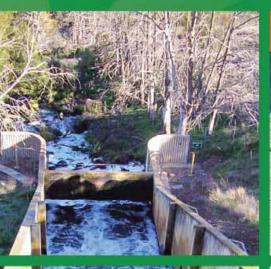


# Collie Futures – Protected Cropping Prefeasibility Investigation

For: Department of Primary Industries and Regional Development Western Australia

**March 2018** 







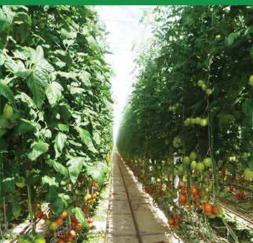












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## **Abbreviations**

Abbreviation	Explanation
\$	dollar
%	percentage
Α	annum
AWE	annual water entitlement
CID	Collie Irrigation District
CO <sub>2</sub>	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
MIAP	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

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Griffin Coal, a relevant landholder in the Colie Basin, specifically Brant Edwards and Paul Irving who provided time to show the project team around the Collie Basin highlighting key assets that would assist in the development of a sustainable greenhouse project in the Collie Region. Griffin Coal has committed to assist in the development of a greenhouse project in the Collie Region.

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AECUTIVE SUMMAR.

#### 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 ±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	Tomatoes \$23.047M	Tomatoes \$22.437M
high tech. greenhouse)	Strawberries \$21.055M	Strawberries \$20.445M
Payback	Tomatoes: 7yr 6mo	Tomatoes: 7yr 5mo
	Strawberries: 9yr 6mo	Strawberries: 9yr 2mo
Greenhouse		e, multi span greenhouses, 12 - 16 m per span  Greenhouse cladding EFTE (F-Clean or
		of ventilation and insect screening.
	·	heating / cooling and automated hydroponic
	irrigation.	, and any and any any and any
Energy	Cogenerated heat from Power	Gas heating with gas from the Dampier
	station. No additional cost for	Bunbury main. Cost of gas is in the order
	heating.	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	Grid power available
	renewable power generation	
Water	A range of water resources have	Water would be purchased from Harvey
	been identified to meet the needs	
	of this project	irrigation scheme
	Alexander and the state of the	The second discount limitation for future
	Water identified would limit future expansion above 100ha	e There would be no limitation for future expansion
Water treatment		oth projects to achieve the water quality
water treatment	necessary for greenhouse product	
	When the Collie Water project is	
	developed, then suitable RO water	r
	could be purchased directly	
	mitigating the need for a water	
	treatment plant	
Brine waste stream		ge Pipeline is seen as the most likely solution
	for the brine waste stream.	a hash la sasia na will na swina na sasia a sa ha
Zoning	developed under a non-conformin	s, both locations will require rezoning or be
Production	·	es. There is evidence of higher production
Troduction		he world, however, the rate selected is both
	achievable and realistic in the first	
Green production	This project could be developed of	
	grid with harvested storm water o	
	mine rehabilitation sites and	
	renewable energy.	
Markets for produce		der the core assumption that export markets
		ost horticultural commodity markets are
		rket and for this reason the market study has
	focused on international market o	pportunities.

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 96 persons is required. It is anticipated site can be adequately met from local arcontributor to regional development and for some staff and training providers / contributed.	that the labour requirements for either nd regional resources and will be a d prosperity. Training will be required





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