

Collie Futures – Protected Cropping Prefeasibility Investigation

For: Department of Primary Industries and
Regional Development Western Australia

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EXECUTIVE SUMMARY

Abbreviations

Abbreviation	Explanation
\$	dollar
%	percentage
A	annum
AWE	annual water entitlement
CID	Collie Irrigation District
CO ₂	carbon dioxide
CREB	Collie River East Branch
CRID	Collie River Irrigation District
DAFWA	Department of Agriculture and Food Western Australia
DoW	Department of Water
DPIRD	Department of Primary Industries and Regional Development Western Australia
dS/m	Electrical conductivity in deci siemens per meter
DWER	Department of Water and Environmental Regulation
EGRC	Electricity Generation and Retail Corporation
EOI	Expression of Interest
ESY	ecological sustainable yield
FTE	full time equivalent
GL	gigalitre
g	gram
ha	hectare
HID	Harvey Irrigation District
hr	hour
IPM	integrated pest management
IT	information technology
k	thousand
kg	kilogram
kL	kilolitre
km	kilometre
L	litre
LCSWAP	Lower Collie surface water allocation plan
LIA	Light Industrial Area
m	million
MAR	Managed Aquifer Recharge
MCA	Multi Criteria Analysis
MeBr	methyl bromide
Mg	milligram
MHAP	Myalup Irrigation Agriculture Precinct
MICoR	Manual of Importing Country Requirements
min	minute
ML	megalitre
NZ	New Zealand
PPE	personal protective equipment
RiWI	Rights in Water and Irrigation
SA	South Australia
SDP	Saline Disposal Pipeline
SIA	Strategic Industrial Area
SWGAP	South West groundwater areas allocation plan

Abbreviation	Explanation
t	tonne
TDS	Total dissolved solids
TPP	tomato potato psyllid
TPS	Town Planning Scheme
UAE	United Arab Emirates
UCL	Unallocated Crown Land
UCWAP	Upper Collie water allocation plan
UN	United Nations
WA	Western Australia
WSP	Water Service Provider
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

1 Executive Summary

This report defines the opportunity, requirements and potential benefits of an intensive greenhouse horticulture enterprise in the Greater Collie Region. A base unit of 10ha was studied but there are adequate resources available for a larger project or a number of smaller developers.

High technology protected cropping facilitates rigorous control of the growing environment to deliver optimal product quality, yield and market reliability as well as effectively managing biosecurity/quarantine protocols, labour and production inputs.

It is recognised that there is limited domestic market opportunities for increased large-scale production of the types of crops likely to be grown in greenhouses. For this reason, the report has a significant focus on export market opportunities.

Export market access was looked at but detailed assessment was outside the scope of the project. Market access may impact on access to specific international markets.

An options analysis process has revealed two preferred sites in the region; Collie and Northern CRID Farmlands. The primary differences between the sites reflect different infrastructure and operating costs for heating and whether land needs to be purchased.

The Collie Region offers a distinctive opportunity to develop a leading, high value and integrated intensive horticultural industry utilising existing heat, power and water resources, as well as local socio-economic and natural assets.

The Northern CRID Farmlands region also commands a distinct opportunity with valuable local socio-economic and natural assets to support a leading, high value, clean and integrated intensive horticultural industry.

These sites are not mutually exclusive as both could be developed simultaneously or consecutively. Both locations have adequate resources for future expansion.

Energy and water are key considerations and both a greenhouse heat demand model and a water balance model have been used to populate this prefeasibility analysis. The Greater Collie Region offers a number of energy and water resources strategy options.

Costs and returns can be variable, and although based on current market data and industry costs, presented values are prefeasibility estimates, with an allowance $\pm 30\%$. The market assessment has been undertaken as a desktop study, as market for produce is a critical success factor it is therefore important that further work is undertaken to establish sustainable markets.

The economic analysis, founded on a 10ha development unit, a realistic return on investment in the order of 16.05% – 18.64% can be achieved. The initial capital investment at the preferred sites is estimated to \$20.5M – \$23M with annual recurring costs around \$8.5 – 9m. This is based on truss tomato (one of four identified benchmark crops), though a diverse range of crops can be realistically

considered in this region, including novel options. Western Australia is in a strong position to be a significant player in many of the regional Asian and Middle East fresh produce markets into the future.

Table 1 Executive summary of site information

Issue	Collie	Brunswick
Investment (per 10ha high tech. greenhouse)	Tomatoes \$23.047M Strawberries \$21.055M	Tomatoes \$22.437M Strawberries \$20.445M
Payback	Tomatoes: 7yr 6mo Strawberries: 9yr 6mo	Tomatoes: 7yr 5mo Strawberries: 9yr 2mo
Greenhouse	Dual skin poly clad, chapel style, multi span greenhouses, 12 - 16 m per span wide with 6.5m high gutter height. Greenhouse cladding EFTE (F-Clean or similar) with double continuous roof ventilation and insect screening. Environmental control systems for heating / cooling and automated hydroponic irrigation.	
Energy	Cogenerated heat from Power station. No additional cost for heating.	Gas heating with gas from the Dampier Bunbury main. Cost of gas is in the order of \$1.8M per annum
	Energy may be able to be banked or taken from the grid to balance energy load and cost of development	
Land access	Low-cost freehold land available	Other competing land uses but can be purchased
Power	System has been costed with renewable power generation	Grid power available
Water	A range of water resources have been identified to meet the needs of this project	Water would be purchased from Harvey Water and supplied through the CRID irrigation scheme
	Water identified would limit future expansion above 100ha	There would be no limitation for future expansion
Water treatment	Reverse osmosis is required for both projects to achieve the water quality necessary for greenhouse production. When the Collie Water project is developed, then suitable RO water could be purchased directly mitigating the need for a water treatment plant	
Brine waste stream	Access to the Collie Saline Discharge Pipeline is seen as the most likely solution for the brine waste stream.	
Zoning	Do not see significant zoning issues, both locations will require rezoning or be developed under a non-conforming development application.	
Production	60kg/m ² /yr of marketable tomatoes. There is evidence of higher production rates in greenhouses throughout the world, however, the rate selected is both achievable and realistic in the first three years of operation.	
Green production	This project could be developed off grid with harvested storm water of mine rehabilitation sites and renewable energy.	This project is likely to be a more conventional greenhouse development.
Markets for produce	This study has been developed under the core assumption that export markets will be developed for produce. Most horticultural commodity markets are saturated within the domestic market and for this reason the market study has focused on international market opportunities.	

Issue	Collie	Brunswick
Infrastructure	There are no significant public infrastructure concerns with either site and neither has any infrastructure advantage or disadvantage.	
Labour	For each 10ha of greenhouse development a directly employed labour force of 96 persons is required. It is anticipated that the labour requirements for either site can be adequately met from local and regional resources and will be a contributor to regional development and prosperity. Training will be required for some staff and training providers / course need to be identified and implemented.	

EXECUTIVE SUMMARY



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