Virgin Olives Incorporated
Project Proposal

A Report to the South Australian Government

Prepared by Narelle Daniels
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Executive Summary

Virgin Olives Incorporated (VOI) has approached the South Australian Government with a proposal for an olive growing and oil processing project to be undertaken here in South Australia. VOI has requested financial assistance via a concessional interest rate loan and an exemption from federal profits tax.

VOI is a foreign-owned company and is expected to repatriate any profits the project may earn. The project would be located in the Adelaide Plains and it would offer employment to predominantly unskilled labour from the region. It would also use local materials and manufactured items as project inputs. The investment has also been presented by VOI as an import-replacing project. Demand for olive products in Australia continues to grow and imports currently make up 95% of consumption.

This benefit-cost analysis report examines a number of options open to the Government, including alternative means of financial support. It was commissioned by the SA Government as an input to the decision making process governing the project. It considers the options from the perspective of the stakeholders to the project.

The report considers the following options:

- **Option 1**  No concessional terms (finance at a commercial interest rate and no profits tax exemption)
- **Option 2**  A loan from the Bank of South Australia at a concessional interest rate of 2%
- **Option 3**  Exemption from federal profits tax for the first 15 years of the project
- **Option 4**  Exemption from import duties on inputs
- **Option 5**  Exemption from the SA agricultural levy
- **Option 6**  Concessional loan and exemption from federal tax for 15 years
- **Option 7**  Changes to current water charging policies and removal of the SA agricultural levy
- **Option 8**  A loan at a concessional rate of 6.5%

The methodology employed in the report is social benefit-cost analysis (BCA). It enables each option to be ranked according to market-based efficiency, the private proponent, economic efficiency (economy-wide) and from the perspective of the Government's nominated referent group.

The analysis showed that 4 options were considered viable – Options 2, 6, 7, and 8. The following summary table illustrates the net benefits to the various parties, calculated at a discount rate of 6%.
<table>
<thead>
<tr>
<th></th>
<th>Option 2</th>
<th>Option 6</th>
<th>Option 7</th>
<th>Option 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV @ 6% ($000)</td>
<td>377.121</td>
<td>377.121</td>
<td>1517.280</td>
<td>1069.782</td>
</tr>
<tr>
<td>Total Referent Group</td>
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<tr>
<td>Referent Group Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour</td>
<td>693.517</td>
<td>693.517</td>
<td>693.517</td>
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</tr>
<tr>
<td>SA Government</td>
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<td>293.953</td>
<td>131.497</td>
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</tr>
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<td>Bank of South Australia</td>
<td>-610.349</td>
<td>-610.349</td>
<td>692.265</td>
<td>82.312</td>
</tr>
<tr>
<td>VOI</td>
<td>2433.55</td>
<td>3656.33</td>
<td>2308.894</td>
<td>1993.30</td>
</tr>
<tr>
<td>Federal Govt</td>
<td>-357.402</td>
<td>-1580.177</td>
<td>-1372.900</td>
<td>-609.812</td>
</tr>
</tbody>
</table>

The project appears to be one that could contribute to economic welfare (economy-wide). It represents an efficient distribution of resources.

The analysis of Option 7 shows considerable net benefit to the referent group. It is likely to be an acceptable project to VOI, though not as their highest ranked option. However, the institutional changes that would need to be implemented by the SA Government in order to realise these benefits make the project outcome uncertain, certainly in the timeframe available for decision making.

Options 2 and 6 are also viable projects from both VOI’s and the referent group's perspective. Though there is an overall net gain to the total referent group, the Bank of SA stands to lose with these options, as does the federal government in Option 6.

Option 8 is the option preferred by this report. It involves negotiating with VOI on the extent of concession on a loan interest rate. Information provided to the analysts puts Government in a strong negotiating position in order to realise the benefits from this option.
1 Introduction

This report presents an analysis of a proposal by Virgin Olives Incorporated (VOI) to invest in an olive growing and oil processing project located in the Adelaide Plains, south of Adelaide. VOI estimates that the investment would result in annual olive production figure of 1.08 tonnes, or 216,000 litres of olive oil per annum. VOI have presented their proposal as a potential import replacement project. Australia currently imports approximately 95% of its olive consumption – around 35,000 tonnes per annum\(^1\). VOI’s projected annual production would potentially replace just over 3% of this figure. At the same time, domestic demand for olive products is increasing at around 10% per annum.

The project is likely to utilise a pool of currently unemployed labour in the Adelaide Plains. Furthermore, local materials and manufactured items will be important inputs to the project.

VOI has submitted the proposal to the South Australian Government as it is seeking concessional terms to enable it to undertake the investment. The financial assistance proposed by VOI is a concessional loan from the Bank of South Australia, and exemption from federal government profits tax. Though these taxes are not part of the jurisdictional control of state governments, VOI has indicated that if the project were considered viable by the SA Government, it would wish to undertake three-way negotiations for assistance. If this were the case, South Australian (SA) Government support would be important for successful negotiations.

VOI is a foreign-owned company with significant international experience in olive oil production. The proposed investment would be its first venture into both Australian based olive growing and oil processing. If the project receives financial support from federal and SA Governments, VOI will require approval of the Foreign Investment Review Board.

Options analysed

This report appraises the benefits and costs of the investment overall and to the parties concerned, with and without the proposed financial assistance. It also considers a range of other options that are open to government. The report appraises the following options:

- **Option 1** No concessional terms (finance at a commercial interest rate and no profits tax exemption)
- **Option 2** A loan from the Bank of South Australia at a concessional interest rate of 2%
- **Option 3** Exemption from federal profits tax for the first 15 years of the project
- **Option 4** Exemption from import duties on inputs
- **Option 5** Exemption from the SA agricultural levy
- **Option 6** A loan at a concessional rate of 2% and exemption from federal tax for 15 years
- **Option 7** Changes to current water charging policies\(^2\) and removal of the SA agricultural levy
- **Option 8** A loan at a concessional rate of 6.5%

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\(^1\) Australian Bureau of Statistics

\(^2\) The authors worked with the Department of Resources and Primary Industries to scope this option
2 Methodology

2.1 Social Benefit-Cost Analysis

This report presents a social benefit-cost analysis of eight options available to both the federal and the SA governments. In doing so it examines how the overall net benefits or costs of the proposed project will be distributed among all the stakeholders. In order to appraise the project from the perspective of the varying parties, the analysis is considered in four distinct, but integrated, parts.

Project Analysis

The project benefit-cost analysis determines whether the project benefits outweigh the costs, when all the project inputs and outputs are measured and valued at private market prices. Cash flows are not adjusted for such items as tax or interest on loans. Nor do they include any non-marketed benefits or costs. The project analysis examines the merits of the project without tax and financial arrangements, as they can sometimes make a “bad” project look “good” or a “good” project look “bad”.

Private Analysis

The private BCA is more familiar to decision makers as the financial analysis undertaken by private firms. A purely commercial perspective is taken in measuring and comparing the benefits and costs to the private firm, VOI. Cash flows are considered net of tax, interest and debt financing flows. Although it is almost certain that VOI will have undertaken its own, more than likely confidential, private analysis, the information obtained in this part of the report has been crucial in determining what incentives VOI may respond to in subsequent negotiation. An analysis of the position of a private firm is important because it provides public sector decision makers with an independent appraisal against which they can judge the firm’s case for special treatment.

Efficiency Analysis

The efficiency analysis is concerned with all aspects of the project that can affect economic welfare. It can therefore help inform decision makers as to whether a project is the most efficient use of scarce resources. All the costs and benefits of the project are calculated irrespective of who gains or loses as a result of the project.

An important feature of efficiency BCA is that it does not necessarily use input and output prices observed in the market. Instead, the market prices may be adjusted (and called 'shadow-prices') so that inputs and outputs reflect their marginal value to society and are valued at their opportunity cost. Anything that distorts the value of an input or output is adjusted to reflect this. For example, minimum wages represent a labour market distortion. If the labour input to a project adds to the current supply of labour, (for example, drawn from the pool of available unskilled labour) then it is priced at the 'shadow wage'. Alternatively, if the labour input is reallocated from another market, (for example, skilled labour taken away from another project), then the market rate of labour is used in the analysis. In shadow pricing where taxes are involved (distorting the market) the price used in efficiency analysis should not include taxes.

The efficiency analysis determines whether the project is an economically efficient allocation of scarce resources across all groups impacted upon by the proposal – if the monetary benefits of the proposal exceed the amount required to theoretically compensate those who are adversely affected by the project, then the project is deemed to be an efficient allocation of resources (a potential Pareto improvement).
Referent Group Analysis

The referent group analysis is a subset of the efficiency analysis. While the decision maker is interested in knowing the overall effect of a project on economic welfare, he or she is usually also interested in the net benefits to a nominated group of affected stakeholders. By subtracting from the efficiency analysis results those net benefits which do not accrue to nominated stakeholders, (or alternatively, summing the net benefits to the different sub-groups of the referent group), decision makers have additional information on which to base decisions. An attractive feature of the referent group analysis is that disaggregated information is available on the distribution of impact across the different nominated sub-groups.

For the VOI proposal, consultation with departmental officers revealed that the referent group is considered broadly to be South Australia. The analysis has been further broken down into the following South Australia sub-groups:

- The South Australian Government
- Domestic labour likely to be engaged on the project
- The Bank of South Australia (SA Government 100% shareholder)
- The South Australian Electricity Board (SA Govt owned corporation);
- The South Australian Water Utility (SA Govt owned corporation); and
- The inter-state freight operator.

2.2 Decision criteria

For each of the four integrated parts of the analysis – project, private, efficiency and referent group – a discounted cash flow analysis was undertaken. Cash flows (real prices) were projected over the life of the project (2033-2003) and then discounted back to a net present-year value (2003). If the net present value (NPV) was positive then, all other things being equal, the project was considered worthwhile undertaking.

Although the SA Government applies a discount rate of 6% to public projects, a range of discount rates was used to allow for sensitivity testing of the NPV results. (See section on sensitivity testing for further discussion)

The internal rate of return (IRR) has also been calculated for each part of the analysis. The IRR is that discount rate that reduces the NPV to zero. If the IRR is greater than the relevant cost of capital, it suggests that the project should be accepted.

2.3 Key Variables

Attachment A.1 "Key Variables" details all the project input and revenue data and assumptions about prevailing conditions for the proposed project (for example, current import tariffs, profits tax rate, and so on). Every item detailed in this attachment can be varied and may, indeed, change over time (see Section 2.4 Assumptions). This would certainly be the case as new information comes to hand. An important point to note about the variables in this analysis is that they have been made on the basis of the best information available at the time. With many of the variables forecast over the 30 year life of the project, we cannot know with certainty what those future values may be. This can have significant

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3 If negotiations with VOI progress it is recommended that they be requested to submit more details on their forecast net cash flows and other operating assumptions.
impacts on the results of any analysis, and the reader is cautioned to bear that in mind. Uncertainty around the values of variables is addressed in Section 3.5.

All cost and revenue items are presented in real terms (without inflation) and a set of real discount rates is used.

The key variables that distinguish the different options follow:

- Option 1, the base case, assumes a commercial rate of interest on VOI's loan, and that the prevailing rates for profits tax, import duties and the state agricultural levy apply.

For Options 2-8, each of these key variables was adjusted:

- **Option 2** Interest on loan charged at concessional rate of 2%
- **Option 3** Exemption from the 33% federal profits tax for the first 15 years
- **Option 4** Import duties on inputs reduced from 15% to 0%
- **Option 5** Agricultural levy on olive oil reduced from $0.80/L to $0.00/L
- **Option 6** Interest on loan charged at concessional rate of 2% and granted exemption from profits tax for 15 years
- **Option 7** Rates charged for water licensing and usage were varied and the agricultural levy removed. (The details of this option are discussed further in Section 2.4 Assumptions – Shadow prices)
- **Option 8** Interest on loan charged at concessional rate of 6.5%

### 2.4 Assumptions

This section summarises those assumptions that are most open to the analyst's interpretation and discretion. All other assumptions are contained in Attachment A.1.

**Operating Costs of VOI**

VOI's operating costs have been distinguished between fixed and variable. Fixed costs are incurred from 2004 onward (whereupon operation commences). Variable operating costs (from 2006) directly vary with production levels – VOI anticipates reaching 100% production capacity in 2010.

**Depreciation**

A straight-line method of calculating depreciation at a rate of 10% has been assumed. The different asset lives applicable for calculating depreciation are included in the Key Variables table. However, the Australian Taxation Office's new uniform capital allowance rules for depreciation of most capital asset classes are much more sophisticated than previously allowed straight-line methods. Despite this, the depreciation assumptions are considered adequate in order to estimate net cash flows likely to be faced by VOI and to provide decision makers and negotiators with sufficient information to proceed with initial negotiations.

**Salvage value**

No salvage values or terminal values are assumed or provided for.

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**Import Duties**

Two import duties rates are assumed in this project analysis:

- Imported inputs – subject to a 15% duty
- Imported final goods – subject to a 20% duty

If further analysis is required, a survey of any proposed changes to tariff structures and rates is recommended.

**Interest on Loan**

VOI proposes financing the project with a $2.5 million loan, with a term of 15 years, from the Bank of South Australia. The commercial rate of interest on this loan is 10%. If VOI can secure concessional loan terms the rate would be 2%. Irrespective of the applicable interest rate, the loan repayment structure is assumed to be an annuity.

**Profits Tax**

Company profits are taxed at 33%, payable to the Federal Treasury. It has been assumed that any losses VOI bears can be offset against other VOI operations in Australia. A further assumption relating to options where VOI is exempt from profits tax for 15 years is that losses cannot be offset during this period. These are the tax assumptions that prevail today. However, if further detailed analysis is required, the Australian Taxation Office should be able to provide information on any proposed tax regime changes applicable to VOI's proposed project.

**Repatriation of profits**

VOI are assumed to repatriate all after-tax profits to Europe.

**Shadow Prices**

**Labour**

The shadow price for unskilled labour is equal to 60% of the market wage. It is also assumed that when labour that is otherwise unemployed, is employed on the project, that there is not net change to federal government taxes and social security payments.

**Water licence and water use charges**

The shadow price of the water allocation licence is assumed to be zero because the licence is an administrative mechanism only, with no value in an alternative use. The licence charge is for the right to draw water. It does not vary with the amount of water actually drawn. The water licence is assumed to be non transferable.

The shadow price of water drawn by VOI is 140% of the actual market price paid by VOI for water. The shadow price is the marginal cost of supplying water, assuming a competitive market for water. The marginal cost schedule is therefore the water suppliers supply curve. It is further assumed that the water drawn from the State Water Authority has a value in an alternative use. Its shadow price, therefore, is valued at an equilibrium point on the supply curve – the marginal cost of supplying water. In Option 7, the project is analysed when the market price is set equal to the marginal cost and the SA agricultural levy (another distortion) is removed. Both of these changes are consistent with commitments made by the SA Government to introduce deregulation and transparency in charging.
Power

A similar set of assumptions applies to the supply price of power, where the marginal cost of power is its value in an alternative use – its shadow price. However in the case of pricing by the Electricity Trust of SA, it is pricing power 50% below marginal cost.

Opportunity cost of final olive oil product

Because the VOI proposal is an import replacing project, the project's output (olive oil) will satisfy existing demand from a different source. In this case the appropriate shadow price for olive oil is its world supply price of $6/L.

Changes in related markets

Relative to the size of the relevant markets, the project is not assumed to affect prices in these markets.

3 Analysis

The tables in sections 3.1 to 3.4 summarise the NPVs and IRR for each project option, in terms of the four types of BCA undertaken – project, private, efficiency and referent group, and for each of the discount rates used. Table 3.5 summarises the results at the SA Government's preferred discount rate of 6%. Details of how cash flows were derived are contained in worksheets appended to the report.

3.1 Project Analysis

<table>
<thead>
<tr>
<th>($)000</th>
<th>Project Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NPV@ d.r. 3% 6% 9% 12% Rank IRR Rank</td>
</tr>
<tr>
<td>Option 1</td>
<td>11848.945 6191.015 2946.270 988.852 2 14.29% 2</td>
</tr>
<tr>
<td>Option 2</td>
<td>11848.945 6191.015 2946.270 988.852 2 14.29% 2</td>
</tr>
<tr>
<td>Option 3</td>
<td>11848.945 6191.015 2946.270 988.852 2 14.29% 2</td>
</tr>
<tr>
<td>Option 4</td>
<td>11980.427 6303.766 3045.690 1078.268 1 14.52% 1</td>
</tr>
<tr>
<td>Option 5</td>
<td>11848.945 6191.015 2946.270 988.852 2 14.29% 2</td>
</tr>
<tr>
<td>Option 6</td>
<td>11848.945 6191.015 2946.270 988.852 2 14.29% 2</td>
</tr>
<tr>
<td>Option 7</td>
<td>9496.890 4539.244 1713.433 22.233 3 12.05% 3</td>
</tr>
<tr>
<td>Option 8</td>
<td>11848.945 6191.015 2946.270 988.852 2 14.29% 2</td>
</tr>
</tbody>
</table>

The project analysis reveals that when costs and benefits are considered from the market perspective, all of the project options have positive NPVs at all of the discount rates considered. Nonetheless two options stand out from the rest – Option 1 is preferred, and Option 7 is ranked last.

3.2 Private Analysis

<table>
<thead>
<tr>
<th>($)000</th>
<th>Private Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NPV@ d.r. 3% 6% 9% 12% Rank IRR Rank</td>
</tr>
<tr>
<td>Option 1</td>
<td>3914.133 1601.351 389.629 -264.799 8 10.56% 8</td>
</tr>
<tr>
<td>Option 2</td>
<td>4961.057 2433.554 1065.483 294.951 3 13.79% 3</td>
</tr>
<tr>
<td>Option 3</td>
<td>5129.495 2353.715 820.913 -30.78 4 11.74% 6</td>
</tr>
<tr>
<td>Option 4</td>
<td>4012.514 1691.858 473.222 -187.192 7 10.95% 7</td>
</tr>
<tr>
<td>Option 5</td>
<td>6693.532 3415.587 1638.862 635.133 2 15.33% 2</td>
</tr>
<tr>
<td>Option 6</td>
<td>6730.620 3656.329 1902.019 855.159 1 16.34% 1</td>
</tr>
<tr>
<td>Option 7</td>
<td>5117.657 2308.894 812.860 -12.504 5 12.97% 4</td>
</tr>
<tr>
<td>Option 8</td>
<td>4405.754 1993.303 708.906 0.426 6 12.00% 5</td>
</tr>
</tbody>
</table>
The summary of the private analysis essentially informs us how much VOI stands to make or lose from the different options under consideration. The two decision criteria (NPV and IRR) give almost consistent rankings of the options. However, when ranking Options 3, 4, and 8, the two rules give conflicting results. This is due to a phenomenon known as 'switching’ whereby the curves plotting each project NPV against discount rate' cross. In this instance the while both rules are appropriate for 'accept/reject' decisions, the NPV rule is more robust when ranking projects.

Option 6 (concessional loan at 2% and exemption from federal profits tax) is VOI's clearly preferred option. This indeed was the nature of financial assistance VOI sought. The private analysis also serves to confirm that the assumptions regarding VOI's costs and revenues are not unreasonable.

Knowing VOI's cost of funds, we are able to eliminate Options 1, 3, and 4 as it is evident that, as presently structured, these options would be rejected by VOI. VOI would accept Options 2, 5 and 7. Option 8 may also be acceptable to VOI as the IRR matches the stated cost of capital.

### 3.3 Efficiency Analysis

<table>
<thead>
<tr>
<th>($000)</th>
<th>Efficiency Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV@ d.r.</td>
<td>3%</td>
</tr>
<tr>
<td>All Options</td>
<td>6134.595</td>
</tr>
</tbody>
</table>

All of the options considered have the same net impact on efficiency outcomes. However, decision makers should note that this analysis does not consider any distributional effects of the project.

### 3.4 Referent Group Analysis

<table>
<thead>
<tr>
<th>($000)</th>
<th>Referent Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV@ d.r.</td>
<td>3%</td>
</tr>
<tr>
<td>Option 1</td>
<td>2989.716</td>
</tr>
<tr>
<td>Option 2</td>
<td>1388.591</td>
</tr>
<tr>
<td>Option 3</td>
<td>2989.716</td>
</tr>
<tr>
<td>Option 4</td>
<td>2989.716</td>
</tr>
<tr>
<td>Option 5</td>
<td>210.316</td>
</tr>
<tr>
<td>Option 6</td>
<td>1388.591</td>
</tr>
<tr>
<td>Option 7</td>
<td>2562.369</td>
</tr>
<tr>
<td>Option 8</td>
<td>2239.984</td>
</tr>
</tbody>
</table>

Looking at the above summary table, Option 5 (removing the agricultural levy) would be rejected by decision-makers for the referent group as it has a negative NPV at all but a 3% discount rate. In this scenario all that the referent group stands to lose would be gained by VOI, dollar for dollar.

The referent group's preferred options are, equally 1, 3 and 4. These options however are the same that would be rejected by VOI. The proportion of benefit to the different sub-groups in the referent group is constant for these 3 options – it is the federal government that trades off losses with VOI.

Options 2, 6, 7, and 8 all give a positive NPV to the referent group. The differences between the options (from the perspective of the referent group members only) is which sub-group stands to win or lose. Option 2 sees the Bank of SA lose, Option 6 and 8 the Bank again, though much less with option 8 (due to the a 6.5% interest rate rather than 2% on the VOI loan). In Option 7, the water utility gains almost offset the losses sustained by removing the agricultural levy.
The following table offers a summary of the likely viable options from the perspective of the referent group.

<table>
<thead>
<tr>
<th>NPV@ 6% ($000)</th>
<th>Option 2</th>
<th>Option 6</th>
<th>Option 7</th>
<th>Option 8</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-609.812</td>
</tr>
</tbody>
</table>

3.5 Sensitivity Testing

The analysis outcomes have been tested for their sensitivity to assumptions about, or values of, selected key variables. At this stage of the investigation into VOI’s proposal, only Option 1 (the base case) has been examined for sensitivity. A discount rate of 6% was used.

The following variables were set values over a range of ± 20%:

- The market price of the project output – olive oil
- The market price of capital equipment – irrigation infrastructure, shed, vehicles and equipment, factory building and equipment.
- Water usage rate

<table>
<thead>
<tr>
<th>Sensitivity Analysis – Option 1 Only</th>
<th>NPV@6%</th>
</tr>
</thead>
<tbody>
<tr>
<td>($000) Private</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Base Case 'Benchmarks'</td>
<td>6191.02</td>
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<tr>
<td>Domestic market price of olive oil +20%</td>
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<tr>
<td>Domestic market price of olive oil -20%</td>
<td>2562.54</td>
</tr>
<tr>
<td>Cost of capital expenditure + 20%</td>
<td>5591.61</td>
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<tr>
<td>Cost of capital expenditure - 20%</td>
<td>6765.38</td>
</tr>
<tr>
<td>Water usage +20%</td>
<td>5365.12</td>
</tr>
<tr>
<td>Water usage -20%</td>
<td>7016.90</td>
</tr>
</tbody>
</table>

Market price of olive oil

From the table above we conclude that the project viability from the perspective of VOI is particularly sensitive to the domestic market price of olive oil. If VOI olive oil was not able to command $8/L, the profitability of the project has poor prospects.

Advice from the Department of Resources and Primary Industries is that Australian specialist olive oil producers are capable of commanding premium prices for quality oil products, often above the price of imported oil from traditional sources such as Spain and Greece. However, the ability of domestic producers to successfully compete in that market is dependent on exacting standards and processes. As indicated by the sensitivity analysis results, the VOI’s modelling of anticipated price warrants closer examination. Furthermore, if VOI were indeed able to command a premium price as a niche producer of quality olive oils, it may be the case that the results of the efficiency analysis change. The reason for this is that imported olive oil and its world supply price is less likely to be an appropriate shadow price for such a differentiated product.
As would be expected, the returns to VOI are sensitive to the price of capital equipment. The slight difference in the referent group analysis is attributable to small amounts of rent accruing to labour involved in the provision of these assets.

**Rate of Water Usage**
While the Adelaide Plains is considered to have a Mediterranean climate well suited to olive growing, the same climate is always prone to concerns over the availability and reliability of water for horticulture. A sensitivity test on water usage (less if there is adequate rainfall, more if drought conditions persist) was undertaken. The value of the project to both the referent group and VOI are relatively sensitive to the change, with the impact on VOI's profits being slightly more.

**Other variables**
Although the Australian dollar (AUD) is currently enjoying a five year high against the US dollar (USD) a decision was made not to test outcomes for sensitivity to movements in the exchange rate\(^5\). It was considered a costly exercise to model possible movements in the AUD over a 30 year period for inclusion in this analysis and, a priori, not believed to change the relative ranking of options or those options favoured by VOI or the SA Government.

**Sensitivity to Discount Rate**
In addition to sensitivity testing for discrete variables, the NPV's of each option have been tested for their sensitivity to a range of discount rates (3%, 6%, 9% and 12%). Discounting the net cash flows at a rate higher than the Government's preferred rate of 6% has the effect of adding a 'risk premium' to the discount rate. This is a way of incorporating risk and uncertainty into the analysis, though a crude one as it provides no further information about the probability of an occurrence or the significance or acceptability of risk. From the perspective first of VOI a change in the discount rate, especially from 9% to 12% changes NPV from positive to in negative NPV for the following options:

- Option 1 – No concessions
- Option 3 – Exemption from profits tax for 15 years
- Option 4 – An exemption from import duties
- Option 8 – Loan at concessional interest rate of 6.5%

From the perspective of the referent group:

- Option 2 – Loan at concessional interest rate of 2%
- Option 6 – Loan at concessional interest rate of 2% and profits tax exemptions
- Option 7 – Efficient water pricing and no agricultural levy
- Option 8 – Loan at concessional interest rate of 6.5%

\(^5\) Made in consultation with departmental officers.
4 Conclusion

On the basis of the analysis, the option that maximises benefit to the referent group is Option 7. It also satisfies VOI's IRR decision rule. However, decision makers would need to consider timing issues as part of their negotiating strategy with VOI. If the proposed regulatory reform cannot be introduced in time for this project, the benefits will not be realised. The SA Government may also wish to consider the transaction costs and benefits associated with both introducing water pricing reform and dismantling the agricultural levy respectively.

Options 2 and 6 offer the same net benefit to the referent group and are acceptable options from this perspective. VOI would obviously prefer option 6. However, the federal government, though not explicitly part of the nominated referent group, stands to lose considerable tax revenues with Option 6. The evident efficiency benefits that this project offers the wider economy, however, may be attractive to the federal government. If other options ultimately fail in negotiation, there may be scope to consider 'half-way' concessions on tax and/or interest on finance.

From a total sum of referent group net benefits and timely in implementation consideration, Option 8, a concessional finance loan at 6.5% is likely to be the best option for the SA Government. It offers considerable net benefits estimated at $1.07 million at the same time as earning the required rate of return for VOI. The Government is in a strong negotiation position to be able to affect this outcome. By VOI stating that they will not invest in the project if their after-tax IRR is not at least 12%, VOI have revealed their cost of capital. This is valuable information in negotiating on the proposal as the Government is able to structure options so that VOI earns 'only enough' while maximising returns to the referent group. This 'threshold' amount for assistance is a reduced interest rate of 6.5% rather than VOI's proposed 2%, thereby making considerable savings for the Bank of SA and its equity owners.

Despite this emerging as a preferred option, decision makers should not neglect the results of the sensitivity testing. As the discount rate increases, the referent group benefits are likely to erode considerably with this option. A further recommendation stemming from this analysis is therefore further financial risk analysis.

Additionally, the referent group analysis has not stressed the 'weighting' of loss and gain amongst referent group members. The most attractive strategy to the referent group as a whole places the majority of burden with the Bank of SA. Government may need to consider what incentives the Bank may have in negotiating this outcome. Any costs of this incentive strategy would need to be factored in to further refinements of this BCA analysis.
Appendix

The following MS Excel worksheets are included as an appendix to this report:

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<th>Summary Information</th>
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<tr>
<td>A3</td>
<td>Option 1 – NCF No Concessions</td>
</tr>
<tr>
<td>A4</td>
<td>Option 2 – NCF Concessional Loan</td>
</tr>
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<td>A5</td>
<td>Option 3 – NCF Tax Holiday</td>
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<td>A6</td>
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<td>Option 7 – NCF Water $ Full Cost Recovery</td>
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<td>A10</td>
<td>Option 8 – NCF Concessional rate of 6.5%</td>
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References


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6 See attached disc.