Southern Forests Irrigation Scheme
Pre-feasibility study - Governance and finance structure

Department of Water – Water for Food

In commercial confidence
20 June 2016

Dear Tym,

**Southern Forests Irrigation Scheme**

We are delighted to present you our report focusing on the proposed corporate structure of the Southern Forests Irrigation Scheme. From our initial review we consider the region has the right ingredients for a successful irrigation scheme. The structure we propose encourages operating efficiencies, has low operating costs, centralised management for a wide range of competing and changing interests and finally self-sustaining financial responsibility.

A suitable structure for the local environment is a modified Tasmanian Irrigation structure with more responsibility and obligations held by the irrigators rather than the Government. After reviewing various comparable irrigation projects, summarised later in this report, we consider that the most appropriate operating structure in the circumstances is a **non-distributive co-operative corporate structure** with independent management (either internal or outsourced). This approach mitigates Government risk, increases the scheme’s self-sufficiency and positively incentivises irrigators.

We also recommend the Government facilitate an external procurement process for the construction and operation of the scheme (it is understood Tasmanian Irrigation is already doing the design) to capture additional private sector innovative solutions as well as maximising the potential economic benefits of the scheme. There is significant demand for new construction projects in WA, together with the low interest rates and the public profile of the scheme means that there is a high likelihood of an excellent offer from the private sector.

We also recommend that funding to the scheme by the Government is in the form of a grant alongside contributions from users. The background to our findings, the method and results are detailed in the following report.

Please do not hesitate to contact me if you would like to discuss any aspect of our proposal on +61 (3) 8603 6799 or +61 407 946 648.

Yours sincerely,

Mario D’Elia  
*Engagement Partner*  
PwC Australia
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1. Executive summary

With a modern irrigation scheme, the Southern Forests region has the opportunity to expand as a major agricultural centre producing reliable and increasing qualities of premium produce for domestic and export markets. Our proposed structure and approach presents a powerful tool to achieve this goal.

Our industry experts have evaluated a variety of comparable schemes around Australia. The vision is a self-sustaining scheme with minimal Government involvement providing low cost reliable quality water to irrigators in the region. The main options are a corporatised, Government agency, syndicate, trusts or co-operative structure. Our recommended structure is a non-distributive co-operative corporate structure. A co-operative structure is ideally suited to the Southern Forests Irrigation Scheme because;

- Properly implemented the structure can be self-sustaining,
- Ensures accountability rests with the irrigators,
- Mitigates Government risk,
- Incentivises operational reliability and security,
- Is a low cost operating model which benefits from scale,
- Increases transparency and investment discipline and
- Is a reliable, extensively used model.

What this means for the Government is a lower risk of continuous demands for additional funding and a self-sustaining, irrigator incentivised operating model. The scheme will generate additional regional activity, land value increases and employment that benefits the Government.

The DoW should finalise the initial development phase, obtain approvals, complete the Business Case and facilitate a procurement process for construction. The successful contractor should complete the construction for a fixed price reducing the Government and irrigators risk. Considering the current economic situation and the demand for new construction projects, we expect significant interest from the private sector. Post completion the scheme’s assets are transferred into the co-operative structure that will manage the assets and the Government’s involvement is discontinued.

In the recommended scheme there are two companies, AssetCo that owns the assets and manages the future development monies and OpCo which operates and maintains the scheme. Shares are held in both companies through a stapled share structure and members of OpCo receive Transferable Certificate of Water Entitlement for the amount of water they have signed up for.

The operations and maintenance will be managed by OpCo. OpCo’s Directors will decide whether to in or outsource these functions however, considering the size of the scheme the most likely option would be to outsource to suitably qualified and experienced people/companies through a transparent procurement process. It may be that the operations and maintenance are included as part of the construction package to capture the tax benefits however this will be a result of the procurement process and must provide greater economic benefits than an irrigator operated scheme. An advantage of outsourcing for this greenfield project, at least initially, is to benefit from others experience, systems and documentation, similar to support Tasmanian Irrigation is currently providing.

The current recommended option is for the Government contribution to be a grant to the scheme as a loan is unlikely to be economic and equity would imply ongoing support and continued Government involvement.

It is clear that differing regions within the irrigation scheme have differing economic profiles. To ensure a sustainable scheme irrigation, regions within the scheme should be prioritised based on demand, capital expenditure costs, net operational costs, credit worthiness of irrigators and net economic value added. To reduce risk and maximise the sustainability of the irrigation project it maybe that the scheme is built in stages based on prioritisation.

Initial feedback from irrigators and interested parties was supportive of a co-operative structure with independent management and is consistent with our recommended structure.
2. Scheme summary

The Southern Forests Irrigation Scheme is in the Manjimup-Pemberton district and is a significant horticultural production region. Currently irrigated agriculture is the largest user of water in the area using up to 33 Gigalitres per year GL/y and approx. 4,000 hectares (ha) of land within the surface water catchments of the Warren and Donnelly rivers.

The objectives of the scheme are to:

- target of 12 GL/y of sustainable water to be available in those subareas that have limited or no water available to meet expansion plans, which is expected to increase the value of horticultural production by 50 per cent over the next 15 years;
- engage with local stakeholders and agencies to develop an agreed strategic development plan for the local horticultural industry based on water resource availability;
- prove up the cooperative-type concept of an integrated large scale irrigation scheme of future water supply for the growing horticultural industry; and
- identify and describe the preferred option/s for the future supply of water to support proposed expansion plans by private investors for irrigated agriculture to 2030 – in terms of physical infrastructure, economic and financial models, and governance frameworks.

This scheme will provide:

- a preferred option for a water supply system in the Warren-Donnelly area capable of supporting an expanding horticultural industry in the face of a drying climate;
- an improved capacity for both industry and Government to better manage water resources to support long-term economic development in the Warren-Donnelly area and surrounding region;
- an assessment of water resource and land options available to underpin growth plans for private investment for the Warren-Donnelly area irrigated agriculture and horticulture industry; and,
- a Business Case for the construction and operation of the preferred water resource/supply option for potential private investment.

We understand that the intention is to build a dam on public land sufficient for 10-15GL of storage. This may be located in Record Brook and is subject to Government approvals. A new dam would continue to be a Government asset this will need to be leased to the irrigation scheme for an appropriate amount of time, potentially over 50 years.

We were unable to review and consider the Tasmanian Irrigation financial model and therefore cannot comment on the estimated capital costs, revenues, expenses or the amounts of the capital contributions. We have however completed our own internal financial model based upon the experiences with other projects and which highlight potential risks and possible options. Although this financial model was outside our initial scope of work and has not been included in this report, we would be pleased to discuss some of our findings.

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1 Terms of Reference - Southern Forests Water Futures Steering Group
3. Corporate structure

3.1. Summary

The standard Tasmanian Irrigation model utilises a State Government entity/agency (State Owned Entity) as the developer and a self-managed entity formed by the users of the scheme (Self-Managed Entity) for the ongoing operation of the scheme. Under the Tasmanian Irrigation model the physical assets of the scheme would be developed and ownership retained by a State Owned Entity.

In Western Australia the focus is to reduce the risk and involvement of the Government as much as possible and therefore a new structure is required.

Review of options as set out below with possible roles indicated by X.

<table>
<thead>
<tr>
<th>Structure options</th>
<th>Limited government eg Tasmanian Irrigation</th>
<th>Cooperative - two entity</th>
<th>Private proponent</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of Dam</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Development of water distribution business</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership of distribution assets</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership of Dam</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ownership of water entitlements on river</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Operation of Dam</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation of water distribution business</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concluding arrangements</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

3.2. Recommended structure

Central to the recommended approach is a transparent procurement process as summarised in Appendix 1. This allows the construction and the associated risks to be transferred to a 3rd party, for example to Tasmanian Irrigation or an external construction contractor. The DoW is best placed to facilitate this process as the Government is the main contributor to the scheme, has the resources available and is best placed to organise approvals, local and State Government support. This approach also provides the necessary security over public funds.

Once operating our recommended structure of a **non-distributive co-operative corporate structure** (AssetCo and OpCo) has the same ownership but different Directors. Each company is run independently as a standalone entity with no Government involvement. The companies would operate under the Co-operatives Act and have their own separate Articles of Association. The proposed co-operative structure would be non-distributing because if there are any excess funds then these funds would be transferred to the investment fund for future works. There are significant advantages of a co-operative structure such as:

- The members, directors, managers and employees are not liable for any debts incurred unless they are the result of recklessness, negligence or fraud,
- May benefit from concessional tax treatment,
- Member controlled where the ‘one member one vote’ rule applies, and
- Member focused with the primary focus on delivery benefits and services to members.
The reason for the selection of the recommended structure is the uncertain size of the growth projections, the scheme has strong upfront support but is not proven, needs Government involvement at the beginning to appropriately protect public funding and the need to mitigate the project risk.

The proposed structure is similar to other comparable operating schemes in WA. Crucial differences are the development and construction risk is taken by the construction contractor and professional independent management are involved throughout the process.

Depending upon the responses from 3rd parties during the procurement process it could be only one entity is used, as is used in some Eastern States’ schemes.

3.2.1. AssetCo

AssetCo is the co-operative company that holds the completed assets, does not operate or trade and only employs the Directors of the company. The purpose of AssetCo is to hold the assets of the irrigation scheme and manage the investment of funds which accumulate from the fixed fees charged to users to pay for future works and upgrades for the irrigation scheme. There are several key benefits of having a separate AssetCo such as;

- AssetCo is purely focused on the assets and is quarantined from any possible future issues within OpCo,
- AssetCo can decide whether or not to change the operator for the benefit of the scheme members,
- Decreases the likelihood of the Government needing to step in to protect the assets in the future,
- Ensures a stronger corporate governance structure with improves transparency,
- Is a common structure for irrigation schemes and has a proven track record,

The assets are held in a separate company to protect them in case of potential future issues within the operating company. New users would need to fund the new infrastructure unless they secure Government grant funding.

It is envisaged that the DoW will facilitate the construction of the first stage of the scheme through a standard procurement process. Staged developments usually reduce risk and reduce capital outlays. Trunk capacity may be built in for future expansion opportunities. Apart from ensuring the end users are involved and responsible, it also means the risk lies with 3rd parties and not the Government. This approach allows private companies to provide innovative solutions to the project and because the irrigators are directly involved, means that these solutions are more likely to be implemented. To ensure Government funds are appropriately spent, the
Government oversees the construction and approves the drawdowns of funds, taking a similar approach as commercial financing. Each drawdown is subject to the achievement of investment criteria and previously agreed requirements. If the proposed construction spending is not in accordance with agreed terms, is not competitive or is not transparent the Government can withhold funds until the situation is rectified. Therefore the Government role is more monitoring as opposed to development and construction. The irrigators are incentivised to maximise the use of the funds for the irrigation scheme. AssetCo must have appropriate corporate Governance and suitably qualified Directors. Independent oversight, especially by an independent Project Manager would be recommended.

The initial development and scheme design work completed by the DoW can be transferred to AssetCo as a project asset. The transfer price of the assets should be at market price.

Another significant benefit of the dual structure is to protect the assets in case of an OpCo failure. In case of an OpCo bankruptcy there is no-recourse to the AssetCo and therefore protects the assets and reduces the likelihood of the assets ending up in the hands of a 3rd party.

A common problem are issues over pipes, pumps and other infrastructure being on private property. These issues are usually resolved by putting in place easements and other legal arrangements early in the project timetable prior to the commencement of construction.

This approach also addresses the disadvantages identified in the Tasmanian Irrigation model and tailors the project to local WA conditions.

### 3.2.2. OpCo

OpCo is the operating and trading entity that employs all the staff (or outsources this function) and manages the irrigation scheme. There are several key benefits of having a separate OpCo such as:

- OpCo is purely focused on the business and takes all the risks of operating the assets,
- Protects the assets in a separate entity in case of issues in the operations,
- Provides flexibility to change the operator if required,
- Is a common structure for irrigation schemes and has a proven track record,

The Government is not involved with OpCo as this is a scheme member managed entity.

Consistent with the Tasmanian Irrigation scheme, OpCo would be a self-managed entity that is responsible for the day to day operations of the scheme, the repairs and maintenance of the assets, interaction with stakeholders like the government, future expansion Business Cases and other management activities as well as the collection of the fees for AssetCo. OpCo will not organise the construction of new sections of the scheme or own the assets as this is the responsibility of the AssetCo.

The relationship between the two companies would be governed by an arm’s length Management Agreement. The management agreement between the parties is an intricate point from a tax perspective and needs to be reviewed as part of the Business Case. OpCo allows management of the operating company the option to build up in-house capabilities to run and maintain the scheme or to outsource to 3rd party providers whilst at the same time retaining oversight and accountability to the irrigators. OpCo will be subject to tax. The terms of the Management Agreement should be completed as part of the Business Case to ensure the forecasts cashflows are corrected depicted in the Business Case Financial Model.

The management of OpCo is mandated with the necessary powers to maintain and operate the scheme’s asset and will charge a fee (monthly or quarterly) for the ongoing charges to supply water from the scheme. AssetCo would charge a regular fee (monthly, quarterly or yearly) to cover the costs of the assets and the creation and maintenance of an asset renewal fund. Although there is the option to combine these fees into one bill, the scheme’s management may decide for separate billing in the interests of transparency.

A summary of the advantages and disadvantages of in-house or outsourcing the management functions is in Appendix 3.
3.2.3. Membership of the Co-operatives

Shares would be issued by each company to recognize membership of the scheme. The number of shares should be on the basis of the amount of water allocation, for instance one megalitre of allocation may represent one share in AssetCo and one share in OpCo. Each share between AssetCo and OpCo are linked or stapled and cannot be separately traded. Each share would have a nominal value of $1.

As part of the scheme, members of OpCo receive a **Transferable Certificate of Water Entitlement**. All property rights to the water as well as the corresponding value are included in this certificate. The Certificate may be traded or transferred according to agreed rules and the tax treatment needs to be clarified based upon the final management agreement.

This approach also allows for project expansion as new construction in the future can be recognised with new shares. New sections of the scheme will have differing capital and operating costs that can be allocated to the new irrigation expansion users. Increased expansion benefits all co-operative members due to the greater benefits of scale.

Co-operatives

There are two types of co-operatives operating in Western Australia, distributing co-operatives which allows returns or distributions to members on surplus funds other than the nominal value of any shares at the time of winding-up. Distributing cooperatives have share capital. **Non-distributing co-operatives** do not allow returns or distributions on surplus other than the nominal value of any shares at the time of winding-up. Non-distributing co-operatives can choose whether to have share capital. Share capital non-distributing co-operative is the recommended structure for the Southern River Irrigation Scheme as if there were any excess funds then these funds would be transferred to the investment fund held by AssetCo for future works.

**Advantages**

Advantages of cooperatives are:

- Equal votes. All shareholders have an equal vote at general meetings regardless of their shareholding or involvement in the cooperative.
- Lower debt risk. Shareholders, directors, managers and employees have no responsibility for debts of the cooperative unless those debts are caused recklessly, negligently or fraudulently.
- Age of members. Members, other than directors, can be under 18, though these members cannot stand for office and do not have the right to vote.
- Greater control. A cooperative is member owned and controlled, rather than controlled by investors or third parties. Therefore the end users are highly incentivized to maximise the value from the project for the benefit of the co-operative members.
- Transparency. Cooperative members require a higher level of transparency on decision making and expenditure as there is a direct impact to members.
- Clarity of the Government’s role. Once the government grants are contributed there are no additional funds expected to be contributed. This means the Business Case has to be accurate to a higher degree of probability. In the Tasmanian Irrigation model the Government takes the risk of cost overruns and construction issues there is less incentive for budget control and accuracy. In a more irrigator responsible scheme (as recommended) the Government contribution is fixed therefore construction budget issues rest with the construction contractors. This means the Business Case requires a higher level of certainty and it is the responsibility of the irrigators to solve the inevitable problems that arise.
- Inclusiveness. All members and shareholders have to be active in the co-operative.

**Disadvantages**

Disadvantages of cooperatives are:

- Number of members. A co-operative with a significant amount of members can be unwieldy to manage the variety of opinions.
- No profit distribution. No profit distribution is envisaged as any surplus funds would be invested in the asset renewal fund.
- Difficulty attracting members. As cooperatives are formed to provide a service to their members rather than a return on investment, it may be difficult to attract potential members/shareholders whose primary interest is a financial return.
• One vote only. Even though some shareholders may have a greater involvement or investment than others, they still only get one vote.
• Ongoing educational requirements. Cooperatives require ongoing cooperative education programs for members. This issue can be addressed by having independent professional management or outsourcing to suitable qualified 3rd party service providers.
• Vested interests. It is not uncommon for co-operatives to have factions or groups within co-operatives focused on an agenda that maybe contrary to co-operatives goals. Independent management or outsourcing to 3rd party providers mitigates this risk.

3.2.4. Directors

The Directors of both AssetCo and OpCo are voted in by the irrigation scheme members. To avoid corporate Governance issues we recommend at least one independent Director on each company. Each company should also have one Director with a strong financial background and this could also be the independent Director. Each Director should have fixed terms on a rotational basis, such as three years before facing re-election. The number of terms should be limited to a maximum of three terms to ensure regular board refreshment. There should be no Government or other party appointees.

3.2.5. OpCo management

OpCo management should be independent and suitably qualified for the role. Management can either be internally or outsourced. Considering the size of the scheme it may be more economical to outsource management to a 3rd party service provider for instance Tasmanian Irrigation or Harvey Water, where there are benefits of scale, experience and local knowledge that can be captured. If a 3rd party service provider is preferred then an external Request for Tender process should be completed in a transparent and professional way. This area is covered in the procurement section Appendix 1.

Due to the size of the Southern Forests scheme it is proposed that OpCo does not create excessive administrative and compliance requirements that may lead to unsustainable pricing. In these circumstances an outsourcing model to existing service providers may be a lower cost alternative to in-house management, at least in the near term. There is also the added benefit of engaging existing 3rd party providers in the early stages of the project to benefit from existing knowledge, systems and structures which otherwise would have to be recreated with the inevitable teething phase.

3.2.6. Scheme development and construction

The development and construction of the scheme is crucial to ensure that the project is within budget and time constraints while also ensuring quality and safety in the delivery. Considering the size of the scheme it may be better from a risk, economic and delivery perspective to outsource the construction through a robust procurement process with suitable contracts. As procurement is a specialised and important area this is discussed later in Appendix 1.

Outsourcing of the development reduces the risks to the Government while incentivising the irrigators.

Due to self-interest and the capital contribution the transparent co-operative approach incentivizes efficiencies within the scheme. Although it is unlikely the co-operative or the scheme will initially have the skills and experience required, this can be addressed through outsourcing to appropriate parties, particularly in the short term. Outsourcing or independent management mitigates potential conflict of interest of users of the scheme. It is recognised there is limited Government involvement and in the event of a major financial or infrastructure failure the Boards and the irrigators are responsible. Unlike a Government owned entity, the irrigators are incentivised to find a solution as they have investments in the co-operatives and rely upon the water.

Government contributions or grants should be contributed together with the irrigators’ contributions. The amount of the irrigators’ contribution will be clarified as part of the Business Case however, it is currently estimated to be approx. 30% of the scheme’s capital cost.
3.3. Alternative structures

The two-tier co-operative structure is a common corporate structure for agriculture and irrigation schemes around Australia and the world. Other excluded options are;

**Company**
The option of a company structure was excluded because the purpose of companies is to provide profits to shareholders and may be opposed to focusing solely upon constructing, maintaining and operating an irrigation scheme. The company would be taxable and tax payable would reduce the amount of money for future irrigation investment. The legal framework for companies is more complex with the possibility of stakeholders increasing their shares, or other parties directly or indirectly gaining control. Although there is a not-for-profit option of a company limited to guarantee the members must specify the amount they will guarantee in case the company is wound up some time in the future. A co-operative structure avoids the requirement for an open ended liability.

**Syndicate**
The option of a syndicate was excluded because members are open to joint and several liability farming businesses and assets). This means each irrigators’ personal assets could be at risk in the case of financial distress of the scheme.

**Trusts**
Although a trust structure provides more privacy than a company, can be more flexible in distributions among beneficiaries, can be limited liability if a corporate Trustee is appointed and income flows through the beneficiary it also has disadvantages. These disadvantages can be complexity, limited options to borrow money and Trustee power are governed by the trust deed.

**Government agency**
The Government agency structure means continuing involvement and responsibility and by extension the likelihood of ongoing Government funding. A Government agency approach reduces the irrigators’ accountability for the scheme as well as the likelihood that scheme self-sustainability will be achieved.

3.4. Other items

On our initial review we identified several other points that might assist the Southern Forests Irrigation Scheme, these are;

1. **Aquaculture.** Marron (Cherax tenuimanus) are already a developed aquaculture species in the region and production is up to 60Metric Tons per year primarily for the domestic market. Marron are farmed in ponds or dams however with larger scale access to water through an irrigation scheme it maybe that more intensive marron production is possible. We have spoken to companies in this industry and there is interest to pursue this further. Benefits include that marron farms may not be end users of the water and diversify water usage and therefore improve the economics of the scheme. Marron are a high value product and can justify a premium price for water. In addition, Marron is local premium product that suits other regional produce. We would inquire about the interest of aquaculture companies for water from the scheme.

2. **Power.** There are different power solutions available to support the pumping for the scheme. As pumping will likely be the major operating cost the evaluation of options such as solar, biomass power supply or other options should be considered as part of the Business Case.

3. **Tax.** Research and development. With respect to the scheme and how horticulture is developing in the Southern Forests region it seems there are significant opportunities for research and development tax deductions both for the scheme and the irrigators. As this has a positive impact upon the economics of the scheme this area should be part of a completed Business Case.
4. Government issues

4.1. Financing options

The amount of Government financing required will be determined as part of the Business Case. We concur with the scheme user contributions as proposed by Tasmanian Irrigation.

It is proposed that the final amount of Government funding be in the form of a grant to the scheme. We are unaware of any irrigation scheme that does not have some type of direct or indirect Government support. It is questionable whether the project would be economic if the Government would seek direct economic rents on the public funds contributed to the scheme. The indirect return on public funds is the increased economic activity in the region, higher agricultural production and greater land values.

To ensure investment discipline the grant could be paid in tranches in accordance with the agreed construction timetable. This ensures better investment discipline with a final amount being paid post completion to ensure that the scheme is satisfactorily operating. The amount and timing of the tranches will be determined as part of the construction contract. The construction contract can be organised in accordance with standard procurement methods as summarised in Appendix 1.

No guarantees, liabilities or commitments would be made to the scheme apart from the grant commitment. No commitment for ongoing operating costs would be made. This incentivises the scheme users to find solutions to the inevitable problems with occur with greenfield developments. This mitigates the Government risk while appropriately matching the development risk with the stakeholders most incentivised to make the scheme operational, the irrigation scheme users.

4.2. Tax

Tax is an important consideration as part of the structure establishment due to the economic impact on the irrigators. The main areas of tax to be aware of are;

- The Management Agreement,
- The treatment of the Transferable Certificates of Water Entitlement,
- Deductions for payments to the irrigation scheme including potential Research and Development deductions,\(^2\)
- Treatment of Government grants.

In the recommended structure, which is a co-operative structure, the AssetCo co-operative should be income tax exempt. This approach has been recognised as been a positive for comparable schemes and allows the co-operative to reduce dependence upon future Government funding.

The initial funding for the AssetCo co-operative which is provided by the irrigators will need to be structured in such a way that the irrigators receive value for the contribution. This will ensure that no adverse income tax implications arise for either the AssetCo or the OpCo from the initial capital contributions from irrigators.

We note the tax issues associated with the structure are dependent upon the final structure, how the funds are injected into the scheme and the procurement method. This is an important and complicated area and is outside the scope of this report. A tax review should be considered as part of the final Business Case.

\(^2\) Because of the nature of the project and the investment by growers it appears there would be Research and Development deduction opportunities for the irrigators.
4.3. **Balance sheet treatment for the Government**

Any guarantee, liability or ongoing support the Government provides to the irrigation scheme will have a State Government balance sheet impact and should be avoided. State and Federal Government funding should be in the form of a grant so that the Government risk or exposure is clearly quantified and limited. The tax treatment of the Government grant needs to be reviewed as part of the Business Case.

4.4. **Local Government**

Pipelines and infrastructure become fixtures to the land therefore access and easements to the infrastructure will be required for continued ownership and operation of the irrigation scheme.

If private entities do not obtain easements or rights relating to ownership, maintenance and repair, they may be faced with the prospect that ownership of the assets passes to the owner of the land. This means the landowner may refuse access to the infrastructure, remove the infrastructure, or use it in a manner which may void warranties obtained from the manufacturers and installers of pipes, meters and other equipment comprising the pipeline. The appropriate consents and approvals for access and easements to infrastructure on private land needs to be organised prior to the construction of irrigation scheme assets on the relevant land.

As previously mentioned, it is essential to put in place easements and other legal arrangements early in the project timetable prior to the commencement of construction otherwise the option is to bypass the properties where easement and access consent is not obtained.
5. Comparisons to other schemes

5.1. Project risk assignment comparison with other irrigation projects

The below table shows the risk exposure to State Government for different schemes currently operating in Australia and the proposed arrangements for the Southern Forests project.

### Risk exposure for State Governments

<table>
<thead>
<tr>
<th>Development</th>
<th>Construction</th>
<th>Market</th>
<th>Financing</th>
<th>Operations</th>
<th>Regulatory and approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporatised government eg, GMW, SunWater</td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
<td>Full</td>
<td>Partial but ESC regulated so can charge extra as operations costs increase</td>
</tr>
<tr>
<td>Government supported eg, Tasmanian Irrigation</td>
<td>Full</td>
<td>Full</td>
<td>Part - only proceeds if grower subscriptions sufficient</td>
<td>Full</td>
<td>Can increase tariffs</td>
</tr>
<tr>
<td>Privatised ex government eg, MIL Murrumbidgee,</td>
<td>Government support for modernisation</td>
<td>Schemes already built so no major construction</td>
<td>Nil</td>
<td>Following payment of dowries, nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Privately developed eg, Virginia</td>
<td>Nil for original development and any expansion</td>
<td>Nil for original development and any expansion</td>
<td>Nil</td>
<td>Initial contribution only by government</td>
<td>Nil</td>
</tr>
<tr>
<td>Customer co-operative eg, Harvey Water, Lower Burdekin Water</td>
<td>May take development risk with any expansion</td>
<td>Nil</td>
<td>Nil</td>
<td>Initial contribution only by government</td>
<td>Nil</td>
</tr>
<tr>
<td>Recommended for Southern Forests</td>
<td>Limited</td>
<td>Limited</td>
<td>Nil</td>
<td>Initial contribution only by government</td>
<td>Nil</td>
</tr>
</tbody>
</table>

We have also reviewed international irrigation schemes such as the Hefer Valley water scheme in Israel and there is a consistent direct or indirect Government assistance. We have used Australian examples in this section as they are more comparable to the Southern Forests Irrigation Scheme.
5.1.1. Corporatised - GMW and SunWater

Historically, irrigation systems were developed by governments with water entitlements offered free of charge to irrigators but with a requirement that they developed their properties for irrigation and used their entitlements. While some schemes started in the 19th century, most development occurred in the first half of the 20th century.

Over the last 20 years or so all of the larger originally state organisations have been corporatised (e.g. Goulburn-Murray water (GMW), SunWater) or privatised (e.g. MIL and Murrumbidgee Irrigation). The below table provides details of the two largest corporatised organisations.

GMW and SunWater

<table>
<thead>
<tr>
<th></th>
<th>GMW</th>
<th>SunWater</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Northern Victoria</td>
<td>Across Queensland - around 10 larger schemes (eg, Burnett, Burdekin, Nogoa Mackenzie)</td>
</tr>
<tr>
<td><strong>Water Source</strong></td>
<td>Murray and Goulburn Rivers mainly</td>
<td>Various rivers</td>
</tr>
<tr>
<td><strong>Main crops, markets</strong></td>
<td>Dairy, tree crops, irrigated pasture and broad acre crops</td>
<td>Sugar cane, horticulture, cotton, mine water supply</td>
</tr>
<tr>
<td><strong>Annual volume delivered</strong></td>
<td>1400 GL</td>
<td>&gt;2000 GL</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>Dams, channels and some pipes with modernised telemetry for main infrastructure</td>
<td>Dams, channels and some pipes especially for mine water supply</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Built by the government with most modernisation and asset replacement funded by government</td>
<td>Built by government</td>
</tr>
<tr>
<td><strong>Annual tariffs and entitlement prices</strong></td>
<td>~ $60/ML/yr, higher for piped systems Up to $2,750 for entitlements in Goulburn system</td>
<td>~ $60/ML/yr for irrigation &amp;&gt; $2,000/ML yr for mining Highly variable by system $250-$1800</td>
</tr>
</tbody>
</table>

Risk exposure of governments to these schemes is complicated by governments making special payments from time to time to ensure continuing viability of the businesses. Complications also arise through major grants such as the modernisation grants from the Commonwealth Water Reform program.

5.1.2. Government supported - Tasmanian irrigation

This structure was developed to provide a vehicle that would increase the availability of Federal and State funding to projects with demonstrable regional economic benefits. The projects are being presented as PPP projects when in fact it can be seen in the above table that apart from the contribution by growers (from purchasing entitlements), the government is exposed to much the same risk as in the corporatised government scheme.

Tasmania has abundant undeveloped bulk water sources and this coupled with the expansion of some crops such as medicinal poppies and farming enterprises such as dairy, has allowed take-up of water entitlements on projects. Some more recent projects may not be achieving the required demand.

OVERVIEW OF TASMANIAN IRRIGATION SCHEMES

<table>
<thead>
<tr>
<th></th>
<th>Tasmanian Irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Multiple locations in northern, central and southern Tasmania</td>
</tr>
<tr>
<td><strong>Water Source</strong></td>
<td>Multiple rivers such as the Meander, Coal, Shannon, etc.</td>
</tr>
<tr>
<td><strong>Main crops, markets</strong></td>
<td>Dairy, irrigated pasture, potatoes, poppies</td>
</tr>
</tbody>
</table>
Annual volume delivered | 140 GL once all schemes operational
Infrastructure | Dams channels and some pipes with modernised telemetry for main infrastructure
Construction | Built by the corporatised government agency Tasmanian Irrigation
Annual tariffs and entitlement prices | Fixed + variable tariff of ~$40-180, dependent on scheme and location on scheme (pumping costs, etc)
Indicatively $1,100-1,200/ML for water entitlements

The projects have had acknowledged success in being developed and while there may be significant risk associated with this development, so far none of these risks appears to have materialised.

5.1.3. Privatised ex government - Murrumbidgee and MIL

Murrumbidgee Irrigation and Murray Irrigation Limited (MIL) were privatised in the mid-1990s, becoming schemes owned by the irrigators but required to be self-sustaining. At the time of the privatisation, both organisations were provided with substantial dowries designed to bring the systems up to acceptable standards. Since this time the schemes have received further funding from the federal government under the Water Reform package for modernisation of the systems. This modernisation provides operational benefits with the funding is based on expected water savings.

MIL particularly has suffered from loss of volume as customers sold off their entitlements to the Commonwealth government. This has produced problems of viability as the revenues for the business are lower from the smaller volume delivered. The business may not be in a position to increase tariffs as these are already too high for some industries such as rice production.

OVERVIEW OF MIL AND MURRUMBIDGEE IRRIGATION

<table>
<thead>
<tr>
<th>MIL</th>
<th>Murrumbidgee Irrigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Southern Riverina</td>
</tr>
<tr>
<td><strong>Water Source</strong></td>
<td>Murray</td>
</tr>
<tr>
<td><strong>Main crops, markets</strong></td>
<td>Rice, cotton, dairy and broad acre crops</td>
</tr>
<tr>
<td><strong>Annual volume delivered</strong></td>
<td>&gt;1000 GL</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>Main channel running from Yarrawonga to irrigation area and the distribution system which is mainly channels</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Built by government, modernisation government support</td>
</tr>
<tr>
<td><strong>Annual tariffs and entitlement prices</strong></td>
<td>~$30/ML $1100-1200/ML for entitlement</td>
</tr>
</tbody>
</table>

For the present, both schemes appear to be assuming most risk; however, the funding for modernisation is significant and when it is no longer available there may be further calls for government assistance.

5.1.4. Privately developed - Virginia and Eastern Irrigation schemes

Both these projects are recycled water projects that were each established in settings where feasibility studies had failed to produce workable projects.

For the Virginia project, the South Australian government sought expressions of interest from businesses prepared to develop and operate a scheme. The successful proponent was given a period in which it could develop a detailed set of proposals which were then agreed by the State government agencies such as SA Water
and the Departments of Water, Environment and Treasury. This became the project agreement which included a number of conditions precedent. When all conditions precedent were fulfilled, the project proceeded.

Two of the key conditions precedent were that the proponent obtain 20-year contracts from customers, then secure construction and operations finance based on the revenues from these contracts. Around two thirds of the $25m funding was provided by state and federal government. The scheme continues to operate and the SA government is looking to double its size based on similar arrangements. Supply started in 1999.

The Eastern Irrigation Scheme had a similar development, subject to a similar project agreement, but required less protracted negotiations with government. Supply started in 2005. TRILITY, the private operator, hopes to extend the scheme in late 2016.

**OVERVIEW OF VIRGINIA AND EASTERN IRRIGATION SCHEMES**

<table>
<thead>
<tr>
<th></th>
<th>Virginia Scheme</th>
<th>Eastern Irrigation Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Northern Adelaide Plains</td>
<td>Southern Riverina</td>
</tr>
<tr>
<td><strong>Water Source</strong></td>
<td>Bolivar treatment plant</td>
<td>Eastern Treatment Plant</td>
</tr>
<tr>
<td><strong>Main crops, markets</strong></td>
<td>Intensive horticulture, diamonds wine grapes</td>
<td>Intensive horticulture, turf, urban dual reticulation</td>
</tr>
<tr>
<td><strong>Annual volume delivered</strong></td>
<td>20,000ML</td>
<td>5,000 ML</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>142 kilometres of pipe and associated infrastructure</td>
<td>60 kilometres of pipe and associated infrastructure</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Built by proponent to meet exact demands identified in customer contracts</td>
<td>Built by proponent to meet demands identified in customer contracts but with surplus capacity that was taken up during the millennium drought</td>
</tr>
<tr>
<td><strong>Annual tariffs</strong></td>
<td>$155/ML/yr</td>
<td>$376/ML/yr</td>
</tr>
</tbody>
</table>

For both schemes, an initial payment was made by government agencies which represented the contribution required to allow each project to achieve an agreed Internal Rate of Return over the 20 or 25 year franchise period. No further payments were required from government and in the case of the Eastern Irrigation Scheme, payments are made each year by the proponent to Melbourne Water Corporation for bulk water supply.

**5.1.5. Customer co-operatives - Harvey Water and Lower Burdekin Water**

Harvey Water, an irrigator-owned cooperative, took over irrigation assets previously owned by the government in 1996. It remains an independent business and may undertake future expansion. It has mainly grower board members but also a skill based board member. Lower Burdekin Water is the amalgamation of two separate but similar systems established in 1965, managing groundwater and pumping stations from the Burdekin River that provide water to a channel distribution system and replenish the aquifer. The business is active in a number of self-funded development projects and is also contributing to research into aquifer performance and limiting groundwater flows into streams that flow into the Great Barrier Reef region.

**OVERVIEW OF HARVEY WATER AND LOWER BURDEKIN WATER**

<table>
<thead>
<tr>
<th></th>
<th>Harvey Water</th>
<th>Lower Burdekin Water</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>North of Bunbury W.A.</td>
<td>Ayr North Queensland</td>
</tr>
<tr>
<td><strong>Water Source</strong></td>
<td>Various rivers</td>
<td>Burdekin River and groundwater</td>
</tr>
<tr>
<td><strong>Main crops, markets</strong></td>
<td>Dairy and vegetable production</td>
<td>Sugarcane and tree crops</td>
</tr>
<tr>
<td><strong>Annual volume delivered</strong></td>
<td>65,000 ML</td>
<td>150,000 ML</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>430 kilometres of pipe 254 km of channels</td>
<td>Pumping stations and open channels</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Built by proponent to meet exact demands identified in customer contracts</td>
<td>Surface water system developed progressively in recent</td>
</tr>
</tbody>
</table>
demands identified in customer contracts | years, funded by irrigators
---|---
**Annual tariffs and entitlement prices** | Approximately $40/ML | Range of prices depending on whether the water is pumped from the aquifer or distributed by pipeline with prices from $20/ML. Some water pricing still acreage based

The Harvey Water business has been self-sufficient since its formation and is presently hoping to undertake a major expansion project. The dual cooperative structure is designed to provide security for the irrigation assets, separating this activity from the day-to-day operations and allowing water to be separated from property. Irrigators contribute to a sinking fund that provides for upkeep of assets. There is limited risk to the Government and this structure and operation is attractive for the Southern Forests Irrigation Scheme.

The two boards that amalgamated to form Lower Burdekin Water have been independent since the formation and Lower Burdekin water is also now independent and self-sufficient. Contributions to the operation of the business from the sugar miller represents around one third of the cost attributable to cane growers. Again, there is limited Government risk and provides a suitable reference point for a Southern Forests Irrigation Scheme structure.
6. Project risks

This section presents an overview of categories of potential government risks with irrigation schemes and then provides an assessment of risk issues that might be addressed as the Business Case is developed further.

6.1. Development risks

Development risks are associated with the cost of demonstrating the feasibility of the project and the uncertainty that the project will eventuate. Other risks can include risk of securing water source at the required flow rates, planning and approvals.

To mitigate these risks, it is understood the Government’s preferred approach is to outsource the development of the project to a 3rd party such as Tasmanian Irrigation, Harvey Water or another firm, at least initially. As the Government is sponsoring this project it is recommended to follow a formalised procurement process to ensure there is;

- Detailed project planning. Given the multifaceted nature of the project there is a need to develop a realistic program for development including hold points. The program should give due recognition to the interdependence of development activities and the impact on program of predecessor activities,
- Resource planning. This includes an experienced project management knowledge and a dedicated Project Director is considered crucial to managing the project,
- Sufficient funding to reach project completion. It is our understanding that the project development costs are being borne by the Department of Water,
- Approvals and submissions have been satisfactorily completed and prior to any Government contributions,
- Robust contracts with irrigators, for access right, construction companies, between AssetCo and OpCo and with other stakeholders.

Water supply arrangements are premised upon access to water from the Donnelly River. These arrangements need to be defined and formalised, particularly with respect to issues such as the priority given to the scheme over other uses of the Donnelly River and the hydrological reliability of the supply.

While it seems most likely that the larger single dam rather than multiple smaller dams will be the best option, this needs to be finalised as part of the Business Case. Access rights and ownership of scheme irrigation equipment and pipes on private land is a sensitive area and needs appropriate contracts to protect the irrigation scheme.

6.2. Construction risks

Construction risk is principally in the cost of construction, delays in completion and risk that the project completed meets project requirements initially and for the project life.

It is expected that the estimated construction costs will be completed as part of the Business Case. Tenders for the construction of the project will subsequently occur and as it is a relatively small scheme, thought should be given to engaging one Master Contractor to construct the project based on agreed detailed specifications, usually for a fixed price. One common option is for one company to complete the construction and run the operations for a reasonable period of time to incentivise quality construction and low priced operations. Robust contracts to minimise the risks of construction issues, cost overruns, variations, quality issues etc are an important aspect of any successful contract.

It should be noted that construction costs can usually be significantly reduced by applying a process to eliminate unviable or marginal customers such as those on the extremity of the scheme.
6.3. **Market risks**

Project market risk relates to the risk of pricing movements during the development and construction period. Market risk mostly arises from:

- The volume and pace of take-up,
- The revenue from water sales being less than that assumed,
- Movement in the construction costs during construction, and
- Any attrition of demand or failure by customers to pay the tariffs assumed.

The impact on profitability from loss of particular larger customers’ needs to be considered via sensitivity analysis in the Business Case.

The initial market estimate probably overestimates the viable demand with some customers located well over 30 km from the Dam. All Letters of Intent were non-contractual and submitted without the benefit of applicants seeing the actual supply conditions that will apply to them.

Without term contracts (say 20 year take or pay) there is the potential for customers to leave the scheme and result in loss of revenues. The most critical parameter for the distribution network is the minimum daily quantity available to customers and without this it is difficult to refine the construction costs and scheme viability. The cost-benefit can be tested through the procurement process for those identified customers at the margins.

6.4. **Financing risks**

Financing risk relates to the availability of financing for the construction phase of the project and, when the construction is completed, finance for the continuing operations of the business. Certainty of government funding, both federal and state may be required before any significant project activity is undertaken.

The need for government funding for the project has already been identified. On comparable projects it is not uncommon for the amount of funding for the planned project configuration to be underestimated. The need for funding might be reduced through using competitive bidding for the right to construct and or operate the project with a key selection criterion being the least amount of government funding.

Federal government funding is an important component of the irrigation scheme and we have been advised that the involvement of Tasmanian Irrigation will increase this likelihood.

Tax arrangements require further imports such as the arrangements applying to any government contribution so that it is not assessable for the entity developing and operating the scheme.

The credit worthiness of the irrigators signing up to long term contracts need to be considered. As many irrigators are asset rich and cash poor, particular attention needs to be focused on default risks. In extreme cases consideration should be given to blocking water or other services to irrigators until the amounts are repaid.

6.5. **Operational risks**

Operations risk is related to the liability for costs associated with maintenance for the continuing serviceability of all infrastructure along with other costs of operations. One of the main operational risks of the irrigation scheme are the future pumping costs pumping to the dam and from the dam to customers. Based upon our initial financial model it appears operating revenues marginally cover pumping costs for some locations while other locations maybe generating operating losses. As this is a crucial area of the Business Case additional attention to this point maybe required.

Weather conditions can also be a source of risk; in particular, management of the operations in very wet years.

The documentation on the project to date appears to be silent on how operations might be managed. Recommended practice is to include an operational focus throughout the project development phase. In the
ongoing water delivery contract there may be a need to provide protection from exposure to charges increasing at a greater rate than CPI, particularly when energy costs will be significant part of future electricity.

Operations budgets may need to take into account suitable allowances for replacements of assets over the life of the project. This can be achieved through contributions to a sinking fund such as that used by Harvey Water in its separate asset entity or with a private developer simply accepting the liability to replace assets as required.

It is not clear whether the contracts are say take-or-pay or fixed cost plus variable based on consumption. The structure will have a material impact on tariff revenue.

### 6.6. Management risks

Management risk refers to the possibility of management putting their own interests ahead of the co-operative members, or ineffective, inexperienced destructive or underperforming management.

As mentioned previously management within the scheme should be independent and suitably qualified for the role. There is always the risk in projects of this nature of inappropriate management choices and attention must be on suitable internal management direction and oversight or outsourcing.

Due to the size of the Southern Forests scheme OpCo should seek to minimise administrative and compliance requirements that may lead to unsustainable pricing. It may be that an outsourcing model to existing service providers may be a lower cost alternative to in-house management, at least in the near term. There is also the added benefit of engaging existing 3rd party providers in the early stages of the project to benefit from existing knowledge, systems and structures which otherwise would have to be recreated with the inevitable teething phase.

There are standard approaches to mitigating management risk and we recommend they be implemented on this scheme.
7. Disclaimer

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Appendix 1. Procurement

Procurement process

The procurement process is an essential part of a successful project. The main aspects of the procurement process are:

- procurement options analysis;
- procurement strategy development and implementation;
- procurement documentation;
- interactive tender process management (if desired);
- negotiation strategy; and
- contract close.

Procurement options analysis

Procurement options analysis needs to consider a range of factors across a range of procurement methods to determine the optimum procurement method. Obviously it highly depends on the scope to be outsourced as outlined in the Southern Forests Irrigation Report. This could include to asset completion to managing the operations for a period post completion.

Procurement options can include the following main methods:

- Traditional contracting including:
  - Design then Construct (also known as Construct only);
  - Design and Construct (D&C);
  - Early Contractor Involvement (ECI) and Managing Contractor models;
  - Design, Construct and Maintain (DCM);
- Alliance contracting;
- Public Private Partnership (PPP) including:
  - Design, Build and Operate (DBO);
  - Design, Build, Finance and Operate (DBFO);
  - Design, Build, Finance and Maintain (DBFM);
  - Design, Build, Operate and Maintain (DBOM).

Although outside the Scope of this report, we recommend that the analysis of the options is undertaken using a matrix approach considering various factors. The factors will be tailored to reflect the specificities of the project and could include:

- Design and construction complexity: The level of complexity of the design but also the need (or not) to achieve complete design prior to tendering, the desire (or not) for flexibility during construction or the desire to make the end users involved and responsible will influence the selection of the procurement options. The level of construction complexity will also need to be assessed to ensure the level of risk associated with the construction is adequately evaluated.

- Demand modelling: It is important that demand projections are as realistic as possible to determine the appropriate size and requirements when defining the scope for the infrastructure. This is critical to providing certainty of requirements and of revenue and to select the procurement option that will deliver the best value for money (VFM).

- Scale and scope definition: A detailed review and assessment of the parameters of the project and of the market appetite will determine whether the project could attract the interest of private sector organisations operating in the PPP market. If an opportunity is identified, the extent and scope of private sector involvement would need to be carefully assessed based on the specifications of the project and tailored to reflect the Government requirements especially in terms of risks and responsibility. However at this stage it seems that a more traditional procurement approach may be more appropriate to the scale of the project.

- Cost efficiency: The horticulture industry operating in the Southern Forests region is highly competitive and therefore to be a successful scheme it has to be highly cost sensitive, responsive to changes in the market and reliable. As outlined in the Report and considering the small size of the scheme, it may be
more economical to outsource operation / management to a 3rd party service provider for instance Tasmanian Irrigation or Harvey Water, where there are benefits of scale, experience and local knowledge that can be captured.

- Users’ involvement and commitment to the scheme: Users have already disclosed a strong interest for the development of the scheme. It is critical that the procurement model allows users’ initial contribution to the CAPEX through the sale of water entitlements (one-off payment) as well as users’ contribution to on-going maintenance costs and asset renewal costs through annual charges. Efficient and meaningful users’ contribution is critical to the viability of the Scheme and will contribute to ensuring long term efficiency of the Scheme’s assets.

- Allocation of risk between the parties: Risk allocation should be based on the principle that ‘the party best able to control the risk bears the risk’ to avoid hefty risk premiums being included in the offer price which erode value for money for the Government. In this case the irrigators are best placed to bear the project risk although the development can be outsourced to suitable counterparties which reduces the risks to the Government while incentivising the irrigators.

- Whole of life (WOL): WOL objectives are better achieved with some procurement models than other and therefore it is critical to assess the potential merit in bundling capital and on-going maintenance responsibilities for the project.

- Timing constraints: The time constraints for the project will need to be clearly identified in order to ensure the selected method will best accommodate those constraints and optimise program outcomes.

- Innovations: The procurement method should encourage innovation providing enough flexibility to allow for example water trading initiatives or some innovative power solutions for pumping.

- Public accountability: The key public accountability will be whether the State is achieving a value for money outcome, which will also include ensuring the income for the use of the scheme is sustainable and can support the expenditure proposed.

Those factors will need to be carefully assessed and balanced in order to achieve VFM over the whole-of-life of the infrastructure by selecting the method of procurement and project delivery that will create opportunities to maximise value over the entire life of the project through a competitive process.

**Procurement strategy development and implementation**

An initial procurement strategy and a more detailed procurement plan for implementation will need to be developed for the selected procurement method covering:

- Governance, objectives and targets for the procurement process;
- Procurement planning including analysis of procurement spend, market analysis, contract management framework and benefits of procurement approach;
- Detailed procurement analysis including situation analysis, risk analysis, market capability and market appetite (may need testing via market sounding);
- Detailed procurement implementation approach including interactive workshops, tender format definition.

**Procurement documentation**

High quality documentation will need to be developed by the Government either internally or external consultant/ contractor. This documentation must be clear, concise and free of any ambiguity or inconsistencies as it could derail the procurement process, and will include:

- Detailed professional services briefs for procurement of specialist consultants;
- Contractor procurement documentation including:
  - Contract(s);
  - Technical documentation (extent of technical documentation dependent on type of procurement strategy implemented);
  - Invitation for Expression Of Interest (IEOI);
  - Request For Proposals (RFP);
- Procurement process management documentation including:
  - Probity plan;
  - Evaluation plans for IEOI and RFP;
  - Terms and Conditions for the procurement process;
  - Interactive tender process guidelines (if applicable).
We recommend early liaison with the design and engineering consultants to review and comment on the technical specifications to ensure the project objectives are adequately reflected and key risks are appropriately addressed in the procurement documentation. On projects where PwC is engaged, we usually prepare a schedule of deliverables and associated programme listing the documents to be prepared by various members of the team for each stage (EOI, RFP, contract award). We also coordinate the consultant team deliverables to generate consistent documentation that relays the project objectives, avoid ambiguities and prevents any potential misalignment to ensure procurement strategy considers and aligns with long-term operational strategies including ultimate aim of a self-funded management structure.

**Procurement process management**
The procurement process should be in accordance with the procurement plan and should include the following steps:

- Obtain tenders from the market;
- Potential interactive tender engagement with bidders;
- Undertake evaluation in accordance with the evaluation plan;
- Finalise the evaluation report and procurement approval documents;
- Prepare and secure approval of the negotiation strategy for short listed respondent(s);
- Negotiate;
- Finalise contract documentation; and
- Award.

**Summary of procurement methods**
Generally there are three main procurement approaches:

- Traditional contracting;
- Alliance contracting; and
- Public-private partnerships.

There may also be alternative or hybrid models for delivery to consider such as Market-led proposals or incentivised proposals.

### Delivery mechanisms

**Traditional**
- Design then Construct
- Design and Construct
- Design Construct and Maintain

**Alliances**
- Design Construct with Finance and User pays
- Design Build Finance Operate
- Build Own Operate Transfer

**PPP**
- Market-led proposals
- Profit sharing
- Operator delivered

**Other**

**Traditional contracting**
Traditional contracting generally refers to contracts that pass on the risk to varying degrees to Contractors or Suppliers.
Design then Construct

- This procurement model separates the roles of design and construction, with a fully specified project being developed in the design phase (i.e. input based specification), rather than a higher-level performance based specification (i.e. output based), with a subsequent approach to the market for contracting parties to construct the deliverables.
- This mechanism allows much more control over design. However, it reduces opportunities for constructor-driven innovation as the contractor is generally not involved in the design development process, and often entails longer procurement timeframes as the tender process is contingent on a reasonably mature if not complete design. Further, this delivery model can create more opportunity for large cost variances arising from constructability issues.

<table>
<thead>
<tr>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and constructability risks transferred</td>
<td>Increased potential for disputes over design variations during construction phase</td>
</tr>
<tr>
<td>Price competition and certainty</td>
<td>Interface risks are increased</td>
</tr>
</tbody>
</table>

Design and Construct

- The Design and Construct (D&C) model is widely used across the engineering and construction industry. By bundling the responsibilities for design and construction with a single entity, risks associated with the interface between design and construction can be transferred to one party, and greater collaboration between the two functions can be fostered.
- Together with the development of performance based specifications, a balance between ensuring the principal’s requirements are met, transferring risk to the contracting party and allowing significant room for innovation can be achieved.
- The design and construct delivery model does not create long-term whole-of-life cost and quality incentives as the supplier is not responsible for the long-term performance of the deliverables once construction is completed (except in relation to defects liability regimes, and contingent liabilities).

<table>
<thead>
<tr>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and fit-for-purpose risk transferred</td>
<td>Limited input in early design</td>
</tr>
<tr>
<td>Price competition and certainty</td>
<td>Longer tender period for assessment of risks</td>
</tr>
<tr>
<td></td>
<td>Government may be liable for variations</td>
</tr>
<tr>
<td></td>
<td>Potential for reduced focus on whole-of-life issues unless incorporated into scope</td>
</tr>
</tbody>
</table>

Design, Construct, Maintain

- The design, construct, maintain (DCM) procurement model is a D&C model bundled with maintenance and or operations responsibilities for a defined period post-delivery. Operational responsibilities may range from routine maintenance to full operational control of the asset. This model creates strong incentives for the contractor to drive design, construction and maintenance innovation and efficiencies to reduce the overall whole-of-life cost, particularly where the duration of the operational responsibilities extend into a large part of the service life of the asset. Ideally, the benefits of these efficiencies are captured by the principal when the contract is priced by the market, and – depending on how the long term performance and payment regime is structured – throughout the term of the contract.
- Accordingly, whole-of-life structured arrangements can provide a greater cost certainty and reduce the opportunity for cost variances. However they are not appropriate in all cases, particularly where the operational responsibilities are best retained by the principal.

<table>
<thead>
<tr>
<th>ADVANTAGES</th>
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<tbody>
<tr>
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</tr>
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<td>Longer tender period for assessment of risks</td>
</tr>
</tbody>
</table>
Alliance contracting

- Alliance contracting involves the establishment of an alliance style agreement between a public sector agency and private sector parties to deliver a major capital asset. Alliances attempt to move away from the perceived adversarial nature of the typical contracting arrangements by fostering a ‘best for project’ mentality.

This form of delivery is likely only to be appropriate for very large complex projects.

<table>
<thead>
<tr>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Shared responsibility for appropriateness of design</td>
<td></td>
</tr>
<tr>
<td>- Flexibility of design during construction</td>
<td></td>
</tr>
<tr>
<td>- Relationship-based approach to the contract</td>
<td></td>
</tr>
<tr>
<td>- Able to attract market interest for complex projects</td>
<td></td>
</tr>
<tr>
<td>- Stakeholder management can be well managed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Less price competitive tension and certainty</td>
</tr>
<tr>
<td></td>
<td>- Requires genuine commitment and involvement by private sector and Government</td>
</tr>
<tr>
<td></td>
<td>- Government still bears certain risks (e.g. design and fit-for-purpose)</td>
</tr>
<tr>
<td></td>
<td>- Potential for reduced focus on whole-of-life issues</td>
</tr>
</tbody>
</table>

PPPs

A PPP is a long-term contract between the government and private sector to build, operate and maintain infrastructure to a required standard, noting there may be variations in the precise commercial structure dependant on specific project factors. The private provider, usually a consortium, generally provides the finance which may be complimented with a government subsidisation charge. A PPP is usually chosen as a delivery mechanism where the client is looking for whole-of-life innovation and efficiencies.

There are a range of PPP mechanisms that could be considered such as:

- Design and construct with construction finance and user charging;
- Design, Build, Finance, Operate (DBFO);
- Build, Own, Operate, Transfer (BOOT).

Typically PPPs are suitable for projects involving the development of large scale capital infrastructure assets that are generally stable and that also provide a long-term revenue stream. Projects with complex risk profiles, bundled asset related services which are performance measurable, whole of life performance risks and the degree of innovation sought through design and construction are other considerations when evaluating suitability for a PPP. Without these factors being favourable, it is difficult to demonstrate value for money and generate market interest.
Appendix 2. Demand analysis

Demand analysis

This section provides an overview of the demand based on the Letters of Intent (LOIs) collected by the Department of Water and an inspection of the areas of highest demand concentration. A regional map and demand sites is also included in Appendix 2.

With demand exceeding the availability of supply of reliable water, some prioritisation of demand that can be met efficiently might be required. Fortunately, the demand with the greater capacity to pay appears to be closer to the Dam site and could be serviced by a limited number of pipelines. This improves the likelihood of a sustainable irrigation scheme.

Demand beyond 25-30 kilometres from the Dam is widely dispersed and this would make it expensive to build and operate and therefore is questionable economically.

The indicated demand is diverse across agricultural enterprises and the strongest demand appears to be from industries with the highest capacity to pay.

Demand by crop and area (Megalitres)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Pemberton</th>
<th>SW Manjimup</th>
<th>NW Manjimup</th>
<th>E Manjimup</th>
<th>More than 30km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,000</td>
</tr>
<tr>
<td>Grazing</td>
<td>500</td>
<td>100</td>
<td>125</td>
<td>1,392.5</td>
<td>675</td>
</tr>
<tr>
<td>Annual horticulture</td>
<td>280</td>
<td>300</td>
<td>15</td>
<td>820</td>
<td>25</td>
</tr>
<tr>
<td>Perennial horticulture</td>
<td>1,025</td>
<td>1,260</td>
<td>700</td>
<td>1,317.5</td>
<td>25</td>
</tr>
<tr>
<td>Other</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>200</td>
</tr>
<tr>
<td>Unknown</td>
<td>600</td>
<td>70</td>
<td>0</td>
<td>330</td>
<td>0</td>
</tr>
</tbody>
</table>

The LOIs used to assess demand provide a useful first estimate but this is likely to overstate demand in terms of what is required to underpin construction of the project.

Demand needs to be assessed at least against a terms sheet setting out key supply conditions (eg, take or pay, contract term and a daily minimum flow rate of say 0.75%). As the project progresses there will be a need to make the demand assessment contractual, such as requiring pro forma offers from customers to buy water. The Tasmanian Irrigation approach of expecting some fall off in the demand indicated in the Letters of Intent to be replaced by other demand represents a significant risk to the economics of the scheme and can impact the contribution amounts from growers.

Analysis of data from the Letters of Intent (LOIs) submitted by potential irrigators was performed, focusing on the distance from the dam site, area and the crop type is below.
Interpretation

- Perennial horticulture accounts for most of the demand. This is a combination of demand from more traditional crops such as apples, what appears to be a boom in avocados and to a lesser extent trees grown for production of truffles. Net area planted to wines grapes is reducing. Avocado returns have been high but as many producers enter the market there are concerns about the medium to long term outlook for the industry. Demand for water for grazing is significant, particularly at greater distances from the Dam. If this demand falls in winter this could be compatible with summer demands.

- Annual horticulture demand is low but could increase over time, especially if the area regains its importance as a brassica producing area.

- A scheme involving customers only within say 20-30km of the dam site may have 6,000-8,500ML of total demand, which could be a viable scheme.

- Capacity to pay of some applicants (such as dairy) may be an issue, especially in the context of their distance from the dam which will result in high pumping costs for the scheme. Their credit worthiness from a banking perspective may impact the medium to long term economics of the project.

Limitations/assumptions

- In the LOIs, occasionally the address was unclear or the location could not be located to within a reasonable margin. In this case, the entries were omitted from the analysis. These cases accounted for 671ML (6%) of the total demand.

- Other and unknown is shown in cases where the crop response category in the LOI was other but where this section was not completed it is recorded as unknown.

- Where two crop types were listed, it was assumed that the total volume demanded was to be used on each crop evenly.

In summary the indicated demand offers a good spread of uses for water, with most demand coming from high value crops located within 25 kilometres of the Dam. This is the economic area to focus upon for the irrigation scheme.
Interpretation
- South West Manjimup and Pemberton offer a concentration of higher value crops (e.g. avocados) in close proximity the Dam.
- East of Manjimup is mainly grazing demand with more prospective annual horticultural crops such as potatoes and brassicas closer to the highway. Some of the demand from East of Manjimup may be on land subject to salinity.
- More than 30 km from the Dam there is a single large demand in dairy.
- Demand in the NW and SW Manjimup areas are within around 15km of the dam site, while those in Pemberton and East Manjimup are generally between 15-30km from the dam site.

Limitations/assumptions
- In the LOIs, occasionally the address was unclear or the location could not be located to within a reasonable margin. In this case, the entries were omitted from the analysis. These cases accounted for 671ML (6%) of the total demand and this should be considered when interpreting the results.

In summary, the scheme could be developed to service particular districts and omit others, since the demands in each area are reasonably clustered - this can be done as part of the scheme optimisation and included in the Business Case. Although the present estimate of demand is likely to overestimate the demand that might be serviced by a potential scheme, it does offer a solid basis for further demand assessment and scheme optimisation.
Appendix 3. OpCo advantages and disadvantages of in-house or outsourcing

A summary of advantages/ disadvantages between in-house or outsourcing operation functions is below;

**In-house operations**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Builds up knowledge and expertise in-house</td>
<td>Need to develop systems, processes and procedures</td>
</tr>
<tr>
<td>Usually more economic for larger companies/ projects</td>
<td>Higher start-up costs</td>
</tr>
<tr>
<td>Higher information and operational security</td>
<td>Unable to spread costs over multiple companies/projects</td>
</tr>
<tr>
<td>Staff focused solely on the project/ company</td>
<td>Reduced synergies with other companies/ projects</td>
</tr>
<tr>
<td>Systems, processes and procedures specifically tailored to project/ company</td>
<td></td>
</tr>
</tbody>
</table>

**Outsourcing operations**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits from existing expertise, systems, processes and procedures</td>
<td>External knowledge and expertise</td>
</tr>
<tr>
<td>Usually more economic on smaller companies/ projects</td>
<td>Dependent upon 3rd party provider. If problems with the provider this can impact the business</td>
</tr>
<tr>
<td>Implementation phase usually faster and cheaper</td>
<td>Maybe restrictions and limitations changing service providers</td>
</tr>
<tr>
<td>Creates competition for service delivery and can drive lower pricing</td>
<td>Security and information transfer to 3rd parties</td>
</tr>
<tr>
<td>Usually benefits from wider breadth of knowledge and expertise.</td>
<td>Potential staff distraction with other projects</td>
</tr>
<tr>
<td>Staffing flexibility</td>
<td></td>
</tr>
<tr>
<td>Reduced overhead</td>
<td></td>
</tr>
<tr>
<td>Greater synergies with other companies/ projects</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4. Regional map and demand sites