

NSW Dams Safety Committee

Compliance & Enforcement Policy

March 2015

Introduction

A prime objective of the NSW Dams Safety Committee (DSC) is to ensure that all prescribed (i.e. regulated) dams in NSW are designed, constructed and operated to a standard where risks to the community from uncontrolled loss of storage are tolerably low. The level of risk is determined by the likelihood and consequences of dam failure.

This Compliance & Enforcement Policy provides the DSC's framework for its approach, method, and priorities in ensuring compliance with its legislation and in carrying out its compliance & enforcement powers and functions.

The policy identifies the DSC's main enforcement powers, how the utilisation of those powers may vary depending on the level of non-compliance, and how and when they will be used.

The benefits of this policy include:

- Improved compliance outcomes
- Reduced regulatory cost burden
- Better alignment of strategic and operational planning
- More effective engagement with stakeholders
- Improved internal accountabilities for outcomes
- Improved productivity.

Background on DSC

In the 1970s, international concern over several major overseas dam failures led to the Australian National Committee on Large Dams (ANCOLD) raising the need for consolidation of national recommendations for the safety of large dams and thus also the advisability of dam safety regulation within Australia.

There was also significant consideration in that decade by the NSW Government as to the extent of mining that should be permitted adjacent to Sydney's major water storages. This included various enquiries (particularly the 1977 Reynolds Enquiry) into coal mining under or in the vicinity of the stored waters of five dams owned by Sydney's then Metropolitan Water, Sewerage and Drainage Board. The Reynolds Enquiry sought amongst other things to establish guidelines for regulating the competing demands of mining and the safety of water storages.

Against this background, the NSW Government constituted the NSW Dams Safety Committee as an independent statutory body under the NSW *Dams Safety Act 1978*.

The mission of the DSC is to ensure the safety of prescribed dams, which are listed annually by gazetted schedule. The DSC "prescribes" those dams which if failed have a potential to threaten downstream life, cause extensive property or environmental damage, or have a severe impact on the public welfare. One of the main objectives adopted by the DSC is to ensure that risks to the security of prescribed dams and their storages are tolerably low. This includes the

risks to dams from mining activity, while allowing for optimization of mining resource recovery within that limit condition.

To achieve its mission, the DSC has set a number of objectives which are defined in its DSC's latest Strategic Plan and are aligned with the requirements of the *Dams Safety Act 1978* which currently constitutes the DSC and defines its functions. At 30 June 2014 there were 378 prescribed dams, with ownership broadly grouped as shown in the table below.

Prescribed Dam Ownership Numbers (Groupings)	Prescribed Dams (at 30 June 2014)
<ul style="list-style-type: none"> • Government owned Water Corporations, including State Water Corporation and Sydney Catchment Authority (both part of Water NSW from 1 Jan 2015), Sydney Water, Hunter Water Corporation 	59
<ul style="list-style-type: none"> • Snowy Hydro Ltd (part Government owned) and other Power Generating Companies 	35
<ul style="list-style-type: none"> • Local Government (Councils & Water Utilities) 	146
<ul style="list-style-type: none"> • Other NSW Government Authorities 	8
<ul style="list-style-type: none"> • Mining Companies (Water & Tailings Dams) 	99
<ul style="list-style-type: none"> • Private Owners 	27
<ul style="list-style-type: none"> • Others 	4
Total No. of Prescribed Dams	378

The DSC reports directly to the Minister for Natural Resources, Lands and Water. The Committee comprises part-time members, currently numbering seven (7) with two (2) other vacant positions. All Committee members are appointed by the Minister following Cabinet approval of the nominations. As required under the *Dams Safety Act 1978*, all but one of the members are nominated for their experience in dams engineering; and one other member is nominated typically for experience in mining.

The DSC has negligible assets or property. It uses permanent staff from NSW Trade and Investment (effectively "on loan" to the DSC) and hires contract staff as required. There are currently 11 permanent staff, comprising 10 full-time equivalent positions.

In interpreting its legislative charter, the DSC has adopted as its mission "to ensure the safety of dams". Relevant to this mission statement, the objectives of the DSC are to:

- Protect the safety, welfare and interests of the community from dam failure by formulating measures to ensure that risks from prescribed dams remain tolerable over the long-term, that the risks are regularly reviewed, and further reduced if reasonably practicable;
- Maintain an ongoing surveillance of prescribed dams and their safety throughout each dam's life, including amongst other things:
 - to obtain information and keep records on dams
 - to examine and investigate the location, design, construction, reconstruction, extension, modification, operation and maintenance of prescribed dams;
- Keep up-to-date on all relevant aspects of dam safety management;
- Protect the security of dams and their stored waters from the effects of mining or other activities;
- Inspire confidence in our stakeholders and be recognised for our technical excellence;
- Promote dam safety awareness through the direction, education and training of stakeholders.

In 2013 the Government commenced a review of NSW dams safety in general. In late 2013 the Government publically released the commissioned KPMG review report on the *Dams Safety Act 1978* and the DSC, as well as the associated *NSW Dams Safety Review Community*

Consultation Paper. As part of good commitment to transparency, the ensuing 33 public response submissions on those documents were later made available on the Department of Primary Industries (DPI) website. The review is ongoing, as the government considers carefully the submissions made and a range of other significant factors, including various organisational structure changes and initiatives recently embarked upon and/or currently taking shape within the state's water industry. The DSC is continuing in close partnership with the NSW Government as the current review of the dams safety regulatory framework progresses and ensuing changes to the *Dams Safety Act* are likely introduced over the course of 2015 and 2016. It is assumed that the changes will allow for further developmental accordance with the goals of the Government's NSW 2021 Strategy.

Principles of Compliance & Enforcement

The DSC compliance and enforcement policies are aimed at ensuring that:

- Risks to the community from any uncontrolled loss of storage water from prescribed dams are tolerable;
- DSC's safety requirements for prescribed dams are met, that risks are properly managed, are regularly reviewed, and are further reduced to a level as low as reasonably practicable; and
- Risks to prescribed dams and their stored waters from the effects of mining are properly managed and tolerable.

The following principles underpin the DSC's compliance and enforcement policies:

Targeted:	The DSC will focus on the most important issues and problems, especially its highest risk dams list, to achieve the best outcomes and endeavour to prevent the most serious risks or harm.
Proportionate:	Regulatory measures and responses will be proportional to the risks posed and the seriousness of the non-compliance.
Transparent:	The non-compliance reasons for enforcement of a DSC policy on any particular dam will be transmitted to the dam owner. Included in the DSC's Annual Report will be any cases of serious non-compliance during the year and the list of highest risk dams at the end of the financial year.
Consistent:	The DSC's actions will be consistent with the legislation and within its powers. Compliance and enforcement outcomes will be consistent and predictable for similar circumstances.
Accountable:	The DSC will document and stand by its regulatory decisions and actions. The DSC will also conduct itself in accordance with <i>Behaving Ethically: a guide for NSW government sector employees</i> , and any other relevant policies and guidance and Codes of Conduct.
Inclusive:	We will work with dam owners and, where possible, other relevant agencies and stakeholders to ensure the best compliance outcomes.
Effective:	The DSC will consider all alleged non-compliances to determine the necessary action to minimise impact and maximise deterrence.

Legislation

The DSC has statutory functions under the *Dams Safety Act 1978* and *Mining Act 1992*. The *Dams Safety Act 1978* constitutes the DSC and defines its main functions. The DSC is also empowered with various enabling functions under the *Mining Act 1992* in its role of regulating mining under stored waters.

To achieve its roles, the DSC follows a goals-based approach (i.e. effectively an outcomes based approach) to dam safety regulation. With such regulation, the means of achieving compliance is not specified prescriptively but goals are set that allow alternatives for achieving compliance. The responsibility for dam safety lies principally with the dam owner while the DSC has a challenge/audit role. The dams of interest to the DSC are approximately 380 prescribed dams (378 as at 30 June 2014) whose failure would threaten lives or have significant economic impacts or cause serious environmental damage.

Regarding mining, the legislation creates a system where the risks to dams from mining are independently assessed from an engineering perspective. Usually this is done under the *Mining Act*, by the DSC advising the responsible Minister, but it may also be done directly by the DSC under the *Dams Safety Act*. The DSC may use its powers to direct actions be undertaken to ensure that risks to prescribed dams and their reservoirs from mining are tolerable in terms of the community's safety interests.

The most common regulatory mechanism under the *Mining Act* involves declaration of Notification Areas (NAs) around selected prescribed dams. Mining within these areas requires Ministerial approval, acting on advice from the DSC. Through advice to the responsible Minister, the DSC plays a role in determining the type and extent of mining (predominantly coal) allowed near prescribed dams and their storages. The Committee has the ability to arrange for amendments to existing mining leases under Section 80 of the *Mining Act* by making a recommendation to the Minister administering that Act.

The DSC currently has no charter to be concerned with strategic water resource management nor the purposes of dams per se nor the financial affairs of dam owners. Water quality is not included in the dam safety regulation context.

DSC's Regulatory Approach

Compliance and Enforcement Strategies

The DSC adopts a monitoring role to ensure that the owners of prescribed dams, and other relevant organisations (e.g. mining companies) undertaking significant activities near their storages, conform to appropriate safety benchmarks throughout each dam's life.

Compliance is monitored through a number of proactive and responsive methods including:

- Dam inspections
- Review of reports including:
 - Investigations – e.g. hydrology, geotechnical, stability analyses
 - Dambreak assessments – e.g. breach methodologies, hydraulic analyses, population at risk (PAR), potential loss of life (PLL) and consequence studies
 - Dam designs – concept (i.e. preliminary design) and detailed, including associated key plans and drawings
 - Safety reviews
 - Risk assessments (RAs) – detailed individual dam RAs and dam portfolio RAs
 - Surveillance Reports – i.e. 5-yearly comprehensive reports
 - Dam Safety Emergency Plans (DSEPs).
- Check-offs of independent peer reviews, as required for High and Extreme Consequence Category dams for the following:
 - Hydrology studies
 - Dam designs (concept and detailed)
 - Safety reviews
 - Risk assessments.
- Analysis of information and data – particularly of that supplied by mining companies arising from the conditions on them for mining within gazetted Notification Areas.
- Maintaining and refining extensive databases on documents and dam safety management systems and records pertaining to dams and their owners, including

reports, other documents and correspondence. In these databases are included summary statements and derived from them are statistics, adapted information and generated data on due or overdue reports from dam owners and other stakeholders.

Enforcement strategies include Committee decisions made through its regular meetings with reference to DSC's general requirements (in the *Dams Safety Act*) and expounded requirements (in the DSC's Guidance Sheets) and the DSC's powers as laid out in the *Dams Safety Act* (including particularly Sections 15 and 18 among other aspects).

The DSC works with the following agencies and stakeholders in the quest for compliance:

- Department of Trade and Investment, Regional Infrastructure and Services (NSW Trade & Investment), including:
 - Department of Primary Industries (DPI), particularly the NSW Office of Water
 - Resources and Energy
- Department of Planning and Environment
- State Emergency Service (SES)

Risk-based Approach to Compliance

From 2000 onwards the DSC progressively developed a "Risk Management Policy Framework for Dam Safety". Following the DSC's advocacy of it, in August 2006 the NSW Government endorsed this risk management policy framework. This significant regulatory framework policy was then progressively implemented by the DSC (see Guidance Sheet *DSC1B Background to DSC Risk Policy Context* for details). It allows owners of prescribed dams to formally adopt risk assessment and management approaches. The policy framework is outlined and shown in *DSC1B* through the use of high level generic principles (shaded) and accompanying notes, tables and figures that amplify the principles or indicate their application.

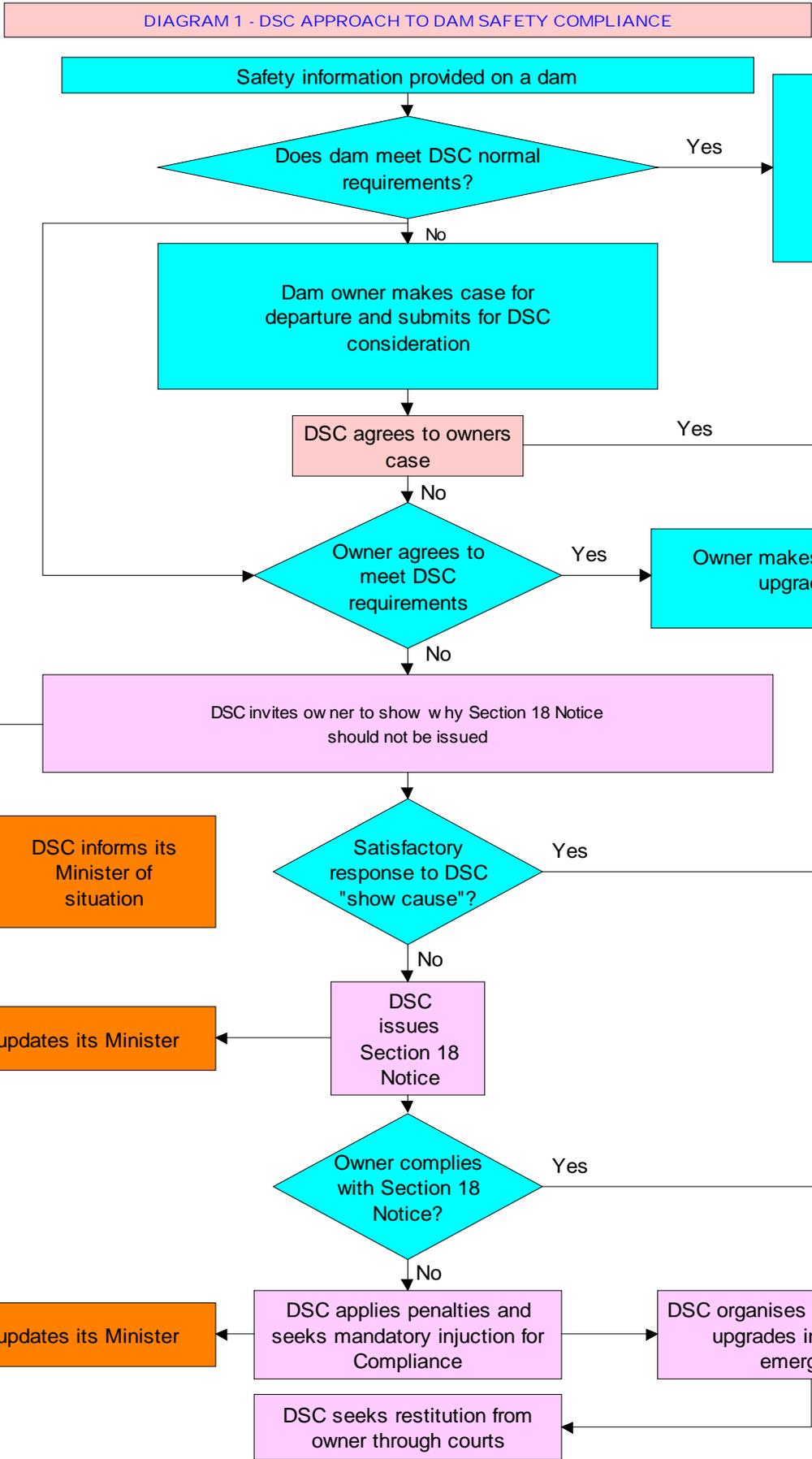
The DSC has effectively completed incorporating the main principles of its risk based policy framework into its Guidance Sheets (which serve to outline the DSC's requirements). Stakeholder consultation will continue. The DSC will continue to engage with other NSW safety, environmental and economic regulators to ensure that its Guidance Sheets fit in a consistent regulatory approach. Guidance Sheets are progressively updated as the need arises, subject firstly to a notification and comment period on the DSC's website prior to authorized amendment.

The DSC considers the following factors, at a minimum, when it assesses compliance risk:

- Compliance history of the dam owner, including:
 - Quality and timeliness of required documentation
 - Dam condition and maintenance history
 - Degree of reactivity, timeliness and success in arranging implementation of any required safety improvement or upgrading works.
- Experience and suitability of the dam owner's specialist technical advisers or consultants.
- Whether a dam's safety review or risk assessment has been independently peer reviewed (as is required for High and Extreme Consequence Category dams) and how suitable that peer review process has been.
- The reasonableness of any specific risk assessment case submitted by a dam owner.

DSC's Decision Making Process for Enforcement

If the DSC considers that a prescribed dam is unsafe, or may become unsafe, it may give notice, under Section 18 of the *Dams Safety Act 1978*, requiring the dam owner to take such actions as are necessary to ensure the safety of the dam (see Diagram 1 of Guidance Sheet *DSC1A* – i.e. the compliance flowchart for the process, as included on the following page).



Given that the safety status of a dam is affected by many variables (e.g., level of hazard conditions and loadings, changes in downstream development, new assessment methods and criteria, etc) the DSC will not “sign-off” on a dam’s safety but will judge whether a dam meets current safety criteria. The DSC’s decision making process for enforcement involves consideration of various aspects, the key ones including the following:

- The assessed level of risk for a particular prescribed dam (or retarding/detention basin) using:
 - Probabilities of dam failure (from detailed risk assessments or other reasonable estimates)
 - Main assessed or otherwise suitable estimated consequences, principally threat to life.
- Severity of non-compliance – i.e. including consideration of the following factors:
 - Whether and how long a dam has been on the highest risk list
 - The degree of shortfall in a dam’s key characteristics (e.g. flood capacity or seismic handling capability) against safety standards or other associated requirements – i.e. how “unsafe” a dam might be.
 - The likely complexity needed in investigating and determining an effective risk reduction solution
 - The extent of lack of action and/or obstructive behaviour by a dam owner in undertaking an appropriate risk management and reduction process.
- The following principles for dams with risk positions above the DSC’s Limit of Tolerability (LoT) – i.e. those which are on the highest risk dams list:
 - Whether an owner with a single dam in this list is actively seeking to lower the risk below the LoT in a timeframe as soon as reasonably practicable (ASARP) – as should be the aim
 - Whether an owner with multiple dams in this list is actively seeking to lower the risk below the LoT for at least the highest risk dam in the portfolio in an ASARP manner; and then staging the risk reduction for the remaining other dams in descending order of existing risk (based on an acceptable portfolio risk assessment) in an agreed timeframe – as allowable and as should also be the aims.
- For dams with significant risk but below the LoT, whether in an acceptable medium term timeframe the owner has undertaken further risk reduction to meet the DSC’s standards based requirements or, if using a risk assessment approach, the owner alternatively has proved to the DSC’s satisfaction that the risk position is as low as reasonably practicable (ALARP) – either of which as should be the aim in principle.

Based on the outcome of the assessment, the DSC will make a determination of the appropriate level, if any, of further investigation or response and/or enforcement action.

DSC’s Risk Tolerance

Any dam that has its risk position above the LoT as outlined and charted in the relevant DSC Guidance Sheets, (i.e. the societal risks are intolerable by definition) will lead to proactive action from the DSC. The DSC will firstly liaise and work with the dam owner to ensure the owner develops an appropriate risk reduction program in an acceptable short term time frame. If an agreed program is put in place, the DSC will then monitor progress of the program and review any required staged documentation and other requirements – e.g. investigation/design reports, construction dam safety emergency plan (DSEP), peer review sign-off, construction report, etc. If an acceptable program is not put in place, or an agreed program falls substantially behind schedule, then the DSC’s risk tolerance will decrease and consequently the extent of the DSC’s

response and enforcement action will increase according to the degree of the following conditions and dam owner or relevant stakeholder behaviours:

- Severity of non-compliance (see the previous sub-section, DSC’s Decision Making Process for Enforcement)
- Excessive inaction and/or lack of effective program management
- Stalling, including claims of inadequate direct funding or preferences on funds for other activities (noting that the DSC has no charter to concern itself with the financial or business affairs of dam owners)
- Other obstructive behaviours.

For dams that have their risk positions below the LoT, the DSC’s risk tolerance will increase the further the risk position is below the LoT. Where a dam’s risk position is at least 2 orders of magnitude below the LoT, then the DSC has defined the risks as negligible and the dam is considered “safe for the time being”. Where a dam’s risk position is below the LoT and it either meets the DSC’s standards based requirements or its risk position is proven to be ALARP using a suitable risk assessment process, then the dam is also considered “safe for the time being”.

For dams that have their risk positions below the LoT but not in the negligible risk zone or do not meet the DSC’s standards based requirements or are not proven to be ALARP when using a risk assessment basis, then the DSC’s risk tolerance will decrease and consequently the extent of the DSC’s response and enforcement action will increase according to the degree of the following:

- How close to the LoT a dam’s risk position lies
- Excessive inaction and/or lack of effective program management with respect to achieving acceptable risk reduction
- Stalling or other obstructive behaviours.

Note however, that for dams below the LoT but still requiring risk reduction then the overall program schedule allowed for achieving acceptable risk reduction is considerably longer in general than for dams above the LoT.

Other Aspects of DSC’s Approach

The DSC liaises and works closely with dam owners and other stakeholders to help ensure an adequate dam safety management programs is in place over the effective life cycle of any prescribed dam – including any periodic upgrades or risk reduction measures that might be determined as necessary.

Sometimes however, sanctions need to be applied where problems or other unacceptable issues arise in a dam safety program. Depending on the nature and extent of the assessed contravention of the DSC’s requirements, the DSC takes an escalating approach to sanctions so as to help achieve an appropriate outcome within a reasonable timeframe. This ranges from a warning to a “Show Cause” notification (applicable under Section 18 of the Act) to an actual Notice under the relevant Section of the *Dams Safety Act*.

Through its extensive database, the DSC keeps track of the scheduled dates for delivery of the required dam safety program documentation for prescribed dams. For cases where documentation is excessively behind schedule or otherwise not up to date, the DSC can and does act by firstly issuing warnings and then secondly (if no intervening rectification) Notices under Section 15 *Keeping and furnishing information* of the *Dams Safety Act*. This typically applies to long overdue surveillance reports, critically important design reports or safety reviews and also considerably out of date DSEPs.

Section 18 *Giving notice to ensure safety of prescribed dams* of the *Dams Safety Act* applies where it appears to the DSC “that a prescribed dam is unsafe or is in danger of being unsafe”. A Notice issued in writing under Section 18 requires “the owner of a prescribed dam to do such things as are specified or prescribed in the notice as may be reasonably necessary to ensure the safety of the prescribed dam”. Historically to date 4 (four) Section 18 Notices have been issued under the *Dams Safety Act*, although a greater number of the prior warnings and “Show Cause”

notifications have been issued. Of the actual 4 Section 18 Notices, none have led to the necessity for the associated fine to be paid; but rather all cases have resulted instead in the confronted owners of these unsafe dams undertaking remedial actions and works to lower the risks to acceptable levels.

The status and outline of any current Section 15 Notices or Section 18 “Show Cause” notifications or actual Notices are listed in the DSC’s Annual Report.

Although never yet having had to be used, the DSC also has considerable powers under Sections 21 and 22 of the *Dams Safety Act* regarding states of emergency pertaining to a prescribed dam either liable to collapse or failure or having collapsed or failed in whole or part. Under these conditions, the DSC may act to prevent or mitigate the collapse or failure and later recover the costs from the dam owner or other party responsible for the collapse or failure.

Outcomes

Outcomes Sought To Be Achieved Through Regulation

The general outcomes the DSC wants to achieve through regulation include:

- Acceptable level of community safety by minimising the risks from the potential uncontrolled loss of storage from prescribed dams
- High level of awareness by dam owners, dam technical specialists and consultants, miners and other relevant stakeholders of the DSC’s risk regulatory framework, standards and other associated requirements
- Responsible level of compliance with laws and the DSC’s requirements
- Addressing of any non-compliances objectively and effectively
- Effective dam safety management programs are in place for all prescribed dams, including recognition of risks and, if necessary, any ensuing and acceptable risk reduction management.

With the developed detailed safety benchmarks and guidance that are encompassed within the DSC policy framework, the DSC feels that New South Wales is now one of the world leaders in dam safety management. Indeed, through the risk based regulatory approaches adopted by several Australian States (including NSW in particular) and the influence of ANCOLD and its Guidelines in this important subject, Australia is recognised internationally as at the strategic forefront of this modern dam safety management approach of incorporating a risk based framework. With its risk based approach to dam safety management, dam safety regulation in NSW compares very favourably with the best dam safety programs world-wide.

The DSC’s ultimate aim is that the risks from dams to the community and to the environment will be tolerably low for all prescribed dams.

Measured Outcomes

Dam safety management programs are in place for all prescribed dams, well established for most of the dams and will continue to be further improved. Almost all prescribed dams now have a tolerably low likelihood of failure but some need further risk reduction as soon as reasonably practicable and as applicable to their particular consequence categories.

A "safe" dam is one that does not have intolerable risks – i.e. does not lie above the DSC’s Limit of Tolerability (LoT) for societal risk and one that:

- Complies with the DSC's safety benchmarks, including standards based requirements – e.g. especially for flood capacity, seismic stability, surveillance and monitoring processes and frequency, etc; or
- Has its risks ALARP under risk based requirements.

The DSC places a heavy emphasis on working closely with dam owners towards reducing the number of dams in the highest risk dams list. To this end for example, the number has been reduced significantly from a recent high in mid 2012 of 27 down to 14 as at 30 June 2014. That

represents a reduction in that list number as a percentage of the total number of prescribed dams from about 7% to about 4%. The DSC will continue to liaise and work with the owners of the remaining current dams in that list to ensure that appropriate risk reduction programs are put and/or kept in place to further and steadily reduce the net number over the next few years.

The DSC also places considerable emphasis on achieving risk reduction for moderate risk dams (i.e. below but typically within about one order of magnitude of the LoT) which might still have a significant shortfall in standards based requirements and/or have not yet been satisfactorily shown to be ALARP by their owners if using a risk assessment approach.

During each year the DSC monitors performance indicators to gauge the achievement of its objectives and its effectiveness in compliance checking of the dam safety management programs of dam owners over time. These performance indicator ratings are included in tabular and charted figure forms in the DSC's Annual Report. Some of the indicators are quantitative and some are necessarily qualitative.

Accountability

Internal Decision Making

The Committee meets 8 times per year, typically about every 6 weeks, operating via the following Sub-committees that provide recommendations to the Committee for consideration and endorsement:

- The following two standing Sub-committees which also meet 8 times per year in the same cycle and prior to the DSC meetings:
 - Surveillance Sub-committee – i.e. dealing with dam surveillance reports, safety reviews, designs and other related technical issues; and
 - Mining Sub-committee – i.e. dealing with matters relating to mining near prescribed dams and their storages.
- Three ad-hoc advisory Sub-committees – Emergency Management, Hydrology and Policy – which meet as required.

The Executive Engineer is the secretary for the Committee meetings and is responsible for ensuring the permanent DSC staff members undertake the work required to carry out the policies, recommendations, other endorsements and associated routine work of and required by the Committee. To provide effective liaison between the Sub-committees and the Committee, the Executive Engineer is also a member of each of the Sub-committees. In addition the Executive Engineer provides an important role of main liaison with dam owner personnel and other principal stakeholders, with routine liaison delegated to the relevant DSC engineering / technical staff members. The engineering/scientific staff members have been hired for their substantial experience and knowledge in various aspects of dams engineering (especially dam safety and surveillance) and mining engineering.

In routine matters the Executive Engineer and two standing Sub-committees act for the DSC, while the DSC Executive (consisting of Chairman, Deputy Chairman and Executive Engineer) deals with urgent business or emergencies between Committee meetings. Policy initiatives originate at any level, but are developed by the Policy Sub-committee before submission for DSC endorsement.

The minutes of all Sub-Committee meetings and the main Committee meetings are recorded, with the latter provided to the Minister's office.

Quality Assurance and Controls

All Committee members are nominated to and appointed by the NSW Cabinet for their extensive experience and expertise in dams engineering and mining. The DSC Chairman is also specifically appointed by Cabinet.

The Committee is responsible for determining the number and compositions of its Sub-committees. All Sub-committees include at least two Committee members and the Executive Engineer; and each Sub-committee is chaired by a Committee member. The general composition of the Sub-committees is as follows:

- Surveillance Sub-Committee (SSC) – selected Committee members, Executive Engineer, DSC engineering staff members and selected external dams engineering experts
- Mining Sub-committee (MSC) – selected Committee members, Executive Engineer and DSC mining staff members
- Emergency Management Sub-committee (EMSC) – selected Committee members, Executive Engineer, a DSC engineering staff member and flood planning/management personnel from the State Emergency Service (SES)
- Hydrology Sub-committee (HSC) – selected Committee members, Executive Engineer and various very experienced external hydrologists (including from consulting firms, the Bureau of Meteorology and other organisations)
- Policy Sub-committee (PSC) – DSC Chairman, DSC Deputy Chairman, two other selected Committee members and Executive Engineer.

The DSC requires dam owners and mining companies to use experienced and competent dam engineering designers and other specialists (either in-house or consultants) to undertake the investigations, designs, studies, assessments and other work required to produce and submit the range of necessary documents. The DSC also requires independent peer reviews for designs, upgradings and safety reviews of all High and Extreme Consequence Category dams.

The DSC's engineering/technical staff members use their substantial experience and knowledge in their reviews of the key supplied documents to provide summary information and associated recommendation proposals to the standing Sub-committees for their consideration. These Sub-committees add value to the review process through wide-ranging additional experience and expertise in determining their ensuing recommendations on individual dams, projects and general policies for provision to the main Committee.

The final value addition to the quality control process involves the Committee review and endorsement (including any modifications considered necessary) of the recommendations from the Sub-committees – or occasionally directly from other sources. The DSC usually confines its review to assurance that major safety criteria and key investigation and design details are satisfied. However, the DSC may challenge dam owners or mining project companies on any investigation, study or design aspect that is of concern. The challenge may be at staff, Sub-Committee or Committee review level, depending on the nature of the particular aspect.

For proposed prescribed dams and modifications to existing dams, the DSC requires dam owners to provide concept and detailed design information for its review before construction. The DSC requires designers' involvement in the dam construction process, to approve design changes so that the "as-built" design is sound. DSC staff members also liaise with, and assist, the dam owners' personnel. Upon completion of construction, the DSC requires dam owners to submit work-as-executed drawings and a "construction completion certificate" (certifying designer's approval of changes) for the DSC's records. At a reasonable time after completion of construction the DSC requires dam owners to submit a construction report for future reference.

The DSC then requires surveillance reports summarising the behaviour of the dam since construction, to be submitted. The first report is to be submitted usually after first filling of the dam, which is a critical phase in dam safety, but no later than one year after construction. Thereafter, surveillance reports are required at not more than five-yearly intervals generally.

These surveillance reports provide information on the safety status of existing dams and are checked in a staged process by DSC staff, the Surveillance Sub-committee and then to the Committee for discussion and/or endorsement by the Committee – as outlined above. The surveillance reports enable the DSC to monitor whether dam owners are continuing with a responsible dam safety management approach at all stages during the lives of their dams. The

reporting extent varies, with comprehensive reporting required for Extreme Consequence Category dams; down to brief pro-forma reports for Low Consequence Category dams. This rationale is in keeping with a good risk management approach.

Other Issues

The DSC's approach to compliance and enforcement is likely to evolve further following the anticipated amendment to the *Dams Safety Act* sometime during the next year and hence expected to be effectively in place in the foreseeable future following an interim adjustment period.

More Information

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (March 2015). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of the NSW Department of Trade and Investment, Regional Infrastructure and Services or the user's independent advisor.