

**BAT for Energy Efficiency**

<b><i>BAT reference Number</i></b>	<b><i>BAT Statement</i></b>	<b><i>Applicability to installation</i></b>	<b><i>Proposed/ in place</i></b>
<b>1</b>	BAT is to implement and adhere to an energy efficiency management system (ENEMS) that incorporates, as appropriate to the local circumstances, all of the following features (see Section 2.1. The letters (a), (b), etc. below, correspond those in Section 2.1):	Applicable	The applicant will implement and maintain a comprehensive management programme on-site to provide a maximum operating status. This plan will involve maintaining all registers, and visual inspection of all storm water outlets.  An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>2</b>	BAT is to continuously minimise the environmental impact of an installation by planning actions and investments on an integrated basis and for the short, medium and long term, considering the cost-benefits and cross-media effects.	Applicable	Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>3</b>	BAT is to identify the aspects of an installation that influence energy efficiency by carrying out an audit. It is important that an audit is coherent with a systems approach (see BAT 7).	Applicable	An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>4</b>	When carrying out an audit, BAT is to ensure that the audit identifies the following aspects (see Section 2.11):	Applicable	An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>5</b>	BAT is to use appropriate tools or methodologies to assist with identifying and quantifying	Applicable	An energy audit will be carried out if required to establish the existing energy usage and to

	energy optimisation,		identify any potential recommendations.
<b>7</b>	BAT is to optimise energy efficiency by taking a systems approach to energy management in the installation.	Applicable	The buildings and their layout are state of the art for the industry. A thorough review was undertaken of best available techniques to minimise emissions from the development as well as to maximise energy efficiency and also maximise welfare conditions for animals and staff alike on site.
<b>8</b>	<p>BAT is to establish energy efficiency indicators by carrying out all of the following:</p> <p>a. identifying suitable energy efficiency indicators for the installation, and where necessary, individual processes, systems and/or units, and measure their change over time or after the implementation of energy efficiency measures (see Sections 1.3 and 1.3.4)</p> <p>b. identifying and recording appropriate boundaries associated with the indicators (see Sections 1.3.5 and 1.5.1)</p> <p>c. identifying and recording factors that can cause variation in the energy.</p>	Applicable	Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>9</b>	BAT is to carry out systematic and regular comparisons with sector, national or regional benchmarks, where validated data are available.	Applicable	Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations. This will take heed of sector, national and regional benchmarks where applicable.
<b>10</b>	BAT is to optimise energy efficiency when planning a new installation, unit or system or a	Applicable	The buildings and their layout will be state of the art for the industry. A thorough review was undertaken of best available techniques to

	significant upgrade (see Section 2.3) by considering all of the following:		minimise emissions from the development as well as to maximise energy efficiency and also maximise welfare conditions for animals and staff alike on site.
<b>11</b>	BAT is to seek to optimise the use of energy between more than one process or system (see Section 2.4), within the installation or with a third party.	Not Applicable	Not Applicable
<b>12</b>	<p>BAT is to maintain the impetus of the energy efficiency programme by using a variety of techniques, such as:</p> <ul style="list-style-type: none"> <li>a. implementing a specific energy efficiency management system (see Section 2.1 and BAT 1)</li> <li>b. accounting for energy usage based on real ( metered) values, which places both the obligation and credit for energy efficiency on the user/bill payer (see Sections 2.5, 2.10.3 and 2.15.2)</li> <li>c. the creation of financial profit centres for energy efficiency (see Section 2.5)</li> <li>d. benchmarking (see Section 2.16 and BAT 9)</li> <li>e. a fresh look at existing management systems, such as using operational excellence (see Section 2.5)</li> <li>f. using change management techniques ( also a feature of operational excellence, see Section 2.5).</li> </ul>	Applicable	Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>13</b>	BAT is to maintain expertise in energy efficiency and energy-	Applicable	All staff are instructed on the importance of energy control and this is borne out energy, as

	<p>using systems by using techniques such as:</p> <p>a. recruitment of skilled staff and/or training of staff. Training can be delivered by in-house staff, by external experts, by formal courses or by self-study/development (see Section 2.6)</p> <p>b. taking staff off-line periodically to perform fixed term/specific investigations ( in their original installation or in others, see Section 2.5)</p> <p>c. sharing in-house resources between sites (see Section 2.5)</p> <p>d. use of appropriately skilled consultants for fixed term investigations ( e.g. see Section 2.11)</p> <p>e. outsourcing specialist systems and/or functions (e.g. see Annex 7.12)</p>		<p>consumption is inside the Industry average.</p> <p>Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.</p>
<p><b>14</b></p>	<p>BAT is to ensure that the effective control of processes is implemented by techniques such as:</p> <p>a. having systems in place to ensure that procedures are known, understood and complied with (see Sections 2.1(d)(vi) and 2.5)</p> <p>b. ensuring that the key performance parameters are identified, optimised for energy</p>	<p>Applicable</p>	<p>All staff are instructed on the importance of energy control and this is borne out energy, as consumption is inside the boundary average.</p> <p>Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.</p>

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	<p>efficiency and monitored (see Sections 2.8 and 2.10)</p> <p>c. documenting or recording these parameters (see Sections 2.1(d)(vi), 2.5, 2.10 and 2.15).</p>		
<b>15</b>	<p>BAT is to carry out maintenance at installations to optimise energy efficiency by applying all of the following:</p> <p>a. clearly allocating responsibility for the planning and execution of maintenance</p> <p>b. establishing a structured programme for maintenance based on technical descriptions of the equipment, norms, etc. as well as any equipment failures and consequences. Some maintenance activities may be best scheduled for plant shutdown periods</p> <p>c. supporting the maintenance programme by appropriate record keeping systems and diagnostic testing</p> <p>d. identifying from routine maintenance, breakdowns and/or abnormalities possible losses in energy efficiency, or where energy efficiency could be improved</p> <p>e. identifying leaks, broken equipment, worn bearings, etc. that affect or control energy usage, and rectifying them at the earliest opportunity.</p>	Applicable	<p>Michael O' Connor will be the responsible person on site for maintaining energy efficiency.</p> <p>Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.</p>

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<b>16</b>	BAT is to establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of operations and activities that can have a significant impact on energy efficiency. Some suitable techniques are given in Section 2.10.	Applicable	Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.
<b>20</b>	BAT is to seek possibilities for cogeneration, inside and/or outside the installation  (with a third party).	Not Applicable	Not Applicable
<b>21</b>	BAT is to increase the power factor according to the requirements of the local electricity distributor by using techniques such as those in Table 4.3, according to applicability (see Section 3.5.1).	Applicable	All motors installed will be energy efficient.
<b>23</b>	<p>BAT is to optimise the power supply efficiency by using techniques such as those in Table 4.4, according to applicability:</p> <ul style="list-style-type: none"> <li>• Installing capacitors in the AC circuits to decrease the magnitude of reactive power</li> </ul> <p>All cases. Low cost and long lasting, but requires skilled application</p> <ul style="list-style-type: none"> <li>• Minimising the operation of idling or lightly loaded motors</li> </ul> <p>All cases</p> <ul style="list-style-type: none"> <li>• Avoiding the operation of</li> </ul>	Applicable	Electric Motors will be regularly monitored, cooling fans and cowlings maintained.

	<p>equipment above its rated voltage</p> <p>All cases</p> <ul style="list-style-type: none"> <li>When replacing motors, using energy efficient motors (see Section 3.6.1)</li> </ul> <p>At time of replacement</p>		
<b>24</b>	<p>BAT is to optimise electric motors in the following order (see Section 3.6):</p> <ol style="list-style-type: none"> <li>1. optimise the entire system the motor(s) is part of (e.g. cooling system, see Section 1.5.1)</li> <li>2. then optimise the motor(s) in the system according to the newly-determined load requirements, by applying one or more of the techniques in Table 4.5, according to applicability</li> </ol>	Applicable	<p>Electric Motors will be regularly monitored to determine the starting and operational load, and techniques such as soft starting and the use of VLC converters will be installed if deemed appropriate.</p>
<b>25</b>	<p>BAT is to optimise compressed air systems (CAS) using the techniques such as those in Table 4.6, according to applicability:</p>	Applicable	<p>The buildings and their layout will be state of the art for the industry. A thorough review was undertaken of best available techniques to minimise emissions from the development as well as to maximise energy efficiency.</p> <p>Monitoring of Energy efficiency at the unit will be carried out. An energy audit will be carried out if required to establish the existing energy usage and to identify any potential recommendations.</p>
<b>26</b>	<p>BAT is to optimise pumping systems by using the techniques in Table 4.7, according to applicability (see Section 3.8):</p>	Applicable	<p>The buildings and their layout will be state of the art for the industry. A thorough review was undertaken of best available techniques to minimise emissions from the development as well as to maximise energy efficiency.</p>

<p><b>27</b></p>	<p>BAT is to optimise heating, ventilation and air conditioning systems by using techniques such as:</p> <ul style="list-style-type: none"> <li>• for ventilation, space heating and cooling, techniques in Table 4.8 according to applicability</li> <li>• for heating, see Sections 3.2 and 3.3.1, and BAT 18 and 19</li> <li>• for pumping, see Section 3.8 and BAT 26</li> <li>• for cooling, chilling and heat exchangers, see the ICS BREF, as well as Section 3.3 and BAT 19 (in this document). □</li> </ul>	<p>Applicable</p>	<p>The buildings and their layout will be state of the art for the industry. A thorough review was undertaken of best available techniques to minimise emissions from the development as well as to maximise energy efficiency.</p>
<p><b>28</b></p>	<p>BAT is to optimise artificial lighting systems by using the techniques such as those in Table 4.9 according to applicability (see Section 3.10):</p>	<p>Applicable</p>	<p>All artificial lighting will be used in the accommodation houses, offices and outside yards and will be low energy lighting. Location of lighting will be strategically planned.</p>
<p><b>29</b></p>	<p>BAT is to optimise drying separation and concentration processes by using techniques such as those in Table 4.10 according to applicability, and to seek opportunities to use mechanical separation in conjunction with thermal processes</p>	<p>Not Applicable</p>	<p>Not Applicable</p>