Table F4 - Mine affected water release during flow events

Receiving waters/ stream	Release Point (RP)	Gauging station	Gauging Station Latitude (decimal degree, GDA94)	Gauging Station Longitude (decimal degree, GDA94)	Receiving Water Flow Recording Frequency	Receiving Water Flow Criteria for discharge (m^3/s)	Maximum release rate (for all combined RP flows)	Electrical Conductivity Release Limits
e.g. Wet Creek	Insert all release points that will release based on this gauging station flow. e.g. RP1, RP2 & RP3	e.g. Gauging station 1	XXXX	XXXX	Continuous (minimum daily)	Low Flow <XX m3/s for a period of <insert number of days> after natural flow events that exceed XX m3/s (where XX is a specified event flow trigger)	Insert < xx ML/day or < xx m3/s Volume/rate to be determined on case by case basis	Electrical conductivity (uS/cm): <insert water quality objective or 75th percentile of long term background reference data>
						Medium Flow > XX m3/s (where XX is specified event flow trigger)	< XX m3/s (where XX is the maximum release rate determined on case by case basis)	Electrical conductivity (uS/cm) <insert value determined on case specific basis but typically <1500
							< YY m3/s (where YY is the maximum release rate determined on case by case basis)	Electrical conductivity (uS/cm) <insert value determined on case specific basis but typically <3500
						High Flow > ZZ m3/s (where ZZ is a specified high flow event trigger)	< ZZ m3/s (where ZZ is the maximum release rate determined on case by case basis)	Electrical conductivity (uS/cm) <insert value determined on case specific basis but typically within a range of <3500 to <10,000

F12 The daily quantity of mine affected water released from each release point must be measured and recorded.

F13 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

Notification of Release Event

F14 The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

a) release commencement date/time

b) details regarding the compliance of the release with the conditions of Department Interest: Water of this environmental authority (that is, contaminant limits, natural flow, discharge volume)

c) release point/s

d) release rate

e) release salinity

f) receiving water/s including the natural flow rate.

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local Administering Authority via email or facsimile.

F15 The environmental authority holder must notify the administering authority as soon as practicable and nominally no later than 24 hours after cessation of a release event of the cessation of a release notified under Condition F14 and within 28 days provide the following information in writing:

a) release cessation date/time

b) natural flow rate in receiving water

c) volume of water released

d) details regarding the compliance of the release with the conditions of Department Interest; Water of this environmental authority (i.e. contaminant limits, natural flow, discharge volume)

e) all in-situ water quality monitoring results

f) any other matters pertinent to the water release event.

Note: Successive or intermittent releases occurring within 24 hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions F14 and F15, provided the relevant details of the release are included within the notification provided in accordance with conditions F14 and F15.

Notification of Release Event Exeedance

F16 If the release limits defined in **Table F2 - Mine affected water release limits** are exceeded, the holder of the environmental authority must notify the administering authority within 24 hours of receiving the results.

F17 The environmental authority holder must, within 28 days of a release that is not compliant with the conditions of this environmental authority, provide a report to the administering authority detailing:

a) the reason for the release

b) the location of the release

c) the total volume of the release and which (if any) part of this volume was non-compliant

d) the total duration of the release and which (if any) part of this period was non-compliant

e) all water quality monitoring results (including all laboratory analyses)

f) identification of any environmental harm as a result of the non compliance

g) all calculations

h) any other matters pertinent to the water release event.

Receiving Environment Monitoring and Contaminant Trigger Levels

F18 The quality of the receiving waters must be monitored at the locations specified in **Table F6 - Receiving water upstream background sites and down stream monitoring points** for each quality characteristic and at the monitoring frequency stated in **Table F5 - Receiving waters contaminant trigger levels**.

Table F5 - Receiving waters contaminant trigger levels

Quality Characteristic	Trigger Level	Monitoring Frequency
pH	6.5 – 9.0	Daily during the release
Electrical Conductivity (μS/cm)	TBA Note: for protection against toxicity this may need to be reduced in some circumstances e.g. where in close proximity upstream of a drinking water dam or regional waterway	
Suspended solids (mg/L)	To Be Determined. Turbidity may be required to assess ecosystems impacts and can provide instantaneous results.	
Sulphate (SO_4^{2-}) (mg/L)	250 (Protection of drinking water Environmental Value)	

Table F6 - Receiving water upstream background sites and down stream monitoring points

Monitoring Points	Receiving Waters Location Description	Latitude (decimal degree, GDA94)	Longitude (decimal degree, GDA94)
Upstream Background Monitoring Points			
Monitoring Point XX	XXXX Creek XX metres upstream of RP XX	XXXX	XXXX
Monitoring Point XX	XXXX Creek XX metres upstream of RP XX	XXXX	XXXX
Downstream Monitoring Points			
Monitoring Point XX	XXXX Creek XX metres downstream of RP XX	XXXX	XXXX
Monitoring Point XX	XXXX Creek XX metres downstream of RP XX	XXXX	XXXX

Table F6 - Receiving water upstream background sites and down stream monitoring points notes:

a) The upstream monitoring point should be within X km the release point.

b) The downstream point should not be greater than X m from the release point.

c) *The data from background monitoring points must not be used where they are affected by releases from other mines.*

F19 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table F5 - Receiving waters contaminant trigger levels** during a release event the environmental authority holder must compare the downstream results to the upstream results in the receiving waters and:

a) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or

b) where the down stream results exceed the upstream results complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining

1. details of the investigations carried out
2. actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F19 b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

F20 All determinations of water quality and biological monitoring must be performed by an appropriately qualified person.

Receiving Environment Monitoring Program (REMP)

F21 The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of the *XX* and connected or surrounding waterways within *XX* (for example, *X*km) downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

F22 A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administrating authority upon request.

F23 A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

Water reuse

Explanatory notes—Water reuse conditions

Mine affected water reuse conditions acknowledge that there is beneficial potential for using mine affected water. How the water is to be reused is not to be stipulated, this is for the third party to determine as they are better placed to make this decision.

F24 Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with the consent of the third party).

Annual Water Monitoring Reporting

F25 The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format:

a) the date on which the sample was taken

b) the time at which the sample was taken

c) the monitoring point at which the sample was taken

d) the measured or estimated daily quantity of mine affected water released from all release points

e) the release flow rate at the time of sampling for each release point

f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority

g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

Temporary Interference with waterways

F26 Destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with Department of Natural Resources and Mines (or its successor) *Guideline – Activities in a Watercourse, Lake or Spring associated with Mining Activities*.

Water Management Plan

F27 A Water Management Plan must be developed by an appropriately qualified person and implemented.

Stormwater and Water sediment controls

F28 An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

F29 Stormwater, other than mine affected water, is permitted to be released to waters from:

a) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition F28

b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with condition F27, for the purpose of ensuring water does not become mine affected water.

Schedule G - Sewage treatment

Explanatory note—G1 may need amendment if other contaminants are permitted to be released to land. Monthly monitoring of E-coli may be revised based on location/remoteness of mine site.

G1 The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in **Table G1 - Contaminant release limits to land.**

Table G1 - Contaminant release limits to land

Contaminant	Unit	Release limit	Limit type	Frequency
5 day Biochemical oxygen demand (BOD)1	mg/L	20	Maximum	Monthly
Total suspended solids	mg/L	30	Maximum	Monthly
Nitrogen	mg/L	30	Maximum	Monthly
Phosphorus	mg/L	15	Maximum	Monthly
E-coli	Organisms/100ml	1000	Maximum	Monthly
pH	pH units	6.0 – 9.0.	Range	Monthly

G2 Treated sewage effluent may only be released to land in accordance with the conditions of this approval at the following locations:

(a) within the nominated area(s) identified in Schedule ##—Figure ## (sewage treatment plant and effluent disposal)

(b) other land for the purpose of dust suppression and/or fire fighting.

G3 The application of treated effluent to land must be carried out in a manner such that:

(a) vegetation is not damaged

(b) there is no surface ponding of effluent

(c) there is no run-off of effluent.

G4 If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.

G5 All sewage effluent released to land must be monitored at the frequency and for the parameters specified in **Table G1 - Contaminant release limits to land**.

G6 The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.

G7 When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent.

G8 A minimum area of <<insert area>> of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.

Explanatory note — the supply of treated wastewater for re-use is regulated under the *Water Supply (Safety and Reliability) Act 2008.*

G9 Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the Act whilst using the treated sewage effluent.

Schedule H - Land and rehabilitation

Explanatory note—Table H1 - Rehabilitation Requirements

Tables should be kept as concise as reasonably practicable, without losing clarity. For example, if requirements for more than 1 domain are the same, there is no need to set out a separate row for each domain. The components shown in the table below are only examples of rehabilitation requirements. Only mine features that are present in the mines should be listed. The contents of **Table H1 - Rehabilitation Requirements** below are included as examples only.

H1 Land disturbed by mining must be rehabilitated in accordance with **Table H1 - Rehabilitation Requirements**.

Table H1 - Rehabilitation Requirements

Mine Domain	Mine Feature Name	Rehabilitation Goal	Rehabilitation Objectives	Indicators	Completion Criteria
Dams ML XXXX	Tailings dam	1. Safe	(a) Site safe for humans and animals	(a) Structural, geotechnical and hydraulic adequacy of the dam	
		2. Non-polluting	(a) Acid mine drainage will not cause environmental harm	(a) Technical design of capping (b) Surface and groundwater monitoring	e.g. Monitoring meeting release limits
		3. Stable	(a) Minimise erosion	(a) Engineered structure to control water flow (b) Vegetation cover	e.g. Surface armour/ engineered drop structures in place and functioning e.g. X% foliage cover recorded over a period of X years
		4. Self-sustaining	Describe post mine land use of land suitability or land capability	(a) Species diversity (b) Presence of key species	e.g. Certification that X% species diversity achieved and maintained for X years e.g. Certification that key species present over a period of X years
Waste rock dump					
Infrastructure					
Voids					
Roads					

H2 Rehabilitation must commence progressively in accordance with the plan of operations.

Contaminated Land

H3 Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use.

H4 Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1.

H5 Minimise the potential for contamination of land by hazardous contaminants.

Biodiversity offsets

H6 The holder of this environmental authority must provide an offset for impacts on applicable state significant biodiversity values, in accordance with Queensland Biodiversity Offset Policy. The biodiversity offset must be consistent with the requirements for an offset as identified in the Biodiversity Offset Strategy (as per condition H7) and must be provided:

a) prior to impacting on state significant biodiversity values; or

b) where a land based offset is to be provided, within 12 months of the later of either of the following

   1. the date of issue of this environmental authority; or

   2. the relevant stage identified in the Biodiversity Offset Strategy submitted under condition H7; or

c) where an offset payment is to be provided, within 4 months of the later of either of the following

   1. the date of issue of this environmental authority; or

   2. the relevant stage identified in the Biodiversity Offset Strategy submitted under conditions H7.

H7 A Biodiversity Offset Strategy must be developed and submitted to the administering authority within either 30 days, or a lesser period agreed to by the administering authority, prior to impacting on the applicable state significant biodiversity values.

End of conditions

ADVICE - OTHER AREAS OF CONCERN TO BE CONSIDERED

Monitoring

Upon request from the administering authority, copies of monitoring records and reports should be made available and provided to the administering authority's nominated office within 10 business days or an alternative timeframe agreed between the administering authority and the holder.

Any management or monitoring plans, systems or programs required to be developed and implemented by a condition of this environmental authority should be reviewed for effectiveness in minimising the likelihood of environmental harm on an annual basis, and amended promptly if required, unless a particular review date and amendment program is specified in the plan, system or program.

Light

A condition about light should not be imposed unless this is likely to be a relevant issue for the mine due to the proximity of sensitive places. If so, the following condition may be included:

AXX In the event of a complaint about light from any mining activity that, after investigation, is in the opinion of an authorised person causing a nuisance at a sensitive place, the holder of this environmental authority must take appropriate action to mitigate the nuisance. The holder of this environmental authority must take the action within the reasonable time set by the administering authority.

Chemicals and flammable or combustible liquids

All explosives, hazardous chemicals, corrosive substances, toxic substances, gases and dangerous goods should be stored and handled in accordance with the current Australian standard where such is applicable.

Flammable and combustible liquids, including petroleum products, should be stored and handled in accordance with the latest edition of AS1940—The storage and handling of flammable and combustible liquids.

Where no relevant Australian standard exists store such materials within an effective on-site containment system.

Minimise the potential for contamination of land and waters by diverting stormwater around contaminated areas and facilities used for the storage of chemicals and flammable or combustible liquids.

Meteorological monitoring

Environmental authority holders are encouraged to establish and maintain an automatic weather station to measure and record wind speed, wind direction, temperature and rainfall intensity to aid in the compliance with conditions of approval.

It is possible for environmental authority holders to utilise relevant and available weather monitoring information collected by other parties as reference data.

Waste rock

A waste rock and spoil disposal plan should be developed and include, where relevant, at least:

a) effective characterisation of the waste rock and spoil to predict under the proposed placement and disposal strategy the quality of runoff and seepage generated concerning potentially environmentally significant effects including salinity, acidity, alkalinity and dissolved metals, metalloids and non-metallic inorganic substances

b) a program of progressive sampling and characterisation to identify dispersive and non-dispersive spoil and the salinity, acid and alkali producing potential and metal concentrations of waste rock

c) a materials balance and disposal plan demonstrating how potentially acid forming and acid forming waste rock will be selectively placed and/or encapsulated to minimise the potential generation of acid mine drainage

d) where relevant, a sampling program to verify encapsulation and/or placement of potentially acid-forming and acid-forming waste rock

e) how often the performance of the plan will be assessed

f) the indicators or other criteria on which the performance of the plan will be assessed

g) rehabilitation strategy.

Monitoring or rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of the placed materials, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.

Transportation

It is recommended that the holder of the environmental authority ensure that vehicles (including trains) used for transporting bulk materials from mining lease(s), leave the mining lease(s) with appropriate load preparation to prevent the spillage and/or loss of particulate matter and/or windblown dust during transport.

Definitions

Words and phrases used throughout this environmental authority are defined below. Where a definition for a term used in this environmental authority is not provided within this environmental authority, but is provided in the EP Act 1994 or subordinate legislation, the definition in the EP Act or subordinate legislation must be used.

'acid rock drainage' means any contaminated discharge emanating from a mining activity formed through a series of chemical and biological reactions, when geological strata is disturbed and exposed to oxygen and moisture.

'airblast overpressure' means energy transmitted from the blast site within the atmosphere in the form of pressure waves. The maximum excess pressure in this wave, above ambient pressure is the peak airblast overpressure measured in decibels linear (dBL).

'appropriately qualified person' means a person who has professional qualifications, training, skills or experience relevant to the nominated subject matter and can give authoritative assessment, advice and analysis on performance relating to the subject matter using the relevant protocols, standards, methods or literature.

'background', with reference to the water schedule means the average of samples taken prior to the commencement of mining from the same waterway that the current sample has been taken.

Explanatory note— **'certification', 'certifying'** or **'certified'**

Only include regulated structures version of this definition if environmental authority controls regulated structures in the conditions.

'certification', 'certifying' or **'certified'** by an appropriately qualified and experienced person in relation to a design plan or an annual report regarding dams/structures, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit at any time:

a) exactly what is being certified and the precise nature of that certification;

b) the relevant legislative, regulatory and technical criteria on which the certification has been based;

c) the relevant data and facts on which the certification has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and

d) the reasoning on which the certification has been based using the relevant data and facts, and the relevant criteria.

'blasting' means the use of explosive materials to fracture:

a) rock, coal and other minerals for later recovery; or

b) structural components or other items to facilitate removal from a site or for reuse.

'chemical' means:

a) an agricultural chemical product or veterinary chemical product within the meaning of the Agricultural and *Veterinary Chemicals Code Act 1994* (Commonwealth); or

b) a dangerous good under the Australian Code for the Transport of Dangerous Goods by Road and Rail approved by the Australian Transport Council; or

c) a lead hazardous substance within the meaning of the Workplace Health and Safety Regulation 1997;

d) a drug or poison in the Standard for the Uniform Scheduling of Drugs and Poisons prepared by the Australian Health Ministers' Advisory Council and published by the Commonwealth; or

e) any substance used as, or intended for use as:

(i) a pesticide, insecticide, fungicide, herbicide, rodenticide, nematocide, miticide, fumigant or related product; or

(ii) a surface active agent, including, for example, soap or related detergent; or

(iii) a paint solvent, pigment, dye, printing ink, industrial polish, adhesive, sealant, food additive, bleach, sanitiser, disinfectant, or biocide; or

(iv) a fertiliser for agricultural, horticultural or garden use; or

(v) a substance used for, or intended for use for mineral processing or treatment of metal, pulp and paper, textile, timber, water or wastewater; or

(vi) manufacture of plastic or synthetic rubber.

'commercial place' means a workplace used as an office or for business or commercial purposes, which is not part of the mining activity and does not include employees' accommodation or public roads.

'construction' or **'constructed'** in relation to a regulated structure includes building a new regulated structure and lifting or otherwise modifying an existing regulated structure, but does not include investigations and testing necessary for the purpose of preparing a design plan.

'disturbance' of land includes:

a) compacting, removing, covering, exposing or stockpiling of earth;

b) removal or destruction of vegetation or topsoil or both to an extent where the land has been made susceptible to erosion;

c) carrying out mining within a watercourse, waterway, wetland or lake;

d) the submersion of areas by tailings or hazardous contaminant storage and dam/structure walls;

e) temporary infrastructure, including any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be removed after the mining activity has ceased; or

f) releasing of contaminants into the soil, or underlying geological strata.

However, the following areas are not included when calculating areas of 'disturbance':

a) areas off lease (e.g. roads or tracks which provide access to the mining lease);

b) areas previously disturbed which have achieved the rehabilitation outcomes;

c) by agreement with the administering authority, areas previously disturbed which have not achieved the rehabilitation objective(s) due to circumstances beyond the control of the mine operator (such as climatic conditions);

d) areas under permanent infrastructure. Permanent infrastructure includes any infrastructure (roads, tracks, bridges, culverts, dam/structures, bores, buildings, fixed machinery, hardstand areas, airstrips, helipads etc) which is to be left by agreement with the landowner.

e) disturbance that pre-existed the grant of the tenure.

'EC' means electrical conductivity.

'effluent' treated waste water released from sewage treatment plants.

'hazard category' means a category, either low significant or high, into which a dam is assessed as a result of the application of tables and other criteria in 'Manual for Assessing Hazard Categories and Hydraulic Performance of Dams'.

'infrastructure' means water storage dams, levees,, roads and tracks, buildings and other structures built for the purpose of the mining activity.

'land' in the 'land schedule' of this document means land excluding waters and the atmosphere, that is, the term has a different meaning from the term as defined in the *Environmental Protection Act 1994*. For the purposes of the *Acts Interpretation Act 1954*, it is expressly noted that the term 'land' in this environmental authority relates to physical land and not to interests in land.

'land use' –means the selected post mining use of the land, which is planned to occur after the cessation of mining operations.

'leachate' means a liquid that has passed through or emerged from, or is likely to have passed through or emerged from, a material stored, processed or disposed of at the operational land which contains soluble, suspended or miscible contaminants likely to have been derived from the said material.

'licensed place' means the mining activities carried out at the mining tenements detailed in Table # (page #) of this environmental authority.

'm' means metres.

'mine affected water':

a) means the following types of water:
   i) pit water, tailings dam water, processing plant water;
   ii) water contaminated by a mining activity which would have been an environmentally relevant activity under Schedule 2 of the Environmental Protection Regulation 2008 if it had not formed part of the mining activity;
   iii) rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water;
   iv) groundwater which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated;
   v) groundwater from the mine's dewatering activities;
   vi) a mix of mine affected water (under any of paragraphs i)-v) and other water.

b) does not include surface water runoff which, to the extent that it has been in contact with areas disturbed by mining activities that have not yet been completely rehabilitated, has only been in contact with:

i) land that has been rehabilitated to a stable landform and either capped or revegetated in accordance with the acceptance criteria set out in the environmental authority but only still awaiting maintenance and monitoring of the rehabilitation over a specified period of time to demonstrate rehabilitation success; or

ii) land that has partially been rehabilitated and monitoring demonstrates the relevant part of the landform with which the water has been in contact does not cause environmental harm to waters or groundwater, for example:

a. areas that are been capped and have monitoring data demonstrating hazardous material adequately contained with the site;

b. evidence provided through monitoring that the relevant surface water would have met the water quality parameters for mine affected water release limits in this environmental authority, if those parameters had been applicable to the surface water runoff; or

iii) both.

'measures' includes any measures to prevent or minimise environmental impacts of the mining activity such as bunds, silt fences, diversion drains, capping, and containment systems.

'NATA' means National Association of Testing Authorities, Australia.

'natural flow' means the flow of water through waters caused by nature.

'non polluting' means having no adverse impacts upon the receiving environment.

'peak particle velocity (ppv)' means a measure of ground vibration magnitude which is the maximum rate of change of ground displacement with time, usually measured in millimetres/second (mm/s).

'protected area' means – a protected area under the *Nature Conservation Act 1992*; or

a) a marine park under the *Marine Parks Act 1992*; or

b) a World Heritage Area.

'receiving environment' in relation to an activity that causes or may cause environmental harm, means the part of the environment to which the harm is, or may be, caused. The receiving environment includes (but is not limited to):

a) a watercourse;

b) groundwater; and

c) an area of land that is not specified in Schedule # – Table # (Authorised Activities) of this environmental authority.

The term does not include land that is specified in Schedule # – Table # (Authorised Activities) of this environmental authority.

'receiving waters' means the waters into which this environmental authority authorises releases of mine affected water.

'rehabilitation' the process of reshaping and revegetating land to restore it to a stable landform

'release event' means a surface water discharge from mine affected water storages or contaminated areas on the licensed place.

'RL' means reduced level, relative to mean sea level as distinct from depths to water.

'representative' means a sample set which covers the variance in monitoring or other data either due to natural changes or operational phases of the mining activities.

'saline drainage' The movement of waters, contaminated with salts, as a result of the mining activity.

'sensitive place' means:

a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or

b) a motel, hotel or hostel; or

c) an educational institution; or

d) a medical centre or hospital; or

e) a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 1992* or a World Heritage Area; or

f) a public park or gardens.

Note: The definition of 'sensitive place' and 'commercial place' is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling, library & educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial & retail activity, protected area or an area identified under a conservation plan under *Nature Conservation Act 1992* as a critical habitat or an area of major interest, marine park under *Marine Parks Act 2004*, park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. Accommodation for mine employees or contractors is a sensitive place if the land is held by a mining company or related company, and if occupation is restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

For example, a township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by one or more of the companies.

'the Act' means the *Environmental Protection Act 1994*.

'µS/cm' means micro siemens per centimetre.

'watercourse' has the same meaning given in the *Water Act 2000*.

'water quality' means the chemical, physical and biological condition of water.

'waters' includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), storm water channel, storm water drain, and groundwater and any part thereof.

Disclaimer:

While this document has been prepared with care it contains general information and does not profess to offer legal, professional or commercial advice. The Queensland Government accepts no liability for any external decisions or actions taken on the basis of this document. Persons external to the administering authority should satisfy themselves independently and by consulting their own professional advisors before embarking on any proposed course of action.

Approved by

Omar Ameer

Director
Environmental Regulatory Practice and Support
Department of Environment and Heritage Protection

Date: 26 June 2013

Enquiries:

Permit and Licence Management

Phone: 13 QGOV (13 74 68)

Fax: (07) 3330 5875

Email: palm@ehp.qld.gov.au

Appendix

Guidance on compliance with model mining conditions

This section provides guidance on how to comply with the general conditions outlined in Model mining conditions guideline, EM944. Officers should also refer to the separate guidelines: Structures which are dams or levees constructed as part of environmentally relevant activities (EM634).

Generally the conditions do not outline 'how' the environmental authority (EA) holder must achieve the required environmental outcomes. This is referred to as outcome focused conditioning. With outcome focused conditioning, it is the responsibility of the EA holder to assess the most efficient and effective way to achieve the outcome for their own particular circumstance.

In addition to outcome-focussed conditions, in some instances 'how to' conditions may be appropriate for site-specific or project-specific reasons. While these 'how' conditions are by nature not outcome focused, they are required to ensure that a clear environmental value that has been identified can be protected.

The following information has been provided to aid the EA holder in determining the most effective and efficient method to achieve compliance with each model condition of an environmental authority. Possible solutions to achieving compliance with each condition are provided but they are not an exhaustive source. It is possible for the EA holder to decide to achieve the condition outcomes in a manner that is different to that outlined below. The EA holder will need to be satisfied that they can demonstrate, if required, that the outcome of the condition can still be achieved by the alternate approach.

Guidance on how to comply with conditions is not provided for every condition. Where there is no guidance provided on how to comply with a condition there may be details of the requirements to meet the desired outcome within the condition.

Please note, if amended conditions are imposed or agreed which involve changes to existing infrastructure, consideration should be given to an appropriate transitional period enabling the infrastructure work to be undertaken and this should be included in the condition, on a case-by-case basis.

Schedule A – General

A1 This environmental authority authorises environmental harm referred to in the conditions. Where there is no condition or this environmental authority is silent on a matter, the lack of a condition or silence does not authorise environmental harm.

How do I comply?

No further guidance provided to that outlined in the condition.

A2 Either:

In carrying out the mining activity authorised by this environmental authority, disturbance of land

a) may occur in the areas marked 'A'

b) must not occur in the areas marked 'B'

c) may occur in the areas marked 'C' but only in accordance with the conditions in Schedule Z on the map that is annexure 1 to this environmental authority.

OR

In carrying out the mining activity authorised by this environmental authority, the holder of this environmental authority must comply with Schedule K—Figure 1a (Project Infrastructure Layout—Mine Area) and Schedule K—Figure 1b (Project Infrastructure Layout—Support Infrastructure).

How do I comply?

The first version of A2 may be used where the supporting EIS or application documents have enough information to demonstrate that an acceptable level of ground-truthing has been done on potential for flora/fauna impacts and other risk assessment so that EHP is comfortable that the right areas have been identified to indicate no go areas. If the EIS or other supporting information only proposes 2 types of areas (those to be disturbed and those not to be disturbed), it is only necessary to use paragraphs a) and b) below. However, if the EIS or other supporting information addresses and justifies limited disturbance within a mapped area, paragraph c) may be added, on the basis that the conditions for that limited disturbance are set out elsewhere in the conditions or in a report that is adopted by the conditions. If the limited disturbance relates to flora and fauna, refer to Schedule Z.

Where there is not enough information to show that an acceptable level of ground-truthing has been done, the second version of A2 should be used.

Option 1 (for limited surface infrastructure)

A3 Any disturbance within the areas marked 'C' on the map that is annexure 1 to this environmental authority:

a) is only authorised to the extent reasonably necessary for a road, fence, underground service, low-impact telecommunications facility, electrical sub-station, transmission grid works and supply network works, storage depots, similar minor infrastructure and ancillary facilities for any of the above minor infrastructure

b) any disturbance within areas marked 'A' or 'C' is not to impact adversely on areas marked 'B'.

Option 2 (authorising sub-surface disturbance)

A3	Only sub-surface disturbance is authorised within the areas marked 'C' on the map that is annexure 1 to this environmental authority.

How do I comply?

Condition A3 should only be used if condition A2 includes optional paragraph c) authorising limited disturbance within a mapped area. These conditions are not to be used in relation to paragraphs a) and b) of condition A2. The model conditions are examples only. Any authorisation of limited disturbance should be site-specific and based on an assessment of the EIS or other supporting information, including ground-truthing of the areas.

A4	The holder of this environmental authority must: a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this environmental authority b) maintain such measures, plant and equipment in a proper and efficient condition c) operate such measures, plant and equipment in a proper and efficient manner d) ensure all instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority are properly calibrated.

How do I comply?

No further guidance provided other than that outlined in the condition.

Monitoring

A5	Except where specified otherwise in another condition of this environmental authority, all monitoring records or reports required by this environmental authority must be kept for a period of not less than 5 years.

How do I comply?

The holder of the environmental authority should implement a monitoring program that enables the holder and administering authority to determine compliance with this approval.

Financial assurance

A6	The activity must not be carried out until the environmental authority holder has given financial assurance to the administering authority as security for compliance with this environmental authority and any costs or expenses, or likely costs or expenses, mentioned in section 298 of the Act.

How do I comply?

Refer to the latest version of the Financial assurance under the EP Act guideline, which can be located on the administering authority's website at www.ehp.qld.gov.au (search for EM1010).

A7	The amount of financial assurance must be reviewed by the holder of this environmental authority when a plan of operations is amended or replaced or the authority is amended.

How do I comply?

No further guidance provided to that outlined in the condition.

Risk management

A8	The holder of this environmental authority must develop and implement a risk management system for mining activities which mirrors the content requirement of the Standard for Risk Management (ISO31000:2009), or the latest edition of an Australian standard for risk management, to the extent relevant to environmental management, by <<Insert date 3 months from date of issue>>

How do I comply?

Companies have the option of providing a risk management plan which is structured differently from the ISO provided that the alternative approach is reasonably justified.

Notification of emergencies, incidents and exceptions

A9	The holder of this environmental authority must notify the administering authority by written notification within 24 hours, after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority.

How do I comply?

If notification is given under an alternative notification condition of the environmental authority it is taken to be notification under this condition. If notification is required under sections 320–320G of the EP Act the additional requirements under sections 320–320G apply.

The notification should include, but not be limited to:

a) the environmental authority number and name of the holder

b) the name and telephone number of the designated contact person

c) the location of the emergency or incident

d) the date and time of the emergency or incident

e) the time the holder of the environmental authority became aware of the emergency or incident

f) where known

   1. the estimated quantity and type of substances involved in the emergency or incident
   2. the actual or potential cause of the emergency or incident
   3. a description of the nature and effects of the emergency or incident including environmental risks, and any risks to public health or livestock

g) any sampling conducted or proposed, relevant to the emergency or incident

h) immediate actions taken to prevent or mitigate any further environmental harm caused by the emergency or incident

i) what notification of owners and occupiers who may be affected by the emergency or incident has occurred or is being undertaken.

A10 Within 10 business days following the initial notification of an emergency or incident, or receipt of monitoring results, whichever is the latter, further written advice must be provided to the administering authority, including the following:

a) results and interpretation of any samples taken and analysed

b) outcomes of actions taken at the time to prevent or minimise unlawful environmental harm

c) proposed actions to prevent a recurrence of the emergency or incident.

How do I comply?

No further guidance provided to that outlined in the condition.

Complaints

A11 The holder of this environmental authority must record all environmental complaints received about the mining activities including:

a) name, address and contact number for of the complainant

b) time and date of complaint

c) reasons for the complaint

d) investigations undertaken

e) conclusions formed

f) actions taken to resolve the complaint

g) any abatement measures implemented

h) person responsible for resolving the complaint.

How do I comply?

No further guidance provided other than that outlined in the condition.

A12 The holder of this environmental authority must, when requested by the administering authority, undertake relevant specified monitoring within a reasonable timeframe nominated or agreed to by the administering authority to investigate any complaint of environmental harm. The results of the investigation (including an analysis and interpretation of the monitoring results) and abatement measures, where implemented, must be provided to the administering authority within 10 business days of completion of the investigation, or no later than 10 business days after the end of the timeframe nominated by the administering authority to undertake the investigation.

How do I comply?

No further guidance provided to that outlined in the condition.

Third-party reporting

A13 The holder of this environmental authority must:

a) within 1 year of the commencement of this environmental authority, obtain from an appropriately qualified person a report on compliance with the conditions of this environmental authority

b) obtain further such reports at regular intervals, not exceeding 3 yearly intervals, from the completion of the report referred to above; and

c) provide each report to the administering authority within 90 days of its completion.

How do I comply?

The holder must, at its cost, arrange for independent certification by the third party within 1 year to report on compliance with the conditions of the environmental authority. Within 90 days of completing the report required under condition A13, provide the written report to the administering authority which should contain details of any non-compliance issues that were found (if no non-compliance issues were found this should be stated in the report). If non-compliance issues were found the report must also address:

a) actions taken, or being undertaken, by the holder of this environmental authority to ensure compliance with this environmental authority

b) actions taken, or being undertaken, to prevent a recurrence of non-compliance.

A14 Where a condition of this environmental authority requires compliance with a standard, policy or guideline published externally to this environmental authority and the standard is amended or changed subsequent to the issue of this environmental authority the holder of this environmental authority must:

a) comply with the amended or changed standard, policy or guideline within 2 years of the amendment or change being made, unless a different period is specified in the amended standard or relevant legislation, or where the amendment or change relates specifically to regulated structures referred to in condition XX, the time specified in that condition

b) until compliance with the amended or changed standard, policy or guideline is achieved, continue to remain in compliance with the corresponding provision that was current immediately prior to the relevant amendment or change.

How do I comply?

No further guidance provided to that outlined in the condition.

Schedule B - Air

Point source releases to air

B1 Discharges of contaminants to air from the activity, other than dust and particulate matter addressed by condition B4, must be in accordance with **Tables B1—release points (air)** and **B2—contaminant limits (air)**.

How do I comply?

The release of contaminants specified in condition should be:

a) directed vertically upwards, with no impedance

b) in accordance with the criteria in **Table B1—Release points (air)**

c) at a mass emission rate and concentration that do not exceed the limits stated in **Table B2—Contaminant limits (air)**.

B2	Conduct a monitoring program of contaminant releases to the atmosphere at the release points, frequency and for the contaminants specified in Table **B2—Contaminant limits (air)** and which complies with the most recent edition of AS4323.1 'Stationary source emissions method 1: Selection of sampling positions' and the most recent edition of the administering authority's air quality sampling manual.

Table B1—Release points (air)

Table B2—Contaminant limits (air)

How do I comply?

A monitoring program of contaminant releases to the atmosphere at the release points, frequency and for the contaminants specified in Table B2—Contaminant limits (air) should be conducted to comply with the following:

a) Monitoring at the release points should comply with the most recent edition of AS4323.1 Stationary source emissions method 1: Selection of sampling positions

b) The following tests should be performed and recorded for each sample taken at each release point specified in Table B1 - Point Source Air Emissions

   1. gas velocity, volume and mass flow rate
   2. temperature
   3. water vapour concentration (for non-continuous sampling)
   4. the actual test methods and accuracy

c) During the sampling period the following additional information should be gathered

   1. plant throughput rate at time of sampling
   2. fuel type and consumption rate
   3. any factors that may influenced odour and particular emissions
   4. the odour and/or particulates treatment system operating status

d) Monitoring of contaminant release should be carried out in accordance with the most recent edition of the administering authority's air quality sampling manual.

B3	The release of point source and fugitive emissions from the mining activities must not cause the concentrations of the contaminants listed in Table XX, when measured at [a sensitive place or at specified monitoring stations], to exceed the levels shown in Table XX.

How do I comply?

No further guidance provided to that outlined in the condition.

B4 The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the dust and particulate matter emissions generated by the mining activities do not cause exceedances of the following levels when measured at any sensitive or commercial place:

a) Dust deposition of 120 milligrams per square metre per day, averaged over 1 month, when monitored in accordance with the most recent version of Australian Standard AS3580.10.1 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method.

b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24 hour averaging time, for no more than 5 exceedances recorded each year, when monitored in accordance with the most recent version of either

1. Australian Standard AS3580.9.6 Methods for sampling and analysis of ambient air Determination of suspended particulate matter – PM10 high volume sampler with size-selective inlet – Gravimetric method; or

2. Australian Standard AS3580.9.9 Methods for sampling and analysis of ambient air Determination of suspended particulate matter – PM10 low volume sampler– Gravimetric method.

c) A concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5) suspended in the atmosphere of 25 micrograms per cubic metre over a 24 hour averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.10 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter – PM (sub)2.5(/sub) low volume sampler – Gravimetric method.

d) A concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 1 year averaging time, when monitored in accordance with the most recent version of AS/NZS3580.9.3:2003 Methods for sampling and analysis of ambient air - Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method.

How do I comply?

Sources of PM2.5 are primarily from combustion sources and PM2.5 is unlikely to be elevated if significant combustion sources are not present. Condition B4 c) will therefore only be required if there is a significant source of air emissions from combustion sources.

The 5 exceedances allowed each year within in B4 b) are only permitted to allow for events that are known to occur, but which cannot be managed by the environmental authority holder. Such events could include emissions from bushfires, fuel reduction burning for fire management purposes or dust storms. More than 5 exceedances due to such events would not be considered to be in breach of B4 b) if the environmental authority holder can demonstrate that the exceedance was cause by such events outlined above.

Schedule C - Waste management

To achieve the outcomes of the waste management conditions section, the holder of this environmental authority should develop, implement and maintain a waste management program that should include:

a) a description of the mining activities that may generate waste

b) waste management control strategies including

   1. the types and amounts of wastes generated by the mining activities
   2. segregation of the wastes
   3. storage of the wastes
   4. transport of the wastes
   5. monitoring and reporting matters concerning the waste

c) the hazardous characteristics of the wastes generated including disposal procedures for hazardous wastes

d) a program for reusing, recycling or disposing of all wastes

e) how the waste will be dealt with in accordance with the waste management hierarchy, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste management hierarchy (that is, avoidance, reuse, recycling, energy recovery, disposal)

f) procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed

g) procedures for dealing with accidents, spills and other incidents

h) details of any accredited management system employed, or planned to be employed, to deal with waste

i) how often the performance of the waste management program will be assessed

j) the indicators or other criteria on which the performance of the waste management program will be assessed

k) staff training and induction to the waste management program.

General waste deposited in the active waste disposal trench should be compacted and covered with a layer of inert material following placement of the waste into the trench.

Litter control methods should be implemented at the active waste disposal trench.

The active waste disposal trench should be constructed and operated to minimise the generation of leachate including a system of diversion drains or embankments to divert surface waters away from any area where contact with wastes or sources of contamination may occur.

Completed waste disposal trenches should be capped with a low permeability material and compacted and contoured to effectively minimise water infiltration.

The holder of this environmental authority should maintain a record of the location of trenches used for waste disposal. Notwithstanding any other condition of this authority, such records be maintained until the administering authority approves the surrender of this authority.

All general and regulated waste (other than for example, waste rock, scats , rejects, tailings, construction and demolition waste, putrescibles and domestic wastes, minor quantities of regulated wastes incidental to and commingled with domestic waste, green wastes, tyres) must be removed from the site to a facility that is lawfully able to accept the waste under the EP Act.

Regulated waste, other than that authorised to be disposed of on site under this authority, must only be removed and transported from the site by a person who holds a current authority to transport such wastes to a facility that is lawfully able to accept the waste under the EP Act.

Regulated waste generated in the mining activity can be temporarily stored on site awaiting removal provided it is stored to ensure there is minimal risk of causing fire or contamination to land or waters.

Each container of regulated waste stored awaiting movement off-site must be clearly marked to identify the contents.

For the disposal and storage of scrap tyres, reference to Operational policy—Disposal and storage of scrap tyres at mine sites EM729 should be made on the administering authority's website at www.ehp.qld.gov.au.

C1	General waste must only be disposed of into the waste disposal trench facility of <insert tenement number> and identified in Schedule # Figure # – Site Map.

How do I comply?

No further guidance provided other than that outlined in the condition.

C2	Unless otherwise permitted by the conditions of this environmental authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.

How do I comply?

If it can be demonstrated that other possible options have been considered in accordance with the waste management hierarchy, burning may also be permitted for mining activities in addition to clearing for extraction activities.

C3	The holder of this environmental authority may burn vegetation cleared in the course of carrying out extraction activities provided the activity does not cause environmental harm at any sensitive place or commercial place.

How do I comply?

No further guidance provided to that outlined in the condition.

Tailing disposal

C4 Tailings must be managed in accordance with procedures contained within the current plan of operations. These procedures must include provisions for:

a) containment of tailings

b) the management of seepage and leachates both during operation and the foreseeable future

c) the control of fugitive emissions to air

d) a program of progressive sampling and characterisation to identify acid producing potential and metal concentrations of tailings

e) maintaining records of the relative locations of any other waste stored within the tailings

f) rehabilitation strategy

g) monitoring of rehabilitation, research and/or trials to verify the requirements and methods for decommissioning and final rehabilitation of tailings, including the prevention and management of acid mine drainage, erosion minimisation and establishment of vegetation cover.

How do I comply?

No further guidance provided to that outlined in the condition.

Acid sulfate soils

C5 Treat and manage acid sulphate soils in accordance with the latest edition of the Queensland Acid Sulfate Soil Technical Manual.

How do I comply?

No further guidance provided to that outlined in the condition.

Schedule D- Noise

Noise limits

D1 The holder of this environmental authority must ensure that noise generated by the mining activities does not cause the criteria in **Table D1 – Noise limits** to be exceeded at a sensitive place or commercial place.

Table D1 – Noise limits

How do I comply?

The definition of 'sensitive place' and 'commercial place' is based on Schedule 1 of EPP Noise. That is, a sensitive place is inside or outside on a dwelling, library & educational institution, childcare or kindergarten, school or playground, hospital, surgery or other medical institution, commercial & retail activity, protected area or an area identified under a conservation plan under *Nature Conservation Act 1992* as a critical habitat or an area of major interest, marine park under *Marine Parks Act 2004*, park or garden that is outside of the mining lease and open to the public for the use other than for sport or organised entertainment. A commercial place is inside or outside a commercial or retail activity.

A mining camp (i.e., accommodation and ancillary facilities for mine employees or contractors or both, associated with the mine the subject of the environmental authority) is not a sensitive place for that mine or mining project, whether or not the mining camp is located within a mining tenement that is part of the mining project the subject of the environmental authority. For example, the mining camp might be located on neighbouring land owned or leased by the same company as one of the holders of the environmental authority for the mining project, or a related company. However, accommodation for mine employees or contractors is a sensitive place, even if the land is held by a mining company or related company, if occupation is not restricted to the employees, contractors and their families for the particular mine or mines which are held by the same company or a related company.

For example, a township (occupied by the mine employees, contractors and their families for multiple mines that are held by different companies) would be a sensitive place, even if part or all of the township is constructed on land owned by 1 or more of the companies.

Where there are 2 or more potential noise sources, it can be difficult to differentiate between them to determine if the mining activity is in exceedance of its noise limits. In these circumstances a site specific condition and monitoring requirements may need to be developed.

Noise is not considered to be a nuisance if monitoring demonstrates that noise from the activity does not exceed the limits outlined in **Table D1 – Noise limits** or equivalent site specific noise limit condition. It is recommended that if model condition A1, authorising of environmental harm, does not form part of the approval, than a similar condition be included within the adopted noise conditions.

Airblast overpressure nuisance

D2 The holder of this environmental authority must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in **Table D2 – Blasting noise limits** to be exceeded at a sensitive place or commercial place.

Table D2 – Blasting noise limits

How do I comply?

No further guidance provided other than that outlined in the condition.

Monitoring and reporting

D3 Noise monitoring and recording must include the following descriptor characteristics and matters:

a) LAN,T (where N equals the statistical levels of 1, 10 and 90 and T = 15 mins)

b) background noise LA90

c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels

d) atmospheric conditions including temperature, relative humidity and wind speed and directions

e) effects due to any extraneous factors such as traffic noise

f) location, date and time of monitoring

g) if the complaint concerns low frequency noise, Max LpLIN,T and one third octave band measurements in dB(LIN) for centre frequencies in the 10 – 200 Hz range.

How do I comply?

The method of measurement and reporting of noise levels must comply with the latest edition of the administering authority's Noise Measurement Manual or the most recent version of AS1055 Acoustics – description and measurement of environmental noise. Where the conditions do not specify that noise limits are to be achieved at the boundary, monitoring can be undertaken at the noise sensitive place or the boundary. If the monitoring identifies exceedances of limits, monitoring at the noise sensitive place may however pose difficulties for the mining activity when trying to demonstrate that they are not the source of the noise when there are multiple noise sources.

Where the noise nuisance complaint relates to a sensitive place or commercial place that is less than 5 kilometres (5km) from the activity, monitoring will need to be undertaken for a period of at least 3 days.

For continuous/ongoing/multiple complaints originating at the same sensitive or commercial place, noise monitoring should be implemented such that exceedance of noise criteria outlined in **Table D1 – Noise limits** can be identified immediately. This may involve the implementation of real time directional noise monitoring stations. These monitoring stations should continuously monitor noise levels and the direction of that noise relative to the monitor. Procedures should be implemented such that the appropriate persons are notified immediately upon identification of noise limit exceedance.

D4 The holder of this environmental authority must develop and implement a blast monitoring program to monitor compliance with **Table D2 – Blasting noise limits** for:

a) at least <insert number> % of all blasts undertaken on this site in each <insert period e.g. month or year> at the nearest sensitive place or commercial place <at insert a place nominated in this authority>

b) all blasts conducted during any time period specified by the administering authority at the nearest sensitive place or commercial place.

How do I comply?

The method of measurement and reporting of vibration levels must comply with the most recent edition of the administering authority's guideline Noise and vibration from blasting guideline.

Where blast monitoring detects non-compliance with **Table D2 – Blasting noise limits** the holder of this environmental authority should:

a) take steps to ensure compliance is achieved by subsequent blasts; and

b) continue to monitor all consecutive blasts until at least 3 successive blasts comply with **Table D2 – Blasting noise limits**.

Schedule E - Groundwater

Contaminant release

E1	The holder of this environmental authority must not release contaminants to groundwater.

How do I comply?

This condition is only to be used when it has been identified that no release of contaminants to groundwater is to occur as a result of mining activities. The definition of a 'contaminant' is set out in Section 11 of the EP Act and relevantly includes any 'gas, liquid or solid', not just hazardous contaminants. For example, it would include the replenishment of aquifers with water of the same quality or higher quality than the aquifers. The term 'release' is defined in Schedule 4 of the EP Act and relevantly, it should be noted that this includes passive releases and not merely controlled releases. Accordingly, if it is likely that the activity will lead to the passive replenishment of aquifers, even with good quality water, this condition should not be used.

OR

E1	The holder of this environmental authority is authorised to release contaminants at the release points and at the release frequencies specified in **Table E1 - Groundwater release points, frequency** and comply with the release limits specified in **Table E2 - Groundwater release quality**.

Table E1 - Groundwater release points, frequency

Table E2 - Groundwater release quality

How do I comply?

This condition is only to be used when it has been identified that release of contaminants to groundwater is authorised to occur as a result of mining activities.

Section 63 of the Environmental Protection Regulation 2008 addresses the topic of the release of 'waste' to groundwater. The term 'waste' is defined in Section 13 of the EP Act. Section 63 of the EP Regulation requires the administering authority to refuse an application if:

(a) the waste is not being, or may not be, released entirely within a confined aquifer (except for petroleum activities); or

(b) the release of the waste is affecting adversely, or may affect adversely, a surface ecological system; or

(c) the waste is likely to result in a deterioration in the environmental values of the receiving groundwater.

Paragraph (b) is not intended to apply to a surface ecological system which is authorised to be cleared for the purpose of the mining activities. Paragraphs (b) and (c) are not intended to apply to trivial impacts.

Where contaminants are proposed to be released to groundwater the limits set out in the condition must not be exceeded at the release point. All the potential contaminants generated as part of the mining activity that have a release limit will be included in this table. The limit type and value will need to be determined in consultation with the administering authority.

Monitoring and reporting

E2	All determinations of groundwater quality and biological monitoring must be performed by an appropriately qualified person.

How do I comply?

Monitoring methods should be in accordance with the latest edition of the Queensland Monitoring and Sampling Manual, AS/NZS 5667:11 1998 Water Sampling Guidelines – Part 11 Guidance on groundwater, and the Australian Governments Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat#6890.1). Analyses should be carried out on representative samples, at a laboratory accredited (for example, NATA) for the method of analysis being used.

E3	Groundwater quality and levels must be monitored at the locations and frequencies defined in **Table E3 - Groundwater monitoring locations and frequency** and Schedule # – Figure # (Groundwater Bore Monitoring Locations) for the quality characteristics identified in **Table E4 - Groundwater quality triggers and limits**.

Table E3 - Groundwater monitoring locations and frequency

Table E4 - Groundwater quality triggers and limits

How do I comply?

Monitoring locations must be suitably positioned to detect any impacts caused by the activity and ensure compliance with the conditions of the environmental authority.

Monitoring methods should be in accordance with the latest edition of the Queensland Monitoring and Sampling Manual, AS/NZS 5667:11 1998 Water Sampling Guidelines – Part 11 Guidance on groundwater, and the Australian Governments Groundwater Sampling and Analysis – A Field Guide (2009:27 GeoCat#6890.1)

Generic parameters and associated triggers and limits have not been provided given they would vary from site to site. This does not suggest though that any and every parameter should be included within this table. Only parameters that are relevant to groundwater quality associated with the activity should be included.

E4	Groundwater levels when measured at the monitoring locations specified in **Table E3 - Groundwater monitoring locations and frequency** must not exceed the groundwater level trigger change thresholds specified in **Table E5 - Groundwater level monitoring** below.

Table E5 - Groundwater level monitoring

How do I comply?

The level trigger thresholds will be site specific and dependent upon what type of aquifer is present. A 5 metre reduction in water level for consolidated aquifers such as sandstone or a 2 metre reduction in water level for unconsolidated aquifers such as shallow aquifers may be appropriate.

Depending upon site specifics, it could be possible that the level trigger threshold can be based on a percentage of annual average change of the aquifer rather than the 5 metre or 2 metre outline above.

Where there are localities that have known external influences on the fluctuation of groundwater levels, these should also be taken into account when setting the trigger level thresholds. This will avoid unnecessary investigations into exceedances being required by condition E6.

Exceedance Investigation

E5	If quality characteristics of groundwater from compliance bores identified in **Table E3 - Groundwater monitoring locations and frequency** exceed any of the trigger levels stated in **Table E4 - Groundwater quality triggers and limits** or exceed any of the groundwater level trigger threshold stated in **Table E5 - Groundwater level monitoring**, the holder of this environmental authority must compare the compliance monitoring bore results to the reference bore results and complete an investigation in accordance with the ANZECC and ARMCANZ 2000

How do I comply:

If the level of contaminants at the compliance monitoring bore does not exceed the reference bore results, then no action is to be taken. If however the level of contaminants at the compliance monitoring bore is greater than the reference bore results, an investigation is to be completed in accordance with the ANZECC and ARMCANZ 2000 into the potential for environmental harm and a written report is to be provided to the administering authority within 3 months, outlining:

a) details of the investigations carried out

b) details of environmental impacts observed

c) actions taken to prevent environmental harm.

Where an exceedence of a trigger level has occurred and is being investigated, then no further reporting is required for subsequent trigger events for that quality characteristic within the 3 month investigation period.

E6	Results of monitoring of groundwater from compliance bores identified in **Table E3 - Groundwater monitoring locations and frequency**, must not exceed any of the limits defined in **Table E4 - Groundwater quality triggers and limits**.

How do I comply:

No further guidance provided other than that outlined in the condition.

Bore construction and maintenance and decommissioning.

E7	The construction, maintenance and management of groundwater bores (including groundwater monitoring bores) must be undertaken in a manner that prevents or minimises impacts to the environment and ensures the integrity of the bores to obtain accurate monitoring

How do I comply?

As a minimum, groundwater bores (including groundwater monitoring bores) must be constructed, maintained and decommissioned in accordance with methods prescribed in the latest edition of the National Uniform Drillers Licensing Committee manual titled Minimum Construction Requirements for Water Bores in Australia.

Oil-based drilling fluids, oil-based additives, synthetic based drilling fluids or synthetic based additives must not be used in the construction of groundwater bores.

Current Material Safety Data Sheets for all substances used for the drilling of groundwater bores must be made available to the administering authority promptly upon request.

Corrective measures must be taken immediately if the holder of this environmental authority becomes aware that bore construction, maintenance or decommissioning have resulted in a change in groundwater quality or groundwater levels or have caused interconnection of aquifers.

Schedule F – Water (Fitzroy model conditions)

Contaminant Release

F1	Contaminants that will, or have the potential to cause environmental harm must not be released directly or indirectly to any waters as a result of the authorised mining activities, except as permitted under the conditions of this environmental authority.

F2	Unless otherwise permitted under the conditions of this environmental authority, the release of mine affected water to waters must only occur from the release points specified in **Table F1 - Mine affected water release points, sources and receiving waters** and depicted in Figure 1 attached to this environmental authority.

F3	The release of mine affected water to internal water management infrastructure installed and operated in accordance with a water management plan that complies with condition F28 is permitted.

How do I comply?

No further guidance to that outlined in the conditions and associated explanatory notes.

Table F1 - Mine affected water release points, sources and receiving waters

F4	The release of mine affected water to waters in accordance with condition F2 must not exceed the release limits stated in **Table F2 - Mine affected water release limits** when measured at the monitoring points specified in **Table F1 - Mine affected water release points, sources and receiving waters** for each quality characteristic.

Table F2 - Mine affected water release limits

F5	The release of mine affected water to waters from the release points must be monitored at the locations specified in **Table F1 - Mine affected water release points, sources and receiving waters** for each quality characteristic and at the frequency specified in **Table F2 - Mine affected water release limits** and **Table F3 - Release contaminant trigger investigation levels, potential contaminants**. *Note: the administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response in the event condition F5 is contravened due to a temporary lack of safe or practical access. The administering authority expects the environmental authority holder to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.*

Table F3 - Release contaminant trigger investigation levels, potential contaminants

How do I comply?

No further guidance to that outlined in the conditions and associated explanatory notes.

F6 If quality characteristics of the release exceed any of the trigger levels specified in **Table F3 - Release contaminant trigger investigation levels, potential contaminants** during a release event, the environmental authority holder must compare the down-stream results in the receiving waters to the trigger values specified in **Table F3 - Release contaminant trigger investigation levels, potential contaminants** and:

a) where the trigger values are not exceeded then no action is to be taken; or

b) where the down-stream results exceed the trigger values specified **Table F3 - Release contaminant trigger investigation levels, potential contaminants** for any quality characteristic, compare the results of the down-stream site to the data from background monitoring sites

1. if the result is less than the background monitoring site data, then no action is to be taken; or
2. if the result is greater than the background monitoring site data, complete an investigation into the potential for environmental harm and provide a written report to the administering authority within 90 days of receiving the result , outlining

i. details of the investigations carried out

ii. actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F6 b (2) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

F7 If an exceedance in accordance with condition F6 b (2) is identified, the holder of the environmental authority must notify the administering authority in writing within 24 hours of receiving the result.

How do I comply?

No further guidance provided to that outlined in the condition.

Mine Affected Water Release Events

F8 The holder must ensure a stream flow gauging station/s is installed, operated and maintained to determine and record stream flows at the locations and flow recording frequency specified in **Table F3 - Release contaminant trigger investigation levels, potential contaminants**.

F9 Notwithstanding any other condition of this environmental authority, the release of mine affected water to waters in accordance with condition F2 must only take place during periods of natural flow in accordance with the receiving water flow criteria for discharge specified in **Table F4 - Mine affected water release during flow events** for the release point(s) specified in **Table F1 - Mine affected water release points, sources and receiving waters**.

F10 The release of mine affected water to waters in accordance with condition F2 must not exceed the Maximum Release Rate (for all combined release point flows) for each receiving water flow criterion for discharge specified in **Table F4 - Mine affected water release during flow events** when measured at the monitoring points specified in **Table F1 - Mine affected water release points, sources and receiving waters**.

or

F11 The 80th percentile of electrical conductivity (EC) values recorded at the downstream monitoring points listed in **Table F4 - Mine affected water release during flow events** must not exceed XXXuS/cm over the duration of the release influence period and have a maximum value of no greater than 20 per cent of XXXuS/cm. The 80th percentile must be calculated using all EC values recorded by the monitoring station during the release influence period.

Table F4 - Mine affected water release during flow events

How do I comply?

No further guidance to that outlined in the conditions and associated explanatory notes.

F12 The daily quantity of mine affected water released from each release point must be measured and recorded.

F13 Releases to waters must be undertaken so as not to cause erosion of the bed and banks of the receiving waters, or cause a material build up of sediment in such waters.

How do I comply?

No further guidance provided to that outlined in the condition.

Notification of Release Event

F14 The environmental authority holder must notify the administering authority as soon as practicable and no later than 24 hours after commencing to release mine affected water to the receiving environment. Notification must include the submission of written advice to the administering authority of the following information:

a) release commencement date/time

b) details regarding the compliance of the release with the conditions of Department Interest: Water of this environmental authority (that is, contaminant limits, natural flow, discharge volume)

c) release point/s

d) release rate

e) release salinity

f) receiving water/s including the natural flow rate.

Note: Notification to the administering authority must be addressed to the Manager and Project Manager of the local Administering Authority via email or facsimile.

F15 The environmental authority holder must notify the administering authority as soon as practicable and nominally no later than 24 hours after cessation of a release event of the cessation, of a release notified under Condition F14 and within 28 days provide the following information in writing:

a) release cessation date/time

b) natural flow rate in receiving water

c) volume of water released

d) details regarding the compliance of the release with the conditions of Department Interest: Water of this environmental authority (that is, contaminant limits, natural flow, discharge volume)

e) all in-situ water quality monitoring results

f) any other matters pertinent to the water release event.

Note: Successive or intermittent releases occurring within 24 hours of the cessation of any individual release can be considered part of a single release event and do not require individual notification for the purpose of compliance with conditions F14 and F15, provided the relevant details of the release are included within the notification provided in accordance with conditions F14 and F15.

How do I comply?

The administering authority will take into consideration any extenuating circumstances prior to determining an appropriate enforcement response, in the event condition F14 is contravened due to extenuating circumstances, such as in emergencies which prevent communications, applicable monitoring equipment has been destroyed as a result of the emergency or access is prevented. The administering authority expects the environmental authority holder though to take all reasonable and practicable measures to maintain safe and practical access to designated monitoring locations.

Notification of Release Event Exceedance

F16 If the release limits defined in **Table F2 - Mine affected water release limits** are exceeded, the holder of the environmental authority must notify the administering authority within 24 hours of receiving the results.

How do I comply?

It should be noted however that a release which has exceeded release limits is no longer compliant and should cease. Any release that continues when limits in **Table F2 - Mine affected water release limits** have been breached will be subject to compliance action by the administering authority.

F17 The environmental authority holder must, within 28 days of a release that is not compliant with the conditions of this environmental authority, provide a report to the administering authority detailing:

a) the reason for the release

b) the location of the release

c) the total volume of the release and which (if any) part of this volume was non-compliant

d) the total duration of the release and which (if any) part of this period was non-compliant

e) all water quality monitoring results (including all laboratory analyses)

f) identification of any environmental harm as a result of the non compliance

g) all calculations

h) any other matters pertinent to the water release event.

Receiving Environment Monitoring and Contaminant Trigger Levels

F18 The quality of the receiving waters must be monitored at the locations specified in **Table F6 - Receiving water upstream background sites and down stream monitoring points** for each quality characteristic and at the monitoring frequency stated in **Table F5 - Receiving waters contaminant trigger levels**.

Table F5 - Receiving waters contaminant trigger levels

Table F6 - Receiving water upstream background sites and down stream monitoring points

How do I comply?

The intent is that that each discharge point has both an upstream and downstream monitoring point associated with it. These monitoring points should be located as close as practicable to the release point and the distances should be defined in the footnotes in **Table F6 - Receiving water upstream background sites and down stream monitoring points**. The location of flow monitoring points should also be considered in selecting upstream monitoring points. Other considerations include accessibility, particularly during wet weather conditions.

F19 If quality characteristics of the receiving water at the downstream monitoring points exceed any of the trigger levels specified in **Table F5 - Receiving waters contaminant trigger levels** during a release event the environmental authority holder must compare the down stream results to the upstream results in the receiving waters and:

a) where the downstream result is the same or a lower value than the upstream value for the quality characteristic then no action is to be taken; or

b) where the down stream results exceed the upstream results complete an investigation into the potential for environmental harm and provide a written report to the administering authority in the next annual return, outlining

1. details of the investigations carried out

2. actions taken to prevent environmental harm.

Note: Where an exceedance of a trigger level has occurred and is being investigated, in accordance with F19 b) of this condition, no further reporting is required for subsequent trigger events for that quality characteristic.

F20	All determinations of water quality and biological monitoring must be performed by an appropriately qualified person.

How do I comply?

All determinations of water quality and biological monitoring should be made in accordance with methods prescribed in the latest edition of the Department of Environment and Heritage Protection (or its successor) Monitoring and Sampling Manual. Samples should be collected from monitoring locations identified within this environmental authority. Analyses should be carried out on representative samples, at a laboratory accredited (for example, NATA) for the method of analysis being used.

Receiving Environment Monitoring Program (REMP)

F21	The environmental authority holder must develop and implement a Receiving Environment Monitoring Program (REMP) to monitor, identify and describe any adverse impacts to surface water environmental values, quality and flows due to the authorised mining activity. This must include monitoring the effects of the mine on the receiving environment periodically (under natural flow conditions) and while mine affected water is being discharged from the site. For the purposes of the REMP, the receiving environment is the waters of the XX and connected or surrounding waterways within XX (for example, Xkm) downstream of the release. The REMP should encompass any sensitive receiving waters or environmental values downstream of the authorised mining activity that will potentially be directly affected by an authorised release of mine affected water.

F22	A REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administrating authority upon request.

F23	A report outlining the findings of the REMP, including all monitoring results and interpretations must be prepared annually and made available on request to the administrating authority. This must include an assessment of background reference water quality, the condition of downstream water quality compared against water quality objectives, and the suitability of current discharge limits to protect downstream environmental values.

How do I comply?

The Receiving Environment Monitoring Program (REMP) should be used to assess the local receiving waters for the specified discharge locations. The monitoring should not be specifically designed to assess compliance of the release – this is covered by other conditions. The key purpose of the REMP is to assess the overall condition of the local receiving waters and assessment should be against water quality objectives and relevant guidelines.

Note that in some cases where discharge occurs to ephemeral streams, there may be a need to include downstream sensitive receiving waters or environmental values outside of the specified REMP area. An example of this would be where there are no semi-permanent /permanent waterholes in the specific area but 1 is located further downstream prior to the confluence with the next major waterway. For further guidance on what to include in a REMP, please refer to the Draft EHP REMP Document for Fitzroy Coal Mines and Additional Information. There is a potential for beneficial linkages of REMP monitoring to regional waterway monitoring programs, such as the Fitzroy Partnership monitoring program. For example EHP intends to maintain monitoring information compiled through individual REMP programs through an internal database under development. Industry has indicated its willingness to see this data shared with the Fitzroy Partnership for the purpose of a regional water monitoring program. Likewise it is possible for environmental authority holders to utilise relevant and available water monitoring information collected by other parties, such as the Fitzroy Partnership, as reference data for the purposes of the REMP required by this section.

The REMP should:

a) assess the condition or state of receiving waters, including upstream conditions, spatially within the REMP area, considering background water quality characteristics based on accurate and reliable monitoring data that takes into consideration temporal variation (for example, seasonality)

b) be designed to facilitate assessment against water quality objectives for the relevant environmental values that need to be protected

c) include monitoring from background reference sites (for example, upstream or background) and downstream sites from the release (as a minimum, the locations specified in Table 6)

d) specify the frequency and timing of sampling required in order to reliably assess ambient conditions and to provide sufficient data to derive site specific background reference values in accordance with the *Queensland Water Quality Guidelines* 2006. This should include monitoring during periods of natural flow irrespective of mine or other discharges

e) include monitoring and assessment of dissolved oxygen saturation, temperature and all water quality parameters listed in Table 2 and 3)

f) include, where appropriate, monitoring of metals/metalloids in sediments (in accordance with ANZECC & ARMCANZ 2000, BATLEY and/or the most recent version of AS5667.*1 Guidance on Sampling of Bottom Sediments*)

g) include, where appropriate, monitoring of macroinvertebrates in accordance with the AusRivas methodology

h) apply procedures and/or guidelines from ANZECC & ARMCANZ 2000 and other relevant guideline documents

i) describe sampling and analysis methods and quality assurance and control

j) incorporate stream flow and hydrological information in the interpretations of water quality and biological data.

Water reuse

F24	Mine affected water may be piped or trucked or transferred by some other means that does not contravene the conditions of this environmental authority and deposited into artificial water storage structures, such as farm dams or tanks, or used directly at properties owned by the environmental authority holder or a third party (with the consent of the third party).

How do I comply?

Note that the definition of 'wastewater' under the *Water Supply (Safety and Reliability) Act 2008* specifically exempts spent or used water generated from mining activities. In addition, there is an exemption from water service provider registration requirements if there is no charge for the water supply. Mines are encouraged to provide water to their neighbours and communities. Previous versions of these model water conditions specified terms to be included in agreements with those third parties, but current policy is that the commercial terms of these agreements, including the purposes for which the third parties require the water, are a matter for direct negotiation between the parties.

The provision of re-use water to artificial water storage structures, or direct application to land for purposes such as dust suppression in road maintenance and construction work, constitutes an authorised 'release' which does not need to be addressed under condition F2. However, as part of the annual review of water management plans, an outline should be included about beneficial re-use arrangements, for water balance purposes.

Annual Water Monitoring Reporting

F25 The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority and submitted to the administering authority in the specified format:

a) the date on which the sample was taken

b) the time at which the sample was taken

c) the monitoring point at which the sample was taken

d) the measured or estimated daily quantity of mine affected water released from all release points

e) the release flow rate at the time of sampling for each release point

f) the results of all monitoring and details of any exceedances of the conditions of this environmental authority

g) water quality monitoring data must be provided to the administering authority in the specified electronic format upon request.

How do I comply?

No further guidance provided to that outlined in the condition.

Temporary Interference with waterways

F26 Destroying native vegetation, excavating, or placing fill in a watercourse, lake or spring necessary for and associated with mining operations must be undertaken in accordance with Department of Natural Resources and Mines (or its successor) Guideline – Activities in a Watercourse, Lake or Spring associated with Mining Activities.

How do I comply?

No further guidance provided to that outlined in the condition.

Water Management Plan

F27	A Water Management Plan must be developed by an appropriately qualified person and implemented.

How do I comply?

The Water Management Plan should be developed in accordance with Department of Environment and Resource Management guideline *Preparation of water management plans for mining activities* and include:

a) a study of the source of contaminants

b) a water balance model for the site

c) a water management system for the site

d) measures to manage and prevent saline drainage

e) measures to manage and prevent acid rock drainage

f) contingency procedures for emergencies

g) a program for monitoring and review of the effectiveness of the water management plan.

The Water Management Plan should be reviewed annually to assess the adequacy of the plan, ensure actual and potential environmental impacts are managed, and identify any necessary amendments to the plan.

Stormwater and Water sediment controls

F28	An Erosion and Sediment Control Plan must be developed by an appropriately qualified person and implemented for all stages of the mining activities on the site to minimise erosion and the release of sediment to receiving waters and contamination of stormwater.

F29	Stormwater, other than mine affected water, is permitted to be released to waters from: a) erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition F28 b) water management infrastructure that is installed and operated, in accordance with a Water Management Plan that complies with condition F27 for the purpose of ensuring water does not become mine affected water.

How do I comply?

Stormwater, other than mine affected water, is permitted to be released to waters from erosion and sediment control structures that are installed and operated in accordance with the Erosion and Sediment Control Plan required by condition F28. Stormwater is permitted to be released from water management infrastructure that is installed and operated in accordance with a Water Management Plan required by condition F27, for the purpose of ensuring water does not become mine affected.

The maintenance and cleaning of any vehicles, plant or equipment must not be carried out in areas from which contaminants can be released into any receiving waters.

Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable to minimise the release of wastes, contaminants or materials to any stormwater drainage system or receiving waters.

Schedule G- Sewage treatment

G1	The only contaminant permitted to be released to land is treated sewage effluent in compliance with the release limits stated in **Table G1 - contaminant release limits to land.**

Table G1 - Contaminant release limits to land

How do I comply?

F1 may need amendment if other contaminants are permitted to be released to land. Monthly monitoring of E coli may be revised based on location/remoteness of mine site.

G2	Treated sewage effluent may only be released to land in accordance with the conditions of this approval: a) within the nominated area(s) identified in Schedule ## – Figure ## (Sewage Treatment Plant and Effluent Disposal) b) on other land for the purpose of dust suppression and/or fire fighting.

How do I comply?

No further guidance provided to that outlined in the condition.

G3	The application of treated effluent to land must be carried out in a manner such that: a) vegetation is not damaged b) there is no surface ponding of effluent c) there is no run-off of effluent.

How do I comply?

No further guidance provided to that outlined in the condition.

G4	If areas irrigated with effluent are accessible to employees or the general public, prominent signage must be provided advising that effluent is present and care should be taken to avoid consuming or otherwise coming into unprotected contact with the effluent.

How do I comply?

No further guidance provided to that outlined in the condition.

G5	All sewage effluent released to land must be monitored at the frequency and for the parameters specified in **Table G1 - contaminant release limits to land**.

How do I comply?

No further guidance provided to that outlined in the condition.

G6	The daily volume of effluent release to land must be measured and records kept of the volumes of effluent released.

How do I comply?

No further guidance provided to that outlined in the condition.

G7	When circumstances prevent the irrigation or beneficial reuse of treated sewage effluent such as during or following rain events, waters must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent.

How do I comply?

No further guidance provided to that outlined in the condition.

G8	A minimum area of <<insert area>> of land, excluding any necessary buffer zones, must be utilised for the irrigation and/or beneficial reuse of treated sewage effluent.

How do I comply?

No further guidance provided to that outlined in the condition.

G9	Treated sewage effluent must only be supplied to another person or organisation that has a written plan detailing how the user of the treated sewage effluent will comply with their general environmental duty under section 319 of the Act whilst using the treated sewage effluent.

How do I comply?

The supply of treated wastewater for re-use is regulated under the *Water Supply (Safety and Reliability) Act 2008.*

Schedule H – Land and rehabilitation

H1	Land disturbed by mining must be rehabilitated in accordance with **Table H1 - Rehabilitation Requirements**.

Table H1 - Rehabilitation Requirements

How do I comply:

In addition to the criteria listed above, holders should be aware that section 276 of the *Mineral Resources Act 1989* includes a requirement that it is a condition of mining leases that: 'the holder, prior to the termination of the mining lease for whatever cause, shall remove any building or structure purported to be erected under the authority of the mining lease and all mining equipment and plant, on or in the area of the mining lease unless otherwise approved by the Minister.'

There are occasions when the post-mining landholder wishes to retain specified mine infrastructure, such as roads, clean water dams, amenities and the like. It is not unusual for the mining lease holder to submit a copy of a written agreement with the landholder about these issues for the consent of the Minister administering the *Mineral Resources Act 1989*.

H2	Rehabilitation must commence progressively in accordance with the plan of operations.

How do I comply:

Rehabilitation must commence progressively as soon as areas become available and in accordance with the plan of operations. For more information, please refer to the most recent edition of the administering authority's guideline rehabilitation requirements for mining projects (EM1122).

Contaminated Land

H3	Before applying for surrender of a mining lease, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the mining lease which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1.

H4	Before applying for progressive rehabilitation certification for an area, the holder must (if applicable) provide to the administering authority a site investigation report under the Act, in relation to any part of the area the subject of the application which has been used for notifiable activities or which the holder is aware is likely to be contaminated land, and also carry out any further work that is required as a result of that report to ensure that the land is suitable for its final land use under condition H1.

How do I comply?

For more information, please refer to the most recent edition of the administering authority's guideline surrender applications and progressive rehabilitation.

H5	Minimise the potential for contamination of land by hazardous contaminants.

How do I comply?

The following activities have a risk of releasing dust fallout which can accumulate and be a source of contamination if not managed adequately, so care should be taken to manage these accordingly:

a) crusher

b) concentrate handling, storage and transport

c) dry tailings

d) transport of ore.

All explosives, hazardous chemicals, corrosive substances, toxic substances, gases, flammable or combustible liquids and dangerous goods should be stored and handled in accordance with the current, relevant Australian Standard where such is applicable.

Notwithstanding the requirements of any applicable Australian Standard, any liquids stored on licensed place that have the potential to cause environmental harm should be stored and serviced by an effective containment system that is impervious to the materials stored and managed to prevent the release of liquids to waters or land. The following could be applied:

a) storage tanks must be bunded such that the capacity and construction of the bund is sufficient to contain at least 110% of a single storage tank or 100% of the largest storage tank plus 10% of the second largest storage tank in multiple storage areas

b) drum storages must be bunded such that the capacity and construction of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

All containment systems should be designed to minimise rainfall collection within the system.

Any spillage of hazardous contaminants should be cleaned up promptly. Dry methods of clean up are generally preferable to minimise the risk of release to land.

Biodiversity Offsets

H6 The holder of this environmental authority must provide an offset for impacts on applicable state significant biodiversity values, in accordance with Queensland Biodiversity Offset Policy. The biodiversity offset must be consistent with the requirements for an offset as identified in the Biodiversity Offset Strategy (as per condition H7) and must be provided:

a) prior to impacting on state significant biodiversity values; or

b) where a land based offset is to be provided, within 12 months of the later of either of the following

1. the date of issue of this environmental authority; or
2. the relevant stage identified in the Biodiversity Offset Strategy submitted under condition H7; or

c) where an offset payment is to be provided, within 4 months of the later of either of the following

1. the date of issue of this environmental authority; or
2. the relevant stage identified in the Biodiversity Offset Strategy submitted under conditions H7.

How do I comply?

No further guidance provided to that outlined in the condition.

H7 A Biodiversity Offset Strategy must be developed and submitted to the administering authority within either 30 days, or a lesser period agreed to by the administering authority, prior to impacting on the applicable state significant biodiversity values.

How do I comply?

The Biodiversity Offset Strategy must include, as a minimum:

a) demonstration that the activity has avoided or minimised impacts to applicable state significant biodiversity values

b) where there will be impacts to applicable State significant biodiversity values, a detailed description of the values that will be impacted, and the extent of that impact

c) mapping that details the surveyed locations of any applicable State significant biodiversity values at the licensed place

d) results of a flora and fauna assessment of the affected area to determine if the operations will directly impact on any applicable State significant biodiversity values detailed in the *Queensland Biodiversity Offset Policy*

e) project stages for the provision of offsets

f) the proposed offset delivery mechanism for each stage

g) where an offset transfer is proposed, or where a land based offset is to be secured within 12 months of commencement of the relevant stage, evidence that an offset can be located within the landscape

h) an ecological equivalence assessment where required by the *Queensland Biodiversity Offset Policy.*

Guideline

Environmental Protection Act 1994

Structures which are dams or levees constructed as part of environmentally relevant activities

Table of contents

ABN 46 640 294 485

1 Scope

This document provides information about the procedures of the administering authority when authorising structures which are dams, or levees that are constructed as part of an activity under an environmentally relevant activity (ERA) pursuant to the *Environmental Protection Act 1994*.

Environmental authorities and development approvals (both referred to hereafter as an 'authority') will include conditions that require holders of the authority to have the hazard category of any structures which are dams or levees that are constructed as part of a project assessed by a 'suitably qualified and experienced person'.

The hazard assessment will determine whether a structure is a 'regulated structure' for the purpose of the authority. Regulated structures will require certified design plans to be submitted to the administering authority, and will be subject to annual inspection and reporting by a suitably qualified and experienced person.

The responsibility for ensuring the accurate hazard assessment, documentation of the design, and the adequate performance of regulated structures rests with the holder of the authority and its consultants (i.e. the suitably qualified and experienced person).

The administering authority will rely on the certification(s) given by suitably qualified and experienced persons of documentation submitted to the administering authority. This places considerable onus on both the holder of the authority and the suitably qualified person(s) providing certification(s) to ensure that hazard assessments are rigorously carried out and that regulated structures are designed and operated in accordance with the regulatory requirements.

The administering authority may, from time to time, review documentation and certification(s) in detail for conformance with prevailing engineering and environmental management practices, and the provisions of the law.

2 Related document

This guideline relates to, and should be read in conjunction with, the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* (the manual) published by the administering authority.

The *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* does not limit, amend or change in any way, any other requirements to be complied with under authority conditions and/or regulations for the design and operation of a dam[1]. Further, it does not negate any lawful requirements of the *Environmental Protection Act 1994*, other Commonwealth, state or local government laws or requirements under relevant standards or agreements.

3 Background

In the context of regulated structures which are dams or levees constructed as part of environmentally relevant activities; protecting human life and the environment requires that the standards used for the design, construction, operation, modification and decommissioning of regulated structures mitigate the hazards arising from potential failure or collapse of those structures.

[1] An example of other legislative requirements that may be relevant are those relating to referrable dams under the *Water Supply (Safety and Reliability) Act 2008*.

The administering authority requires that any regulated structure be designed, constructed, operated and maintained to an engineering standard appropriate to the nature of the contents of the dam, the purpose for which it is to be used, and the environment in which it is located and will discharge. The administering authority also requires that the condition of regulated structures and their operations will be monitored on a regular basis, and that timely action will be taken to prevent or minimise any actual or potential environmental harm.

4 Essential elements of a design plan and certification for a regulated structure

A '**design plan**' is a document setting out how all identified hazard scenarios are addressed in the planned design and operation of a regulated structure. The document must describe the physical dimensions of the regulated structure, the materials and standards to be used for construction of the regulated structure, and the criteria to be used for operating the regulated structure.

The design plan must include all investigation and design reports, plans and specifications sufficient to hand to a contractor for construction, and planned decommissioning and rehabilitation outcomes; so as to address all hazard scenarios that would be identified by a properly conducted hazard assessment for the regulated structure.

Documentation must be such that an independent review could be conducted without seeking further information from the designer.

A design plan for a regulated structure should address a range of issues including:

- the hazard scenarios that have been used in undertaking a hazard assessment;
- the hydrology/hydraulics used to estimate and deal with flood events, internal and external to the regulated structure, at probabilities appropriate to address identified hazard scenarios, including containment of contaminants;
- seepage and stability issues, including containment of contaminants; and
- any assumptions relating to the design and safety of the regulated structure.

A '**certification'** is required in the form set out in the attached Appendix A (and in the manual), from a suitably qualified and experienced person. The certification must be accompanied by a statement of reasons setting out how the facts documented in the design plan support the conclusion that the regulated structure is capable of providing the specific performance required of that structure.

4.1 Environmental objectives for regulated dams containing contaminants

Key performance objectives for regulated dams containing contaminants assessed as a hazard by a suitably qualified and experienced person, with the potential to cause environmental harm include that the contaminants are safely contained within the regulated dam during the operational life of that dam, and that upon decommissioning such contaminants are, either removed for safe disposal elsewhere, or securely encapsulated for the foreseeable future.

Flood protection levees are also to be classified as regulated structures as they have an important environmental objective of minimising the risk of excessive flood water inflows to a site on which an environmentally relevant activity is being conducted, and the consequent potential for contamination of the flood waters and overloading of containment performance.

Key performance criteria for design elements of regulated dams may be required for certain applications.

Regulated dams must be able to withstand seasonal rainfall events without releasing contaminants from the dam in an unauthorised manner. A minimum available storage, called a **design storage allowance** (DSA), is required to be estimated for regulated dams in accordance with the manual, in order to accommodate seasonal rainfall to a specified annual probability. On-site water management must allow for and provide the DSA volume in each regulated dam, going into each new wet season (that is, on the 1 November each year).

The intent of a DSA volume is to provide reasonable certainty that design performance criteria for containment will be met in any forthcoming wet-season. Failure to operate a regulated dam so that it meets the requirement to provide the DSA volume at the onset of each wet-season (that is, on the 1 November each year) should be an alert to the holder of an authority that it risks the likelihood that a spillway discharge from a regulated dam during the wet-season may not be authorised.

The intent of a **mandatory reporting level** (MRL) is to provide a level at which it is mandatory that the holder of an authority communicate to the administering authority that there is a possibility of a spillway discharge from a regulated dam.

Even where a regulated dam is designed and operated in compliance with the conditions of an authority and the certification provided, there may still be instances where there is associated spillway discharge during the wet season. If these requirements are met and the discharge meets the water quality conditions in the environmental authority (EA), it will be considered to be authorised. If water quality conditions in the environmental authority are exceeded, but all other requirements are met, then the operator may be able to demonstrate that they have met the general environmental duty which is a defence to a charge of environmental harm.

4.2 Environmental objectives for regulated dams—people and communities

Environmental harm includes physical and chemical risks to human life. In particular, this may occur where dams may have the potential—as a result of discharges—to chemically interfere with waters that may be used as sources of drinking water, or lives can be at risk due to dwellings or workplaces being in the path of a dam break flood.

These regulated dams must be designed, constructed, operated and decommissioned to mitigate those hazards. The taking of appropriate actions to mitigate hazards does not remove the responsibility of the holder of an authority to also mitigate consequences where it is practical and reasonable to do so.

Consultation with affected persons should occur prior to the construction of a dam which is assessed as being a high or significant hazard category. In situations where a hazard remains, consultation with affected persons must be undertaken by the holder, and emergency action plans, including response procedures, must be in place prior to operation of the regulated dam. For dams that are declared regulated structures after construction, consultation with affected persons must be undertaken by the holder, and emergency action plans, including response procedures, must be in place by a timeframe specified by a condition of the EA.

5 Applications for environmental authorities or development approvals that involve dams

Any application involving dams must include a copy of the most recent hazard assessment undertaken, with the accompanying certification.

Contemporary conditions applicable to regulated dams will be inserted by the administering authority in current authorities when amendment applications for projects involving dams are made, and in any application for a new authority.

Regulated dams that are authorised as part of resource activities that are not mining projects require details to be entered in a Register of Regulated Dams kept by the holder of the authority (the 'holder'), and an electronic copy provided annually to the administering authority[2]. Details of all other regulated dams must be recorded on the relevant authority.

It is the responsibility of the holder of the authority to ensure any Register of Regulated Dams is accurately maintained.

5.1 Lodgement of design plans for regulated structures

Before operation of a regulated structure can commence, one paper copy and one electronic copy of a design plan, must be submitted to the administering authority.

5.2 Lodgement of annual inspection reports for regulated structures

Annual inspection reports on the condition and adequacy of any regulated structure must be made available to the administering authority on request.

To ensure that the administering authority is aware of the action to be taken by the holder of an authority as a result of the annual inspection report, the holder must, within 20 business days following receipt of the report, notify the administering authority of the findings of the report and the actions that are to be taken to implement the recommendations.

5.3 Form of certification

Any hazard assessment report, design plan or annual inspection report must be certified in accordance with the form of certification provided referenced in Appendix A to this guideline.

Approved by:

Omar Ameer
Director, Environmental Regulatory Practice
Department of Environment and Heritage Protection
Date: 31 March 2013

Enquiries:

Permit and Licence Management
Ph: 13 QGOV (13 74 68)
Fax: (07) 3896 3342
Email: palm@ehp.qld.gov.au

[2] A copy of the register template can be obtained by contacting the Department of Environment and Heritage Protection.

Appendix A

For Minimum requirements of certification/certification report and Form of certification (Hazard assessment/design plan), see: Appendix C of *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* constructed as part of environmentally relevant activities pursuant to the *Environmental Protection Act 1994* – Version 3.

Appendix B—Model conditions schedule 'X' structures

General notes:

Explanatory notes for assessing officer guidance are in green. DELETE prior to issue of an authority.

Insertions required by applicants and/or the administering authority are in blue. DELETE appropriate parts or include relevant information prior to issue of an authority.

Model conditions are in black with defined terms indicated by **bold** text.

1. Preamble

The *Environmental Protection Act 1994* requires that any condition imposed be necessary or desirable to achieve the objects of the Act. In conditioning an environmental authority (authority), delegates should consider whether any condition, (model or otherwise) is necessary or desirable based on the particular facts and circumstances of the application to which the proposed authority relates. These model conditions have been prepared to indicate the administering authority's position on and expectations of authority holders in managing potential environmental risk posed by structures which are dams or levees that are of a high or significant hazard category. They also allow for consistency in conditioning of authorities across the state. The conditions are able to be modified where evidence supplied indicates that such modification, removal or replacement would achieve the same objective and is deemed necessary or desirable by the delegate.

It is the departments' position that the requirement for a condition to be 'necessary or desirable' has been met where a demonstrable link exists to achieving the object of the Act or discharging a duty or obligation imposed on the administering authority.

Officers should review the final conditions intended to be applied in a particular authority to ensure there is consistency in numbering, cross referencing and structure of conditions.

START OF CONDITIONS

2. Explanatory notes—all structures:

The model conditions under this section are expected to apply to all structures. Some parts of these model conditions are specific only to dams associated with a resource activity - non mining activity and this may affect the final structure and content of any particular authority.

The objective of the following conditions is to ensure that **all** structures are appropriately assessed to determine the applicable hazard category and a certificate provided by the suitably qualified and experienced person who undertook the assessment. Following this, appropriate conditioning can occur based of whether the structure is a regulated structure.

Where a structure is assessed as a low hazard structure, and later assessment results in the structure being determined to be a significant or high hazard category structure, this will require an amendment to the existing environmental authority or the Register of Regulated Dams.

Note that a dam includes all appurtenances that are connected with ensuring preservation of the integrity of the structure (e.g. spillways, catchment diversions). Also, a levee may be subject to regulation, depending on the consequences associated with failure as assessed in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams* published by the administering authority.

A hazard assessment report may include details in relation to more than one structure.

Assessment of hazard category

(X 1) The **hazard category** of any **structure** must be **assessed** by a **suitably qualified and experienced person**:

a) in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM365)*; and

b) in any of the following situations:

i) prior to the design and **construction** of the **structure**; or

ii) prior to any change in its purpose or the nature of its stored contents; and

iii) in accordance with the *Manual for assessing Hazard Categories and Hydraulic Performance of Dams.*

(X 2) A **hazard assessment** report and **certification** must be prepared for any **structure assessed** and the report may include a **hazard assessment** for more than one **structure**.

(X 3) The holder must, on receipt of a **hazard assessment** report and **certification**, provide to the administering authority one paper copy and one electronic copy of the **hazard assessment** report and **certification**.

(X 4) **Certification** must be provided by the **suitably qualified and experienced person** who undertook the assessment, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.

(X 5) The holder must take reasonable and practical measures so that each dam associated with the mining activity is designed, constructed, operated and maintained in accordance with accepted engineering standards and is fit for the purpose for which it is intended.

3. Explanatory notes—all regulated structures

The following model conditions relate to **all structures that have been assessed as regulated structures** (that is, structures in a high or significant hazard category).

Depending on the nature of the authority, some or all conditions may be applicable to the authority.

Regulated structures must not be constructed or operated unless an assessment of the hazard category, and a report and certification of the assessment has been prepared by a suitably qualified and experienced person.

A regulated structure must not be constructed or operated unless a suitably qualified and experienced person has prepared a design plan and certification for the regulated structure and this has been provided to the holder of the authority. Operation of the regulated structure is not permitted unless the holder has provided the administering authority with a copy of the design plan and certification.

The administering authority is not an approval body for the hazard category of a structure or design plans for a structure. Accordingly, acceptance by the administering authority of any report and certification (whether relating to the hazard category or design plan) does not indicate the administering authority approves the assessment carried out or the plans. The administering authority has set out requirements for suitably qualified and experienced persons to undertake this activity to ensure that the assessments and engineering works are conducted appropriately and in accordance with applicable standards.

Due to the number of dams associated with a resource activity - non mining activity, the administering authority has agreed to the use of a Register of Regulated Dams which is managed and maintained by the holder of an authority. For all other dams that are regulated dams, the details must be included in the authority itself.

Note that conditions X6 to X13 are not required if the proposal only covers existing structures that are declared regulated structures. In the case of existing structures that are declared to be regulated structures condition X39 must be included with transitional conditions X37 and X38.

If the project contains both new regulated structures and existing structures that are declared to be regulated structures after construction conditions X6 to X13 should contain the following ‘excluding regulated structures listed in table X of condition X37.

Design and construction[3] of a regulated structure

(X 6) All **regulated structures** [excluding structures listed in condition X38] must be designed by, and **constructed**[4] under the supervision of, a **suitably qualified and experienced person** in accordance with the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.

(X 7) **Construction** of a **regulated structure** [excluding structures listed in condition X38] is prohibited unless the **holder** has:

a) submitted a **hazard category assessment** report and **certification** to the administering authority;

b) commissioned a **suitably qualified and experienced person** to prepare a design plan for the **structure**; and

c) received the **certification** from a **suitably qualified and experienced person** for the **design and design plan and** the associated operating procedures in compliance with the relevant condition of this **authority**. [if appropriate insert reference to all conditions relating to X5 to X13 and if relevant, any conditions relating to design and construction that apply to dams associated with a resource activity - non mining activity (X33 to X35)]

(X 8) Certification must be provided by the suitably qualified and experienced person who oversees the preparation of the design plan, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.

(X 9) **Regulated structures** [excluding structures listed in condition X38] must:

a) be designed and constructed in accordance with and conform to the requirements of the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams;*

b) be designed and **constructed** with due consideration given to ensuring that the design integrity would not be compromised on account of:

i) floodwaters from entering the **regulated dam** from any **watercourse** or drainage line; and

ii) wall failure due to erosion by floodwaters arising from any **watercourse** or drainage line.

c) [Insert only in environmental authorities for regulated dams that are dams associated with a resource activity - non mining activity] have the floor and sides of the **dam** designed and constructed to prevent or minimise the passage of the wetting front and any entrained contaminants through either the floor or sides of the **dam** during the operational life of the **dam** and for any period of decommissioning and rehabilitation of the **dam**.

(X 10) The design plan for a **regulated structure** [excluding structures listed in condition X38] must include, but is not limited to:

a) **certification** that the design plan:

i) is in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*, including subsidiary certifications if necessary; and

ii) addresses the requirements in X10(b) to (i)

[3] Construction of a dam includes modification of an existing dam—refer to the definitions.

[4] Certification of design and construction may be undertaken by different persons.

b) A design report which provides:
   i) a description of all the documents which constitute the design plan;
   ii) a statement of:
      a) the applicable standards including engineering criteria, industry guidelines, relevant legislation and regulatory documents, relied upon in preparing the design plan; and
      b) all relevant facts and data used in preparing the design plan, including any efforts made to obtain necessary facts and data, and any limitations or assumptions to facts and data used in preparing the design plan;
      c) the **hazard category** of the regulated **structure**; and
      d) setting out the reasoning of the **suitably qualified and experienced person** who has certified the design plan, as to how the design plan provides the necessary required performance;
   iii) documentation of hydrological analyses and estimates required to determine all elements of the design including volumes and flow capacities;
   iv) detailed criteria for the design, operation, maintenance and decommissioning of the regulated **structure**, including any assumptions;
   v) design, specification and operational rules for any related structures and systems used to prevent failure scenarios;

c) Drawings showing the lines and dimensions, and locations of built structures and land forms associated with the regulated **structure**;

d) Consideration of the interaction of the pit design with the levee or regulated dam design;

e) [Insert only in environmental authorities for dams that are associated with a resource activity - non mining activity] A description of the containment system implemented.

f) An **operational plan** that includes:
   i) normal operating procedures and rules (including clear documentation and definition of process inputs in the DSA allowance);
   ii) contingency and **emergency action plans** including operating procedures designed to avoid and/or minimise environmental impacts including threats to human life resulting from any overtopping or loss of structural integrity of the regulated **structure**;

g) A plan for the decommissioning and rehabilitation of the regulated **structure** at the end of its operational life;

h) Details of reports on investigations and studies done in support of the design plan;

i) Any other matter required by the **suitably qualified and experienced person**.

(X 11) **Certification** by the **suitably qualified and experienced person** who supervises the construction must be submitted to the administering authority on the completion of **construction** of the regulated **structure**, and state that:

a) the 'as constructed' drawings and specifications meet the original intent of the design plan for that regulated **structure;**

b) **construction** of the regulated structure is in accordance with the design plan;

(X 12) Where a regulated dam is to be managed as part of an integrated containment system and the DSA volume is to be shared across the integrated containment system, the design and operating rules for the system as a whole must be documented in a **system design plan** that is **certified** by a **suitably qualified and experienced person**.

(X 13) The system design plan must contain:

a) the design plans, and

b) the 'as constructed' plans, and

c) the operational rules for each individual regulated dam that forms part of the integrated system, and

d) the standards of serviceability and accessibility of water transfer equipment or structures, and

e) the operational rules for the system as a whole.

Operation of a regulated structure

(X 14) Operation of a **regulated structure** is prohibited unless:

a) the **holder** has submitted to the administering authority:

i) one paper copy and one electronic copy of the design plan and **certification** of the 'design plan' in accordance with condition ##, and

ii) a set of 'as constructed' drawings and specifications, and

iii) **certification** of those 'as constructed drawings and specifications' in accordance with condition ##, and

iv) where the regulated structure is to be managed as part of an integrated containment system for the purpose of sharing the DSA volume across the system, a copy of the certified system design plan.

b) the requirements of this **authority** relating to the **construction** of the regulated **structure** have been met; and

c) [Insert only in environmental authorities for regulated dams that are dams associated with a resource activity - non mining activity] The **holder** has entered the details required under this **authority**, into a Register of Regulated Dams; [**OR**]

d) [Insert only in authorities for regulated dams that are not dams associated with a resource activity - non mining activity] Relevant details for the **dam** have been included in Schedule X Table 1 and Schedule X Table 2 of this **authority**.

(X 15) Each **regulated structure** must be maintained and operated in a manner that is consistent with the current design plan, the current operational plan, and the associated **certified** 'as constructed' drawings for the duration of its operational life until decommissioned and rehabilitated.

(X 16) The **holder** must take reasonable and practicable control measures to prevent the causing of harm to persons, livestock or wildlife through the **construction** and operation of a **regulated structure**. Reasonable and practicable control measures may include, but are not limited to:

a) the secure use of fencing, bunding or screening; and

b) escape arrangements for trapped livestock and fauna.

4. Explanatory notes—all regulated structures (continued)

All regulated dams must have a clearly observable mandatory reporting level (determined in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*). The holder must notify the administering authority on becoming aware of the dam contents reaching the MRL and take appropriate action to prevent or minimise the potential for environmental harm.

Each calendar year, an annual inspection and assessment of any regulated structure must be undertaken by a suitably qualified and experienced person, and a report prepared with recommendations for ensuring the integrity of the regulated structure is maintained. This inspection may indicate that the hazard category of a dam is potentially changed and identifies

amongst other things, whether there are any instances of failing to meet the conditions of an authority and the likelihood of insufficient capacity of a dam leading up to a wet season.

The holder of an authority must ensure there is sufficient capacity within the dam on 1 November of every year, to meet the design storage allowance (DSA) determined in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams*. This is to minimise the risk of contaminants being released from the dam during a high rainfall wet season.

The intent of a DSA volume is to provide reasonable assurance that design performance criteria for containment will be met in any forthcoming wet-season. Failure to operate a regulated dam so that it meets the requirement to provide the DSA volume at the onset of each wet-season (that is, on the 1 November each year) should be an alert to the holder of an authority that it risks the likelihood that a spillway discharge from a regulated dam during the wet-season may not be authorised.

The intent of a mandatory reporting level (MRL) is to provide a level at which it is mandatory that the holder of an authority communicate to the administering authority that there is a possibility of a spillway discharge from a regulated dam.

Mandatory reporting level

(X 17) The **Mandatory Reporting Level** (the **MRL**) must be marked on a **regulated dam** in such a way that during routine inspections of that **dam**, it is clearly observable.

(X 18) The **holder** must, as soon as practical and within forty-eight (48) hours of becoming aware, notify the administering authority when the level of the contents of a **regulated dam** reaches the **MRL**[5].

(X 19) The **holder** must, immediately on becoming aware that the **MRL** has been reached, act to prevent the occurrence of any unauthorised discharge from the regulated dam.

Annual inspection report

(X 20) Each **regulated structure** must be inspected each calendar year by a **suitably qualified and experienced person**.

(X 21) At each annual inspection, the condition and adequacy of all components of the **regulated structure** must be assessed:

a) against the most recent **hazard assessment** report and design plan (or system design plan);

b) against recommendations contained in previous annual inspections reports;

c) against recognised dam safety deficiency indicators;

d) for changes in circumstances potentially leading to a change in **hazard category**;

e) for conformance with the conditions of this **authority**;

f) for conformance with the 'as constructed' drawings;

g) for the adequacy of the available storage in each **regulated dam**, based on an actual observation or observations taken after 31 May each year but prior to 1 November of that year, of accumulated sediment, state of the containment barrier and the level of liquids in the **dam** (or network of linked containment systems);

h) for evidence of conformance with the current operational plan.

(X 22) A **suitably qualified and experienced person** must prepare an annual inspection report containing details of the assessment and including recommended actions to ensure the integrity of the regulated **structure.**

---

[5] Please note that for some model conditions, such as model conditions for dams that are associated with a resource activity - non mining activity, the notification requirements may be located in a separate part of the conditions of an environmental authority (e.g. under notification requirement conditions).

(X 23) The **suitably qualified and experienced person** who prepared the annual inspection report must **certify** the report in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.

(X 24) The **holder** must:

a) upon receipt of the annual inspection report, consider the report and its recommendations and take action to ensure that the **regulated structure** will safely perform its intended function; and

b) within twenty (20) business days of receipt of the annual inspection report, notify the administering authority in writing, of the recommendations of the inspection report and the actions being taken to ensure the integrity of each **regulated structure**.

(X 25) A copy of the annual inspection report must be provided to the administering authority upon request and within ten (10) business days[6].

Design storage allowance

(X 26) On 1 November of each year, storage capacity must be available in each **regulated dam** (or network of linked containment systems with a shared DSA volume), to meet the **Design Storage Allowance** (**DSA**) volume for the **dam** (or network of linked containment systems).

(X 27) The **holder** must, as soon as possible and within forty-eight (48) hours of becoming aware that the **regulated dam** (or network of linked containment systems) will not have the available storage to meet the **DSA** volume on 1 November of any year, notify the administering authority.

(X 28) The **holder** must, immediately on becoming aware that a **regulated dam** (or network of linked containment systems) will not have the available storage to meet the **DSA** volume on 1 November of any year, act to prevent the occurrence of any unauthorised discharge from the regulated dam or linked containment systems.

Performance review

(X 29) The **holder** must assess the performance of each **regulated dam** or linked containment system over the preceding November to May period based on actual observations of the available storage in each regulated dam or linked containment system taken prior to 1 July of each year.

(X 30) The **holder** must take action to modify its water management or linked containment system so as to ensure that the **regulated dam** or linked containment system will perform in accordance with the requirements of this authority, for the subsequent November to May period.

Note: Action may include seeking the necessary approvals for physical modification of a regulated dam.

Transfer arrangements

(X 31) The holder must provide a copy of any reports, documentation and certifications prepared under this authority, including but not limited to any Register of Regulated Structures, hazard assessment, design plan and other supporting documentation, to a new **holder** and the administering authority on transfer of this **authority**.

Decommissioning and rehabilitation

(X 32) Prior to the cessation of the environmentally relevant activity, each **regulated structure** must be decommissioned such that:

[6] Please note that for some model conditions, such as model conditions for dams associated with a resource activity - non mining activity, the notification requirements may be located in a separate part of the conditions of an environmental authority (e.g. under notification requirement conditions).

1. ongoing environmental harm is minimised by the regulated structure:
   i) becoming a safe site for humans and animals at the completion of rehabilitation; or
   ii) becoming a stable landform, that no longer contains flowable substances and minimises erosion impacts; or
   iii) not allowing for acid mine drainage; or
   iv) being approved or authorised under relevant legislation for a beneficial use; or
   v) being a **void** authorised by the administering authority to remain after decommissioning; and
2. the regulated structure is compliant with all other relevant rehabilitation requirements of this **authority**[7].

5. Explanatory notes—regulated structures other than dams associated with a resource activity - non mining activity

The following model conditions are intended to apply to all regulated structures (which are dams or levees) except for dams associated with a resource activity - non mining activity, which have separate additional model conditions set out later in this document. For regulated structures other than those which are dams associated with a resource activity - non mining activity, details of the regulated structure must be inserted into the authority itself. These details include location details of any regulated structure, details such as the hazard category, MRL and DSA and the hydraulic performance of the dam. Any change in these specifications will require an amendment to the authority or application for a transitional environmental plan (TEP).

These requirements are for new structures assessed as regulated structures, but may also apply to existing structures on amendment of an existing authority, or where an existing structure is being used under a new authority. In those instances only, transitional arrangements are able to be set out in the authority, providing for a transitional period within which the existing structure must be altered or modified to meet the new requirements. The term of three years is used as a benchmark only, and less time may be provided for, or alternatively a TEP may be applied for if more than three years is required.

Where the transitional arrangements provided for by X37 and X38 call up previous conditions of approval, the relevant schedule is to include the definitions that were applicable at the time that the conditions were imposed. Where there were no previous conditions of approval, the relevant schedule is to specify the applicable existing standards with which the regulated structure must comply.

Where a regulated structure ceases to be a regulated structure by being decommissioned and rehabilitated or having its hazard category re-assessed and certified by a suitably qualified and experienced person, an application may be made to amend the approval to remove the requirements in relation to that particular regulated structure.

Regulated structures location and performance

(X 33) Each **regulated structure** named in Column 1, of Schedule D - Table 1 must be wholly located within the control points noted in columns 2 and 3 of Schedule D - Table 1, below, for that **structure**.

[7] There may be additional specific conditions relating to rehabilitation and decommissioning that apply to a dam. Note it is possible to accept modification of condition X32 if a dam is accepted as an asset by a new landholder.

Schedule D—Table 1 (Location of Regulated structures)

Column 1	Column 2	Column 3	Column 4 Levees only
Name of Regulated Structure[1]	**Latitude**[2] **(GDA 94)**	**Longitude**[2] **(GDA 94)**	**Unique Location ID**[3]
<XXX>	<XXX> <XXX> <XXX>	<XXX> <XXX> <XXX>	<XXX> <XXX> <XXX>
<XXX>	<XXX> <XXX> <XXX>	<XXX> <XXX> <XXX>	<XXX> <XXX> <XXX>

[1] The 'name of the regulated structure' should refer to the name for example, process residue facility and decant dam.

[2] A minimum of three control points is required to constrain the location of all activities associated with the regulated structure. Additional infrastructure which forms part of any regulated dam may include appurtenant works consisting of seepage collections systems, runoff diversion bunds, containment systems, pressure relief wells, decant and recycle water systems. Note that details on tailing discharge pipelines would be included in this table only if they have not been included in the design plan required in condition x10.

[3] This location reference is the reference for schedule D table 4 flood level and crest level.

(X 34) Each **regulated dam** named in column 1 of Schedule D—Table 2, must be consistent with the details noted in columns 2 through to and including 7 of Schedule D - Table 2, below, for that **dam**.

Schedule D—Table 2 (Basic Details of Regulated Dams)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Name of Regulated dam[1]	**Hazard Category**	**Surface area of dam at spillway (ha)**	**Max. volume of dam at spillway (m^3)**	**Max. depth of dam[2] at spillway (m)**	**Spillway Level (mAHD)**	**Use of dam[3]**
<XXX>	<XXX>	<XXX>	<XXX>	<XXX>	<XXX>	<XXX>
<XXX>	<XXX>	<XXX>	<XXX>	<XXX>	<XXX>	<XXX>

[1] The name of the regulated dam should refer to the name of the dam, for example, process residue facility and decant dam and should be the same name used in Schedule D Table 1 for the dam.

[2] For regulated dams which do not require a dam wall, input the maximum void depth, for example, where dams are formed by excavating below the land surface or backfilling a residual void.

[3] The use or purpose of the regulated dam should outline the designed function, for example, 'the permanent containment of tailings resulting from the extraction of nickel, cobalt and other metals at the XYZ refinery'.

(X 35) Each **regulated dam** named in column 1 of Schedule D – Table 1, must meet the **hydraulic performance** criteria noted in columns 2 through to and including 4 of Schedule D - Table 3, below, for that **dam**.

Schedule D—Table 3 (Hydraulic Performance of Regulated Dams)

Column 1	Column 2	Column 3	Column 4
Name of Regulated dam	**Spillway Capacity AEP**	**Design Storage Allowance AEP**	**Mandatory Reporting Level AEP**
<XXX>	<XXX>	<XXX>	<XXX>
<XXX>	<XXX>	<XXX>	<XXX>

(X 36) Each **regulated levee** named in column 1 of Schedule D – Table 1, must be consistent with the details noted in columns 2 through to and including 6 of Schedule D - Table 4, below, for that **levee**.

Schedule D—Table 4 (Basic Details of Regulated Levees)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Name of Regulated Levee	Design AEP	Design Flood Level[1] (mAHD)	Minimum Levee Level[1] (mAHD)	Schedule D Table 1 Location ID[1]	Use of levee
<XXX>	<XXX>	<XXX>	<XXX>	<XXX>	<XXX>
<XXX>	<XXX>	<XXX>	<XXX>	<XXX>	<XXX>

[1] Design flood levels, and hence regulated levee levels, are expected to vary along the length of that levee. The location IDs listed (Column 5) must correspond with location IDs listed in Schedule D Table 1 and, together with Columns 3 and 4, define the minimum design level envelope for the longitudinal crest of the structure.

[Only insert the below model conditions into authorities for existing regulated dams that do not meet the requirements for basic details (Schedule D—Table 2) and hydraulic performance (Schedule D—Table 3), or if a levee (Schedule D—Table 4)]

Transitional arrangements

(X 37) Each **regulated structure** specified below must, within a period of three years (the transitional period) from [insert the date of the commencement of this condition], meet the performance requirements of conditions X34 and X35 or if a levee, condition X36:

a) [<XXX>]; and

b) [<XXX>].

(X 38) During the transitional period, each **regulated structure** specified in condition X37 must comply with either conditions X34 and X35 or if a levee, condition X36 of this **authority,** or the conditions set out in Schedule [<XXX>] of this **authority** which schedule expires at the end of the transitional period.

(X 39) **During the transitional period**, for each declared regulated structure listed in condition X##, either:

a) Certification must be provided, by a suitably qualified and experienced person, in the form set out in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams:*

i) that the declared regulated structure is suitable for use as a regulated structure and can be transitioned to meet with either conditions X34 and X35 or if a levee, condition X36 of this **authority**; and

ii) of any design plans for the modification of the declared regulated structure where modification is required to meet with either conditions X34 and X35 or if a levee, condition X36 of this **authority**; or

b) The declared regulated structure must be decommissioned.

6. Explanatory notes—regulated dams that are dams associated with a resource activity – non mining

The below model conditions are only intended to apply to regulated dams that are dams associated with a resource activity - non mining activity.

The objective of these model conditions is to ensure the chances of any leaching, seepage or unintended release of Coal Seam Gas water, saline effluent or brine is minimised. The conditions also provide for a register of regulated dams to be developed and maintained by the holder of the authority rather than have details specified in the authority itself.

[Only insert the following conditions in environmental authorities for regulated dams that are associated with a resource activity – non mining]

(X 40) **Aggregation dams** must:

a) have the floor and sides of the **dam** designed with material that will contain the wetting front and any entrained contaminants during the operational life of the **dam** and for any period of decommissioning and rehabilitation of the **dam**; and

b) have a system to detect any passage of the wetting front or entrained contaminants through either the floor or sides of the **dam**; and

(X 41) **Brine dams** must:

a) have the floor and sides of the **dam** designed with material that will contain the wetting front and any entrained contaminants during the operational life of the **dam** and for any period of decommissioning and rehabilitation of the **dam**; and

b) have a system to detect any passage of the wetting front or entrained contaminants through either the floor or sides of the **dam**; and

c) have a system for the collection and proper disposal of any contaminants that move beyond the bounds of the containment system; and

d) that brine dams must be constructed with the capacity to continuously remove any leachate from beneath the floor or beyond the sides of the **dam**

[Only insert the following conditions in environmental authorities for regulated dams that are associated with a resource activity - non mining activity]

Register of Regulated Dams

(X 42) A Register of Regulated Dams must be established and maintained by the **holder** and include, as a minimum, the following information for each **regulated dam**[8]:

a) Date of entry in the register;

b) Name of the **dam**, its purpose and intended/actual contents;

c) Location of the **dam** defined by coordinates (latitude and longitude in GDA94) within five metres at any point from the outside of the **dam** including its storage area;

d) The **hazard category** of the **dam** as **assessed** using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*;

e) Dates, names, and reference numbers of all document(s) lodged as part of a design plan for the **dam**;

f) Name and qualifications of the **suitably qualified and experienced person** who **certified** the design plan and 'as constructed' drawings;

g) For the **regulated dam**, other than in relation to any levees –

i) The **dimensions** (metres) and surface area (hectares) of the **dam** measured at the footprint of the **dam**;

ii) **Dam crest volume** (megalitres);

iii) Spillway crest level (metres AHD).

iv) Maximum operating level (metres AHD);

v) Storage rating table of stored volume versus level (metres AHD);

vi) **Design storage allowance** (megalitres) and associated level of the dam (metres AHD);

vii)**Mandatory reporting level** (metres AHD);

h) The design plan title and reference relevant to the **dam**;

i) The date **construction** was **certified** as compliant with the design plan;

j) The name and details of the **suitably qualified and experienced** person who **certified** that the constructed **dam** was compliant with the design plan;

k) Details of the composition and construction of any liner;

l) The system for the detection of any leakage through the floor and sides of the **dam**;

m) Dates when the regulated **dam** underwent an annual inspection for structural and operational adequacy, and to ascertain the available storage volume for 1 November of any year;

n) Dates when recommendations and actions arising from the annual inspection were provided to the administering authority;

o) Dam water quality as obtained from monitoring required under this **authority** as at 1 November of each year.

(X 43) The **holder** must provisionally enter the required information in the Register of Regulated Dams when a **design plan** for a **regulated dam** is submitted to the administering authority.

(X 44) The **holder** must make a final entry of the required information in the Register of Regulated Dams once compliance with condition (X14) has been achieved.

[8] Note: The regulated dam register in the approved departmental format is available for download at: <www.ehp.qld.gov.au/management/coal-seam-gas/csg-water.html>.

(X 45) The **holder** must ensure that the information contained in the Register of Regulated Dams is current and complete on any given day.

(X 46) All entries in the Register of Regulated Dams must be approved by the chief executive officer for the holder of this authority, or their delegate, as being accurate and correct.

(X 47) The **holder** must, at the same time as providing the annual return, supply to the administering authority a copy of the records contained in the Register of Regulated Dams, in the electronic format required by the administering authority.

[Only insert the following conditions in environmental authorities for regulated dams that are associated with a resource activity - non mining activity]

Repair requirements

(X 48) Where the **holder** detects any passage of the wetting front through the floor or sides of a **regulated dam** they must, as soon as practicable:

a) repair the regulated **dam** to rectify the detected passage of the wetting front or entrained contaminants through the floor or sides of the regulated **dam**; or

b) decommission and rehabilitate the regulated **dam**.

Definitions

Aggregation dam means a regulated dam that receives and contains coal seam gas water or coal seam gas concentrate. The primary purpose of the dam must not be to evaporate the water even though this will naturally occur.

Annual exceedance probability or AEP the probability that at least one event in excess of a particular magnitude will occur in any given year.

Assessed and assessment by a suitably qualified and experienced person in relation to a hazard assessment of a dam, means that a statutory declaration has been made by that person and, when taken together with any attached or appended documents referenced in that declaration, all of the following aspects are addressed and are sufficient to allow an independent audit of the assessment:

(a) exactly what has been assessed and the precise nature of that determination;

(b) the relevant legislative, regulatory and technical criteria on which the assessment has been based;

(c) the relevant data and facts on which the assessment has been based, the source of that material, and the efforts made to obtain all relevant data and facts; and

(d) the reasoning on which the assessment has been based using the relevant data and facts, and the relevant criteria.

Associated works in relation to a dam, means:

(a) operations of any kind and all things constructed, erected or installed for that dam; and

(b) any land used for those operations.

Authority means an environmental authority or a development approval.

Brine means saline water with a total dissolved solid concentration greater than 40,000 mg/L.

Brine dam means a regulated dam that is designed to receive, contain or evaporate brine.

Certification means assessment and approval must be undertaken by a suitably qualified and experienced person in relation to any assessment or documentation required by this manual, including design plans, ‘as constructed’ drawings and specifications, construction, operation or an annual report regarding regulated

structures, undertaken in accordance with the Board of Professional Engineers of Queensland Policy Certification by RPEQs (ID: 1.4 (2A)).

Certifying, **certify or certified** have a corresponding meaning as 'certification'.

Construction or constructed in relation to a dam includes building a new dam and modifying or lifting an existing dam, but does not include investigations and testing necessary for the purpose of preparing a design plan.

Coal seam gas water means groundwater that is necessarily or unavoidably brought to the surface in the process of coal seam gas exploration or production. Coal seam gas water typically contains significant concentrations of salts, has a high sodium adsorption ratio and may contain other contaminants that have the potential to cause environmental harm if released to land or **waters** through inappropriate management. Coal seam gas water is a waste, as defined under s. 13 of the *Environmental Protection Act 1994*.

Coal seam gas water concentrate means the concentrated saline water waste stream from a water treatment process that does not exceed a total dissolved solid concentration of 40 000 mg/L.

Coal seam gas evaporation dam is defined as a impoundment, enclosure or structure that is designed to be used to hold coal seam gas water for evaporation.

Dam means a land-based structure or a void that contains, diverts or controls flowable substances, and includes any substances that are thereby contained, diverted or controlled by that land-based structure or void and **associated works**. A dam does not mean a fabricated or manufactured tank or container, designed and constructed to an Australian Standard that deals with strength and structural integrity of that tank or container.

Dam crest volume means the volume of material (liquids and/or solids) that could be within the walls of a dam at any time when the upper level of that material is at the crest level of that dam. That is, the instantaneous maximum volume within the walls, without regard to flows entering or leaving (eg via spillway).

Design storage allowance or DSA means an available volume, estimated in accordance with the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* published by the administering authority, must be provided in a dam as at 1 November each year in order to prevent a discharge from that dam to an annual exceedance probability (AEP) specified in that manual.

Designer for the purposes of a regulated dam, means the certifier of the design plan for the regulated dam.

Development approval means a development approval under the *Integrated Planning Act 1997* or the *Sustainable Planning Act 2009* in relation to a matter that involves an environmentally relevant activity under the *Environmental Protection Act 1994*.

Emergency action plan means documentation forming part of the operational plan held by the holder or a nominated responsible officer, that identifies emergency conditions that sets out procedures and actions that will be followed and taken by the dam owner and operating personnel in the event of an emergency. The actions are to minimise the risk and consequences of failure, and ensure timely warning to downstream communities and the implementation of protection measures. The plan must require dam owners to annually update contact details that are part of the plan, and to comprehensively review the plan at least every five years.

[Only insert the following definitions in authorities for regulated dams that are associated with a resource activity - non mining activity]

Existing aggregation dam means <INSERT names and locations of aggregation dams that are constructed and/or whose construction had substantially commenced on the approval date of this environmental authority>.

Existing brine dam means <INSERT names and locations of brine dams that are constructed and/or whose construction had substantially commenced on the approval date of this environmental authority>.

Existing coal seam gas evaporation dam means <INSERT names and locations of existing dams containing coal seam gas water for the primary purpose of evaporation that are constructed and/or whose construction had substantially commenced on the approval date of this environmental authority>.

Flowable substance means matter or a mixture of materials which can flow under any conditions potentially affecting that substance. Constituents of a flowable substance can include water, other liquids fluids or solids, or a mixture that includes water and any other liquids fluids or solids either in solution or suspension.

Hazard in relation to a dam as defined, means the potential for environmental harm resulting from the collapse or failure of the dam to perform its primary purpose of containing, diverting or controlling flowable substances.

Hazard category means a category, either low, significant or high, into which a dam is assessed as a result of the application of tables and other criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.

Holder means:

(a) where this document is an environmental authority, any person who is the holder of, or is acting under, that environmental authority; or

(b) where this document is a development approval, any person who is the registered operator for that development approval.

Hydraulic performance means the capacity of a regulated dam to contain or safely pass flowable substances based on a probability (AEP) of performance failure specified for the relevant hazard category in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*.

Levee means an embankment that only provides for the containment and diversion of stormwater or flood flows from a contributing catchment, or containment and diversion of flowable materials resulting from releases from other works, during the progress of those stormwater or flood flows or those releases; and does not store any significant volume of **water** or **flowable substances** at any other times.

Low hazard dam means any dam that is not a high or significant hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)*; and

Mandatory reporting level or MRL means a warning and reporting level determined in accordance with the criteria in the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* published by the administering authority.

Modification or modifying (see definition of 'construction')

Operational plan for a dam means a document that amongst other things sets out procedures and criteria to be used for operating a dam during a particular time period. The operational plan as defined herein may form part of a plan of operations or plan otherwise required in legislation.

Regulated dam means any dam in the significant or high hazard category as assessed using the *Manual for Assessing Hazard Categories and Hydraulic Performance of Dams (EM635)* published by the administering authority.

Structure means dam or levee.

Spillway means a weir, channel, conduit, tunnel, gate or other structure designed to permit discharges form the dam, normally under flood conditions or in anticipation of flood conditions.

Suitably qualified and experienced person in relation to regulated structures means a person who is a Registered Professional Engineer of Queensland (RPEQ) under the provisions of the *Professional Engineers Act 2002*, and has demonstrated competency and relevant experience:

- for regulated dams, an RPEQ who is a civil engineer with the required qualifications in dam safety and dam design.
- for regulated levees, an RPEQ who is a civil engineer with the required qualifications in the design of flood protection embankments.

Note: It is permissible that a suitably qualified and experienced person obtain subsidiary certification from an RPEQ who has demonstrated competence and relevant experience in either geomechanics, hydraulic design or engineering hydrology.

System design plan means a plan that manages an integrated containment system that shares the required DSA volume across the integrated containment system.

Void means any constructed, open excavation in the ground.

Watercourse has the same meaning given in the *Water Act 2000*.

Waters includes all or any part of a river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water in natural or artificial watercourses, bed and banks of a watercourse, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater.

Water year means the 12-month period from 1 July to 30 June.

Wet season means the time of year, covering one or more months, when most of the average annual rainfall in a region occurs. For the purposes of DSA determination this time of year is deemed to extend from 1 November in one year to 31 May in the following year inclusive.