

DSC2B

June 2017

DOCUMENTATION AND INFORMATION FLOW OVER DAM LIFE CYCLE

Table of Contents

Item	Page
1. Introduction.....	2
2. DSC Internal Procedural Arrangements	2
3. Notes on Flow Chart.....	2
4. Information Flow during each Dam Project Phase.....	3
Flowchart – Information Flow over Dam Life Cycle	8

1. INTRODUCTION

The *normal requirements* of the NSW Dams Safety Committee (DSC) are set out in its guidance sheets with its principal guidance sheet, *DSC Background, Functions and Operations - DSC1A*, outlining the DSC's general operations and authority.

The DSC has a function to obtain information relevant to the safety of prescribed dams and its goal in this area is to ensure that dam owners provide substantive and timely information to the DSC so that it can audit the risk status of prescribed dams in NSW to achieve and/or maintain risks to community interests that are tolerable.

Accordingly, this Guidance Sheet is provided for the guidance and direction of dam owners, and their consultants, on the information (ie nature, extent and timing) the DSC requires to fulfil its dam safety role. The outlined flow of information for a typical dam project (see Section 4 and the flow chart of this sheet) provides an indication of what the DSC requires, when it is required, and the response to be expected from the DSC.

2. DSC INTERNAL PROCEDURAL ARRANGEMENTS

Information submitted by a dam owner is initially reviewed by DSC staff who prepare a summary report of key aspects. These reports are then considered by the DSC's Surveillance Sub-Committee which meets about one week prior to each full Committee meeting. The Sub-Committee prepares and provides a summary report with recommendations for consideration by the full Committee.

The full Committee determines the response that will be made to the dam owner. The response to the dam owner is arranged by DSC staff who also follow-up implementation by the dam owner of any required actions.

The full Committee meets every six weeks, on average (see DSC website for dates). In order to avoid delay to their projects, owners are advised to submit information sufficiently in advance to allow adequate time for the necessary DSC processing.

3. NOTES ON FLOW CHART

The DSC has standard data forms (eg D1, D2 etc) for the submission of information at specified stages of dam projects. Copies of these forms can be obtained by contacting the DSC's office or downloading from the DSC's website. Information is to be submitted as indicated in the following notes, and flow chart, accompanied by a transmittal letter signed by an authorized representative of the dam owner.

4. INFORMATION FLOW DURING EACH DAM PROJECT PHASE

4.1 Feasibility Investigation

The D1 form is intended to provide the first advice to the DSC of a proposal by a dam owner to construct, or modify, a dam. It provides basic dam information for the DSC's consideration and database, and for subsequent follow-up. In particular, information on the type, size, location and consequence category (ie failure consequences) of new dams is critical for the DSC's consideration of the need, or otherwise, to prescribe the dam.

The D1 form is to be submitted by dam owners as soon as there is a serious proposal to construct or modify a dam. However, in most circumstances, a dam will not be prescribed until a final decision (as defined under the *Environmental Planning and Assessment Act*) has been made to proceed with the work.

The exception is where the dam may be so located that the DSC will need to advise on the regulation of mining activity in the vicinity, in which case the dam site will be prescribed well ahead of construction.

If any details are uncertain at this stage the owner should indicate this on the form. Upon consideration of the details provided, the DSC will outline its requirements for the project including, for new dams, its decision on prescription.

4.2 Concept Design

The DSC requires dam owners to submit their concept designs for DSC consideration. The concept design will normally provide the DSC with details on such aspects as the location and type of dam, dam materials, design parameters, major dimensions and consequence category. Depending on the scale of the project, the submitted information could range from a comprehensive report, with peer review, for a large dam to an outline general arrangement, and information, for a small flood retarding basin. The information should convey to the DSC the salient details of the project and the consequences should it fail. Following consideration of information provided, the DSC will comment on the concept design and consequence category.

4.3 Environmental Assessment

The DSC is interested to ensure that its requirements are addressed in the environmental planning and assessment stage for dams, and the DSC can provide assistance/comments to stakeholders during these processes. Accordingly, the owner is to arrange submission of relevant statutory planning documentation to the DSC for consideration and comment.

4.4 Environmental Determination / Decision to Proceed

The DSC normally takes its first formal interest in a dam project when a final decision is made by the owner to proceed to construction following approvals by planning and environment authorities. At this stage, the DSC requires confirmation of the consequence category of the dam (refer DSC3A). In addition the DSC requires information on the design programme, summarised on its D2 Form, along with the curricula vitae (CVs) of the persons who it is proposed would take responsibility for each speciality in the detail design phase (eg hydrologist, geologist, dam designer etc). Following consideration of the information provided, the DSC will advise on its decisions and approval of the design team.

4.5 Detail Design

At the design stage, for both new dams and modifications to existing dams, the DSC has a regulatory role to ensure major detail design requirements (e.g., safety against piping, flood capacity, stability) are adequately covered. The DSC does not review the design in detail but relies on the knowledge, skill and diligence of the owner's design and review team. Accordingly, owners should submit relevant design details and also a dambreak study (for dams whose failure could endanger downstream lives – refer DSC2G), as they become available for the DSC's consideration.

In particular, the DSC requires submission of general layout drawings, specifications, design report and a completed D6 form outlining the hydrologic data for the project. All important design decisions are to be recorded in the Design Report.

The report shall include, as a minimum, the factual results of investigations, the interpretations made from those results, the assessed input values, the analysis methodologies used and the output values, and the justification of decisions. In addition, for extreme and high consequence category dams, a peer review of the design is required, along with the owner's comments and proposed actions as a result of the peer reviewer's comments (see DSC2D). After consideration of this information, the DSC will provide comments, and notify of areas requiring further consideration, before endorsing the design, in principle.

4.6 Construction Contract

Specifications for the construction, or modification of significant, or higher consequence category, dams are to require that a formal Construction Report, including work-as-executed drawings, be prepared on completion of the works.

Following the awarding of a construction contract, the D3 form is to be submitted to the DSC to provide advice of the parties involved in the construction phase and the construction program.

An Emergency Plan (including a risk assessment) should be prepared for the construction stage, where failure of the dam during construction could endanger downstream residents. This plan is to be forwarded to the DSC with the D3 form. Upon consideration of the details provided, the DSC will provide any comments and notify the owner of proposed inspections by DSC staff during construction of the dam.

4.7 Construction Phase

During construction, no significant changes are to be made to the design without the written endorsement of the design team. This requirement is not intended to discourage changes. On the contrary, where the revealed conditions or other circumstances dictate that the approved design is no longer appropriate, a change should be made. However, the DSC is concerned to see that any such change is considered and endorsed by the design team.

The relevant designer is to prepare a design variation report, recording the change and the reasons in support of it. Any proposed change that could have a significant effect on the safety of a dam (beneficial or otherwise) is to be immediately notified to the DSC along with the endorsement of the responsible designer. Such notification is to be made as early as possible, and in all cases before implementation of the change. The DSC will advise its views promptly..

4.8 Commissioning (End of Construction)

The D4 form, Construction Report, and Work-As-Executed Drawings (WAE) are required to be provided to the DSC with final details, including design variation reports, of dam construction for inclusion in the DSC's database. The accuracy of this information is critical for future safety reviews. A Construction Certificate (form D9) is also to be provided along with a Design Variation Report (where applicable). These documents are to provide details of the designer's input and oversight of the construction process as required by the DSC.

The DSC also requires submission of a Dam Safety Emergency Plan (DSEP - refer DSC2G) and information on the availability of an Operations and Maintenance Manual (refer DSC 2F) for the dam.

Upon consideration of the information provided, the DSC will normally provide comments and outline its ongoing requirements for the project.

4.9 First Filling

The DSC requires submission of a Surveillance Report upon first filling or one year after construction, whichever occurs first. The report is to be prepared in accordance with DSC2C. Upon consideration of the Report, the DSC will normally endorse the Report, provide comments and any requirements, and then monitor implementation of actions recommended in the Report.

4.10 Dam in Service

The DSC requires owners of Prescribed dams to have Comprehensive Surveillance inspections undertaken on their dams at five yearly intervals. The DSC requires submission of associated Surveillance Reports, along with Report recommendations program, within six months of the Comprehensive Surveillance inspections. Intermediate review reports (usually annually) are to be provided for mining and ash dams. Dam owners should commence works relating to the report's recommendations as soon as practicable after the Surveillance inspection. The Reports are to be prepared in accordance with the DSC's guidance sheet on *Surveillance Reports for Dams - DSC2C* and must include a report on the safety management system (SMS) for the dam (refer DSC2A and Form D12). Safety Reviews are also to be submitted to the DSC for consideration as required / recommended in Surveillance Reports or by DSC2D.

Upon consideration of the Surveillance Reports, the DSC will normally endorse the Report, provide comments and any requirements, and then monitor implementation of actions recommended in the Report.

The DSC shall also be notified of incidents that either affect, or have the potential to affect, dam safety (refer DSC2A) as well as the formal requirement for notification when a DSEP is implemented (refer DSC2G). These incidents may also lead to the DSC requesting a Safety Review.

Upon becoming aware that the safety of a dam or dams is deficient or uncertain, the owner is to provide a report detailing relevant aspects as soon as reasonably practicable. Thereafter reports are to be updated by 30 June each year until the DSC agrees that the safety of the dam or dams is reliably known and no safety deficiencies remain. The purpose of reporting is to enable the DSC to see that deficiencies or uncertainties are being addressed as soon as reasonably practicable and to keep the DSC apprised of changes in the program of activities.

Dam owners are to provide annual updates of their DSEP's to the DSC for maintenance of safety and security protocols (refer DSC3G).

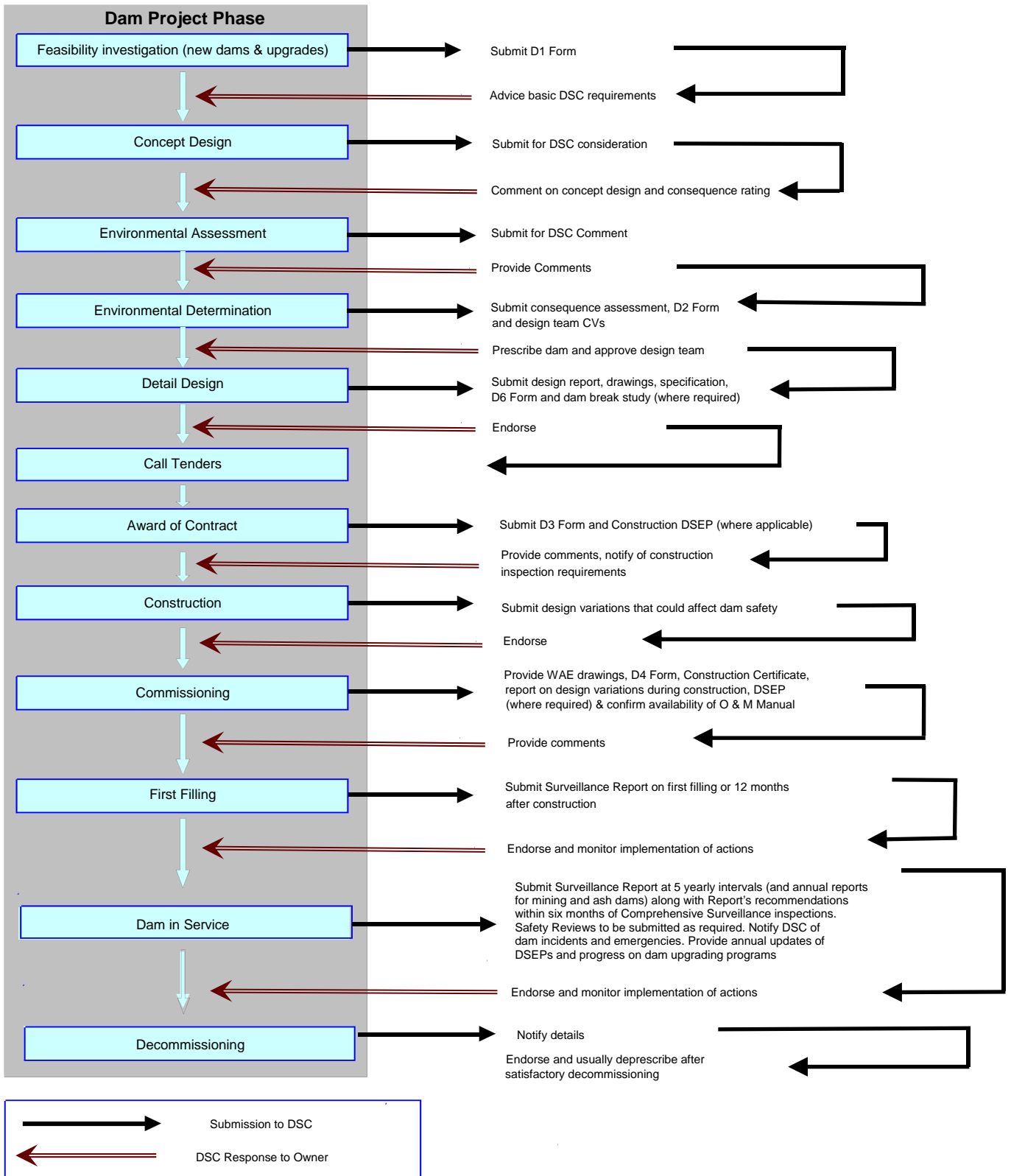
Dam owners are to have in place an effective long-term archiving system of all important documentation relating to the dam, including reports, geotechnical data, inspection sheets, monitoring results, operation and maintenance records and design and construction drawings.

4.11 Decommissioning

The DSC endeavours to ensure that decommissioning of a dam is undertaken in such a way as to remove any threat posed by the dam. The owner is required to submit details of any proposed decommissioning for the DSC's consideration and endorsement. Upon completion of

decommissioning the DSC will deprecise the dam and will then have no formal requirements in regard to the dam. If decommissioning does not result in removal of risks, or in risks that are tolerable, the DSC may leave the dam prescribed with continuing requirements on the dam owner.

Diagram 1 - Information Flow over Dam Life Cycle



Revision tracking sheet

Row #	Document & Version, Release or Build Number	Revision Date	Revision Description	Revision tracking notes
1			Few revisions of this document not tracked in this Document	
2		10/08/2017	Amended Page 7 of 9, flow chart, Page 9, Address change and Page 6 of 9, item 4.10	DSC Meeting June 2017
3				

This Guidance Sheet is one of a series available from our Website at:

<http://www.damsafety.nsw.gov.au>

In order to read this file you need a Portable Document Format (PDF) reader. A free PDF reader is available from <http://www.adobe.com/>

For any further information please contact:

NSW Dams Safety Committee

Level 11, Macquarie Tower
10 Valentine Avenue, Parramatta NSW 2150

☒ Locked Bag 5123, Parramatta NSW 2124

☎ (02) 9842 8073



dsc@damsafety.nsw.gov.au



ISSN 1039-821X