

3.	Project Description	3-1
3.1.	Project overview	3-1
3.2.	Fish passage	3-6
3.3.	Construction	3-7
3.4.	Operation	3-8
3.5.	Sustainability	3-8

3. PROJECT DESCRIPTION

This section provides an overview of the Project and provides additional clarification of the Project Description in the EIS in response submissions.

3.1. Project overview

The Emu Swamp dam site is located on the Severn River between Fletcher Road and Emu Swamp Road in the SDRC. The dam site is 5 km north of Ballandean and 15 km southwest of Stanthorpe.

The Emu Swamp Dam Project has four major components:

- Emu Swamp Dam;
- Urban Pipeline;
- Irrigation Pipeline;
- Stalling Lane Access; and
- Recreational Area.

3.1.1. *Emu Swamp Dam*

The proposed Emu Swamp Dam has a storage capacity of 10,500 ML. The Full Supply Level is 738 m AHD with an associated inundation area of 196 ha. Under the Border Rivers Resource Operations Plan (ROP) there is a water allocation for urban water supply of 1,500 ML. The proposed annual extraction volume for Emu Swamp Dam is 750 ML/yr. The proposed water allocation for the irrigation component is 1,740 ML/year as provided in the Water Resource (Border Rivers) Plan (WRP) and the ROP.





The proposed inundation area for Emu Swamp Dam is presented in Figure 3-1. A buffer area of approximately 200 m is proposed surrounding the dam to protect the water quality within the dam and also to maintain ecological connectivity within the region.

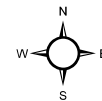
One submission suggested that the selection of the site for topographical reasons is flawed as the dam will be very shallow and the effects of sun and wind on evaporation levels of these shallow waters should be fully investigated.

The selection of the Emu Swamp Dam site was based on a number of factors, not only on topographical reasons. The performance of the dam in terms of reliability has been analysed with the Extended IQQM hydrology model developed by DSIT IA (refer to Section 7.5.1). These results show that the proposed Emu Swamp Dam will have high reliability, greater than 99% monthly and annual reliability, for the urban water supply. For urban water supply it is preferred if the reliability is more than 99%. The irrigation water supply annual reliability is 94%, significantly above comparable irrigation water supply schemes.



LEGEND

-  Watercourse
-  Cadastral Boundaries
-  Buffer Area
-  Full Supply Level (738m AHD)



0 0.15 0.3 0.45 0.6



Kilometres

Scale - 1:20,000

Projection: GDA94 MGA56

**EMU SWAMP DAM
SUPPLEMENTARY REPORT**

Figure 3-1

Inundation Area and Buffer Area



3.1.2. *Urban Pipeline*

The urban pipeline is 23.2 km long and is largely located in road reserves. The route follows Fletcher Road, the New England Highway, Wiskey Gully Road, Brunckhorst Avenue, Hale Haven Drive, Rifle Range Road, Eukey Road/Sugar Loaf Road, Kingston Road, across private property, Greenup Street/Diamondvale Road and across SDRC land to the Mt Marlay water treatment plant. The urban pipeline route is presented in Figure 3-2.

The urban pipeline along Fletcher Road and the New England Highway will be 375 mm diameter reducing to 250 mm diameter at the Wiskey Gully Road intersection.

The pipeline will be constructed from Ductile Iron Concrete Lined (DACL) pipes, with an internal cement lining and external cold applied bituminous paint. No cathodic protection will be required for the pipeline, which will have a design life of 50 years.

A concrete blockwork pump station for the urban pipeline will be located at Emu Swamp Dam. The location of the pump station is shown in Figure 3-2.

3.1.3. *Irrigation Pipeline*

The irrigation pipeline route largely follows road reserves although there are some short sections crossing private lands. The irrigation pipelines are supplied from the urban pipeline. The total length of irrigation pipeline (excluding the urban pipeline section) is 102 km.

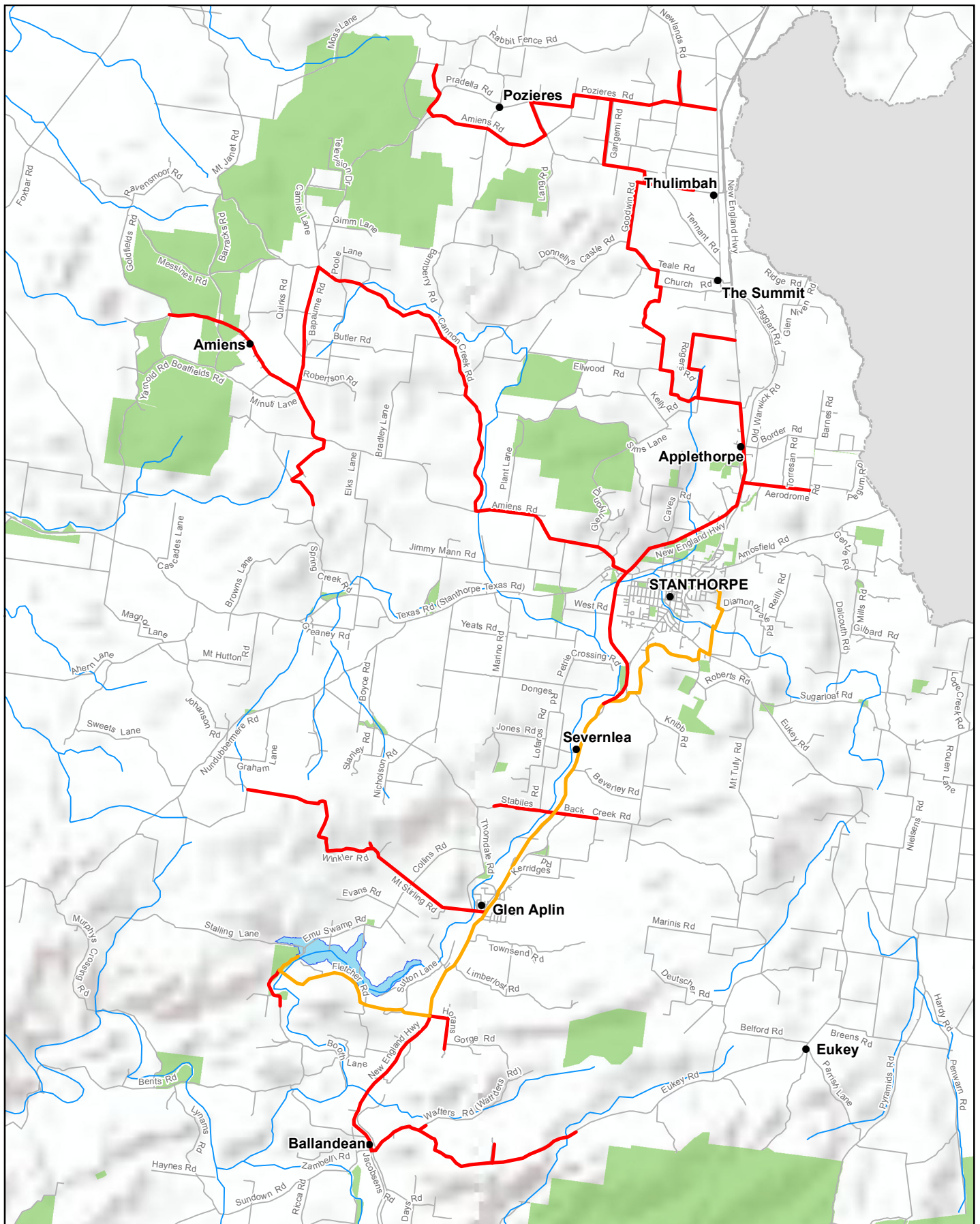
The Irrigation Pipeline route follows Eukey Road, the New England Highway, Horans Gorge Road, Mt Stirling Road, Winkler Road, Back Creek Road, Stables Road, Amiens Road, Cannon Creek Road, Bapaume Road, Swans Lane, Spring Creek Road, Barracks Road, Aerodrome Road, Applethorpe Road, Ellwood Road, Rogers Road, Church Road, Teale Road, Goodwin Road, Gangemi Road, Poziers Road, Newlands Road, Pfrunder Road, Pradella Road and Scotts Camp Road. The irrigation pipeline route is presented in Figure 3-2.

The irrigation pipeline will be constructed from flexible pipe materials like high-density polyethylene (HDPE) and polyvinyl chloride (PVC) and will range in size from 40 mm to 300 mm diameter. No cathodic protection will be required for the pipeline, which will have a design life of 50 years.

Small concrete blockwork pump stations will be constructed on Old Caves Road (near the New England Hwy intersection), on Church Road (near the Ellwood Road intersection) and on Cannon Creek Road (near the Barkers Lane intersection). The indicative locations for the pump stations on the irrigation pipeline are presented in Figure 3-2.

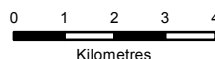
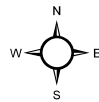
One submission requested information on how the pipeline route was selected. The pipeline route was developed by Stanthorpe Shire Council with reference to the Stanthorpe Community Reference Panel.

A submission has requested that an update of information on the current pipeline route. The pipeline route for the urban and irrigation pipelines have not changed since the EIS. The final alignment of the urban and irrigation pipelines will be confirmed during detailed design. SDRC are committed to minimising the potential environmental impacts associated with the construction of the urban and irrigation pipelines.



LEGEND

- Town Names
- Watercourse
- Road
- Urban Pipeline
- Irrigation Pipeline
- Park, Forests and Reserves
- New South Wales
- Full Supply Level (738m AHD)



Scale - 1:150,000

Projection: GDA94 MGA56

**EMU SWAMP DAM
SUPPLEMENTARY REPORT**

Figure 3-2

Urban and Irrigation Pipeline Routes



3.1.4. *Stalling Lane Access*

The inundation area for the proposed dam will result in the closure of Emu Swamp Road. As a result of this closure Stalling Lane will no longer be accessible from Emu Swamp Road. Stalling Lane currently provides access to two properties. To maintain this access, the Stalling Lane Access is proposed to be constructed from Fletcher Road to the western end of Stalling Lane. The location of the Stalling Lane Access is presented in Figure 3-1.

The alignment of the proposed Stalling Lane access will be modified as necessary to avoid areas of ecological value.

3.1.5. *Recreation Area*

Public recreation facilities will be provided on the left abutment of the dam after construction is completed. The expected facilities include:

- picnic area shelters with rainwater tanks, uncovered picnic tables, wood fired BBQs;
- playground equipment;
- toilet facilities with water tank, on-site septic tank treatment and pump out capability;
- boat ramp (5 m wide concrete extending to 3 m below FSL);
- gravel access from Fletcher Road; and
- gravel surfaced car park and boat trailer park.

3.2. Fish passage

Several submissions raised concerns about the proposed approach to fish passage including:

- the methodology for providing fish passage;
- no information provided regarding the decommissioning in relation to fish transfer; and
- concern for fish safety particularly over the spillway.

3.2.1. Fishway design

Based on the feedback received on the EIS the concept design for the proposed Emu Swamp Dam has been amended to include a lock-style fishway to provide fish movement both up- and downstream. Additional details on the proposed fishway are provided in Section 1.4.5

The fishway will be designed with the aim of maximising movement while reducing the potential for physical damage. Department of Environment and Heritage Protection (DEHP) turtle experts will be consulted early in this phase to ensure maximum potential benefits are identified and achieved.

3.2.2. Decommissioning

The promotion of fish passage during and after the decommissioning of the Project will be considered as part of any future decommissioning plan.

3.2.3. Fish safety

Safe downstream passage over the spillway will be provided through a cut-in, in the dam crest, up to 100 mm deep and up to 10 m wide. The cut-in may include a vertical slot, approximately 0.3–0.5 m wide and 0.2–0.4 m deep. The spillway below the cut-in and slot will be smoothed and will terminate in a plunge pool to minimise injury and mortality to fish passing over the spillway during increased flows. The dimensions of the plunge pool would ideally be as wide as the cut-in and extend approximately 3–4 m out from the toe of the dam wall. This arrangement is expected to provide safe downstream movement opportunities in spill events.

3.2.4. Improving fish movement at existing weirs

In addition to the fishway, SDRC propose to improve fish passage through the construction of a fishway at an existing weir on the Severn River.

It is proposed a survey will be undertaken of the existing privately owned weirs upstream and downstream of the proposed dam. The team of specialist ecologists in consultation with Queensland Fisheries will develop concept designs to improve fish passage at existing weirs. The team will engage with the weir owners and make the concept designs available. A demonstration fishway will be constructed at one of the existing weirs, with the owner's permission, as part of the Project.

3.3. Construction

3.3.1. *Clearing of vegetation within the water storage*

One submission suggested that in his professional experience that the clearing of the storage area be completed before the completion of the dam wall. As discussed in Section 3.2.1.1 of the EIS, clearing for the Emu Swamp Dam Project will be undertaken in phases including initial site establishment at the dam construction site and for the remainder of the inundation area later when the dam construction is well advanced.

The degree of clearing proposed to be undertaken in the water storage area is a balance between a number of factors including planning for fauna and flora requirements, facilitating selected fire wood collection, minimising potential impacts of rotting vegetation on water quality within the storage, minimising erosion, and ensuring safe recreational use of the facility. The EIS noted that trees would not be cleared within 2.0 m vertical of FSL.

This strategy of progressive clearing will be scheduled to balance these factors while minimising the risk of not completing clearing prior to inundation within the water storage area.

3.3.2. *Pipeline construction*

One submission requested that SDRC liaise with Department of Transport and Main Roads (DTMR) regarding their requirements for the depth and cover of the buried pipeline within the road reserve and regarding construction methods for road crossings. SDRC is committed to liaising with DTMR in regards to their requirements for construction of the pipeline within the State controlled road corridors and at road crossings. Furthermore, during detailed design of the pipeline, reference will be made to the DTMR Road Planning and Design Manual.

One submission noted that directional drilling is their preferred option where possible for pipeline construction at creek crossings to minimise disruption to flows and fish passage. Where trenching within the creek bed is employed, waterway barrier works approval under the *Fisheries Act 1994* is likely to be required.

SDRC are committed to minimising the potential environmental impacts associated with the construction of the urban and irrigation pipelines. The potential disturbance footprint will be reduced further in areas of ecological value through trenchless construction. Directional drilling will be employed as a construction methodology for some creek crossings. Where directional drilling, or other trenchless construction, is not a feasible construction methodology, trenching will be employed.

3.3.3. *Construction Schedule*

One submission requested further clarification of the Project schedule. The construction program was presented in Section 3.2.2 of the EIS with an estimated construction period of 16 months for the Project. The duration of the construction program for the dam has not changed since the EIS. The following activities need to be undertaken before construction can commence:

- obtain all environmental approvals and permits;
- undertake detailed engineering design;
- complete the land acquisition process and Native Title and cultural heritage requirements; and
- secure a biodiversity offset.

At this stage, it is anticipated construction would not commence until 2016.

3.4. Operation

3.4.1. Dam Operation

One submission requested to know who would be responsible for the operations of the dam.

SDRC propose to establish a propriety limited company with shares held by SDRC and the irrigators who hold a water allocation. The propriety limited company would be responsible for:

- the operation and maintenance of the dam;
- the operation and maintenance of the urban pipeline and irrigation pipeline; and
- environmental management.

3.4.2. Buffer Area Management

Several submissions raised concerns about the management of the buffer area of dam. Land within the buffer area would be acquired by the SDRC for the Project and be reserved for ecological purposes. Further information on the management of the buffer area is presented in Section 5.1.

3.5. Sustainability

One submission suggested that the Project should apply the precautionary approach to maintain and restore wildlife habitat lost in the construction of the dam and that the dam would contribute to the extinction of *Homo sapiens*. Section 3.5 of the EIS discussed the application of the National Strategy for Ecologically Sustainable Development (NSES), which includes the application of the precautionary principle. Chapters 9 and 10 of the EIS addressed the impacts of the dam on the terrestrial and aquatic ecology habitats and species. These assessments identified that the Project was not likely to lead to the extinction of species or habitats.

The Supplementary Report provides assessment of potential impacts, mitigation measures and offsets particularly for terrestrial ecology (Section 10) and aquatic ecology (Section 11).

One submission stated Section 3.5 of the EIS did not demonstrate an understanding of ESD principles. Section 3.5 of the EIS provided a brief summary of the project in relation to the key objectives of sustainability as outlined in the NSES. For detailed and comprehensive understanding of the impacts of the Project and how it performs in relation to the key objectives of the NSES, the EIS should be reviewed and considered as a whole.