Major Projects Overview
Queensland Major Contractors Association

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## Delivery of Major Projects

### Sunwater Project Life Cycle

- **Corporate Development group** – leads projects up to Business Case approval
- **Major Projects & Technical Services group** – leads projects through delivery and handover phase
- **Operations group** – operates and maintains assets

### Project Life Cycle Diagram

<table>
<thead>
<tr>
<th>Identification</th>
<th>Initiation</th>
<th>Evaluation</th>
<th>Definition</th>
<th>Execution</th>
<th>Closure</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the Business Opportunity, Assess alignment with Strategy, prioritise &amp; categorise.</td>
<td>Initiate project.</td>
<td>Assess feasibility, analyse options and develop recommendation. Establish project governance, complete Preliminary Cost</td>
<td>Development of Business Case, Supply Strategy, Cost / Benefits analysis, etc.</td>
<td>Execute Supply strategy and conduct procurement. Award Contracts, Build / develop / deliver project outputs.</td>
<td>Transition back to the operations / Business as Usual and formally close the project.</td>
<td>Review if project benefits were realised and if not - why.</td>
</tr>
</tbody>
</table>

### Decision Gates

1. **Strategic Assessment**: Opportunity Identification & Initiation Document
2. **Financial Investment Decision**: Preliminary Business Case (P50)
3. **Project Completion**: Detailed Business Case (P90)
4. **Project Closure**: Executed Project Management Plan (PMP)
5. **Benefits Realisation**: Project Closure Report

### Benefits Realisation

- **0**: Opportunity Identification & Initiation Document
- **1**: Preliminary Business Case (P50)
- **2**: Detailed Business Case (P90)
- **3**: Executed Project Management Plan (PMP)
- **4**: Project Closure Report
- **5**: Benefits Realisation Report
Delivery of Major Projects

Project Approval and Building Queensland Framework

- SunWater projects > $50M required to follow Building Queensland Framework for Business Cases
- As established under the Building Queensland Act, 2015
  - Provides independent expert advice to the Qld Gov for proposed infrastructure funding and approval
  - Proposals with estimated capital cost $50M to $100M prepared with guidance from Building Qld
  - Proposals with estimated capital cost > $100M led by Building Qld

- Supports detailed assessment of all components of the project through Business Case development

Building Queensland Framework shown to illustrate how and where the SunWater lifecycle maps to the Qld government
Sunwater Program – Major Projects

Major Projects by Program

• *Dam Improvement Program (DIP)*
  - To ensure Sunwater’s dams continue to function safely during extreme weather events; and
  - To comply with the latest dam safety guidelines and engineering standards
  - Works prioritized under Sunwater’s Portfolio Risk Assessment (program review across all dams)
  - $1.4 billion program underway for current and future projects, for completion by 2028
  - Two key projects currently in Business Case development – Paradise Dam, and Burdekin Falls Dam Improvement

• *Development Projects*
  - New or additional water supply – asset creation projects or upgrade of existing assets
  - Includes current projects approved (Business Case approved and funding commitment) – eg. Rookwood Weir
  - Business Cases currently being progressed – eg. Burdekin Falls Dam Raising

• *Other*
  - Efficiency projects to improve supply – including National Water Infrastructure Development Fund projects
  - Renewals Program (may trigger Major Projects)
Queensland dam owners are responsible for safety of dams under:

- Water Supply (Safety and Reliability) Act (Qld Govt)
- Guidelines for Failure Impact Assessment of Water Dams (Qld Govt)
- Guidelines on Acceptable Flood Capacity for Water Dams (Qld Govt)
- Queensland Dam Safety Management Guidelines (Qld Govt)
- Guidelines on Acceptable Flood Capacity for Dams (ANCOLD)
- Guidelines on Risk Assessment (ANCOLD)
- Guidelines on the Consequence Category for Dams (ANCOLD)
- Australian Rainfall and Runoff Guidelines (Commonwealth Govt)
Dam Improvement Program

Considerations

• Program of review against current safety Guidelines and Regulatory requirements. Inputs include:
  - Annual inspections, and 5-yearly comprehensive inspections;
  - Regular Comprehensive Risk Reviews (CRA);
  - 20-yearly Dam Safety Review (review of design basis);
  - Hydrology reviews (catchment rainfall and inflows);
  - Failure Impact Assessment (consequence assessment)

• Takes into consideration impacts on each dam & changes including:
  - Current asset condition, and performance post flood events;
  - Improved methods of estimating extreme rainfall & flood events;
  - Extent of development & population growth downstream;
  - Revised assessment and methods of downstream consequences
  - Revised Guidelines, industry standards, risk assessment methods, and engineering design;
  - Other information from various reviews (updated studies)
Dam Improvement Program

Portfolio Risk Assessment (PRA)

• Sunwater regularly reviews updated and new information for each dam, and assesses risks to identify the need for any proposed improvement works through Comprehensive Risk Assessments (CRAs).

• Due to changes over time – this can result in the need for dam enhancements greater in scope than what would be considered as part of Sunwater’s regular maintenance programs.

• Risks and proposed improvements for each dam then assessed at a portfolio level – the Portfolio Risk Assessment (PRA) – to prioritise projects and plan a staged program of work (Dam Improvement Program).

• Projects scoped and scheduled to ensure earliest reasonable risk retirement.

• The 2018 (Draft) PRA currently identifies:
  − 18 Dam Improvement projects totaling approximately $1.4 billion, for completion by 2028.
  − Approximately 80% of the total cost is associated with three (3) dam improvement projects –
    • Fairbairn Dam (currently in construction phase),
    • Paradise Dam (priority ranking No. 3 – in Detail Business Case development phase),
    • Burdekin Falls Dam (priority ranking No. 4 – finalising Preliminary Business Case development phase).
## Dam Improvement Program

### Portfolio Risk Assessment (PRA)

- Current prioritised projects, from 2018 PRA (Draft)

<table>
<thead>
<tr>
<th>DIP Project</th>
<th>Priority</th>
<th>Current Status / Project Phase</th>
<th>Approval Process</th>
<th>Cost Estimate / Category</th>
<th>Construction Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fairbairn Dam (Stages 1, 2, 3)</td>
<td>1</td>
<td>Construction</td>
<td>Approved</td>
<td>$165 M</td>
<td>2017 - 2021</td>
</tr>
<tr>
<td>Beardmore Dam – Thuraggi Channel</td>
<td>2</td>
<td>Construction</td>
<td>Approved</td>
<td>$4 M</td>
<td>2019</td>
</tr>
<tr>
<td>Paradise Dam Spillway Improvement</td>
<td>3</td>
<td>Detail Business Case</td>
<td>Bld Qld Bus Case, SHM (^1)</td>
<td>&gt;&gt; $100 M</td>
<td>2021 - 2025</td>
</tr>
<tr>
<td>Burdekin Falls Dam Improvement</td>
<td>4</td>
<td>Prelim Business Case</td>
<td>Bld Qld Bus Case, SHM (^1)</td>
<td>&gt;&gt; $100 M</td>
<td>2021 - 2024</td>
</tr>
<tr>
<td>Teemburra Dam Improvement</td>
<td>5</td>
<td>Prelim Business Case</td>
<td>SW Board, notify SHM (^1)</td>
<td>$10 – 20 M</td>
<td>2021 - 2023</td>
</tr>
<tr>
<td>Leslie Dam Improvement</td>
<td>6</td>
<td>Prelim Business Case</td>
<td>SW Board, notify SHM (^1)</td>
<td>TBA</td>
<td>TBA</td>
</tr>
<tr>
<td>Coolmunda Dam Improvement</td>
<td>7</td>
<td>Initiation</td>
<td>SunWater Board</td>
<td>$5 - 10 M</td>
<td>2021 - 2022</td>
</tr>
<tr>
<td>Wuruma Dam Improvement</td>
<td>8</td>
<td>Future</td>
<td>SW Board, notify SHM (^1)</td>
<td>$20 – 30 M</td>
<td>2023 - 2025</td>
</tr>
<tr>
<td>Bjelke Peterson Dam Improvement</td>
<td>9</td>
<td>Future</td>
<td>Bld Qld Bus Case, SHM (^1)</td>
<td>$50 – 100 M</td>
<td>2025 - 2027</td>
</tr>
<tr>
<td>9 x remaining dam improvements</td>
<td>10-18</td>
<td>Future</td>
<td>SW Brd (each&lt; $10M)</td>
<td>approx $40 M</td>
<td>2025 - 2028</td>
</tr>
</tbody>
</table>

\(^1\) SHM = Shareholding Ministers (approval)

\(^2\) Cost estimates given are generally for indicative cost category ranges, and considering project approval requirements.
Paradise Dam Spillway Improvement Project – Overview

- Preliminary Business Case approved by Sunwater Board 2018 – two shortlisted options
- Detail Business Case currently underway (to be led by Building Qld as project value > $100M)
- Consultancy awarded for preliminary design (underway), including review of CRA
- Consultancy awarded for environmental assessment, including Impact Assessment Report for options (12 month process)
- DBC approval late 2020 (including delivery strategy)
- Likely early tender involvement / EOI / shortlisting with contractors in 2020 in reviewing / finalising DBC (though no commitment to progress until DBC approved)
- Major contract award 2021, completion by 2025
Paradise Dam Spillway Improvement Project – Scope

• Options include:
  a) Full upgrade – maintaining current full supply level
  b) Reduced spillway level (eg. 10–12m lower) with reduced improvement scope
Burdekin Falls Dam Improvement Project – Overview

- Significant review of hydrology undertaken 2018, considering large catchment size and adopting new methods for determining rainfall / frequency / design flood events necessary for this catchment.

- Various design options reviewed as part of Preliminary Business Case phase, and evaluated for preferred option

- Preliminary Business Case currently being finalised, for approval to progress with Detail Business Case (DBC) (to be led by Building Qld)

- DBC approval by Q3 to Q4 in 2020 (including delivery strategy)

- Likely early tender involvement / EOI / shortlisting with contractors in 2020 in parallel with reviewing / finalising DBC (though no commitment to progress until DBC approved)

- Major risk / issue of dam overtopping for extended and uncertain periods (typically Jan to Apr) during construction period

- Major contract award 2021, completion by 2024
Burdekin Falls Dam Improvement Project – Scope

- Proposed improvement works to Spillway and Abutments (Main Dam) – see below, and;
- Proposed improvements to four Saddle Dams (total length 4,760m) – raise crest level by 3.8m

**Left Abutment:**
- Raise by 1.6m (parapet wall),
- Post tensioned anchors (91 strand),
- and Concrete buttressing

**Spillway:**
- Post tensioned anchors (91 strand)
- 2 per monolith (28 monoliths)

**Right Abutment:**
- Raise by 4.6m,
- Post tensioned anchors (91 strand),
- and Concrete buttressing
Dam Improvement Program
Fairbairn Dam Spillway Improvement – Overview

- Designed and constructed in a staged delivery (Stages 1, 2 and 3) for earliest risk reduction to priority works
- Main construction activities (Stages 2 and 3) being managed by Sunwater (self perform), with subcontractors
- Scope includes:
  - Replacement of spillway under-slab drains, and filling voids;
  - Replace and increased anchoring (passive anchors) across full extent of spillway and spillway basin floor
  - Reinforced concrete slab overlays across spillway and spillway basin
  - Post tensioned anchoring across spillway crest
  - New reinforced concrete “gravity side walls” down length of spillway chute (at junction between floor and side walls)
- Construction works underway and predominantly committed by Sunwater
Development Projects
Rookwood Weir – Overview

- Business Case approved to improve water security and deliver new business opportunities for irrigators and industry in Livingstone Shire, Rockhampton and Gladstone
- Approved funding by Commonwealth and State of $352M, based on 2017 Detailed Business Case
- The project will make approximately 76,000 ML per annum of water available.
- Sunwater is committed to working closely with local industry to facilitate business opportunities through construction, wherever possible.
- Construction packages proposed, including weir and bridge works, and road upgrades
- Construct to design (detail design currently being finalised by Sunwater and consultant)
- QPP tender assessment weighting have been proposed
Development Projects
Rookwood Weir – Construction Packaging

- Proposed construction packages as follows (subject to review):

<table>
<thead>
<tr>
<th>Project</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rookwood Weir</td>
<td>EOI, Select tender</td>
</tr>
<tr>
<td>Foleyvale Bridge</td>
<td>(Lump sum, Construct Only)</td>
</tr>
<tr>
<td>Riverslea Bridge</td>
<td></td>
</tr>
<tr>
<td>Intersection upgrade at Gogango</td>
<td>Open tender</td>
</tr>
<tr>
<td></td>
<td>(Lump sum, Construct Only)</td>
</tr>
<tr>
<td>Thirsty Creek Road</td>
<td>Rockhampton Regional Council (RRC)</td>
</tr>
<tr>
<td>Hanrahan Crossing</td>
<td>RRC or local contractor</td>
</tr>
</tbody>
</table>

Rookwood Weir – Artist’s Impression
Riverslea Bridge – Artist’s Impression
Rookwood Weir
Scope and Timing

• **Early Works** – Sunwater is currently progressing, including:
  - Primary approval conditions and secondary approvals
  - Road upgrades (Gogango intersection and Thirsty Creek Road).
  - Investigations around local procurement of construction materials and facilitating works

• **Main Works Package** – Rookwood Weir, and bridges
  - Multi-stage process: Industry briefing, EOI, select tender, final negotiation, and award
  - EOI date being determined
  - Engagement undertaken with QMCA and CCF
  - Market sounding scheduled

• **Gogango Intersection** upgrade
  - To open mid 2019 (Pending Qld Purchasing Policy approvals)

• **Thirsty Ck Road** upgrade
  - Ready for issue, pending QPP requirements
Rookwood Weir
Packaging

Intersection upgrade – 2019 tender
Main Works Package – 2019 EOI
Rockhampton Regional Council works
Hanrahan Crossing – To be advised
Local Focus

- Project has obligations as a result of both the Queensland Procurement Policy, Queensland Charter for Local Content and the Australian Industry Participation Policy.
- Focused on creating opportunity for local enterprise.
- Opportunities to be engaged on the project may come directly (contractors) from Sunwater or indirectly (as a sub-contractor) via the appointed contractor(s) of relevant works packages.
- 10% - 15% of total construction hours to be undertaken by apprentices and/or trainees or workforce training.

Foleyvale Bridge – Artist Impression
Contact Details

Major Projects

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