers are biodegradable, they are put into 'general waste' as they are contaminated with food and as such cannot be recycled. The sachet packets are recyclable however there are no segregated bins at the point of use and so everything goes into the general waste, which ultimately goes to landfill – likelihood of waste impact is therefore high. Waste-to-landfill is also monitored and reported on by the facilities team, recycling volumes and targets are also reported on by the university as a whole.</p> <p>Small items like this also contribute to litter around campus, which has a more direct environmental impact. Litter on land often ultimately ends up entering the watercourse and resulting in pollution, posing a threat to plant and animal life. This impact is also cumulative, and although relatively small amounts of litter arise from this activity, it is contributing to wider problems which has serious and far-reaching consequences.</p> <p>There is increasing awareness among the student body around single-use and disposable items. The booth manager I spoke to informed me that customers regularly mention this (a recent change).</p> <p>I observed that the vast majority of customers used these at the counter before leaving with their drinks. The recommendation is therefore to replace the single use items – provide spoons instead of stirrers, and replace sachets with 'pourers' – these are already used in other catering locations at the university. This could be trialled, maintaining a reduced supply of sachets to be available on request only.</p> <p>The catering department has a purchasing policy which already favours products with an environmental certification; this usually refers to the food/agricultural practices. It is recommended that the policy is expanded to include packaging materials, to help with sourcing in the future, and ensure that improvements are still made, even if it is determined that some single-use items are still required.</p>
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Recommended additional measures	Intended outcomes	Timescale for implementation	Resource requirement
Replace sachets with re-fillable 'pourers', and replace wooden stirrers with (washable) spoons (already used at other catering functions)	Minimise requirement for single-use item, reducing recyclable and non-recyclable waste	1 month	Financial – relatively low cost to purchase re-usable items. Cost is offset by better value of bulk-buying sugar etc (already purchased for other catering functions)
Where replacement is not suitable, source alternatives from sustainable sources and which have recyclable packaging	Where waste cannot be eliminated, allows it to be recycled. Contributes to university waste targets.	1-2 months	Cost of bins – likely zero as these can be relocated from
		1 month	

Provide split bins at counter with signage to show what packaging can be recycled	Ensures proper segregation of waste; further contributing to waste targets / reduced waste to landfill	1-2 months	elsewhere. Signage can be produced / printed internally
Update purchasing policy to assist in sourcing decisions	Increase awareness and understanding of environmental considerations; provide information for decision-makers		Time – catering manager to research suitable alternatives and update policy

SAMPLE

Significant aspect 3: Food waste (consumables – disposal (coffee, teabags))

<p>Explanation of significance:</p> <p><i>Including reference to:</i></p> <ul style="list-style-type: none"> - <i>environmental receptors that may be affected through associated impacts</i> - <i>business concerns, relevant compliance obligations, needs and expectations of interested parties</i> - <i>the link to key environmental issues</i> - <i>the likelihood and severity of identified impacts (with current controls in place)</i> 	<p>The sale of hot drinks produces large volumes of food waste (tea and coffee). Currently this is all disposed of as general waste. Conversations with the catering manager and facilities team identified that there is an opportunity for this to be added to the on-site composter which is used on campus.</p> <p>Landfill as ultimate waste disposal is a key environmental issue as there is a finite amount of space available for sites to operate. Local disruptions are also an issue when sites are in use, as well as limited possibilities for land use once the landfill site is 'full'. Food waste being sent to landfill produces methane, which is a harmful greenhouse gas – contributing to global warming. The likelihood of this impact resulting from these activities is high, as there is currently no alternative option available for disposal. The severity of landfill impacts increases over time, as locations become harder to find and manage.</p> <p>Composting food waste is an earlier stage of the waste hierarchy, which not only reduces methane production from the same waste but will also reduce costs to the organisation (for waste removal, and by producing compost on-site).</p> <p>When I raised this suggestion to the booth managers, they implied that teabags could not be composted. After a quick check on the packaging it was confirmed that the current brand used is actually labelled as compostable.</p> <p>The changes suggested are relatively minor in practice; however, it will have a large impact on the organisation's environmental performance, based on the large volumes of waste involved.</p>
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Recommended additional measures	Intended outcomes	Timescale for implementation	Resource requirement
Separate compostable waste for collection by facilities team (procedure change)	Ensures proper segregation of waste; further contributing to waste targets; reduced waste to landfill; reduced costs of disposal	1-2 weeks	Cost of bins – likely zero as these can be relocated from elsewhere. Signage can be produced / printed internally. Zero cost to change procedures
Communication to workers to clarify which items are compostable / non-recyclable	Increase awareness and understanding of environmental considerations, enable workers to better contribute to environmental objectives	1 week	
Update purchasing policy to assist in sourcing decisions	Increase awareness and understanding of environmental considerations; provide information for decision-makers	1-2 months	

Communication and review

You should aim to complete this section in 50 - 100 words.

Timescale for review	Recommend annual review of the assessment as working procedures are unlikely to change / no planned changes.
Who should review these recommendations and how you will communicate to them	Set up brief meeting with facilities manager and catering manager to advise on findings and recommendations. They can then distribute information and actions in their departments.
Follow-up procedure(s)	Follow up in 1-2 months to check on implementation/effectiveness of recommended short-term actions, and allow for any queries on continuing actions.