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How to comply with your environmental permit.

Additional guidance for:

Mining waste operations (EPR 6.14)

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1 INTRODUCTION

1.1 THE MINING WASTE DIRECTIVE

Directive 2006/21/EC of the European Parliament and the Council of 15 March 2006 on the management of waste from extractive industries (the Mining Waste Directive, MWD) and amending Directive 2004/35/EC was published in the Official Journal of the European Union on 11 April 2006 (L102/15). There are also five subsequent Commission Decisions that provide detail on specific areas of the Directive. The overall objective of the Directive is to prevent or reduce as far as possible any adverse effects on the environment as well as any resultant risk to human health from the management of waste from the quarrying and mineral extraction industries.

The permitting requirements of the MWD have been transposed into legislation in England and Wales through the Environmental Permitting (England and Wales) Regulations 2010. Natural Resources Wales is the competent authority for much of the Directive requirements and we are responsible for administering the permitting process under the regulations.

The Department for the Environment and Rural Affairs (Defra) and Welsh Assembly Government (WAG) have prepared guidance to explain the requirements of the Directive and how it should be applied¹. Their guidance describes the roles of competent authorities, the relationship with other legislation, and the permitting requirements. It provides an interpretation of the terms found in the Directive such as mining waste operation, mining waste facility and extractive waste.

1.2 DEFINING EXTRACTIVE WASTE

The Directive covers the management of waste resulting from the prospecting, extraction, treatment and storage of mineral resources. This is known as extractive waste. Examples include residues from treatment of mineral resources, and topsoil, rock and overburden moved to access mineral resources.

You will need to establish whether the materials you are managing fall within the scope of the Directive.

1.3 OPERATIONS AND FACILITIES COVERED BY THIS GUIDANCE

This technical guidance note applies to mining waste operations as defined in Paragraph 2(1) of Schedule 20 of the Environmental Permitting (England and Wales) Regulations 2010 (the Regulations).

A **mining waste operation** is defined in the Regulations as meaning the management of extractive waste, whether or not involving a mining waste facility that falls within the meaning of Article 2 of the Directive. A mining waste operation is a Regulated Facility for the purposes of the Regulations. Certain requirements are waived for some types of extractive wastes. We have provided further explanation of the definition of a mining waste facility, along with how the level of regulation has been reduced, in our Position Statement (PS019) on the Regulatory Framework for implementation of the Mining Waste Directive.

The following activities need to ensure that they comply with Article 4 of the Directive but we will not require an environmental permit or a waste management plan (see our

¹ The Mining Waste Directive” (Defra March 2010) available at Defra website

Regulatory Position Statement, (RPS042), Natural Resources Wales 2010b): Full details of what you need to do to demonstrate compliance with Article 4 in the event that you have neither a permit nor WMP is provided in RPS042.

- Deposit of unpolluted soil from working of a mine or quarry
- Deposit of non-hazardous waste from prospecting of mineral resources (except oil, and evaporites other than gypsum and anhydrite)
- Deposit of waste from extraction, treatment and storage of peat.

Some of the requirements of the Directive only apply to **mining waste facilities**. A mining waste facility is defined in Article 3(15) of the Directive as an area designated for the accumulation or deposit of extractive waste, including heaps, ponds and associated structures such as dams, for the time periods specified, (see Box 1.3 below). Extraction voids into which extractive waste is returned for the purposes of rehabilitation and construction are not mining waste facilities.

Box 1.3

Time periods for establishing whether a mining waste facility exists

An area is only regarded as a mining waste facility if the extractive waste would be kept in it for longer than certain time periods, as follows:

- No time period for Category A mining waste facilities and for extractive waste characterised as hazardous in the Waste Management Plan (WMP);
- Six months for hazardous extractive waste generated unexpectedly;
- A year for non-hazardous non-inert extractive waste; and
- Three years for inert extractive waste and non-hazardous waste from the prospecting of oil, and evaporites other than gypsum and anhydrite.

If extractive waste is stored for time periods less than those defined or is used to backfill the extraction void for the purposes of rehabilitation or construction, its management will comprise a mining waste operation but there will be no mining waste facility. The requirements for mining waste facilities will not apply.

Where waste is stored longer than originally intended and it now meets the time period for a mining waste facility, this is a change of operation. The permit will need to be varied to include this as a new mining waste facility. This will be a normal variation unless it will result in a Category A mining waste facility, which is likely to be regarded as a substantial variation. Our Regulatory Guidance Note 8 Changes to Operation, explains this further. It should be noted that there is no exemption from the Regulations based on a minimum size of mining waste operation, facility or volume of extractive waste.

The permit for a mining waste operation will include control measures for any emission to surface or groundwater that is integral to the waste operation..

The regulated facility will include all areas used for management of extractive waste arising from a specific mining operation and active since May 2008. Typically this will involve a number of discrete areas, joined by some routinely used linkage such as roads, railways, pipelines or watercourses. For example, the waste may be placed into lagoons to dewater, used to infill voids as they occur, accumulated in spoil heaps, or used in construction of lagoon bunds/dams, or of noise or amenity bunds. Hence, the plan of the regulated facility may have a leopard spot appearance and be spread across a wide geographical area. In deciding whether a remote area many miles away is part of the one facility we will weigh the nature and technical significance of the connections against the distance. Further guidance on understanding what activities a permit can regulate and how to establish the site boundary can be found in our Regulatory Guidance Note 2, Meaning of Regulated Facility.

1.3.1 Settlement ponds

Settlement ponds used for the collection and/or disposal of fine-grained waste resulting from rainfall run-off primarily collected from mining waste facilities will be regulated as mining waste facilities, or mining waste operations, depending on the location and residence time of the waste (See Box 1.3 above). Section 3.3.2 of this guidance provides further information on settlement.

Box 1.3.1

Treatment facilities that will not be regulated as mining waste facilities

The following will not be regulated as mining waste facilities:

- Collection points for rainfall runoff, where the collection is for subsequent use in extractive processes or the treatment of extracted minerals and the run-off is primarily from areas that do not comprise mining waste facilities;
- Collection points for rainfall runoff, for water treatment prior to discharge off site by gravity or pumping and the run-off is primarily from areas that do not comprise mining waste facilities;
- Collection points for groundwater, where the collection is for subsequent use in extractive processes or the treatment of extracted minerals; and
- Collection points for groundwater, for discharge off site by gravity or pumping to prevent interference with mineral extraction.

In relation to the above, any fine grained material that accumulates in the collection points will not constitute extractive waste unless and until you dig it out for subsequent disposal when it will comprise part of the mining waste operation.

1.4 AIM AND SCOPE OF THIS GUIDANCE

The management of extractive waste will be the subject of an Environmental Permit issued by us in accordance with the Regulations. Environmental Permits will be required for mining waste operations which may or may not include a mining waste facility.

In the guidance document “How to comply with your environmental permit” we describe the standards and measures that we expect businesses to take in order to control the risk of pollution from the most frequent situations encountered in the waste management (including the management of extractive wastes) and process industries.

This note provides additional guidance for operators of mining waste operations. You should follow the measures in this guidance note in addition to those in “How to comply with your environmental permit” where necessary and appropriate, to meet the objectives in your Environmental Permit. This note also provides specific guidance on the requirements necessary to prepare a Waste Management Plan (WMP) in accordance with the requirements of Article 5 of the Directive.

You should note that compliance with your permit (which includes the WMP) does not release you from your obligations under Health and Safety legislation, for example The Quarries Regulations 1999 or planning conditions associated with the relevant planning permissions for your site.

A reference list of all documents and guidance specifically referred to in this technical guidance note is provided in Section 4.

1.5 BEST AVAILABLE TECHNIQUES

Article 4(3) of the Mining Waste Directive requires that measures taken to prevent or reduce as far as possible any adverse effects on the environment and human health brought about as a result of the management of extractive waste are based amongst other things on best available techniques (BAT). There is an existing European BAT Reference Document (BREF) on “Best Available Techniques for Management of Tailings and Waste-Rock in Mining Activities”, (available at the European Commission website). While a significant part of the BREF guidance is concerned with metalliferous mining, the document does contain information applicable to coal, limestone, and china-clay industries, generally focussing on treatment. The BREF guidance can be found at: <http://ec.europa.eu/environment/waste/mining/index.htm>

You are not required to use any specific techniques in managing your extractive waste, but in complying with Article 5(3)(d) of the Mining Waste Directive, you should demonstrate that you have used the best available techniques taking into account the technical characteristics of the waste operation/facility, its geographical location and the local environmental conditions.

1.6 YOUR ENVIRONMENTAL PERMIT

Your environmental permit will describe the objectives (or outcomes) that we require, i.e. what we want you to achieve. It will not normally tell you how to achieve them; this gives you a degree of flexibility.

Where a permit condition requires you to take appropriate measures to secure a particular objective, we will expect you to use, as a minimum, the measures described in this guidance which are appropriate for meeting the objective. You may have described the measures you propose in your WMP but further measures will be necessary if the objectives are not met. The measures set out in this guidance may not all be appropriate for a particular circumstance and you may implement equivalent measures that achieve the same objective.

In response to the application form question on Operating Techniques and in complying with your permit, you should address the relevant measures in this document as well as those identified in “How to comply with your Environmental Permit”.

Where appropriate, the technical standards and measures described in this guidance will be reviewed in the light of future BREF note revisions. In the meantime we will take account of advances in BAT when considering any changes to your activities.

Guidance on how we determine the requirements that should apply to a particular activity and the regulatory package that we have designed for environmental permitting can be found in Regulatory Guidance Series No RGN 4 “Setting the Standards for Environmental Protection” (Natural Resources Wales 2010). This guidance also sets out how we deal with changes you make to your operating techniques.²

1.6.1 Standard Rules Permits

We have developed standard rules for the management at mines and quarries of inert extractive waste (SR2009 No 08). If you apply to operate under these standard rules you do not have to submit your WMP at the permit application stage, but simply confirm you have a WMP and it meets the relevant requirements. You do this by completing a checklist within the application form. You should however use this guidance to produce your WMP which we will check during compliance assessment.

1.6.2 Bespoke Permits

If your operation is unable to meet the requirements of the standard rules then you must apply for a bespoke permit. A bespoke permit uses a permit template for most of the conditions, which is then tailored more specifically to the requirements of your operation.

In most cases a bespoke permit will be the combination of the standard rules for a mining waste operation, and the site specific conditions of a water discharge. If you have an existing water discharge consent, this is be deemed an Environmental Permit under EPR 2010 and you can apply to vary this permit to include the requirements for the mining waste operation. In this specific type of variation, the application process will be the same as though you are applying for the standard rules alone.

Normally when you apply for a bespoke permit you must submit your WMP with your permit application. What you must include in your WMP is covered in Section 2 of this guidance. You may also need to include H1 risk assessment. Charges for sites including management of hazardous extractive waste and for sites including one or more Category A facilities will be based on OPRA.

1.7 KEY ISSUES

The key issues that you will need to manage effectively to ensure continuing compliance with your permit and to reduce risk to the environment are set out below. Our compliance assessment effort will generally focus on these areas.

1.7.1 Pollution of Surface Water and Groundwater

Emissions may be divided into particulate matter in suspension and chemical pollutants in solution or suspension. Both may be damaging to aquatic fauna and flora as well as

² Guidance on understanding the meaning of regulated facility will be set out in Regulatory Guidance Series No EPR 2 “Understanding the meaning of regulated facility” (Natural Resources Wales 2008b).

rendering water unfit for consumption. Changing the environment of the extractive waste by removing it from the ground, breaking it up and depositing it in a different local environment may promote the breakdown of the extractive waste, potentially releasing fine material and chemical pollutants.

Rainfall impacting on bare surfaces may erode fine material and transport it as suspended solids. This dirty water may drain into surface water courses and cause pollution. Some extractive wastes may only be polluting when placed in certain locations (e.g. limestone waste on peat). Others may have the potential to cause problems which need to be dealt with wherever they are located (e.g. pyritic shales causing acid rock drainage as a result of the oxidisation of sulphides)

1.7.2 Emissions to air

Any dry surface covered with fine grained particulate matter may cause dust. Emissions of dust and particulate material can arise from wind blowing over these dry dusty surfaces, and may be exacerbated by vehicles and plant moving on the surface. Your planning permission will probably contain conditions that require you to manage and control dust, therefore this should not be a significant issue when applying for your Environmental Permit or for implementing schemes of management to ensure compliance with your permit.

1.7.3 Failure of solid or liquid tips

Failure of solid or liquid tips can give rise to serious pollution incidents depending on the nature of the extractive waste and the sensitivity of environmental receptors.

Stability of tips and lagoons should already have been addressed in compliance with The Quarries Regulations 1999 and The Mines and Quarries (Tips) Regulations 1971. However, any mining waste facility whose failure could give rise to a major accident, i.e. leading to a serious danger to human health and/or the environment, will be a Category A facility. These have additional regulatory requirements under the Mining Waste Directive and are discussed in section 2.2.1.1

2 REQUIREMENTS OF THE WASTE MANAGEMENT PLAN

2.1 OBJECTIVES OF THE WASTE MANAGEMENT PLAN

The overarching general requirements of the Mining Waste Directive are set out in Article 4 of the Directive and they require you to take the necessary measures to ensure that extractive waste is managed in a controlled manner without endangering human health or harming the environment.

Article 5 of the Directive requires that you prepare a Waste Management Plan (WMP) for the minimisation, treatment, recovery and disposal of extractive waste, taking account of the principle of sustainable development.

Box 2.1

Objectives of the Waste Management Plan

The objectives of the WMP are as follows:

To prevent or reduce waste production and its harmfulness, in particular, by considering:

- waste management in the design phase and in the choice of the method used for mineral extraction and treatment;
- the changes that the extractive waste may undergo in relation to an increase in surface area and exposure to conditions above ground;
- placing extractive waste back into the excavation void after extraction of the mineral, as far as is technically and economically feasible and environmentally sound in accordance with existing environmental standards at the Community level and with the requirements of the Directive, where relevant;
- putting topsoil back in place after the closure of the mining waste facility or if this is not practically feasible, reusing topsoil elsewhere; and
- using less dangerous substances for the treatment of mineral resources.

To encourage the recovery of extractive waste by means of recycling, reusing or reclaiming such waste, where this is environmentally sound in accordance with existing environmental standards at Community level and with the requirements of the Directive where relevant.

To ensure short and long term safe disposal of the extractive waste in the short and long term, in particular by considering, during the design phase, management during the operation and after-closure of a mining waste facility and by choosing a design which:

- requires minimal and, if possible, ultimately no monitoring, control and management of the closed mining waste facility;
- prevents or at least minimises any long term negative effects for example attributable to migration of airborne or aquatic pollutants from the mining waste facility; and
- ensures the long-term geotechnical stability of any dams or heaps rising above the preexisting ground surface.

The following sections provide guidance in respect of the information that we consider it is necessary for you to include in the WMP and on which your application for a permit will be considered.

2.2 CONTENT OF THE WASTE MANAGEMENT PLAN

Your WMP will form a key element of your application for an Environmental Permit. A primary purpose of the WMP is to demonstrate that your mining waste operation will meet the requirements of the Directive. The Environmental Permit will require that you carry out your mining waste operation according to your WMP and that you keep records to demonstrate that you are complying with your permit.

Where the requirements of other legislation meet some of the requirements of the WMP we will not require that these requirements are duplicated. Examples of other legislation may include The Quarries Regulations 1999 or planning requirements. Your WMP may include references to relevant sections of other documents and the documents must be made

available to us, on request. Where existing information does not meet all the WMP requirements, applicants will need to provide additional information in the WMP.

Your WMP needs to contain sufficient information to allow us to determine that you will meet your obligations under the Directive and that you will be able to implement and satisfy the objectives of your WMP. In your WMP you must establish how the particular methods you have chosen for mineral extraction and treatment will meet the required objectives of the Directive.

An example WMP for an inert mining waste operation, including a mining waste facility with a discharge to surface water, is provided in Appendix 1.

The following sections provide guidance on the information that must be included in your WMP.

2.2.1 Classification of Facility

For all mining waste operations including a mining waste facility, all operators must classify their mining waste facility as Category A or provide justification that it is not a Category A facility. This is a particular requirement of the Mining Waste Directive (Article 5.3(a)) and must be included in the Waste Management Plan for the site.

Guidance for Category A assessments

2.2.1.1 Mining Waste Directive and Commission Decision

The criteria for determining the classification of mining waste facilities as Category A are listed in Annex III to the Mining Waste Directive 2006/21/EC:

A waste facility shall be classified under category A if:

- a failure or incorrect operation, e.g. the collapse of a heap or the bursting of a dam, could give rise to a major accident, on the basis of a risk assessment taking into account factors such as the present or future size, the location and the environmental impact of the waste facility; or*
- it contains waste classified as hazardous under Directive 91/689/EEC above a certain threshold; or*
- it contains substances or preparations classified as dangerous under Directives 67/548/EEC or 1999/45/EC above a certain threshold.*

This is expanded in Commission Decision 2009/337/EC:

A waste facility shall be classified under Category A in accordance with the first indent of Annex III of Directive 2006/21/EC if the predicted consequences in the short or the long term of a failure due to loss of structural integrity, or due to incorrect operation of a waste facility could lead to:

- (a) non-negligible potential for loss of life;*
- (b) serious danger to human health;*
- (c) serious danger to the environment.*

further:

For the purpose of the classification referred to in paragraph 1, the entire life-cycle of the facility, including the after-closure phase, shall be considered in the evaluation of the hazard potential of the facility.

2.2.2 Principles to be considered when classifying your facility

2.2.2.1 Hazardous waste and dangerous substances

The nature of the waste contained in a mining waste facility has the potential to cause serious danger to human health or the environment due to its chemical properties (see Section 5). Where extractive waste is inert, such concerns are not relevant to the definition of a mining waste facility as Category A. Where hazardous waste or dangerous substances are present in the extractive waste, there is potential for a mining waste facility to be classified as Category A based on these properties of the materials.

Hazardous waste and dangerous substances referred to in Directive 2006/21/EC Annex III indents 2 and 3 are further defined in Articles 7 and 8 of Commission Decision 2009/337/EC. Should such wastes or substances be present in any extractive waste managed at the site that will be deposited in a mining waste facility, operators must undertake further assessment to understand whether the mining waste facility in which they will be deposited will comprise a Category A facility. The presence of these wastes and substances above the thresholds in a mining waste facility means that the mining waste facility presents a hazard sufficient to require the mining waste facility to be classified as Category A.

2.2.2.2 Consequences of failure

Within this guidance “hazard” means any accumulation in a mining waste facility of extractive waste, solid or liquid, where the consequences in the event of a failure or incorrect operation of the mining waste facility will cause serious danger to human health or the environment. The likelihood of failure of the mining waste facility is irrelevant to the definition of a hazard.

A mining waste facility may be classified as Category A based on failure or incorrect operation even though it contains only inert extractive waste. The consequences of the failure, or incorrect operation, may be sufficient to cause serious danger as a result of the physical properties of the material and not necessarily its chemical composition. Incorrect operation means any situation which may give rise to a major accident, including the malfunction of environmental protection measures and faulty or insufficient design, construction, maintenance and management.

2.2.2.3 Source-Pathway-Receptor: are there any human or environmental receptors that are connected to your Mining Waste Facility by one or more pathways?

When a risk assessment is undertaken, in accordance with Article 4(4) of the Commission Decision the extent of the potential impacts are considered in the context of a source–pathway–receptor linkage. It is stated at Article 4(4) of the Commission Decision that where there is no pathway, the facility shall not be classified as Category A on the basis of failure due to loss of structural integrity or incorrect operation. The pathway could be a pathway associated with overland ‘flow’ of materials, or as a result of releases of materials or compounds into surface water or groundwater, the air or surrounding soil.

Even if a pathway exists, the consequences of any failure associated with the mining waste facility must represent a serious danger if the mining waste facility is to be classified as a Category A facility.

It should be apparent that if there are no receptors (either human or environmentally sensitive features) then a mining waste facility is not classified as a Category A facility. To understand how to assess risks associated with mining waste operations, further information is available in Appendix 6 of this guidance.

2.2.3 How to assess if your mining waste facility is a Category A Waste Facility

2.2.3.1 In accordance with Article 1(1) of Commission Decision 2009/337/EC, operators must make an assessment of the “*predicted consequences...of a failure*” of a mining waste facility - in other words an assessment of the hazard.

2.2.3.2 In England and Wales there is already considerable health and safety legislation under which operators of mines and quarries are required to manage and minimise all foreseeable risks³. This body of legislation is comprehensive and full compliance with it should ensure that, as far as is practicable, all foreseeable pathways linking the source to human receptors are removed or the predicted consequences of failure or incorrect operation are minimised. While compliance with existing relevant legislation does not remove the source of the hazard, in many cases it does everything possible to manage the predicted consequences such that the pathway to human receptors may be removed. Pathways to environmental receptors will need to be identified and assessed, as this is not addressed adequately by the existing legislation.

2.2.3.3 For inert or non-hazardous non-inert waste facilities, if at any time your mining waste facility is not fully compliant with existing relevant legislation, you must either classify your mining waste facility as Category A, or provide adequate justification to clearly demonstrate that it is not a Category A facility.

2.2.3.4 A Major Accident Prevention Plan (MAPP), an off-site (external) emergency plan and financial guarantee are required for any mining waste facility classified as Category A.

2.2.3.5 Operators must, in all circumstances, make an objective assessment of their own waste facilities determining if the facility is a Category A facility in compliance with the relevant provisions of Directive 2006/21/EC and Commission Decision 2009/337/EC (including the criteria in para 1 above) and the following guidance, depending on the type of operation. If you determine that a mining waste facility should not be classified as a Category A facility a justification of that status should be included in your Waste Management Plan.

The following recommendations in Box 2.2.3.5 are expected to apply to the vast majority of mining waste facilities in England and Wales such that they will not be classified as Category A facilities. However, it is recognised that a small number of waste facilities may present a serious danger such that Category A status is justified.

³ A comprehensive review of relevant domestic legislation was undertaken to establish the degree to which the requirements of the Mining Waste Directive in respect of stability are already being met in England and Wales, and is summarised in Appendix 8.

Box 2.2.3.5 Determination of Category A by type of operation

'Inert waste' is defined in Article 3(3) of the Mining Waste Directive (2206/21/EC) and further explained in Commission Decision documents 2009/359/EC (completing the definition of inert waste) and 2009/360/EC (technical requirements for waste characterisation). A list of the extractive wastes that Natural Resources Wales considers to be inert in accordance with the definition of Article 3(3) of the Mining Waste Directive is contained in Appendix 3 of this guidance.

Inert solid tips

We accept that in nearly all cases inert solid tips that are fully compliant with the existing legislation referred to in paragraph 2.2.3.2 are unlikely to be Category A on the basis of failure due to loss of structural integrity or incorrect operation.

While it is likely that the potential danger for the environment is not serious for inert mining waste facilities, as defined in Article 4(3) of Commission Decision 2009/337/EC, operators must satisfy themselves that their mining waste facility does not pose a serious danger to environmental receptors. To help you decide what might represent a serious danger to the environment we have provided examples in Box 2.2.5.2 below. Your local Area Natural Resources Wales mining waste contact will also help you to interpret the Commission definition and if you are still unsure, we have set up the mining waste regulation group to address your concerns.

Inert liquid tips

The term 'liquid tip' as used in this guidance refers to all tailings dams, tailings lagoons, or settlement ponds used to separate water and processing discards, whether or not the solid material remains in place permanently, or is subsequently removed to another location.

Because of the potentially significant hazard posed by some liquid tips, it is necessary to differentiate between those that are 'fully enclosed' and those that rely for their integrity on engineered structures.

We would define a fully enclosed liquid tip as being one that is contained below the level of surrounding, undisturbed geological strata (e.g. *in a void created by mineral extraction or other excavation, or in a natural void or depression*). It follows that it will be located entirely below ground level and will not rely for stability or the containment of its contents in the larger void on any engineered structure. A liquid tip created by building bunds or dam wall(s) in the base of a fully enclosed quarry void falls within this definition. However, such a facility is likely to already be ruled out of Category A on the basis of having no pathway to potential receptors except those persons employed at or visiting the mine or quarry who are already covered by existing

legislation. Existing legislation is relevant to the protection of all persons engaged in the extractive industries (see appendix 8 of this guidance).

If your mining waste facility is an 'above ground' liquid tip and there is a pathway - receptor linkage, it is very likely to be a Category A facility. If you consider that it is not a Category A facility, on the basis of an assessment that considers the consequences of a failure in the context of a non-negligible potential for loss of life, and serious danger to human health and the environment, then you will need to provide very clear justification in your Waste Management Plan.

Additional considerations for 'below ground' inert liquid tips

Although we believe that fully compliant, below ground, inert liquid tips are likely to present a negligible hazard, there are some additional circumstances that you should consider before deciding that your facility is not Category A:

- a. Cascade failure - this type of failure can have unforeseen and very serious consequences. The risk is that the liquid tip you assess is fully below ground and in isolation entirely safe, but an up-gradient failure of another structure causes a serious cascade event with non-negligible potential for loss of life, serious danger to human health or serious danger to the environment.
- b. Geological weakness - there are some geological situations that may render a below ground liquid tip unsafe, e.g. weak or adversely dipping strata that could give rise to movements or failures of the quarry walls. Although this is likely to be a rare occurrence, if you know, or suspect this to be the situation and you have a pathway-receptor link, then you should classify your facility as Category A if the consequences of the failure could give rise to a non-negligible potential for loss of life, serious danger to human health or serious danger to the environment.

If your mining waste facility comprises an entirely below ground inert liquid tip and is compliant with all relevant legislation it should not be classified as a Category A facility. However, in reaching this decision, operators must identify any unique circumstances including, but not limited to, those described above, that indicate their mining waste facility should be classified as a Category A facility.

Non-inert non-hazardous solid tips

Non-inert non-hazardous waste is no more likely to be Category A on stability grounds than inert waste. However, there are potentially greater environmental risks than for inert tips (e.g. acid rock drainage affecting valuable groundwater resources) and you cannot assume that they will not be Category A. You will need to consider any sensitive environmental receptors (see additional notes below), as well as identifying any unique circumstances that indicate your facility should be classified as Category A.

Non-inert non-hazardous liquid tips

Non-inert non-hazardous liquid tips are considered the same as inert liquid tips on the basis of stability, so you will first need to decide if your mining waste facility is above or below ground (see guidance for inert liquid tips above).

If you decide that your mining waste facility is NOT a Category A facility on grounds of stability, you must then consider whether it could be a Category A facility on environmental grounds (see additional notes below).

Hazardous solid or liquid tips

Where hazardous waste is present in a mining waste facility, in accordance with the Mining Waste Directive, this will be classified as a Category A facility in all cases except where the ratio of hazardous waste to other waste in the mining waste facility is less than 5% rule as set out in Commission Decision 2009/337/EC at Article 7(4).

For those waste facilities containing hazardous waste that are not automatically classified as Category A facilities because the ratio of hazardous waste contained in them is less than 5%, the extractive waste may still present a potential serious danger to the environment. If your mining waste facility contains hazardous waste in this category, you should pay particular attention to the danger your mining waste facility poses to any environmental receptors and you must assess the potential environmental impacts as

stated within the guidance above for non-hazardous wastes in solid or liquid tips to determine whether the mining waste facility should be classified as Category A facility.

2.2.3.6 We accept that there will be a small number of operators who cannot, for whatever reason, determine whether or not their mining waste facility is a Category A facility by using the above recommendations. If you are in this position, we ask that you contact us without delay, so that we can help you decide the correct status of your mining waste facility.

2.2.4 When do I need to reassess the status of my mining waste facility ?

You will need to reassess the classification of your mining waste facility if any of following circumstances arise:

1. Where the permit is substantially modified or the operational conditions have changed significantly¹
2. At closure of the mining waste facility
3. If you become non-compliant with relevant legislation and that noncompliance cannot be easily and quickly rectified

¹. In accordance with Commission Decision 2009/337/EC Article 10

2.2.5 Benchmark for Category A classification based on serious danger to the environment

2.2.5.1 What the Commission Decision says

In Commission Decision 2009/337/EC it is stated that if the predicted consequences in the short or the long term of a failure due to loss of structural integrity, or due to incorrect operation of a mining waste facility could lead to serious danger to the environment, a mining waste facility shall be classified as Category A.

At Article 4(3)(a-c) of the Commission Decision 2009/337/EC the definition of serious danger to the environment is expanded and it is stated that;

- The potential danger for the environment shall be considered to be not serious if: (a) the intensity of the potential contaminant source strength is decreasing significantly within a short time;
- (b) the failure does not lead to any permanent or long-lasting environmental damage;
 - (c) the affected environment can be restored through minor clean-up and restoration efforts.

The terms “short time”; “long-lasting”; and “minor clean up and restoration efforts” are not defined further by the Commission, but are left to Member States to interpret.

2.2.5.2 How Natural Resources Wales will interpret serious danger to the environment

A considerable amount of legislation already exists in England and Wales, providing significant levels of protection to the environment. However, in the following section of the guidance we address circumstances in which classification as Category A may be necessary on environmental grounds notwithstanding the existing legislation.

If a mining waste facility is classified as a Category A facility, it is necessary to provide a Major Accident Prevention Plan (or MAPP) and an offsite (external) emergency plan to limit damage to human health and the environment in the event of an accident. In accordance with Article 2 of the Mining Waste Directive, Category A waste facilities are excluded from the waiver of specified requirements that otherwise applies to inert and non-inert non-hazardous mining waste facilities.

The following four worked examples in Box 2.2.5.2 are given as guidance to what we think should (examples 1 and 2), or should not (examples 3 and 4) be classified a Category A Mining Waste Facility on environmental grounds:

Box 2.2.5.2

Examples of what may, or may not represent serious danger to the environment

Example 1. Impact on groundwater

A Mining Waste Operation includes one or more solid tips (mining waste facilities) located above a Principal Aquifer with a designated Source Protection Zone (SPZ2). The extractive waste is classified as non-inert non-hazardous and is capable of generating a leachate containing metals and/or major ions (principally iron, aluminium, etc.) and trace amounts of cadmium and mercury. It may or may not be associated with Acid Rock Drainage (ARD) due to varying amounts of buffering.

As a result of a small structural failure (by itself no immediate danger), the tip drainage is adversely affected and is expected to take a considerable time to repair. Over a period of time groundwater within the aquifer is contaminated with nonhazardous pollutants and small quantities of hazardous substances in contravention of the Water Framework Directive "Prevent and Limit" rule. An important Public Water Supply borehole that supplies 35% of the water used by a local town is turned off by the water company to protect human health. Even when input of contaminants is stopped, an expensive pump and treat operation is expected to take at least 10 years to clean up the aquifer. In the meantime, the borehole will remain off-line and the water company will have to obtain supply from elsewhere.

This is an example of what would be considered a Category A facility arising from the chemical properties of non-hazardous non-inert extractive waste and its effect on groundwater. The effect on groundwater is expected to be long-lasting and the cost of cleaning up the aquifer in the meantime is likely to be considerable.

Example 2. Impact on surface water

A mining waste facility comprising a large tailings or settlement pond is located adjacent to a tributary at the headwaters of an important river. The extractive waste is classified as non-inert non-hazardous because although it contains some hazardous waste, this is below the 5% dry weight limit stated in Commission Decision Article 7(4). The hazardous waste is capable of killing fish where present in sufficient quantity and is capable of causing temporary failure of sewage works that rely on biological treatment of sewage. It

is a dry summer and flow in the river (around 50% of which is baseflow) is low for at least 15 miles downstream of this location.

As a result of catastrophic structural failure the dam wall is breached and extractive waste enters the river in one large pulse. Fish are killed between 15 and 20 miles downstream and 2 sewage treatment works are taken out. It is unclear whether it is the extractive waste or raw sewage that killed fish further down river. An important surface water abstraction 18 miles downstream is turned off just in time. Farmers, local residents, and fishermen are advised to keep away from the river until the precise nature of the contamination is known. Although early autumn rains will clean the river, restocking with fish will be slow due to availability of mature specimens of spawning age. It is expected that it will be around 2 River Basin Management cycles (12 years) before the river has fully recovered to its original WFD water body status.

This is an example of what would be considered a Category A facility arising from the chemical properties of non-hazardous non-inert extractive waste and its effect on surface water and fish. Remediation costs are likely to be high, at least initially until the river is flushed by autumn rains. Full environmental restoration will require longterm efforts due to the loss of mature fish.

Example 3. Impact on river

A mining waste facility comprises an inert solid tip with a maximum height of 35 metres and maximum slope gradient of 1:3. This tip is located adjacent to a river of good ecological status (classification determined under the Water Framework Directive River Basin Management Programme) with important fish populations including migratory species such as trout. Headwaters of the river are in an area of high mountains some 40 km distant. Half a kilometre away is a small village, but it is understood that mining waste could never reach the village, even in the event of total tip failure.

It has been a wet winter and an even wetter spring, resulting in river levels that are high for the time of year. Groundwater flooding remains an issue and an extreme rainfall alert predicting over 100 mm of rain in 6 hours has just been issued. Before staff arrive for work a slope failure occurs at this tip and it is estimated that between 200 and 250 tonnes of mining waste enter the river. The normal course of the river is now totally blocked and water instead flows around the blockage over adjacent land.

This is an example of what would not be considered a Category A facility on grounds of serious danger to the environment. The failure will not lead to permanent or longlasting environmental damage because restoration will be carried out quickly when flood waters have receded. The waste is inert and fish populations are in the most part unaffected by the localised and temporary inundation.

Example 4. Impact on heathland

An above ground settlement pond serving a sand and gravel quarry is located adjacent to an area of protected heathland in excess of 20 square kilometres within a national park. The mining waste facility contains only inert waste derived from the washing of sand and gravel.

Following an extended period of wet weather part of the dam wall fails and several hundred tonnes of slurry spill onto the nearby sandy heathland. By the time staff arrive for work most of the liquid has drained away to ground (being very permeable) leaving just the solid residue covering an area of around 2 Ha. The solid material is of unequal depth, being

deepest close to the breach in the dam wall, while natural resistance of the vegetation has meant that the effects further away are negligible.

In consultation with the National Park authority the operators of the sand and gravel quarry commence removal of the solid waste and agree a restoration plan to restore the heathland to original condition as quickly as possible. The initial clean up is expected to take around 2 months, following which the worst affected area, including any habitat damaged by vehicles, will be replanted with heathland plant species. Other wildlife is expected to move back into this area from neighbouring heathland as soon as the vegetation has once again become established.

This is an example of what would not be considered a Category A facility on grounds of serious danger to the environment. The area of heathland affected is relatively small and initial clean-up work will take place almost immediately. No permanent or long-lasting damage has been caused because vegetation will regenerate and the liquid portion of the waste entering groundwater was inert.

2.2.6 Waste Characterisation

Your WMP should characterise the waste to be generated based on the requirements specified in Annex II of the Directive.

The purpose of the characterisation of the extractive waste is to obtain the relevant information on the waste to be managed in order to be able to assess and monitor its properties, behaviour and characteristics and thereby ensure that it is managed under environmentally safe conditions in the long term. Furthermore, the characterisation of extractive waste should help you decide on the options for managing such waste and the related mitigation measures in order to protect human health and the environment.

You should categorise your extractive waste into one of the following categories:

- Inert;
- Non-hazardous non-inert; or
- Hazardous.

Article 3(3) of the Directive provides a definition for inert waste. Hazardous waste is defined in Article 1(4) of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste. By exclusion, any extractive waste which does not meet either of these definitions is categorised as non-hazardous non-inert.

Extractive waste may be considered as inert waste without specific testing if information about the site and the operations makes it reasonable to consider that the extractive waste does not contain dangerous substances and is free of contamination from human activity or mineralisation, and is included in the list of inert extractive waste in Appendix 3 of this guidance. Commission Decision 2009/359/EC completes the definition of inert extractive waste under 2006/21/EC (the Mining Waste Directive) and includes the criteria in Box 2.2.6 a below.

If your extractive waste is not included in the list, the extractive waste may be considered as inert waste if it can be demonstrated that the criteria set out below have been adequately considered and are met on the basis of existing information. Where existing information is unavailable or insufficient to demonstrate the waste meets all criteria in Box 2.2.6a, further investigation may be undertaken in accordance with Commission Decision 2009/360/EC of 30 April 2009 set out in Appendix 4 of this guidance. For the extractive

waste to be considered as inert waste, the waste must comply with all of the criteria detailed over the short and long term.

Box 2.2.6 a

Waste Characterisation

Waste Category	Criteria
Inert	<ul style="list-style-type: none"> • The waste will not undergo any significant disintegration or dissolution or other significant change likely to cause any adverse environmental effect or harm to human health; • The waste has a maximum content of sulphide sulphur of 0.1 %, or the waste has a maximum content of sulphide sulphur of 1 % and the neutralising potential ratio, defined as the ratio between the neutralising potential and the acid potential, and determined on the basis of a static test prEN 15875 is greater than 3; • The waste presents no risk of self-combustion and will not burn; • The content of substances potentially harmful to the environment or human health in the waste, and in particular Arsenic, Cadmium, Cobalt, Chromium Copper, Mercury, Molybdenum, Nickel, Lead, Vanadium and Zinc, including in any fine particles alone of the waste, is sufficiently low to be of insignificant human and ecological risk, in both the short and the long term. In order to be considered as sufficiently low to be of insignificant human and ecological risk, the content of these substances should not exceed national threshold values⁴ for sites identified as not contaminated or relevant national natural background levels; and • the waste is substantially free of products used in extraction or processing that could harm the environment or human health.
Non-inert nonhazardous	<ul style="list-style-type: none"> • Any waste which does not meet the criteria for inert or hazardous waste, as defined in this table.
Hazardous	<ul style="list-style-type: none"> • It is listed as hazardous in the List of Waste Regulations; • It is a specific batch of waste which is determined pursuant to regulation 8 of the Hazardous Waste (England & Wales) Regulations 2005 or the Hazardous Waste (Wales) Regulations 2005 to be a hazardous waste, i.e. it has been determined to be hazardous by the Secretary of State, Welsh Assembly Government.

You should ensure that the information and data for waste characterisation are appropriate, of adequate quality and representative of the extractive waste at your site. You may have much of the information necessary to characterise your extractive waste already documented in other technical reports.

⁴ These have yet to be agreed. In the meantime we will make each assessment on a case by case basis, using a risk-based approach.

Box 2.2.6 b

Potential sources of information suitable for extractive waste characterisation

- Existing investigations and studies;
- Existing applications for permits/authorisations, e.g. planning permissions or extraction licences;
- Geological surveys;
- List of inert extractive waste.

Only in cases where the information necessary for the characterisation of waste is unavailable or insufficient will you be expected to undertake sampling. If sampling and testing is necessary, further guidance on the technical requirements for waste characterisation has been developed by the European Commission and is provided in Appendix 4.

You should provide references to relevant information necessary to demonstrate waste characterisation in your WMP, or include any additional information regarding waste characterisation as appropriate. A list of waste codes for extractive waste is provided in Appendix 5.

Box 2.2.6 c

Information to be provided in the WMP for extractive waste characterisation

For inert waste

- For extractive waste on the list of inert extractive waste, a description of the physical characteristics of the extractive waste.

For non-hazardous non inert waste and for hazardous waste

- A description of the waste's physical and chemical characteristics, in the short and long term, with particular reference to its stability under surface atmospheric conditions. This should include consideration of the type of mineral being extracted and the nature of any overburden to be removed.

For all extractive waste types

- Classification of the waste in accordance with the relevant entry in the List of Waste Regulations;
- A description of any chemical substances to be used during treatment of the mineral resource and their stability;
- A description of the method of deposition; and
- The nature of any waste transport systems to be employed.

2.2.7 Description of operation and any treatment of the waste

You should provide in your WMP a description of the operation generating the extractive waste at your site and any treatment to which the extractive waste is subjected. Such information should be available from existing information and reports you have already prepared, for example in support of your planning application, to satisfy your obligations under The Quarries Regulations 1999 or contained in environmental management reports.

Box 2.2.7

Information to be provided in the WMP to describe the operations generating the extractive waste and any treatment to which it is subjected

The following information should be provided as a minimum, where relevant:

- An overview of site operations describing how and where the extractive waste is generated on your site. This may be at more than one location, e.g. overburden removed to access the resource and extractive waste generated from the treatment of minerals;
- The volume of extractive waste generated. This information should be provided for each of the locations and extractive waste types identified;
- Where and how any extractive waste is stored, e.g. in stockpiles or lagoons and the locations and capacities of these facilities;
- Where and how the extractive waste is treated, e.g. crushing, screening, washing etc., the details of the equipment used (sizes, capacity frequency of use etc.) and where these activities take place;
- Where and how any extractive waste is transported as part of your mining waste operation, e.g. by truck or conveyor; and
- The final destination of the extractive waste.

You may wish to summarise the above information by producing a process flow diagram for the mining waste operations at your site. You should provide a site plan(s) to accompany and cross reference the above information, which shows the location and layout of your site in relation to the management of extractive waste.

2.2.8 Description of risks to the environment and human health

In your WMP you should provide a description of the potential risks to the environment and human health by reference to an environmental risk assessment. For mining waste operations, risk assessment forms an essential part of the decision making process so that a rational and justified decision can be reached by us in determining the Environmental Permit application. Risk assessments must be used by you to develop your design and risk management procedures for mining waste operations. However, only those risks that are relevant to your site need be addressed through risk assessment in your WMP.

Box 2.2.8 a

Information to be provided in the environmental risk assessment

The main areas of risk assessment relevant to mining waste operations are:

- Stability;
- Hydrogeology (groundwater);
- Hydrology (surface water);
- Particulate matter (dust);
- Mud (on roads);
- Odour;
- Noise and vibration; and
- Accidents and their consequences.

The general issue of stability at mines and quarries is enforced by the Health and Safety Executive, therefore, it is not considered further in this technical guidance note. You should confirm in your application that you have met these requirements and ensure that the stability of stored extractive waste has been dealt with in your WMP.

In many cases, a simple qualitative risk assessment, based on the identification of source-pathway-receptor linkages should be sufficient for the other elements identified. You are likely to have already undertaken such an assessment to support your planning application and demonstrate to the Mineral Planning Authority that your activities can be undertaken without causing pollution of the environment or harm to human health. This information can be used in your WMP.

Nuisance issues such as dust, mud, odour, noise and vibration are usually covered by the planning regime. You may have addressed the risk to groundwater and surface water in your planning application or other technical assessments. Assessments for groundwater and surface water must consider the active operational phase and after completion of the mining waste operation.

You should provide a summary of the assessments undertaken in support of planning for your site and provide confirmation that schemes are in place to manage the nuisance issues and to control impacts to groundwater and surface water associated with the mining waste operation.

Only where these matters have not been considered in detail as part of the planning process (e.g. for older sites) will you need to provide additional assessments as part of your Environmental Permit application. You may wish to present the risk assessments as a simple qualitative matrix. An example simple qualitative risk assessment matrix is provided in Appendix 6.

Box 2.2.8 b

Guidance on preparing environmental risk assessment

There is various existing guidance available on undertaking environmental risk assessments.

- “Environmental Risk Assessment: Part 1 – Simple assessment of environmental risk for accidents, odour, noise and fugitive emissions”.
- “Environmental Risk Assessment: Part 2 – Assessment of point source releases and costbenefit analysis”.
- “Guidelines for Environmental Risk Assessment and Management”. (DETR et al. 2000);
- “How to comply with your environmental permit”
- “Hydrogeological Risk Assessments for Landfills – and the Derivation of Groundwater Control and Trigger Levels”.); and
- “Procedure for identifying risks from landfills”.

In order to provide a description of the potential risks to the environment and human health from your mining waste operation, you should identify and consider the sensitivity of the following receptors in the vicinity of your site:

- controlled waters (surface water and groundwater);
- the atmosphere;
- land/soil/geology;
- human receptors (people, property, community/recreation areas); and
- ecological receptors.

Any risk assessment should be carried out at a level of complexity that is proportional to the potential environmental hazard that your mining waste operation poses, the level of uncertainty and the likelihood of risks being realised.

2.2.9 Construction and management of mining waste facilities

In accordance with Article 11 of the Directive, based on your risk assessments your WMP must, where relevant, provide a description of the construction and management measures proposed for developing new mining waste facilities or modifying existing mining waste facilities.

You should note that where your site does not have any mining waste facilities and a permit is needed for mining waste operations only, then the remaining requirements under Section 2.2.9 do not apply.

You may provide references in your WMP to existing documents and schemes that describe the construction and management of mining waste facilities.

Where measures are in place by virtue of other regulatory regimes, e.g. planning, the Quarries Regulations 1999, etc. we will not seek to duplicate the requirements for compliance and we will liaise with appropriate authorities, e.g. Mineral Planning

Authority, Health and Safety Executive, etc. in regulating your mining waste facility.

Box 2.2.9 a

Issues to be considered in respect of the construction and management of mining waste facilities

- The location and design measures for mining waste facilities necessary to prevent pollution of soil, air, groundwater or surface water, taking account of the Groundwater, Dangerous Substances and Water Framework Directives and taking account of protected areas and geological, hydrological, hydrogeological, seismic and geotechnical factors. . Protected areas include Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Sites of Special Scientific Interest (SSSI), as well as other nature conservation, heritage and landscape sites - including Biodiversity Action Plan (BAP) , National and European protected species and BAP habitats.
- Efficient means for the collection of contaminated water (and leachate if produced).
- The measures necessary to reduce erosion caused by water or wind as far as it is technically possible and economically viable.
- The measures that will be taken to ensure that the mining waste facility will be constructed, managed and maintained in order to ensure physical stability in the short and long term.
- The measures that will be taken to prevent pollution or contamination from the mining waste facility of soil, air, surface water or groundwater in the short and long term.
- The measures that have been adopted to minimise as far as possible damage to the landscape.
- The arrangements for the rehabilitation of the land and the closure of the mining waste facility.
- The arrangements for aftercare for the mining waste facility.

Box 2.2.9 b

Possible sources of information describing the construction and management of mining waste facilities

- Information submitted for planning purposes.
- Schemes prepared to satisfy planning conditions.
- Construction specifications and designs.
- Environmental Management Systems in place at the site.
- Managers Rules prepared in accordance with Regulation 10 and designs prepared in accordance with Regulation 30 of the Quarries Regulations 1999.

You should demonstrate how your proposed management system will ensure appropriate monitoring of the mining waste facility and that the necessary actions will be triggered where the monitoring indicates instability or contamination of soil or water. You will be required, through a condition in your permit, to keep records relating to monitoring throughout the life of the permit.

2.2.10 Control and monitoring procedures

Control and monitoring procedures are relevant to mining waste operations and for existing sites, your WMP should include the current arrangements for monitoring required by the planning permission.

Box 2.2.10 a

Control and monitoring requirements for mining waste operations

For extractive waste to be placed into the extraction voids in accordance with Article 10 of the Directive you must demonstrate in your WMP that:

- The extractive waste will be physically stable.
- Pollution of soil and water is prevented.
- Measures are in place to monitor the extractive waste and the void before surrender of the permit to ensure that the physical and chemical stability of the waste is maintained.

Note that mining waste operations that do not include mining waste facilities may not always require monitoring.

Box 2.2.10 b

Control and monitoring requirements for mining waste facilities

For mining waste facilities you must demonstrate in your WMP that:

- There are suitable plans and arrangements for regular monitoring and inspection of the mining waste facility.
- There are plans and arrangements for actions in the event that instability or potential for contamination of water or soil is indicated.

You are likely to be monitoring nuisance emissions as part of your wider site environmental management activities and in accordance with schemes prepared in compliance with planning conditions. Such monitoring is likely to be acceptable in discharging your monitoring obligations under an Environmental Permit. Stability is addressed through compliance with the Quarries Regulations 1999.

Box 2.2.10 c

Environmental monitoring

Monitoring may be required if:

- Your Environmental Permit allows ongoing releases to the environment (e.g. a point source emission to controlled water);
- There is a particular risk of release to which we need to be alerted (e.g. as identified by your environmental risk assessment); and/or
- We need to check that the effect of your activities is not causing harm to the environment (i.e. it is as per your environmental risk assessment submitted with your Environmental Permit application).

Section 3.3 (Emissions and monitoring) of “How to comply with your Environmental Permit” contains general information on monitoring, which applies to all permitted activities. Section 3.0 of this technical guidance note provides additional sector specific guidance in relation to mining waste operations.

Box 2.2.10 d

Relationship between water discharge from mining waste facilities and other water discharge from the site

All discharges to surface water are regulated through an Environmental Permit. If the discharge of water is wholly or primarily from your mining waste operations, then we will normally permit the discharge through your mining waste Environmental Permit.

In this case, you should provide the following information in your Environmental Permit application:

- A drawing showing your proposed surface water/leachate management system;
- Details of any surface water/leachate treatment to be undertaken (e.g. interceptors, settlement ponds etc.);
- A plan clearly showing the location and construction of the proposed discharge point; •
Your proposed monitoring regime for the emission (parameters and frequencies); and
- Your proposed emission limits.

Other discharges to water can be included in the same permit and are referred to as ‘standalone’ water discharge activities.

2.2.11 Proposed plan for closure aftercare and monitoring

Closure and aftercare procedures are the subject of Article 12 of the Directive. A plan for closure, rehabilitation and aftercare is required as part of the WMP for your mining waste facility. The plan for closure is separate from information that you have provided in respect of the construction and management of mining waste facilities (see Section 2.2.9)

Box 2.2.11 a

Exceptions to requirements for closure and aftercare procedures

Except where the extractive waste is deposited in a Category A facility the closure and aftercare provisions of Article 12 of the Directive do not apply to mining waste facilities that:

- only accept inert waste and unpolluted soil; or
- are for waste resulting from the extraction, treatment and storage of peat or prospecting of mineral resources (except oil and evaporites other than gypsum and anhydrite);

Mining waste operations that do not include a mining waste facility and mining waste facilities identified in Box 2.2.11a are not subject to the procedures set out in Article 12. However, in accordance with Article 5(3)(f), you are still required to provide a proposed plan for closure. This should comprise a statement in your Waste Management Plan describing the rehabilitation and after-closure procedures that you will undertake. It will correspond closely with the restoration and aftercare requirements set out in your planning permission.

For all other mining waste facilities, you should provide information on the rehabilitation, after-closure procedures and monitoring required by Article 12 of the Directive. The information necessary for the closure plan may be contained in other documents, e.g. aftercare and restoration schemes submitted in compliance with planning conditions, and you should reference such documents in your WMP. You should be aware when preparing your closure plan that the closure of the mining waste facility will be a staged process.

Box 2.2.11b

Staged closure process that we will apply to the regulation of mining waste facilities

With regards to mining waste facilities to which Article 12 applies, there will be two stages to the closure process:

- 'definite closure' of the facility, which is the point at which the mining waste facility ceases to receive extractive waste and any necessary infrastructure is put in place to manage and monitor potential environmental impacts; and,
- 'facility completion', which may be a later point when aftercare, maintenance and monitoring is completed to such a level that we decide that the mining waste facility is unlikely to cause pollution to the environment or harm to human health and we may accept the surrender of the permit.

A mining waste facility (that is subject to article 12) will not be considered by us to be in definite closure until we have inspected the mining waste facility, considered a closure report (including the restoration of the land to an appropriate condition) and informed you that we accept the closure report. Following definite closure, you must continue to comply with the requirements of your Environmental Permit until we accept surrender of the permit, i.e. at facility completion.

Box 2.2.11 c

Surrender of an Environmental Permit

Once a mining waste facility is in definite closure, you can apply to surrender the Environmental Permit in order to end its regulation by us. We will not accept the surrender of a permit unless you have demonstrated that you have taken the appropriate steps to ensure that the facility no longer poses the potential to cause pollution of the environment if left in an undisturbed state.

This may involve the management of the waste deposits through the definite closure period, until the extractive waste poses no hazard to the environment.

For those mining waste operations that

- do not include mining waste facilities;
- include mining waste facilities only for inert waste and unpolluted soil (other than Category A); or
- are for waste resulting from the extraction, treatment and storage of peat or prospecting of

Box 2.2.11 c

Surrender of an Environmental Permit

mineral resources (except oil and evaporites other than gypsum and anhydrite);

You will be able to surrender your permit once you have implemented the steps set out in your proposed plan for closure.

2.2.12 Measures for the prevention of environmental pollution

Article 13 of the Directive requires that you implement measures to prevent water status deterioration and air and soil pollution in respect of mining waste facilities and mining waste operations.

Box 2.2.12 a

Measures for the prevention of environmental pollution

You must demonstrate that you have taken the measures necessary to meet relevant Community environmental standards, in particular to prevent the deterioration of the water status in accordance with the Water Framework Directive. You should:

- Determine the water balance of the mining waste facility;
- Evaluate the potential volume and quality of leachate that could be generated by the extractive waste in the mining waste facility;
- Specify the means by which you will prevent or minimise leachate generation and the potential for contamination of surface water, groundwater and soil;
- Specify how you will collect and treat contaminated water and leachate from the mining waste facility to a standard suitable for discharge.

We will waive all but the first two bullet points above for mining waste facilities for inert waste or unpolluted soil, non hazardous prospecting waste and waste resulting from the extraction, treatment and storage of peat.

We may waive all but the first two bullet points above where you consider, on the basis of an environmental risk assessment (taking into account the Dangerous Substances Directive, and the Groundwater Directive or Water Framework Directive as appropriate) that:

- It is not necessary to collect or treat leachate; or
- The mining waste facility poses no potential hazard to water or soil.

We will interpret 'no potential hazard' as meaning that the mining waste facility poses an acceptable environmental risk. We will only waive the measures where they would provide a negligible contribution to meeting the relevant environmental standards and preventing the deterioration of the water status.

You must demonstrate in your WMP that you have taken adequate measures to prevent or reduce dust and gas emissions associated with your mining waste operations. We will permit disposal of extractive waste in water only where such disposal will not cause pollution of the water or soil.

Box 2.2.12 b

Disposal of extractive waste in water

For extractive waste that is not inert, unpolluted soil or waste resulting from the extraction, treatment and storage of peat or prospecting of gypsum and anhydrite, we will not permit the disposal of such into a water body unless you can demonstrate compliance with the Groundwater, Dangerous Substances and Water Framework Directives.

This does not apply to a water body specifically created for the purposes of disposing of the extractive waste, e.g. a settlement pond that comprises a mining waste facility.

For extractive waste that is not inert, unpolluted soil or waste resulting from the extraction, treatment and storage of peat or prospecting of gypsum and anhydrite, we will not permit the disposal of any extractive waste back into an extraction void which will be allowed to flood unless you have demonstrated that you have taken measures necessary to prevent or minimise water quality status deterioration and soil pollution. You will need to demonstrate compliance with Community obligations in particular the Water Framework Directive.

Additional restrictions are imposed on you if you dispose of cyanide rich extractive waste into ponds. These requirements by definition will apply only to Category A mining waste facilities and mining waste facilities for hazardous wastes and are unlikely to affect mining waste operations in England and Wales. The additional requirements are set out in Appendix 7.

2.2.13 Survey of the land to be affected

Your WMP should contain a survey of the condition of the land to be affected by your mining waste facility. You should identify any aspects which could potentially affect the stability and lead to pollution of the environment or harm to human health. You may have existing topographic surveys and other investigation reports relevant to the area of the mining waste facility. You should include a copy of the relevant topographic survey of the land affected by the mining waste facility in your WMP.

Box 2.2.13

Surveys of mining waste facilities already in operation

If the mining waste facility to which the WMP relates is already in operation and there was no topographic survey of the land before deposition of extractive waste commenced you should provide references to other reports or documents that you may have that are relevant to the condition of the land before deposition commenced.

2.3 REVIEW OF THE WASTE MANAGEMENT PLAN

You should review your WMP periodically and advise us of any amendments that you make to the WMP.

Box 2.3

Requirements for a WMP review

Article 5(4) of the Mining Waste Directive requires that you review your WMP every five years. This requirement applies to all mining waste operations and following the review, the WMP should be amended as necessary.

In addition to a five yearly review, you should review your WMP in the event of a substantial change to the operation of a waste management facility or the extractive waste types deposited. Substantial change is defined in Section 5.

2.4 ADDITIONAL REQUIREMENTS FOR CATEGORY A FACILITIES – MAJOR ACCIDENT PREVENTION

This section is only relevant to those mining waste facilities comprising Category A facilities. Note that if you are the operator of a Category A facility which also falls under the requirements of the Control of Major Accident Hazards Regulations 1999 (i.e. a COMAH site), you do not need to produce a Major Accident Prevention Policy (MAPP) in accordance with this section of the guidance but you will need to refer to it within your WMP.

Box 2.4 a

Application of Article 6 of the Directive

Article 6 of the Mining Waste Directive sets out the requirements for major accident prevention and the associated information requirements. It requires the following to be devised:

- Major Accident Prevention Policy
- Safety Management Plan to implement the MAPP
- Internal Emergency Plan
- External Emergency Plan

However, not all of the requirements are delivered directly through the environmental permitting regime and will not be regulated by us.

Article 6(3) of the Directive requires you to produce a MAPP for the management of extractive waste and a Safety Management System (SMS) to implement it. The MAPP and SMS *should be proportionate to the major-accident hazards presented by the mining waste facility*, the elements of which are included in Annex I, Section 1 of the Directive. You must submit outlines of your MAPP and Safety Management System with your permit application.

- The MAPP should include your overall aims and principles of action to control major accidents hazards.
- The Safety Management System should include:
 - Organisational structure and responsibilities
 - Identification of major hazards
 - Operational control
 - Management of change
 - Planning for emergencies
 - Monitoring performance
 - Audit and review

You are also required to produce an internal emergency plan setting out the actions that will be taken on site in the event of an accident and your MAPP should demonstrate implementation of this plan via the Safety Management System.

Box 2.4 b

Internal emergency plan

The internal emergency plan should ensure that the objectives of Article 6(4) of the Directive are met and it should, therefore:

- Contain and control major incidents to limit their impact, in particular, on human health and the environment;
- Ensure that the necessary measures are taken to protect human health and the environment;
- Ensure that the necessary information is given to the public and the relevant public bodies; and
- Ensure that the effects on the environment are remediated.

The requirements for an external emergency plan specifying measures to be taken off-site in the event of an accident is contained in the Major Off-site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009. The requirements of these regulations are not covered in this technical guidance note, but are included in the Defra draft guidance: Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009. This guidance is currently out to consultation.

Off site emergency plans will be produced by local authority emergency planning teams. You will need to provide us, as part of your permit application, the information necessary for the local authority emergency planner to be able to draw up an external emergency plan. You will also need to cooperate with the emergency planning teams in consulting local residents and in providing the information specified in the Major Off-site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009.

We cannot issue a permit for a mining waste operation that includes a Category A facility until we have received confirmation from the Emergency Planning Authority that they have the necessary information with which to prepare the Off-site Emergency Plan.

Detailed guidance on the development of a MAPP and Safety Management System may be found in "A guide to the Control of Major Accident Hazards Regulations 1999 (as amended)". (Health and Safety Executive 2006).

Box 2.4 c

Stability and Category A facilities

Concerning the issue of stability, compliance with the existing controls under the Mines and Quarries (Tips) Act (1969), The Quarries Regulations (1999) and Mines and Quarries (Tip) Regulations (1971) provides all of the necessary safeguards that the Directive requires with regard to the stability of waste deposits, including dams and retaining lagoons. Information produced in pursuance of this legislation does not, therefore, need to be reproduced in your MAPP, but you should refer to it and in particular any assessments prepared for the Category A facility.

To help clarify what you need to do to comply with the Major Accident Prevention requirements detailed in Article 6 of the Directive, we have included the table in Box 2.4 d.

Box 2.4 d				
Major Accident Prevention requirements				
Document Title	Document Requirement	Requirements already covered by other legislation?	Required as part of permit application?	Other issues
1. Major accident prevention policy (MAPP)	High level principles for prevention of accidents.	If COMAH establishment then MAPP part of safety report for top tier, or will be stand alone for lower tier.	If COMAH, ref this. If not then submit outline.	Operator to ensure that safety manager is in place to implement/supervise/maintain MAPP.
2. Safety Management System (SMS)	To implement MAPP and identify all major hazards.	If COMAH top tier.	If COMAH, ref this. If not then submit outline.	
3. Internal Emergency Plan (IEP)	Actions to be taken on site in event of accident.	If COMAH top tier then covered by existing on site emergency plan.	If COMAH, ref this. If not then submit outline.	
4. Off Site Emergency Plan	Specifying measures to be taken off site in event of an accident.	If COMAH top tier Major Off-site Emergency Plan Regulations 2009.	If COMAH, ref this. Otherwise submit info as part of application.	

3 TECHNICAL STANDARDS AND MEASURES FOR MINING WASTE OPERATIONS

3.1 INTRODUCTION

This section of the technical guidance note should be read in conjunction with “How to comply with your environmental permit” and the sub-headings in italics crossreference you to the relevant sections of that document.

The operational and design measures set out in this section are provided as guidance on the measures that we will consider demonstrates compliance with the requirements of the Directive.

Box 3.1a**Equivalent measures**

The measures set out in this guidance may not be appropriate or applicable in all circumstances. You may implement equivalent measures that achieve the same objective, as long as these are justified. The measures you decide to use must meet the relevant objectives of the Directive.

For Standard Rules Permits, the appropriate measures necessary must be in place when the permit is issued. When applying for a Bespoke Permit, you will be asked in the application to identify the measures you need to take to provide an appropriate level of environmental protection.

We recognise that there is significant overlap between the requirements of the Mining Waste Directive and other regulatory regimes already in place in England and Wales. To avoid duplication of regulatory effort and to minimise the compliance burden on all parties, we will only require that you adopt or adapt existing technical standards and measures already in place where these will achieve the requirements of the Directive. We will only require that you implement new standards and measures where no suitable measures exist or the measures are insufficient to meet the requirements of the Directive.

Box 3.1b**Co-operation with other regulators**

We will co-operate with other parties in respect of regulation under the Directive.

We will take account of other legislative requirements and existing technical guidance in providing our regulatory function, and in particular we will take account of:

Regulatory Regime	Planning	Health and Safety
Regulator	Mineral Planning Authority (MPA)	Health and Safety Executive (HSE)
Legislation	Town and Country Planning Act 1990, and the Planning and Compulsory Purchase Act 2004 Environmental Impact Assessment Regulations 1999 Environment Act 1995	The Quarries Regulations 1999 Mines and Quarries (Tips) Act (1969) Mines and Quarries (Tips) Regulations (1971)

Box 3.1b**Co-operation with other regulators**

	(Schedules 13 & 14)	
Technical Guidance	MPS2 'Controlling and Mitigating the Environmental Effects of Mineral Extraction in England'	Health and Safety at Quarries – Quarries Regulations 1999 – Approved Code of Practice (HSE, 1999)

3.2 MANAGING YOUR ACTIVITIES

In addition to section 1 of “How to comply with your environmental permit” (Natural Resources Wales 2010c), you should take account of the general and accident management measures specified as appropriate for your mining waste operations. Please note that these apply to your management system as opposed to your WMP.

3.2.1 General Management

Box 3.2.1

General management measures

- Ensure that management and operational staff are aware of the causes and effects of pollution and their roles and responsibilities in relation to the key environmental legislation affecting mining waste operations, e.g. the Groundwater Regulations 1998.
- Ensure that contractors are aware of and understand the requirements of the key environmental legislation affecting mining waste operations.
- Ensure that contractors engaged in mining waste operations follow good practice and site safety procedures to minimise the risk of pollution to the environment or harm to human health.
- Undertake regular risk assessments of procedures in relation to protection of the environment and prevention of harm to human health as they relate to mining waste operations.
- Undertake regular inspection and maintenance of all structures required to prevent the escape of pollutants as they relate to mining waste operations.

3.2.2 Accident management

Box 3.2.2

Accident management measures

- Ensure that staff involved with mining waste operations have and follow a documented emergency procedure for dealing with spillages.
- Ensure that staff follow fuelling good practice and undertake routine plant maintenance of plant used for mining waste operations to prevent spillage or leakage of oils, hydraulic fluids and fuels.
- Ensure staff know the critical points in mining waste operations where pollutants could escape to the external environment so that protective measures may be put in place as soon as possible.

3.3 EMISSIONS AND MONITORING

This section of the technical guidance note should be read in conjunction with “How to comply with your environmental permit”.

3.3.1 Temporary storage of extractive waste

For extractive waste that is non inert, exposure to the air may cause oxidation of minerals (e.g. pyrite) and the infiltration of rainwater into extractive wastes which, when stored, can cause the release of metals into solution. The leachate generated in this manner may

contain hazardous substances (e.g. cadmium, mercury) and more frequently non-hazardous substances (e.g. arsenic, lead, copper, zinc and ferric hydroxide).

Measures to prevent or minimise the risk to controlled waters may be necessary if extractive waste is to be stored temporarily before being tipped to a mining waste facility. It is unlikely that the area used for temporary storage will comprise a mining waste facility, unless the time periods for the accumulation of extractive waste noted in the Directive are exceeded. Their use is therefore likely to be part of a mining waste operation even if they do not constitute mining waste facilities.

Box 3.3.1

Temporary storage of non inert solid extractive waste to prevent risk to controlled waters

- Minimise the period of exposure of extractive waste in area and duration before tipping in a mining waste facility;
- Locate temporary stockpiles in areas of low permeability if at all practicable;
- Grade temporary stockpiles to promote run-off;
- Collect run-off from temporary stockpiles and treat it prior to discharge.

3.3.2 Settlement Ponds

Settlement ponds at mineral extraction sites are in common use to treat extractive waste and surface run off prior to re-use of water in mineral processing or for discharge from the site. Because they accumulate extractive waste, settlement ponds located outside of the void, unless they are routinely excavated, are likely to comprise mining waste facilities and their construction, operation, etc. are matters to be addressed in your WMP.

In Box 1.3.1 we have set out those circumstances in which we consider that fine grained materials accumulating in ponds does not comprise extractive waste and the ponds do not comprise mining waste facilities.

In addition to suspended solids, the water in settlement ponds may contain additives used either in the mineral processing operations or to promote silt settlement in the pond. Water in settlement ponds, therefore, has the potential to cause pollution of the environment and harm to human health.

Box 3.3.2

Use of settlement ponds

Surface run-off from mining waste facilities

- Where suspended solids are a problem and space permits, the most effective control measure for surface run-off from mining waste facilities prior to discharge from the site is a settlement pond. These ponds must be adequately sized to allow silt to settle under flows generated by all normal rainfall events at the site.
- In severe rainfall events, the runoff rate may greatly exceed the capacity of any practical size of silt pond and flood attenuation ponds may be required upstream to control the flow rate and to prevent the settlement pond from being overwhelmed leading to uncontrolled discharges to surface water courses.
- Attenuation ponds should be designed with a capacity to accommodate a 1 in 100 year return period storm of any duration with the discharge restricted to match the corresponding greenfield run-off rate⁵. Be aware that storms of several days duration may give more runoff than storms of a few hours duration, even though the latter may be of much greater intensity. It is accepted that existing ponds may not meet these design capacity standards. Instead, if there are any known instances where an existing pond has been overwhelmed, or given rise to uncontrolled discharge as a result of a storm event, we will require you to carry out upgrade work to prevent a reoccurrence.
- Attenuation ponds should be built with adequate spillways, to allow controlled escape of surplus water in the event of extremely severe events (i.e. greater than the 1 in 100 year return period storm).

Treatment of extractive waste

- Provided the stability is not an issue and the processing discards do not contain substances that may be leached out and cause pollution, settlement ponds need not be water tight.
- If the waste is non-inert, you should construct settlement ponds to minimise water loss into the ground to protect groundwater.
- If ponds are used to precipitate discards from solution or the waste that they will contain is hazardous, you should ensure that the ponds are water tight to prevent hazardous and non-hazardous substances from polluting surface water and groundwater.
- Depending on the capacity of the settlement pond and the nature of the processing discards deposited in the pond, it may be desirable to have ponds dealing with processing waste separate from those dealing with surface water runoff to minimise the potential for high run off overwhelming the pond and causing escape of fine or contaminated material from the pond.

Technical issues of reworking an extractive waste site are most likely to arise in connection with developing on top of pre-existing settlement ponds (for example constructing a landfill over settlement ponds in a quarry base). The geotechnical requirements for landfills are well-described in our landfill sector guidance and the operator should refer to those documents when considering the reworking of settlement ponds. There is no legal

⁵ Communities and Local Government (2006a). Planning Policy Statement 25: Development and Flood Risk (Annex D).

restriction on placing a landfill over silt ponds, although the technical considerations may be difficult to overcome.

3.3.3 Spoil heaps and the mining waste directive

Article 24 of the Directive sets out the transitional arrangements that will apply to existing mining waste operations, including those that are closed. In order to clarify how we will apply the regulations to spoil heaps at each stage of the transitional period, we have set this out in the following table:

Key: MWD = mining waste directive EPR = Environmental Permitting Regulations 2010 MWO = mining waste operation Effectively closed = after completion of any after-closure monitoring requirements

Age of heap of spoil / process discards	Old – Effectively closed before 1 May 2008	Recent - not added to after 1 May 2006 and effectively closed by 31 December 2010	Ongoing (1) – added to after 1 May 2006 and effectively closed by 31 December 2010	Ongoing (2) – added to after 1 May 2006 and not effectively closed by 31 December 2010	New – heap started after 1 May 2008
Is the material extractive waste ¹ ?	Yes				
Is a permit required under EPR to cover current position?	No ²	No ³	No ³	Yes ⁴	Yes ²
Is MWO EPR permit required if heap is being re-profiled leading to an increase in the footprint of the heap.	Yes ^{5,6}	Yes ⁵	Yes ⁵	Yes ⁵	Not Applicable
Is a MWO EPR permit required if further mineral is extracted from the spoil heap?	Yes – for the waste arising from treatment / reprocessing of the heap				

Footnotes:

1. Before the mining waste directive the material was still waste but was generally referred to as mines and quarries waste.
2. Article 24(2) of MWD - Transitional provision
3. Article 24(4) of MWD – Transitional provision
4. Article 24(4) of MWD – Transitional provision. Additionally regulation 105(1) of EPR 2010 transition provision requires the permit application to be made before 1 May 2011.
5. Article 2(1) of MWD includes management of extractive waste within the scope of the Directive. Depending on the outcome of a risk assessment, the permit may also require a groundwater activity.
6. This will be decided case by case in liaison with Mineral Planning Authorities

Note:

If some of the spoil is taken off site to a site that is not a mining waste facility, it becomes subject to regulation as Waste Framework Directive Waste. Its further use would need to be regulated as a disposal or recovery operation. For example, colliery spoil used as engineering liner for a landfill site, or used in construction of a golf course. Justification for requirement of MWO EPR permit (row 4) includes extension onto new ground.

3.3.4 Transfer of extractive waste

Extractive waste may be accepted from, or distributed to, another mining waste operation. In either case the receiving Regulated Facility will need to include the material within their waste management plan and ensure compliance with the Mining Waste Directive as if the had produced that waste from their own Regulated Facility. The deposit of any waste which is not extractive waste will be subject to the Landfill Directive and will make the whole facility subject to regulation under the Landfill Directive

3.3.5 Point source emissions to air, water and land

The key potential point source emission from mining waste operations and facilities is likely to be the discharge of surface water, waste process water and/or treated leachate from the mining waste facility.

The determinands and frequency specified in your monitoring regime should be developed on a site specific basis considering the nature of the source and the receiving water. Your surface water/leachate management proposals should ensure that the benchmark emission standards in the receiving water course are not exceeded. These will usually comprise Environmental Quality Standards (EQS) for fresh water and are detailed in the guidance document “Environmental Risk Assessment: Part 2 – Assessment of point source releases and cost-benefit analysis” Natural Resources Wales (2008a).

All monitoring should comply with our MCERTS Scheme (Monitoring Certification Scheme), where practicable. Further information on MCERTS is provided in “How to comply with your environmental permit” (Natural Resources Wales 2010c).

3.3.6 Fugitive emissions

Fugitive emissions from mining waste operations can include dust and possibly mud deposited on the public highway if the mining waste operations require roads to be crossed by vehicles. Furthermore, operations can give rise to noise and vibration and very infrequently odour.

3.3.7 Dust

Your environmental risk assessment undertaken in accordance with Section 2.2.8 above should have identified the potential risk from dust to be generated at your site and your proposed risk mitigation measures.

Box 3.3.7

Dust suppression measures

In addition to the requirements in “How to comply with your Environmental Permit” (Natural Resources Wales 2010c), you should where appropriate:

- Where significant dust may be produced by traffic, cover the running surface in black top or concrete.
- Enforce low speed limits on site to minimise emissions if dust arising from site roads/tracks;
- During dry conditions, spray site roads and operational areas prior to and during vehicle movements;
- In particularly sensitive locations or during adverse weather conditions, consider the use of static water sprays to provide continuous protection against dust;
- Consider the strength and direction of the prevailing wind, and the proximity of receptors, when planning the sequencing and direction of waste movement and disposal and the location of any waste treatment operations; and
- Undertake visual monitoring for dust throughout the working day.

3.3.8 Mud

If your mining waste operations involve the use of public roads, then your environmental risk assessment undertaken in accordance with Section 2.2.8 above should have identified the potential risk from mud on the public road and your proposed risk mitigation measures.

Box 3.3.8

Measures for controlling mud on the public highway

In addition to the requirements in “How to comply with your Environmental Permit” (Natural Resources Wales 2010c), you should where appropriate:

- Provide a wheel wash which should be maintained in accordance with the manufacturer’s recommendations.
- Ensure that a daily inspection is made of the wheel cleaning facilities, site roads and the highway outside the site.
- Ensure that all dirty water discharged from the road drains is treated by silt settlement procedures before discharge.

3.3.9 Surface Water

Surface water is likely to contain suspended solids and other matter collected from rainfall run-off collected from mining waste facilities. The surface water run-off from mining waste facilities may have the potential to pollute if not managed properly.

Box 3.3.9

Surface water management

The potential for contamination of surface water run-off for non inert materials should be reflected in the design and management of the waste management operations on the basis of the risk assessments. Measures to minimise potential contaminated surface water run-off from mining waste facilities for non inert waste include:

- Keeping the area from which substances may be eroded as small as possible, by capping inactive areas of the tip with inert fill.
- Restore completed areas to vegetation as soon as possible.
- Implement an appropriately designed surface water drainage system(s).

The following materials used in mining waste operations may contain non-hazardous substances:

- Flocculants used in settlement lagoons;

For all mining waste operations you should seek to minimise the amount of pollutant that could enter surface water run-off by minimising the source.

3.3.10 Groundwater

For solid non-inert extractive waste should hazardous and or non-hazardous substances be present, then protection of groundwater may require low permeability barriers to be formed in your mining waste facility to impede transport into the groundwater.

Box 3.3.10

Protection of groundwater

The need for low permeability barriers at your mining waste facility for solid waste will be based on the findings of your risk assessment.

In addition to the requirements in “How to comply with your Environmental Permit” (Natural Resources Wales 2010c), you should where appropriate:

- Keep the quantity of water entering the mining waste facility as small as possible, by profiling the mining waste facility to promote surface water run-off and capping inactive areas with inert extractive waste where practicable.

3.3.11 Odour / Noise and Vibration

Your environmental risk assessment undertaken in accordance with Section 2.2.8 above should have identified the potential risk from odour / noise and vibration at your site and your proposed risk mitigation measures.

The requirements of your planning permission will normally be sufficient to control odour, noise and vibration. However, other guidance is available through “How to comply with your Environmental Permit” (Natural Resources Wales 2010c).

3.4 CLOSURE AND AFTERCARE/RESTORATION

After mining waste operations have ceased at your site or after a mining waste facility is closed, the Environmental Permit will continue to be in force to control the ongoing pollution risks associated with the mining waste facility. You should continue with monitoring of the mining waste facility (if this is a requirement of your Environmental Permit) until such time as you consider that the mining waste facility no longer poses a risk to the environment or human health and the restoration and aftercare has been satisfactorily carried out.

When you consider that the mining waste facility no longer poses an unacceptable risk to the environment or human health, you may apply to surrender the permit.

Box 3.4

Post-Closure

- During the closure period prior to surrender of the permit you should ensure that any environmental management and monitoring systems are maintained and protected from damage so that they operate in an effective manner until the point of permit surrender.
- Any monitoring and aftercare requirements necessary to satisfy other regulatory regimes should be implemented and followed.
- We are required to inspect the mining waste facility to confirm that all required actions under the permit have been completed before you can surrender your permit.

4 References

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5. GLOSSARY & ABBREVIATIONS

BAT	Best Available Technique
BREF	BAT Reference Document
EQS	Environmental Quality Standard
HSE	Health and Safety Executive
LOW	List of Wastes
MAPP	Major Accident Prevention Policy
MPA	Mineral Planning Authority
OSM	Operator Self Monitoring
SMS	Safety Management System
WMP	Waste Management Plan

Various definitions are provided in Article 3 of the Mining Waste Directive. A summary of these and others most relevant to this technical guidance note is provided below:

Dam – an engineered structure designed to retain or confine water and/or waste within a pond.

Dangerous substances – a substance, mixture or preparation which is dangerous with the meaning of Directive 67/548/EEC (the Dangerous Substances Directive) or 1999/45/EC (the Dangerous Preparation Directive).

Hazardous waste – is as defined in Article 1(4) of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste.

Heap – an engineered facility for the deposit of solid waste on the surface.

Inert waste – waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact, in a way likely to give risk to environmental pollution or harm to human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater. Further details on the characterisation standards for inert waste are provided in Section 2.2.6 of this technical guidance note.

Leachate – any liquid percolating through the deposited waste and emitted from or contained within a waste facility, including polluted drainage, which may adversely

affect the environment if not appropriately treated. This would include, but is not limited to, acid rock drainage from sulphide bearing rocks, such as those associated with metal sulphide ores, coal measures or marine shales.

List of Wastes Regulations (LoWR) – List of Waste (England) Regulations 2005 and the List of Waste (Wales) Regulations 2005. The LoWR is a document containing a list of codes and descriptions, which classify all types of waste. Extractive waste covered by the Mining Waste Directive falls under Chapter 1 of the LOW as included in Appendix 6.

Major Accident – an occurrence on site in the course of an operation involving the management of extractive waste in any establishment covered by the Directive, leading to a serious danger to human health and/or the environment, whether immediately or over time, on-site or off-site.

Mining waste facility – any area designed for the accumulation or deposit of extractive waste, whether in a solid or liquid state or in solution or suspension, for the following time-periods:

- no time-period for Category A waste facilities and facilities for waste categorised as hazardous in the WMP;
- a period of more than six months for facilities for hazardous waste generated unexpectedly;
- a period of more than one year for facilities for non-hazardous noninert waste; and
- a period of more than three years for facilities for unpolluted soil, non-hazardous prospecting waste, waste resulting from the extraction, treatment and storage of peat and inert waste.

Such facilities are deemed to include any dam or other structure serving to contain, retain, confine or otherwise support such a facility, and also to include, but not be limited to, heaps and ponds, but excluding excavation voids into which waste is replaced, after extraction of the mineral, for rehabilitation and construction purposes.

Mining waste operation – any management of extractive waste that falls within the scope of the Mining Waste Directive. Extractive waste in this case comprises waste generated from the prospecting, extraction, treatment and storage of mineral resources and the working of quarries. There are some exclusions to which the scope of the Mining Waste Directive does not apply (defined in Article 2 of the Directive), as follows:

- I. waste which is generated by the prospecting, extraction and treatment of mineral resources and the working of quarries, but which does not directly results from those operations;
- II. waste resulting from the offshore prospecting, extraction and treatment of mineral resources;
- III. injection of water containing substances from exploration/extraction/mining activities into geological formations and re-injection of pumped groundwater

from mines and quarries, as defined in Article 11(3)(j) of Directive 2000/60/EC (the Water Framework Directive).

Pond – a natural or engineered facility for the disposal of fine-grained waste, normally tailings, along with varying amounts of free water, resulting from the treatment of mineral resources and from the clearing and recycling of process water.

Substantial change – a change in the operation or structure of a mining waste facility that, in the opinion of Natural Resources Wales, may have significant negative effects on human health or the environment.

Tailings – the waste solids or slurries that remain after the treatment of minerals by separation processes, e.g. crushing, grinding, size-sorting, flotation and other physico-chemical techniques, to remove the valuable minerals from the less valuable rock.

Appendix 1 – example WMP for a Mining Waste Operation (including a mining waste facility) for Inert Wastes

Name of operator	Quarry Industries Limited
Name and address of site	Limestone Quarry Middle Oaks Cheshire ZZ1 2YY

1. Introduction

Quarry Industries Limited (Quarry Industries) proposes to develop a limestone quarry at the above address. The 10 hectare site is located approximately 2.5 km to the south east of Middle Oaks, adjacent to the B9999. The site is estimated to contain 650,000 tonnes of limestone. It is proposed to progressively work the quarry from east to west and restore it to agricultural land over a twelve year period. The site will also contain overburden heaps, processing plant and silt lagoons. Operation of the quarry and processing plant will generate extractive waste which falls under the scope of the Mining Waste Directive and, therefore, an Environmental Permit is required.

This document comprises Quarry Industries' Waste Management Plan in order to support its Environmental Permit Application. Much of the information required has already been produced in order to support the planning application and satisfy the requirements of The Quarries Regulations 1999. In these cases, the relevant information is referred to under the appropriate headings below and the existing data/reports have been included as an appendix.

The purpose of this Waste Management Plan is to ensure that Quarry Industries prevents or reduces waste production and its harmfulness, promotes backfilling of the excavation void and recovery of waste and ensures the short and long term safe disposal of the extractive waste generated.

2. Facility Classification

The proposed facility is not considered to be a Category A facility as it will not contain hazardous waste or dangerous substances. For further details on waste classification refer to Section 3 below.

In addition, a risk assessment has been carried out over the entire lifecycle of the facility and this demonstrates that the predicted consequences of failure due to loss of structural integrity (of the proposed heaps and silt lagoons) are insignificant in terms of loss of life, danger to human health or environmental impact. A copy of the risk assessment is provided in Appendix A; this was undertaken in order to comply with the requirements of The Quarries Regulations 1999. It has been undertaken in accordance with the Approved Code of Practice for The Quarries Regulations and it also covers all of the

requirements detailed in Appendix 2 of Natural Resources Wales's guidance "How to comply with your environmental permit additional guidance for: mining waste operations".

The risk assessment demonstrates that due to the proposed design, operation and maintenance of the facility, even in the event of an accident, the mining waste facility will be able to contain the waste within the boundaries of the facility in the manner for which it was designed.

3. Waste Prevention and Reduction

The proposed extraction activities have been designed to prevent waste production, where possible, and reduce the quantities generated in all other cases. A development plan for the site has been produced as part of the planning application. The development plan defines the nature of extraction operations (refer to Section 5 for further details on site operations and waste treatment) and contains a materials balance plan which presents the estimated quantities and rate of waste to be generated over the 12 year period. A copy of the materials balance plan is provided in Appendix B.

The nature of the site operations and the treatment processes have been designed to minimise waste production by consideration of the phasing sequence, mineral extraction method and selection of plant and machinery. Further reductions in waste production from that detailed in the materials balance plan are not anticipated due to the nature of the geological strata, i.e. the waste to mineral ratio.

A key control on waste prevention will be the removal and proper storage of topsoil (which does not comprise waste) in separate stockpiles to other extractive wastes. It is proposed to replace the topsoil after closure of the mining waste facility, i.e. use it for site restoration, and, therefore, it is not envisaged that other re-use options will be required. The materials balance plan in Appendix B indicates the quantity of topsoil estimated to be removed, stored and used for restoration purposes.

Similarly, waste material which is to be returned to the void will be temporarily stored in a separate area of the site. The materials balance plan in Appendix B indicates the quantity of such material estimated to be removed, stored and used to backfill the void for the purpose of rehabilitation. This process will ensure that waste is recovered where feasible.

It is not proposed to use chemicals to treat the extracted material and, therefore, the use of less dangerous substances is not a consideration at this site.

During the operation of the facility, further measures to reduce the quantity of waste generated will be considered as necessary, e.g. during review of the Waste Management Plan and / or when plant or machinery needs replacing.

4. Waste Characterisation

Quarry Industries proposes to operate a limestone quarry with the extracted material being processed on-site via a Part B screening operation. The finished product will be supplied to the construction industry.

Detailed information on the geological background of the deposit to be exploited has been provided to the Mineral Planning Authority to support the planning application for the site and to the Health and Safety Executive in the Regulation 33 Report; extracts of these documents containing the relevant geological information is provided in Appendix C.

The extraction of limestone will generate waste, comprising the soil and overburden (largely clay) which needs to be removed to access the limestone, oversize material and fines (silt) which will be separated out from the required product during the on-site treatment process. It is estimated that approximately 40,000 m³ of extractive waste will be generated during the operational phase of the quarry. Waste overburden material will be transported to on site stockpiles using a ten tonne truck. The screening equipment will use conveyors to transport waste oversize material to the onsite stockpiles. Silt will be separated out from the product during the washing process; the silt will be settled out in a series of lagoons before the water is recycled back to the washing plant. The silt will not be removed from the lagoons, which will therefore become mining waste facilities. Surface water runoff will be treated to remove suspended solids before discharge to the River Lilly. Full details on the proposed methods of mineral extraction and processing have been provided to the Mineral Planning Authority to support the planning application for the site; an extract containing the relevant information is provided in Appendix D. A detailed surface water management plan has been developed to support the planning application and a copy is provided in Appendix E; this includes details of the location, design, capacity and flow rates etc. of the surface water management system.

The following waste types are expected to be generated on site:

01 01 02 wastes from mineral non-metalliferous excavation
01 04 08 waste gravel and crushed rocks other than those mentioned in 01 04 07 01
04 09 waste sand and clays
01 04 10 dusty and powdery wastes other than those mentioned in 01 04 07
01 04 12 tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11

Various tests have been carried out on the extractive waste generated at the adjacent operational limestone quarry (also operated by Quarry Industries). This quarry is extracting limestone from the same geological strata and, therefore, the data is considered to be representative. The results of laboratory testing to determine the geotechnical characteristics and behaviour of the waste are included in the Regulation 33 Report, see Appendix F.

Appropriate waste characterisation testing has also been undertaken based on requirements detailed in Commission Decision documents 2009/359/EC and 2009/360/EC, which demonstrates the waste to be inert. The laboratory

test certificates are also provided in Appendix G, which confirm that the waste meets the characterisation standards for inert waste as detailed in Box 2.2.6a of Natural Resources Wales's guidance "How to comply with your environmental permit additional guidance for: mining waste operations" (based on .

5. Site Operations and Waste Treatment

As mentioned in Section 3 above, details of the proposed waste treatment, including screening, washing and settlement are provided in Appendix D. The operations have been designed to prevent or reduce waste production and, where waste will be generated, to recover the waste where it is environmentally desirable (refer to Section 6 for Environmental Risk Assessment).

6. Environmental Risk Assessment

An environmental risk assessment has been undertaken in accordance with the template provided in Natural Resources Wales's risk assessment guidance; a copy is provided in Appendix H. The risk assessment has been produced by collating existing information produced to support the planning application and to comply with The Quarries Regulations 1999.

The environmental risk assessment considers the changes that the waste may undergo whilst being exposed to conditions above ground and the environmental impact of returning waste to the void (based on the identification of sources-pathways-receptors).

The environmental risk assessment demonstrates that the proposed mitigation measures will ensure the safe disposal of mining waste in both the short and long term. The issue of stability of the facility has been considered fully in the Regulation 33 Report (Appendix F), however, this information has been summarised in the environmental risk assessment (Appendix H) to demonstrate that the facility will remain stable over the long term.

The risk assessment has not identified any "significant" risks and, therefore, no more detailed risk assessments are required.

7. Risk Mitigation

The environmental risk assessment in Appendix H details the proposed risk mitigation measures which Quarry Industries propose to put in place at Limestone Quarry. Where relevant, these cross refer to Quarry Industries Policies and Procedures Manual. The manual contains detailed operational controls and records for all of the site's activities. The Policies and Procedures Manual forms part of Quarry Industries' Environmental Management System that complies with the requirements of ISO 14001:2004.

8. Control and Monitoring

The risk assessment in Appendix H demonstrates that, due to the nature of the waste to be generated (inert) and the proposed mitigation measures, there will be no significant risk from leachate, particulate matter, mud, odour, noise/vibration or accidents at the site. Therefore, no quantitative monitoring of these parameters is proposed.

It is proposed that there will be a point discharge to the River Lilly from settlement pond C. The settlement ponds will collect silt from the product washing process and surface water run-off from the site. A detailed surface water management plan has been developed to support the planning application and a copy is provided in Appendix E; this includes details of the location, design, sizing etc. of the settlement lagoons. Quarterly monitoring for suspended solids and visible oil and grease is proposed at the point where the discharge leaves the Environmental Permit boundary, the proposed monitoring regime is provided in Section 3 of the Surface Water Management Plan.

9. Proposed plan for closure

The development plan for the site that has been produced as part of the planning application, sets out the plan for closure and restoration of the site. A copy of this plan is provided in Appendix I. It covers all of the required measures as detailed in section 3.4 of Natural Resources Wales's guidance "How to comply with your environmental permit additional guidance for: mining waste operations".

10. Measures for the Prevention of Environmental Pollution

The environmental risk assessment discussed in Section 6 above has identified all of the potential hazards and pollution linkages at the site, the risks they pose and the risk management measures which Quarry Industries Limited proposes to implement in order to mitigate those risks. The proposed risk mitigation measures are considered to meet the requirements of the Mining Waste Directive, including the need to prevent water pollution.

In accordance with Natural Resources Wales's guidance, the water balance of the facility has been determined (see estimated materials balance plan in Appendix B).

The environmental risk assessment (Section 6) considers the potential for leachate to be generated over the life of the site (in order to prevent the contamination of soil, groundwater and surface water). The environmental risk assessment has demonstrated that, as the wastes to be generated will be inert, there will be no source to generate polluting leachate. Therefore, it will not be necessary to collect or treat leachate at the site.

Appendix 2 – classification of facility (SUPPLEMENTARY NOTES FOR SECTION 2.2.1 OF THE TECHNICAL GUIDANCE NOTE)

Commission Decision of 20

April 2009

on the definition of the criteria for the classification of waste facilities in accordance with Annex III of Directive 2006/21/EC of the European Parliament and of the Council concerning the management of waste from extractive industries

(notified under document number C(2009) 2856)

(2009/337/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC [1], and in particular Article 22(1)(g) thereof,

Whereas:

- (1) In order to ensure a common assessment of the criteria set out in Annex III to Directive 2006/21/EC, it is necessary to define a methodology and, where possible, to fix limit values, taking into account the different types of waste facilities, their behaviour in the short and long term as well as throughout their operating phase.
- (2) It is appropriate from a technical point of view to exempt waste facilities containing only inert waste or unpolluted soil from the assessment of the criteria concerning the presence of dangerous substances or hazardous waste.
- (3) The potential hazard posed by a waste facility may change significantly during the operational and closure phases of the facility. Therefore, it is appropriate to

review the classification of the facility as necessary and at least at the end of the operational phase.

(4) In order to assess the potential for loss of life and danger for human health in cases of loss of structural integrity, or incorrect operation, of a facility, the actual permanent presence of people in the potentially affected areas should be taken into account when assessing the significance of that potential loss of life or danger for human health.

(5) The measures provided for in this Decision are in accordance with the opinion of the Committee established by Article 18 of Directive 2006/12/EC of the European Parliament and of the Council [2],

HAS ADOPTED THIS DECISION:

Article 1

1. A waste facility shall be classified under Category A in accordance with the first indent of Annex III of Directive 2006/21/EC if the predicted consequences in the short or the long term of a failure due to loss of structural integrity, or due to incorrect operation of a waste facility could lead to:

- (a) non-negligible potential for loss of life;
- (b) serious danger to human health;
- (c) serious danger to the environment.

2. For the purpose of the classification referred to in paragraph 1, the entire life-cycle of the facility, including the after-closure phase, shall be considered in the evaluation of the hazard potential of the facility.

Article 2

1. For the purpose of this Decision, structural integrity of a waste facility shall mean its ability to contain the waste within the boundaries of the facility in the manner for which it was designed.

2. The loss of structural integrity shall cover all possible failure mechanisms relevant to the structures of the waste facility concerned.

3. An evaluation of the consequences of the loss of structural integrity shall comprise the immediate impact of any material transported from the facility as a consequence of the failure and the resulting short and long term effects.

Article 3

1. For the purpose of this Decision, incorrect operation of the waste facility shall mean any operation which may give rise to a major accident, including the malfunction of environmental protection measures and faulty or insufficient design.

2. An assessment of the release of contaminants resulting from incorrect operation shall comprise the effects of short-term pulses as well as of the long-term release of contaminants. That assessment shall cover the operational period of the facility and as well as the long-term period following closure. It shall include an evaluation of the potential hazards constituted by facilities containing reactive waste, regardless of the classification of the waste as hazardous or non-hazardous under Council Directive 91/689/EEC [3].

Article 4

1. Member States shall assess the consequences of a failure due to loss of structural integrity or incorrect operation of a waste facility in accordance with paragraphs 2, 3 and 4.
2. The potential for loss of life or danger to human health shall be considered to be negligible or not serious if people other than workers operating the facility that might be affected are not expected to be present permanently or for prolonged periods in the potentially affected area. Injuries leading to disability or prolonged states of ill-health shall count as serious dangers to human health.
3. The potential danger for the environment shall be considered to be not serious if:
 - (a) the intensity of the potential contaminant source strength is decreasing significantly within a short time;
 - (b) the failure does not lead to any permanent or long-lasting environmental damage;
 - (c) the affected environment can be restored through minor clean-up and restoration efforts.
4. In establishing the potential for loss of life or danger to human health or to the environment, the specific evaluations of the extent of the potential impacts shall be considered in the context of the source-pathway-receptor chain.

Where there is no pathway between the source and the receptor, the facility concerned shall not be classified as Category A on the basis of failure due to loss of structural integrity or incorrect operation.

Article 5

1. In the case of loss of structural integrity for tailings dams, human lives shall be deemed to be threatened where water or slurry levels are at least 0,7 m above ground or where water or slurry velocities exceed 0,5 m/s.
2. The assessment of the potential for loss of life and danger to human health, shall comprise at least the following factors:
 - (a) the size and properties of the facility including its design;
 - (b) the quantity and quality including physical and chemical properties of the waste in the facility;
 - (c) the topography of the facility site, including damping features;
 - (d) the travel time of a potential flood-wave to areas where people are present;
 - (e) the propagation velocity of the flood-wave;
 - (f) the predicted water or slurry level;
 - (g) the rising rate of water or slurry levels;
 - (h) any relevant, site-specific factors that may influence the potential for loss- of- life or for danger to human health.

Article 6

1. In the case of waste heap slides any waste-mass in movement shall be deemed likely to threaten human lives if people are staying within range of the moving waste-mass.
2. The assessment of the potential for loss of life and danger to human health shall comprise at least the following factors:
 - (a) the size and properties of the facility including its design;
 - (b) the quantity and quality including physical and chemical properties of the waste in the facility;
 - (c) slope angle of heap;
 - (d) potential to build up internal groundwater within the heap;
 - (e) underground stability;
 - (f) topography;
 - (g) proximity to water courses, constructions, buildings;
 - (h) mine workings;
 - (i) any other site-specific factors that may significantly contribute to the risk posed by the structure.

Article 7

1. The threshold referred to in the second indent of Annex III of Directive 2006/21/EC shall be determined, as the ratio of the weight on a dry matter basis of:
 - (a) all waste classified as hazardous in accordance with Directive 91/689/EEC and expected to be present in the facility at the end of the planned period of operation, and
 - (b) waste expected to be present in the facility at the end of the planned period of operation.
2. Where the ratio referred to in paragraph 1 exceeds 50 %, the facility shall be classified as Category A.
3. Where the ratio referred to paragraph 1 is between 5 % and 50 %, the facility shall be classified as Category A.

However, that facility may not be classified as Category A where it is justified on the basis of a site specific risk assessment, with specific focus on the effects of the hazardous waste, carried out as part of the classification based on the consequences of failure due to loss of integrity or incorrect operation, and demonstrating that the facility should not be classified as Category A on the basis of the contents of hazardous waste.
4. Where the ratio referred in paragraph 1 is less than 5 %, then the facility shall not be classified as Category A on the basis of the contents of hazardous waste.

Article 8

1. Member States shall assess whether the criterion set out in the third indent of Annex III of Directive 2006/21/EC is met in accordance with the considerations set out in paragraphs 2, 3, and 4.
2. For planned tailing ponds, the following methodology shall be used:

- (a) an inventory shall be carried out of the substances and preparations which are used in the processing and which are subsequently discharged with the tailings slurry to the tailings pond;
- (b) for each substance and preparation, the yearly quantities used in the process shall be estimated out for each year of the planned duration of operation;
- (c) for each substance and preparation, it shall be determined whether it is a dangerous substance or preparation within the meaning of Council Directive 67/548/EEC [4] and of Directive 1999/45/EC of the European Parliament and of the Council [5];
- (d) for each year of planned operation, the yearly increase in stored water (ΔQ_i) within the tailings pond shall be calculated under steady state conditions according to the formula set out in Annex I;
- (e) for each dangerous substance or preparation identified in accordance with point (c), the maximum yearly concentration (C max) in the aqueous phase shall be estimated according to the formula set out in Annex II.

If, on the basis of the estimation of the maximum yearly concentrations (C max), the aqueous phase is considered to be "dangerous" within the meaning of Directives 1999/45/EC or 67/548/EEC, the facility shall be classified as a Category A facility.

3. For operating tailings ponds, the classification of the facility shall be based on the methodology set out in paragraph 2, or on direct chemical analysis of the water and solids contained in the facility. If the aqueous phase and its contents have to be considered as dangerous preparation within the meaning of Directive 1999/45/EC or 67/548/EEC, the facility shall be classified as a Category A facility.

4. For heap leaching facilities, where metals are extracted from ore heaps by percolating leach solutions, Member States shall undertake a screening for dangerous substances at closure based on an inventory of used leach chemicals and the residual concentrations of these leach chemicals in the drainage after washing has been finalised. If these leachates have to be considered as dangerous preparation within the meaning of Directives 1999/45/EC or 67/548/EEC, the facility shall be classified as a Category A facility.

Article 9

Article 7 and 8 of this Decision shall not apply to waste facilities containing inert waste or unpolluted soil only.

Article 10

A review of the classification shall be carried out by the competent authority within the meaning of Directive 2006/21/EC where the permit is substantially modified or the operational conditions have changed significantly.

That review shall be carried out at the latest at the end of the operational period of the facility.

Article 11

This Decision is addressed to the Member States.

Done at Brussels, 20 April 2009.

For the Commission

Stavros Dimas

Member of the Commission

[1] OJ L 102, 11.4.2006, p. 15.

[2] OJ L 114, 27.4.2006, p. 9.

[3] OJ L 377, 31.12.1991, p. 20.

[4] OJ 196, 16.8.1967, p. 1.

[5] OJ L 200, 30.7.1999, p. 1.

ANNEX I

Formula for the calculation of the average yearly increase in stored water within the tailings pond ΔQ as referred in Article 8 paragraph 2

$\Delta Q_i = (\Delta M_i/D) * P$, where:

ΔQ_i = yearly increase of stored water in the tailing pond (m³/year) during the year "i"

ΔM_i = yearly mass of tailings discharged to pond (tonnes dry weight/year) during the year "i"

D = average dry bulk density of the deposited tailings (tonnes/m³)

P = average porosity of the sedimented tailings (m³/m³) defined as the ratio of the volume of voids to the total volume of sedimented tailings

If exact data are not available, default values of 1,4 tonnes/m³ for the dry bulk density and 0,5 m³/m³ for the porosity should be used.

ANNEX II

Estimation of the maximum concentration in the aqueous phase C max as referred in Article 8 paragraph 2

C max = the maximum of the following value: $S_i/\Delta Q_i$, where:

S_i = yearly mass of each substance and preparation as identified under Article 8(2)(c), discharged into the pond during the year "i".

Appendix 3 - list of inert extractive waste

Operators do not have to carry out specific testing of extractive waste in order to show that it is inert provided that they can demonstrate to the Agency that the criteria in Article 1(1)(a – e) of Commission decision 2009/359/EC have been adequately considered and are met on the strength of existing information or valid procedures or schemes.

Commission Decision 2009/359/EC also provides for member states to draw up a list of inert wastes. Recital 3 states: “*to minimise the administrative burden linked with the implementation of this Decision, it is appropriate from a technical point of view to exempt from specific testing those wastes for which existing relevant information is available, and to allow Member States to establish lists of waste material which could be considered as inert in accordance with the criteria set out in the present Decision.*” Presented in the table below is a list of extractive waste that is considered inert in accordance with the definition of Article 3(3) of Mining Waste Directive. The evidence we require you to submit to us is that *existing relevant information* showing that the material meets one or more of the criteria/descriptions given in the table below. If the *existing relevant information* is insufficient to confidently match the waste with any of the categories given in the table, further information on the nature of the waste will need to be obtained. This is an interim list that will apply in England and Wales only, pending the finalisation of a list drawn up by the Member State in accordance with Article 1(3) of the Commission Decision 2009/359/EC of 30 April 2009.

Extractive waste included in the list below will be regarded as inert, unless there is reason to consider that it may **not** be inert on the basis of

- dangerous substances inherent in the mineral resource
- site specific conditions, - for example by hydrothermal/vein mineralisation (other than the kaolinisation of igneous intrusions). Depending on the nature of the mineralised extractive wastes and the proportion relative to unmineralised extractive wastes, the mineralised extractive wastes may not be inert extractive waste or
- human activity. The extractive waste must not contain dangerous substances used in the physical and chemical processing of non-metalliferous minerals or wastes from potash or rock salt processing

in which case the operator must establish whether the waste is inert by characterisation in accordance with the requirements of Commission Decision 2009/360/EC of 30 April 2009 which are set out in Appendix 5 of this guidance.

Where your extractive waste is not included in the list below and you still consider it to be inert, you may demonstrate this by showing that it meets all the criteria in Box 2.2.6a, or by characterisation in accordance with the requirements of Commission Decision 2009/360/EC.

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
<p>Solid or semi solid waste and waste in suspension in water generated in the excavation void by any excavation process and not otherwise transferred to fixed or mobile plant for processing or treatment in preparation to a specification for sale or other beneficial use.</p> <p>The waste comprises as-dug materials, in the form of discrete material types corresponding to the geological units from which they are derived or as mixtures of materials.</p> <p>The waste may comprise overburden, interburden, underburden and mineral</p>	<p>Mechanical excavation using draglines, dredgers, backacting excavators, face shovels, loading shovels, motor scrapers or other similar plant working materials both above and below groundwater. Hydraulic excavation using monitors, etc.</p> <p>Materials may be dug directly or fragmented by blasting prior to excavation.</p> <p>For deep mines, development work may include use of mechanical and/or explosive extraction methods.</p> <p>Excavation activities include soil stripping, and overburden removal operations, either as separate activities or together</p>	<p>Waste must be produced from the excavation of naturally occurring sands, sand and gravel, clays and rocks only.</p> <p>Extractive waste may be produced during the excavation of:</p> <p>‘Drift’ (inter-glacial, glacial and fluvio-glacial deposits (silt, sand, gravel, clay), alluvium, brickearth, peat, etc)</p> <p>Scree and solifluxion deposits</p> <p>Loess (wind blown fine grained material)</p> <p>Clay of recent geological age (e.g. clay of lacustrine or marine origin)</p> <p>Clay from ‘solid’ geological strata (e.g. Oxford Clay, Mercia Mudstone, London Clay, Reading Beds, Gault Clay and other Cretaceous Clay, Ball Clay, etc.)</p> <p>Clay (interbedded with other minerals for extraction)</p>	<p>01 01</p> <p>01 01 02</p>	<p>Wastes from mineral excavation</p> <p>Wastes from mineral non-metalliferous excavation</p>

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
<p>resources otherwise unsuitable for recovery and processing.</p> <p>The waste may comprise natural weathered residues of the geological units from which they are derived.</p>	<p>with mineral excavation processes. For deep mines, activities may include shaft sinking and drift or tunnel development.</p> <p>Excavation of mineral resources may produce interburden and other extractive waste due to mixing by overlying or underlying strata, natural variations in geological conditions and weathering effects that render the materials unsuitable for processing.</p>	<p>Silt (interbedded with other minerals for extraction)</p> <p>Sand (interbedded with other minerals for extraction)</p> <p>Argillaceous rocks (fine grained clastic rocks, including shales, mudstones, siltstones, marls, calcilutites, seatearths)</p> <p>Arenaceous rocks (medium and coarse grained clastic rocks, including sands from 'solid' geological strata as well as sandstones, gritstones, greywackes, calcirudites, calcarenites, greensands, arkoses)</p> <p>Rudaceous rocks (very coarse grained clastic rocks, including breccias and conglomerates)</p> <p>Psammitic and pelitic rocks (coarse and fine grained metamorphosed clastic rocks, including baked margins/metamorphic aureoles around igneous intrusions or contacts)</p> <p>Marble (metamorphosed limestone)</p> <p>Siliceous rocks (e.g. flint in Chalk, chert)</p> <p>Calcareous rocks (non-clastic calcium carbonate rich rocks, including chalk, limestone, dolomite and tufa)</p> <p>Igneous intrusions and volcanic rocks (including kaolinised igneous intrusions)</p> <p>Kaolinised granite and china clay</p>		

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
		Fault breccia and fault gouge (e.g. broken and crushed material in and around faulted areas, including clay and/or other infilling materials)		

<p>Solid extractive waste comprising loose fragments of the materials extracted for processing.</p> <p>The waste may include scalpings, oversize materials, materials found to be unsuitable either prior to or following processing, spilled materials that have fallen from the processing plant, conveyors or mobile plant or otherwise accumulated in and around the processing area or haul routes.</p>	<p>The treatment or processing to a specification for sale or other beneficial use of mineral resources excavated from the extraction void (either at surface or underground). The treatment or processing may be at a dedicated processing area separate from the extraction void or may be by means of mobile plant operating in the extraction void.</p> <p>Treatment or processing may include dry or wet screening or other mechanical separation on the basis of size, and size reduction by breaking, crushing and/or grinding.</p>	<p>Waste must be produced from the treatment of naturally occurring sand and gravel and rocks only and for material at the processing plant</p> <p>Extractive waste may be produced from the treatment or processing of:</p> <p>Argillaceous rocks (fine grained clastic rocks, including shales, mudstones, siltstones, marls, calcilutites, seatearths)</p> <p>Arenaceous rocks (medium and coarse grained clastic rocks, including sands from 'solid' geological strata as well as sandstones, gritstones, greywackes, calcirudites, calcarenites, greensands, arkoses)</p> <p>Rudaceous rocks (very coarse grained clastic rocks, including breccias and conglomerates)</p> <p>Psammitic and pelitic rocks (coarse and fine grained metamorphosed clastic rocks, including baked margins/metamorphic aureoles around igneous intrusions or contacts)</p> <p>Marble (metamorphosed limestone)</p> <p>Siliceous rocks (e.g. flint in Chalk, chert)</p> <p>Calcareous rocks (non-clastic calcium carbonate rich rocks,</p>	<p>01 04</p> <p>01 04 08</p>	<p>Wastes from further physical and chemical processing on non-metalliferous minerals</p> <p>Waste gravel and crushed rocks other than those mentioned in 01 04 07</p>
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Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description

		including chalk, limestone, dolomite and tufa) Igneous intrusions and volcanic rocks (including kaolinised igneous intrusions) Kaolinised granite and china clay		
<p>Solid or semi solid extractive waste comprising loose fragments of sandy or clayey materials extracted for processing, agglomerations and/or accretions of materials.</p> <p>The waste may include large clay fragments removed from conveyors or at the plant, scalpings, oversize materials, materials found to be unsuitable either prior to or following processing, spilled materials that have fallen from the processing plant, conveyors or mobile plant or otherwise accumulated in and around the processing area or haul routes.</p>	<p>The treatment or processing to a specification for sale or other beneficial use of mineral resources excavated from the extraction void. The treatment or processing may be at a dedicated processing area separate from the extraction void or may be by means of mobile plant operating in the extraction void.</p> <p>Treatment or processing may include dry or wet screening or classification on the basis of size, and size reduction by breaking, crushing and/or grinding. Treatment or processing may include pulverising or shredding clays.</p> <p>Removal of large clay fragments from conveyor belts.</p>	<p>Waste must be produced from the treatment of naturally occurring sand and clay only or treatment of materials derived from mixed sand and gravel or clay deposits.</p> <p>Extractive waste may be produced from the treatment or processing of:</p> <p>'Drift' (inter-glacial, glacial and fluvio-glacial deposits (silt, sand, gravel, clay), alluvium, brickearth, etc)</p> <p>Scree and solifluxion deposits</p> <p>Loess (wind blown fine grained material)</p> <p>Clay of recent geological age (e.g. clay of recent deposits of lacustrine or marine origin)</p> <p>Clay from 'solid' geological strata (e.g. Oxford Clay, Mercia Mudstone, London Clay, Reading Beds, Gault Clay and other Cretaceous Clay, Ball Clay, etc.)</p> <p>Clay (interbedded with other minerals for extraction)</p>	01 04 09	Waste sand and clays

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive	Processes and/or activities	Material types from which extractive waste may be	LOW Code	LOW Description

waste	that may give rise to the extractive waste	produced		
		Kaolinised granite and china clay		
Solid dry or damp/wet dusty or powdery extractive waste produced during the processing and treatment of the mineral resource to make it suitable for use or sale.	<p>The collection and treatment of air in the processing plant, exhaust air or other dust laden air as part of the air pollution control system.</p> <p>Residues from wet dust suppression systems.</p> <p>Grinding/milling operations of hard or fine grained materials.</p> <p>Mechanical or other means of separating fines from mineral products (e.g. by use of air knives, air decks or physical screens, etc).</p>	<p>Waste must be produced from the treatment of naturally occurring mineral resources only and for material at the processing plant.</p> <p>Extractive waste may be produced from the treatment or processing of:</p> <p>'Drift' (inter-glacial, glacial and fluvio-glacial deposits (silt, sand, gravel, clay), alluvium, brickearth, etc)</p> <p>Scree and solifluxion deposits</p> <p>Loess (wind blown fine grained material)</p> <p>Clay of recent geological age (e.g. clay of lacustrine or marine origin)</p> <p>Clay from 'solid' geological strata (e.g. Oxford Clay, Mercia Mudstone, London Clay, Reading Beds, Gault Clay and other Cretaceous Clay, Ball Clay, etc.)</p> <p>Clay (interbedded with other minerals for extraction)</p> <p>Argillaceous rocks (fine grained clastic rocks, including shales, mudstones, siltstones, marls, calcilutites, seatearth)</p> <p>Arenaceous rocks (medium and coarse grained clastic rocks, including sands from 'solid' geological strata as well as sandstones, gritstones, greywackes, calcirudites, calcarenites, greensands, arkoses)</p>	01 04 10	Dusty and powdery wastes other than those mentioned in 01 04 07

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
		<p>Rudaceous rocks (very coarse grained clastic rocks, including breccias and conglomerates)</p> <p>Psammitic and pelitic rocks (coarse and fine grained metamorphosed clastic rocks, including baked margins/metamorphic aureoles around igneous intrusions or contacts)</p> <p>Marble (metamorphosed limestone)</p> <p>Siliceous rocks (e.g. flint in Chalk, chert)</p> <p>Calcareous rocks (non-clastic calcium carbonate rich rocks, including chalk, limestone, dolomite and tufa)</p> <p>Igneous intrusions and volcanic rocks (including kaolinised igneous intrusions)</p> <p>Kaolinised granite and china clay</p>		
Fine grained particles of extractive waste carried in suspension in water, dried by mechanical means or dried through settlement, drainage or evaporation produced during the processing and treatment of the mineral resource to make it suitable for use or sale.	The washing and/or wet screening of mineral resources excavated from the extraction void during the treatment or processing to a specification for sale or other beneficial use, with the extractive waste and process water collected for discharge to settlement ponds or mechanical solid/water separation processes.	<p>Waste must be produced from the treatment of naturally occurring mineral resources only and for material at the processing plant</p> <p>Extractive waste may be produced from the treatment or processing of:</p> <p>'Drift' (inter-glacial, glacial and fluvio-glacial deposits (silt, sand, gravel, clay), alluvium, brickearth, etc)</p> <p>Scree and solifluxion deposits</p>	01 04 12	Tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
	<p>The washing and/or wet screening of mineral resources utilises fresh water only with no other substances employed except those flocculants used in accordance with the manufacturer's recommendations and that will not harm the environment or cause harm to human health in the concentrations found in the tailings or water</p> <p>Extractive waste may be produced during excavation by mechanical means of fines from settlement lagoons or other collection points. Slurry (mixed solid and water) may be pumped to discharge for disposal or subsequent rehandling.</p>	<p>Loess (wind blown fine grained material)</p> <p>Clay of recent geological age (e.g. clay of lacustrine or marine origin)</p> <p>Clay from 'solid' geological strata (e.g. Oxford Clay, Mercia Mudstone, London Clay, Reading Beds, Gault Clay and other Cretaceous Clay, Ball Clay, etc.)</p> <p>Silt (interbedded with other minerals for extraction)</p> <p>Sand (interbedded with other minerals for extraction)</p> <p>Clay (interbedded with other minerals for extraction)</p> <p>Argillaceous rocks (fine grained clastic rocks, including shales, mudstones, siltstones, marls, calcilutites, seatearth)</p> <p>Arenaceous rocks (medium and coarse grained clastic rocks, including sands from 'solid' geological strata as well as sandstones, gritstones, greywackes, calcirudites, calcarenites, greensands, arkoses)</p> <p>Rudaceous rocks (very coarse grained clastic rocks, including breccias and conglomerates)</p> <p>Psammitic and pelitic rocks (coarse and fine grained metamorphosed clastic rocks, including baked margins/metamorphic aureoles around igneous intrusions or contacts)</p> <p>Marble (metamorphosed limestone)</p>		

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
		<p>Siliceous rocks (e.g. flint in Chalk)</p> <p>Calcareous rocks (non-clastic calcium carbonate rich rocks, including chalk, limestone, dolomite and tufa)</p> <p>Igneous intrusions and volcanic rocks (including kaolinised igneous intrusions)</p> <p>Kaolinised granite and china clay</p> <p>The extractive waste must not contain dangerous substances inherent in the mineral resource or used in the physical and chemical processing of non-metalliferous minerals or wastes from potash or rock salt processing.</p>		
<p>Fine grained extractive waste from cutting and sawing of dimension stone. Waste may be dry or damp, solid or semi solid or in suspension in water.</p> <p>Coarse extractive waste may comprise 'off-cuts' and fragments of rock not otherwise suitable for further processing, sale or use.</p>	<p>The extractive waste is produced during the splitting, chipping, cutting and sawing of dimension stone.</p>	<p>Waste must be produced from the treatment of naturally occurring mineral resources only and for material at the processing plant</p> <p>Extractive waste may be produced from the treatment or processing of:</p> <p>Argillaceous rocks (fine grained clastic rocks, including shales, mudstones, siltstones, marls, calcilutites, seatearth)</p> <p>Arenaceous rocks (medium and coarse grained clastic rocks, including sandstones, gritstones, greywackes, calcirudites, calcarenites, greensands, arkoses)</p> <p>Rudaceous rocks (very coarse grained clastic rocks, including breccias and conglomerates)</p>	01 04 13	<p>Wastes from stone cutting and sawing other than those mentioned in 01 04 07</p>

Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
		<p>Psammitic and pelitic rocks (coarse and fine grained metamorphosed clastic rocks, including baked margins/metamorphic aureoles around igneous intrusions or contacts)</p> <p>Marble (metamorphosed limestone)</p> <p>Siliceous rocks (e.g. flint in Chalk)</p> <p>Calcareous rocks (non-clastic calcium carbonate rich rocks, including chalk, limestone, dolomite and tufa)</p> <p>Igneous intrusions and volcanic rocks (including kaolinised igneous intrusions)</p> <p>Kaolinised granite and china clay</p>		

<p>Fine and coarse grained solid and semi solid waste and waste in suspension in water produced during the drilling of boreholes for exploration, preproduction and production purposes.</p> <p>The waste comprises discrete material types corresponding to the in situ geological units from which they are derived or as mixtures of materials.</p>	<p>The extractive waste is generated during drilling of boreholes with no drilling additives other than fresh water.</p>	<p>Waste must be produced from the drilling of naturally occurring mineral resources only</p> <p>Extractive waste under this code includes waste generated during drilling operations in:</p> <p>'Drift' (inter-glacial, glacial and fluvio-glacial deposits (silt, sand, gravel, clay), alluvium, brickearth, etc)</p> <p>Scree and solifluxion deposits</p> <p>Loess (wind blown fine grained material)</p>	<p>01 05</p> <p>01 05 04</p>	<p>Drilling muds and other drilling wastes</p> <p>Freshwater drilling muds and wastes</p>
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Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description

<p>The waste may comprise natural weathered residues of the geological units from which they are derived.</p>		<p>Clay of recent geological age (e.g. clay of lacustrine or marine origin)</p> <p>Clay from 'solid' geological strata (e.g. Oxford Clay, Mercia Mudstone, London Clay, Reading Beds, Gault Clay and other Cretaceous Clay, Ball Clay, etc.)</p> <p>Clay (interbedded with other minerals for extraction)</p> <p>Silt (interbedded with other minerals for extraction)</p> <p>Sand (interbedded with other minerals for extraction)</p> <p>Argillaceous rocks (fine grained clastic rocks, including shales, mudstones, siltstones, marls, calcilutites, seatearths)</p> <p>Arenaceous rocks (medium and coarse grained clastic rocks, including sands from 'solid' geological strata as well as sandstones, gritstones, greywackes, calcirudites, calcarenites, greensands, arkoses)</p> <p>Rudaceous rocks (very coarse grained clastic rocks, including breccias and conglomerates)</p> <p>Psammitic and pelitic rocks (coarse and fine grained metamorphosed clastic rocks, including baked margins/metamorphic aureoles around igneous intrusions or contacts)</p> <p>Marble (metamorphosed limestone)</p> <p>Siliceous rocks (e.g. flint in Chalk)</p>		
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Criteria/description			Correspondence with the List of Wastes	
Nature of the extractive waste	Processes and/or activities that may give rise to the extractive waste	Material types from which extractive waste may be produced	LOW Code	LOW Description
		Calcareous rocks (non-clastic calcium carbonate rich rocks, including chalk, limestone, dolomite and tufa) Igneous intrusions and volcanic rocks (including kaolinised igneous intrusions) Kaolinised granite and china clay Fault breccia and fault gouge (broken and crushed material around faulted areas)		

Appendix 4 technical requirements for waste characterisation

Table 5.1: Technical Requirements for Waste Characterisation (from Commission Decision 2009/360/EC)

Item	Requirement	Details
1	Background information	<p>This should provide basic information on the background and objectives of the extractive operation, for example:</p> <ul style="list-style-type: none"> ③ prospecting, extraction and/or processing activities; ③ type and description of method of extraction and process applied; and ③ nature of the intended product.
2	Geological background of deposit to be exploited	<p>This should provide information on the units to be exposed and which will be the source of the waste. Details required include:</p> <ul style="list-style-type: none"> ③ nature of surrounding rocks, their chemistry and mineralogy, including hydrothermal alteration of mineralised rocks and barren rocks; ③ nature of deposit, including mineralised rocks or rock-bearing mineralisation; ③ mineralisation typology, their chemistry and mineralogy, including physical properties such as density, porosity, particle size distribution, water content, covering worked minerals, gangue minerals, hydrothermal newly-formed minerals; ③ size and geometry of deposit; and ③ weathering and supergene alteration from the chemical and mineralogical point of view.
3	Nature of the waste and its intended handling	<p>This should provide details on all wastes to be generated from prospecting, extraction and processing, including the following:</p> <ul style="list-style-type: none"> ③ origin of the waste in the extraction site and the process generating that waste such as prospecting, extraction, milling, concentration; ③ total quantity of extractive waste to be produced during operational phase; ③ description of the waste transport system; ③ description of the chemical substances to be used during treatment; ③ classification of the waste according to the LOW, including identification of hazardous properties¹; and ③ type of intended waste facility, final form of exposure of the waste and method of deposition of the waste into the facility.

4	Geotechnical behaviour of the waste	<p>This should identify the relevant parameters for assessing the intrinsic physical characteristics of the waste taking into account the type of waste facility. Such information should be contained in your Regulation 33 Report. Relevant parameters may include: shear strength;</p> <ul style="list-style-type: none"> ③ density and water content; ③ granulometry; ③ plasticity; ③ degree of compaction; ③ permeability and void ratio; and ③ compressibility and consolidation.
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Item	Requirement	Details
5	Geochemical characteristics and behaviour of the waste	<p>This should provide details on the chemical and mineralogical characteristics of the waste, and of any additives or residuals remaining in the waste, in particular:</p> <ul style="list-style-type: none"> ③ evaluation of metals, oxyanion and salt leachability over time by pH dependence leaching test, and/or percolation test and/or time-dependent release and/or other suitable testing; ③ for sulphide-containing waste, static or kinetic tests should be carried out in order to determine acid-rock drainage and metal leaching over time.
<p>Note: 1 For classification of the waste in accordance with the LOW, refer to Table 6.1 in Appendix 6</p>		

Appendix 5 List of Waste Codes for Extractive Wastes

Table 6.1: List Of Waste Codes for Extractive Wastes

Chapter 01:	Wastes Resulting from Exploration, Mining, Quarrying, and Physical and Chemical Treatment of Minerals
01 01	Wastes from mineral excavation
01 01 01	Wastes from mineral metalliferous excavation
01 01 02	Wastes from mineral non-metalliferous excavation
01 03	Wastes from physical and chemical processing of metalliferous minerals
01 03 04*	Acid-generating tailings from processing of sulphide ore
01 03 05*	Other tailing containing dangerous substances
01 03 06	Tailings other than those mentioned in 01 03 04 and 01 03 05
01 03 07*	Other wastes containing dangerous substances from physical and chemical processing of metalliferous minerals
01 03 08	Dusty and powdery wastes other than those mentioned in 01 03 07
01 03 09	Red mud from alumina production other than the wastes mentioned in 01 03 07
01 03 99	Wastes not otherwise specified
01 04	Wastes from physical and chemical processing of non-metalliferous minerals
01 04 07*	Wastes containing dangerous substances from physical and chemical processing of non-metalliferous minerals
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	Waste sand and clays
01 04 10	Dusty and powdery wastes other than those mentioned in 01 04 07
01 04 11	Wastes from potash and rock salt processing other than those mentioned in 01 04 07
01 04 12	Tailings and other wastes from washing and cleaning of minerals other than those mentioned in 01 04 07 and 01 04 11
01 04 13	Wastes from stone cutting and sawing other than those mentioned in 01 04 07
01 04 99	Wastes not otherwise specified
01 05	Drilling muds and other drilling wastes
01 05 04	Freshwater drilling muds and wastes
01 05 05*	Oil-containing drilling muds and wastes
01 05 06*	Drilling muds and other drilling muds containing dangerous substances
01 05 07	Barite-containing drilling muds and wastes other than those mentioned in 01 05 05 and 01 05 06
01 05 08	Chloride-containing drilling muds and wastes other than those mentioned in 01 05 05 and 01 05 06
01 05 99	Wastes not otherwise specified

Some of the six-digit codes in the LOW have an asterisk next to them. These are hazardous wastes. Wastes without an asterisk are not hazardous wastes.

Of the hazardous wastes, some are coloured red (“Absolute” hazardous entries) and some are coloured blue (“Mirror” hazardous entries).

The absolute hazardous entries are automatically considered hazardous and their description does not have a reference to “dangerous substances”. Therefore, you do not need to find out what chemicals are in the waste in order to find out if it is hazardous or not. There is only one absolute hazardous entry within Chapter 1: this relates to acid-generating tailings from processing of sulphide ore.

The mirror hazardous entries are those which can be either hazardous or not, depending on whether they contain “dangerous substances” at or above certain levels. If the most appropriate code for your waste is a mirror entry, you will be required to carry out a hazardous waste assessment. Further information on assessing hazardous waste is provided in the following guidance documents:

- “What is Hazardous Waste – A guide to the Hazardous Waste Regulations and List of Waste Regulations in England and Wales”. (Natural Resources Wales 2008e); and
- “Hazardous Waste – Interpretation of the definition and classification of hazardous waste”. (Natural Resources Wales 2008f).

Appendix 6 Example matrix for assessing risks to the environment and human health

Table 7.1: Example Matrix for Assessing Risks to the Environment and Harm to Human Health

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management	Probability of exposure	Consequence	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? If it occurs – who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence.
e.g. leachate from heaps	Groundwater beneath the site – <i>provide details</i> Local water course – <i>provide details</i>	Percolation through the ground Run-off from the heaps	Refer to Section 3 of this technical guidance note for minimum standards and measures for the operation of mining waste operations and facilities. Detail site-specific measures which will be used at your site and who is responsible for them.	Unlikely	Pollution of controlled waters Impact on flora and fauna	Not significant
e.g. dust from traffic on roads	People living at X – <i>provide details</i> Local ecology – <i>provide details</i>	Atmosphere	Refer to Section 3 of this technical guidance note for minimum standards and measures for the operation of mining waste operations and facilities. Detail site-specific measures which will be used at your site and who is responsible for them.	Fairly probable e.g. when wind is blowing towards these receptors, which occurs for approximately X days per year. However, the management measures should prevent this.	Nuisance – dust on cars, clothes, property etc.	Not significant
e.g. bursting of dam on pond X causing release of tailings	Local water course – <i>provide details</i> Groundwater beneath the site – <i>provide details</i> People living at X – <i>provide details</i> Local ecology – <i>provide details</i>	Over ground run-off Percolation through the ground Via surface water courses, streams, ditches etc.	Refer to Section 3 of this technical guidance note for minimum standards and measures for the operation of mining waste operations and facilities. Detail site-specific measures which will be used at your site and who is responsible for them. Also refer to Section 2.4 for details of Major Accident Prevention at Category A facilities.	Unlikely	Pollution of controlled waters Harm to human health Impact on flora and fauna	Not significant if risk mitigation measures are followed.

Appendix 7 – CYANIDE REDUCTION IN PONDS

Article 13(6): Applies only to Category A facilities and facilities for hazardous waste

Article 13(6) of the Directive sets out specific provisions relating to the concentrations of cyanide in ponds. For new sites, applicants must demonstrate that the operator will use best available techniques to reduce the concentration of weak acid dissociable cyanide to the lowest possible level. In all permits granted we will set a limit for weak acid dissociable cyanide to no more than:

- 50 ppm from 1 May 2008;
- 25 ppm from 1 May 2013;
- and - 10 ppm
from 1 May 2018.

The above concentrations relate to the point where the processing plant discharges the tailings to the pond. We can require you to submit a site specific risk assessment which must demonstrate why it is not necessary for us to impose a lower limit than those set out above.

Appendix 8 – Existing relevant legislation

A comprehensive review of relevant domestic legislation was undertaken to establish the degree to which the requirements of the Mining Waste Directive in respect of stability are already being met in England and Wales.

Three key areas of the Mining Waste Directive were established as being crucial to the determination and assessment of waste facilities as Category A facilities:

1. Other workers not employed by the operator but located on-site or close by
2. General public safety where people are staying within range of any hazard
3. Ensuring equivalent levels of safety during the aftercare (post closure) phase

The following legislation was considered relevant to the review:

- Quarry Regulations 1999
- Mines and Quarries (Tips) Act 1969
- Mines and Quarries (Tips) Regulations 1971
- The Health and Safety at Work Act 1974
- Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 1995

	MWD requirements	How this is met by existing domestic legislation
1	Article 4(2) of the Commission Decision 2009/337/EC requires consideration of people other than workers who might be present for extended periods of time. For example, people who are not employed by the quarry operator, but are on site or very close to the facility for the majority of their day such as ready-mix concrete workers	<p>Both the Quarry Regulations 1999 and the Health and Safety at Work Act 1974 (HSWA) require that adequate steps are taken to safeguard other workers [Quarry Regulations Reg.6(1) and Reg.30, as well as HSWA S3(1)]</p> <p>Quarry Regulations Reg.15 requires that emergency planning is undertaken</p> <p>Quarry Regulations Reg.39 requires the cooperation by all employers and employees</p> <p>The Management of Health & Safety at Work Regulations 1999 Regulation 11 together with Quarries Regulations 1999 Regulations 39 require liaison (co-operation and coordination) between quarry operators and other employers with workers on the site to ensure the health and safety of all people on or near the site in compliance with their duties under Health and Safety at Work Act 1974 Section 3 and 4.</p>

2	<p>Commission Decision 2009/337/EC requires consideration of persons staying within potentially affected areas. This includes off-site public safety where people are present permanently or for prolonged periods of time.</p>	<p>This is covered under relevant parts of the Quarry Regulations 1999; Mines & Quarries (Tips) Act 1969; Health and Safety at Work Act 1974; and Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 1995.</p> <p>Quarry Regulations Reg.32 through 37 details a process of facility appraisal and where necessary more detailed assessment and geotechnical reporting. Where any concern exists over the structural integrity of a tip, detailed proposals to correct the problem are initiated and it is reported to the HSE as a</p>
		<p>notifiable tip.</p> <p>The Mines & Quarries (Tips) Act 1969 requires a similar approach at mine facilities.</p> <p>The Health and Safety at Work Act 1974 requires a general consideration of all people within geographical range of a facility.</p> <p>Reporting requirements under Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 1995 are as good as that required by the MWD.</p>
3	<p>Article 1(2) of the Commission Decision 2009/337/EC requires that the entire life cycle of the facility, including the after closure phase, is considered in the Category A assessment.</p> <p>Commission Decision 2009/337/EC Art.10 provides for reassessment under Category A at closure. Any waste facilities that represent an unacceptable hazard at closure will become Category A facilities at that time, if not before.</p>	<p>Quarry Regulations cease to apply 12 months after cessation of quarrying or extraction / preparation of product for sale. They also cease to apply where the operator has formally notified the HSE of abandonment.</p> <p>The operators responsibility under the Quarry Regulations Reg.6(4) for abandoned quarries is not ongoing, but transfers to planning authorities via Part II of the Mines & Quarries (Tips) Act 1969.</p>

Summary

In respect of other workers (not employed by the operator but located on-site or close by) and general public safety, the existing legislation is found to conform very closely with the Mining Waste Directive (2006/21/EC). Not only are all important elements adequately provided for, but in some situations the existing legislation provides greater assurances than those set out in the Mining Waste Directive.

Existing planning and/or environmental regulations do not necessarily adequately address environmental receptors and operators will still need to assess their waste facilities against the Commission Decision 2009/337/EC Article 4(3) to decide if they are Category A facilities on environmental grounds. Following closure, a facility will cease to be covered by the Quarry Regulations 1999, but instead comes under Part II of the Mines & Quarries (Tips) Act 1969 and will be regulated under planning legislation. It is a requirement under Article 10 of the Commission Decision 2009/337/EC that at closure the relevant facility is re-assessed against the criteria for classification as a Category A facility.