



CHRISTMAS ISLAND – SINGAPORE STRATEGY



**SHIRE OF
CHRISTMAS ISLAND**

December 2018

Content	Page
1. Preamble Statement	2
2. Introduction	3
3. ASCSP Fact Sheet – Project 2025	3
4. Strategic Initiatives	4
Population Growth	6
Cessation of Mining	6
Food Supply	6
Tourism Opportunities	7
Construction Material Supply	8
Future Economic Activities	8
Private Investment	8
Natural Environment	9
Climate Change	9
Roads	9
Airport	10
Port	10
Higher Education	11
Defence	11
Culture & the Arts	12
Sports	12
Appendix 1 Singapore food security (2017)	13
Appendix 2 Singapore fact finding mission (7 to 10 February 2017)	15

DISCLAIMER

Any representation, statement, opinion or advice expressed or implied in this document, prepared by Calmy Planning & Design Pty. Ltd. for the Shire of Christmas Island, are made in good faith and on the basis that the author is not liable for any loss whatsoever which may occur as a result of action taken or not taken in respect to the document content. Professional advice should be obtained before applying the information contained in this document to particular circumstances.

1. Preamble Statement

“The ***Christmas Island – Singapore Strategy*** (CISS) recognises the strong historic, cultural and social ties between Christmas Island (CI) and Singapore.

It focuses on the immediate and urgent effort to transition the CI economy from Mining & Immigration to Agriculture, Tourism, Education and Defence under the auspices of the November 2016 ***Australia-Singapore Comprehensive Strategic Partnership*** (ASCSP) seeking to bring the two economies closer together within a 10-year timeframe.

The CISS’s foremost function is to foster new investment opportunities on CI, and possibly the Indian Ocean Territories (IOT) as a whole, from South-East Asia’s first financial hub and Australia’s closest strategic and longstanding Defence partner in the region.”

2. Introduction & Objectives

The Shire of Christmas Island (SoCI) **Local Planning Strategy** (LPS) is progressively being reviewed and adjusted in preparation for the mandatory and formal review of the **Town Planning Scheme No.2** by 2021 pursuant to *Part 6, Division 1 section 65 of the WA Planning & Development Regulations 2015*. As part of this process the SoCI is giving consideration to introduce the CISS to strengthen the Island's historic and special relationship with Singapore and bolster the Island's economy.

The CISS provides a strategic agenda to support the growth of the CI economy with a specific Singapore focus. Many opportunities raised in the CISS could have economic synergies and or applications to the Cocos (Keeling) Islands (CKI). In this context, it is neither the role nor the intended ambition of the SoCI to influence the Shire of CKI in economic matters that can relate to Singapore and the IOT as a whole.

For more than a century and to this day CI is the IOT's leading economy. With the cessation of immigration activities and the life expectancy of the mine unlikely to project beyond 2028, such leadership position is declining rapidly. This predictable downturn is and will continue to affect the Christmas Islanders as well as the Commonwealth bottom line with less revenues. The CISS is mapping a range of short to long term initiatives that would be in the interest of CI, Australia and Singapore to ensure that such trend can be reversed.

The CISS outlines the economic prospects that the ASCSP could open up in terms of Cultural Relations; Education; Innovation & Science; People movements and Northern Australia Agribusiness Development Partnership thus potentially mitigating CI's foreseeable decline, foster new joint business opportunities and potentially secure CI's necessary economic renewal.

Finally, the CISS is designed as a wholistic enabling tool with specific targets to ensure that CI and the IOT are firmly considered within the Northern Australia framework and well represented in all future ASCSP high level deliberations between Australia and Singapore.

3. ASCSP Fact Sheet – Project 2025

The following fact sheet published by the Department of Foreign Affairs & Trade provides a summary of the key aspects of the ASCSP:

On the economic front, the partnership will mean, in practical terms:

- a) *An early review of the Singapore-Australia Free Trade Agreement, unlocking new trade and investment opportunities and establishing a Closer Economic Relationship arrangement;*
- b) *Exploring investment opportunities in sectors such as food, agribusiness and infrastructure, and in new growth areas including Northern Australia;*
- c) *Increasing the flow of skilled labour and visitors;*
- d) *joint tourism cooperation;*
- e) *Reviewing Australia's Foreign Investment Review Board thresholds for Singapore's investments into Australia;*
- f) *Better access to, and integration of, financial and capital markets, including cooperation on financial market infrastructure;*
- g) *Expanding potential to increase two-way investment flows, including by working together in third markets in our region and beyond;*
- h) *Building additional research and development partnerships, including by working on the commercialisation of research among our agencies, academic institutions and the private sector;*
- i) *Enhancing our aviation and maritime connectivity;*
- j) *Promoting trade and investment activities through more partnerships in the private sector, including through sharing information on infrastructure opportunities, collaborating on food and agribusiness opportunities (including in aquaculture and fisheries), and promoting mutual recognition of standards, conformance and qualifications.*

In the area of foreign affairs, defence and security, we will:

- k) *Hold annual leaders' meetings, alternating between the two countries as host;*
- l) *Increase consultations and cooperation between Ministers and officials on regional and global issues, including cooperation in regional institutions such as the East Asia Summit and Association of Southeast Asian Nations;*
- m) *Launch short-term exchanges of Foreign Service Officers;*
- n) *Increase intelligence sharing in areas of common interest, such as new security challenges in counter-terrorism and extremism;*

- o) Develop departmental and military exchanges and postings between Singapore's and Australia's defence organisations;*
- p) Increased access to, and enhancement of, training areas including joint development of military training facilities in Australia, consistent with the requirements of both countries, while respecting Australia's sovereignty and noting Australia's ownership;*
- q) Share expertise on cybercrime investigation techniques and digital forensic capabilities;*
- r) Collaborate on cybercrime in the region;*
- s) Develop operational collaboration and joint targeting of organised crime and money laundering groups emanating from either Australia or Singapore;*
- t) Attach Central Narcotics Bureau officers to the Australian Federal Police; and*
- u) Establish information exchange on bush fire operations and other disaster management issues, and explore short-term deployment of Singapore personnel to assist in tackling large fire operations.*

We share very strong people-to-people links, and have agreed to strengthen these further through:

- v) A New Colombo Plan business champions group;*
- w) More cooperation between our arts institutions, including facilitation of travelling exhibitions, loaning of artefacts and co-curation of exhibitions among heritage institutions and museums, and the establishment of new partnerships;*
- x) Deepening links between our educational, scientific and research institutions by enhancing dialogue and sharing information on policies and programmes to improve teaching quality and lift outcomes for all students;*
- y) Greater internship opportunities in Australia for Singaporean students studying in Singapore institutions;*
- z) The launch of a Joint Strategic Dialogue on Science and Innovation; and*
- aa) Short-term study visits for Singapore and Australian civil service officials across agencies which share areas of interest or policy responsibility.*

4. Strategic Initiatives

This section presents new Strategic Initiatives, under the headings of the current LPS. These Initiatives could ultimately translate in enabling actions and or be formulated as policies during the statutory review of the Shire Planning Instruments by 2021.

4.1.1 Population Growth

Current Issue

At the peak of Immigration activities in 2014 the island's population was close to 5000. With the closure of the detention centre and the reduction in 2018 of the mine's workforce by 1/3, the current population is now down to less than 1200 resulting in a dramatic contraction of the local economy.

Strategic Initiative

Signal to the relevant Singapore Authorities and business community that CI has existing capacity to accommodate 600 visitors at any one time and that existing essential services (water, sewer, power) could support immediately between 3000 to 4000 new residents.

4.1.2 Cessation of Mining

Current Issue

The mine's current assessment indicates cessation of mining around 2028.

The prospect of the accessing new mining deposits is in doubt given the recent refusal by the Environment Minister to support new prospection drilling.

Exhausted mining areas estimated at approximately 1200Ha. are offering the best immediate prospect

Strategic Initiative 1

Exhausted mining areas should be transformed for future productive agri-business related uses (hydroponic vegetables, fish, poultry and semi-enclosed fruit production) that could in part supplement Singapore's food supply, food resilience and ultimate food security ([see Appendix 1 p13](#)).

Strategic Initiative 2

Encourage and support the mine to develop new phosphate products adapted to target specifically Singapore fast growing urban farms

4.1.3 Food Supply

Current Issue

High cost and irregular supply of fresh food on CI.

Singapore for its part is focused on Food Security ([see Appendix 1 p13](#))

Strategic Initiative 1

Encourage the Commonwealth to regulate the anticipated production & export of fresh food such as fruits, vegetables poultry and fish (from potential Singapore agri-businesses that could

be based on CI) to ensure that a proportion of these products are regularly made available to the local market.

Current Issue

Lack of food typically original to CI available for tourism and visitors

The Robber Crab or Palm Thief found on CI is the largest land-living arthropod in the world, and is probably at the upper size limit for terrestrial animals with exoskeletons in recent times, with a weight up to 4.1 kg. It can grow to up to 1 m in length from leg to leg.

Strategic Initiative 2

Foster/encourage dialogue between Parks Australia and the Singapore Zoo to initiate a CI Robber Crab domestication program in Singapore.

(Parks have been hosting Singapore Museum researchers on CI for 20 years, Parks are currently in discussion with the Singapore Zoo to exhibit Blue Tail Skinks and Black-eared Flying Foxes in Singapore. The objective of this initiative is to breed these species outside CI as a genetical back-up)

The ultimate objective is the farming of Robber Crabs on CI to supply the tourism market and potentially export back to Singapore. This initiative may also rely on coconut food supply import from Cocos

Strategic Initiative 3

Provide further support for the continuation of the Mining to Plant Enterprise (MINTOPE) program beyond 2019 with a new research focus on the development of CI original food.

7

4.1.4 Tourism Opportunities

Current Issue

In March 2018 the capacity to accommodate visitors was 284 rooms, 306 beds for a maximum of 519 visitors. On a weekly rotation at 80% occupancy, the island could accommodate 415 visitors per week or 21,580 per annum. At the peak of the resort activity in 1995 the island annual visitation reached 19,377.

In contrast the current tourist visitation on CI would not exceed 1200 per annum averaging 24 guests per week. 300 visitors a week could easily be accommodate with the current hospitality infrastructure.

Strategic Initiative 1

Actively promote the removal of the cabotage restriction for CI-CKI International flights from the immediate north i.e. Indonesia, Singapore and Malaysia to enhance aviation connectivity and increase tourist visitations.

Strategic Initiative 2

Actively promote the introduction of CI visas Support with condition of no-entry to mainland Australia to facilitate and encourage access of foreign tourists, students, educators & researchers.

Strategic Initiative 3

Engage directly with the Singapore Tourism Board to explore suitable arrangements to promote tourism on CI from Singapore.

4.1.5 Construction Material Supply

Current Issue

Heavy reliance on expensive imported construction materials.

Strategic Initiative

Investigate cost effective pre-fabrication construction methods and industries in Singapore to minimise in-situ construction costs and construction time on CI.

4.1.6 Future Economic Activities

Current Issue

The 2016 ABS Census recorded 583 Full Time Employed (FTE) on the Island. In 2018 the closure of the detention centre generated the loss of 240 FTE and a further 53 FTE redundancies occurred at the mine. This is the sharpest economic decline since the closure of the Christmas Island Resort in 1998.

Strategic Initiative

Engage with the Commonwealth Government in order for CI (and the IOT) to be fittingly considered and actively involved within the framework of the ASSCP.

It is expected that such involvement could stimulate economic activities in sectors such as finance, defence, logistics, tourism, education, research, innovation, environmental sciences, trade, socio-cultural advancement and workforce free movement.

4.1.7 Private Investment

Current Issues

Most future land development and associated investments are reliant on the release of Crown Land. The release must, first and foremost, be subject to compliance with EPBC requirements, aquifer pollution prevention and protection of structures against the potential collapse of cave formations. Consequently, it could take several years before Crown Land on the Island is "investment Ready".

Exhausted mining areas outside the National Park with little environmental value offer the best immediate land prospect to attract private investment in the agri-business sector ([refer to sections 4.1.2 & 4.1.3](#))

Strategic Initiative 1

Ensure that a working protocol and common purpose is established between SoCI, the mine and the Commonwealth to expedite the release of

Strategic Initiative 2

Encourage dialogue between DIRDC, the Agri-Food and Veterinary Authority of Singapore (AVA) (AVA will be disbanded on 1 April 2019 and its food related duties will be absorbed by its

successor [Singapore Food Agency](#) (SFA) and the WA Agriculture Produce Commission (APC) to establish a CI specific regulatory framework to inform and guide.

Strategic Initiative 2

Take advice from SFA to reach out to potential Singapore agri-business investors. Check if the AVA Food Fund, to assist Singaporean investors in Agri-businesses, will continue under the SFA.

4.2.1 Natural Environment

Current Issue

With its exceptional natural features, the CI Environment is ideally placed to support eco-tourism, higher education & research programs. (refer to [Higher Education section below](#)).

Strategic Initiative

Encourage dialogue and collaboration between Murdoch University, the National University of Singapore (NUS) and Nanyang Technological University (NTU) to explore higher education opportunities on CI in the fields of Ecologic diversity monitoring, Marine science, Forestry management and Environmental land management. (refer to [section 4.1.4 for eco-tourism and Higher Education section below](#))

4.6.1 Climate Change

Current Issue

The *Paris Agreement* builds upon the Climate Change Convention and for the first time brings all nations into a common cause to undertake ambitious efforts to combat climate change, adapt to its effects and charts a new course in the global climate effort.

Strategic Initiative 1

Accelerate carbon neutrality on CI to align with the *Paris Agreement* by systematically introducing solar arrays and storage to power buildings and future electric motorcars with renewable energy in order to enhance the island's image as an environmentally responsible community surrounded by natural wonders.

Strategic Initiative 2

Engage with Singapore architects, engineers and researchers with proven and successful experience and knowledge in designing innovative low carbon footprint buildings in our equatorial environment and apply such knowledge to our existing and future building infrastructure.

4.7.1 Roads

Current Issue

The SoCI has initiated a street name procedure for the access road from Flying Fish Cove to Tajin House to be named [Jalan Singapore](#)

Strategic Initiative 1

Liaise with the relevant Singapore Government officials to formally notify them to the imminent official unveiling of the street sign ceremony.

Strategic Initiative 2

Provide photographic material of the unveiling of the street sign ceremony to the Singapore media to publicise the event as the starting point of the intended renewed relationship between CI and Singapore.

4.7.2 Airport

Current Issue

The CI airport operation is potentially deficient in six specific areas:

1. The runway does not meet CASA's minimum Longitudinal Slope Standards
2. The Obstacle Limitation Surface around the runway is compromised in several areas
3. The runway End Safety Areas do not meet International aviation standards
4. The fire-fighting infrastructure and service do not meet International aviation standards
5. The terminal building needs upgrade and expansion
6. The CI runway is some 400m shorter than the CKI runway.

The disparity between the 2,445m CKI runway and the 2,043m CI runway could limit the usage of larger aircrafts by South East Asian aviation companies wanting to provide service to both CI and CKI from Asia and may also restrict Defence's abilities and operational flexibility in the IOT.

Strategic Initiative

Promote the relaxation of cabotage ([also refer to section 4.1.4](#)) and the upgrade of the CI Airport in the context of the ASCSP to achieve regular air connectivity with Singapore, improve reliability of air services, accommodate future larger aircrafts and adequately respond to patronage growth potentially driven by tourism, higher education & research, niche agri-business export and possibly defence.

4.7.3 Port

Current Issue

The CI port infrastructure is largely designed for the export of phosphate and associate port services.

The lack of protected berthing space for large vessels combined with limited mooring capability due to steep sea bed close to the shore and exposure to monsoon swell are factors affecting the predictability and reliability of the unloading of sea containers.

Border force and Australian Navy vessels are also subject to these limitations.

The upgrade of the port infrastructure is an essential component to improve CI Maritime connectivity, support CI's sustainable economic growth and consolidate the long term strategic significance of CI in the region.

Strategic Initiative

Encourage Singapore and Australian maritime experts to work collaboratively to design an all-weather berthing capacity for large vessels at or around Flying Fish Cove taking into account the proximity and availability of Singapore's considerable advanced maritime construction equipments and capabilities.

Higher Education

Current Issue

Education and Higher education is emerging as a possible component of CI's economic future. This view has been reinforced by the encouraging results of the Mining to Plant Enterprise (MINTOPE) agricultural and biological research partnership sponsored by Murdoch University, the Commonwealth Government and Phosphate Resources Ltd. since 2012.

MINTOPE activities together with the work done on CI under the auspices of the Australian Research Council has demonstrated that agriculture and downstream agri-products (pulse legumes, cereals, gin, beer, stock feed, yams, coffee etc...) are highly achievable and potentially economically viable on rehabilitated former mining areas.

In addition, the MINTOPE team is indicating that with the quality, diversity and uniqueness of its eco-systems, CI is ideally placed to be considered as a "Living Laboratory" for higher education and research.

Strategic Initiative

Support Murdoch University in establishing partnership with Singapore Higher Education Institutions ([see appendix 2 p 15](#)) to offer joint research and education programs on CI targeting Singaporean Students in the fields of Bio-security, Bio-prospecting, Intensive agriculture/urban farming, Brewing & distillation, Micro sustainable energy, Food security, Mining land rehabilitation, Sustainable mine closure, Small business development, Sociology and Eco-tourism.

Defence

Current Issue

The August 2017 JSCNCET inquiry report into the **Strategic Importance of Australia's Indian Ocean Territories** indicates that defence is considering expanding its presence and activities in the IOT with a specific focus on CI:

"Christmas Island is a valuable location for supporting border protection operations, the replenishment of RAN vessels, staging maritime patrol aircraft on Australia's northern approaches, supporting air operations in North-East Asia and further north and intelligence collection, including surveillance of submarines transiting the Java trench"

The Australian Government under the auspices of the Department of Defence is currently implementing the construction of the Perth-Singapore sub-sea high speed fibre optic cable with a spur connection to CI.

Strategic Initiative

Invite the Australian and Singapore Governments to consider CI with its marine and topographic attributes as suitable for a variety of discrete and non-permanent Australian-Singapore Special Forces extreme training programs.

Culture & the Arts

Current Issue

CI lively culture and traditions can be boosted through further art & culture exchanges with Singapore. The best example is the hand over to CI of the Singapore “Christmas Red” exhibit.

Strategic Initiative

Existing cultural initiatives on CI could be energized and lifted to a higher level with the engagement and participation of Singaporeans personalities & artists. These initiatives are but may not be limited to:

- Carp Leaps over the Dragon Gate
- Singaporean University Thesis collection
- Bust of George Farnham duplication and display on CI
- Relationship building with the LKC Museum
- Robber Crabs at the Singapore Zoo
- Balik Kampong, 回家了, Time to Come Home
- Murals and Interactive Street Art
- Historical and Contemporary Photos exhibition
- The Moving Visuals Co. Stolen Christmas
- Dulux Colours Australia or similar program: Presenting CI Stories in CI Places

Sports

Current Issue

Sports such as Soccer, Cricket, Scuba-diving, Golf or Ping-Pong to name a few are sports practiced on CI as well as in Singapore. Sport is a well-known vehicle to bring people together and foster durable and fruitful international exchanges.

Strategic Initiative 1

Engage with the Singapore Sports Associations peak body to explore ways of promoting events and or tournaments on CI.

Strategic Initiative 2

Promote in Singapore CI’s specific natural attributes that could favourably support niche sport activities such as Marathon, Rock Climbing, Trail Biking or Para-Gliding.

Appendix 1 - SINGAPORE FOOD SECURITY (2017)

Dr Cecilia Tortajada is Senior Research Fellow at the Institute of Water Policy, Lee Kuan Yew School of Public Policy, National University of Singapore. Mr Thinesh Kumar S/O Paramasilvam is student in Geography at the same university.

In many parts of the world, food security is emerging as a serious threat. Increasing population, land and water constraints, changes in dietary habits with increasing affluence, the impact on global food production of floods and droughts in major food producing areas, falling food exports, and a rising number of importing countries – all are contributing to these uncertainties. The problem is likely to be compounded in the future by climate change.

In the years to come, food security in most countries will become more complex than ever. For Singapore, among the world's most open economies and one that is highly dependent on international trade, the situation is likely to be even more complex. The city-state's volume of external trade is about 3.5 times its annual gross domestic product. A decline in the economies of its major trading partners is therefore likely to have an impact on Singapore's own economy, including its food security.

Economist Intelligence Unit recently ranked Singapore as the [second-most food secure country in the world](#), behind only the United States. The Unit's Global Food Security Index is based on three factors, affordability, availability, and quality and safety. Singapore ranks 1st, 11th and 13th on these three criteria, respectively. That puts it ahead of major food-producing countries like Malaysia (34), Brazil (36) and Australia (9). This achievement is largely attributable to the Agri-Food and Veterinary Authority (AVA), and comes despite a heavy dependency on food imports. At present, Singapore imports almost 90 percent of its food, and less than 1 percent of its land area is used for agriculture.

Through its Food Security Roadmap, AVA has diversified sources of food and optimization of local production. These policies, especially those that seek to diversify the source of food imports, are important as they help to spread the risks associated with Singapore's high levels of food imports.

The Sino-Singapore food zone established in Jilin Province, China, in 2010, is just one example of food diversification efforts. The Jilin food zone has been designed as a foot-and-mouth disease-free-zone so that it can be an important source of pork. Not without its challenges, it is meant to enhance the city-state's food security. This will provide further resilience against food supply disruptions.

AVA has also ensured increased local food production over time through the provision of the Food Fund. Investments in new farming techniques such as hydroponics have contributed to a 30 percent increase in local vegetable production over the past 10 years. By the end of 2014, some 40 percent of local farms had benefited from this Fund.

Singapore's net imports for food, beverages and alcohol (clustered in one group) are quite high, at approximately S\$15.57 billion (\$10.9 billion) in 2014. Some of Singapore's most important trade partners, like the United States and Australia, place great importance on the city-state's retail food market. The U.S. sees Singapore as diverse, dynamic, highly developed, extremely competitive, and very strict with its sanitary requirements. Customers in Singapore are considered to be open to a wide range of foreign concept foods, conscious of food safety and

health, and aware of sustainable products. However, they are not necessarily willing to pay more for them.

In 2013, the U.S. exported retail food products to Singapore worth approximately \$575 million, making tiny Singapore its 13th largest market. Exports were led by dairy, prepared foods, fresh fruits, and pork products. For Australia, Singapore was its 9th largest market for food, beverage and agribusiness products in 2014, with exports of A\$1.1 billion (\$760 million) the same year, principally animal fats, dairy products, red meats, sugars and sugar confectionery and pork.

Direct imports are not the only reason for Singapore's international relevance. Its location and trading hub status makes it a vital market for exporters. For example, the percentage of imported food that is re-exported to other countries is approximately 20-25 percent.

Resilience

From a policy perspective, Singapore has managed to accomplish the difficult task of becoming a food secure country by boosting the resilience of its food supply. Policy alternatives such as diversification of sources, the Food Fund, and facilitating food imports are all important components of a well-planned and coordinated strategy. Nonetheless, the next 50 years are likely to be more complex as alternative possibilities depend on external forces and are subject to global change over which the city-state will have no control.

Globally, increasing resilience has been acknowledged as an effective strategy against fluctuations in supplies. This encompasses partnerships, financing, trade, technology, and research and development, all of which are already part of Singapore's strategy.

What else can the city-state do? One alternative is to reduce food waste. Another would be to continue investing in innovative food science and emerging technologies. High-tech, visitor-friendly urban agriculture on the East Coast, or even in very fashionable 50-plus story buildings designed by the nation's most innovative architects could be very significant options.

Highly sophisticated greenhouses that control their environments (temperature, carbon dioxide levels, air flow and nutrients) and situated on ships adapted for this purpose could be another alternative. Projects as visionary as the Marina Reservoir (with a catchment that is about one-sixth the size of Singapore's total land area) or as innovative as Pulau Semakau (the world's first offshore landfill) for highly intensive agriculture could represent additional possibilities.

Agricultural investment or contract farming abroad – something that other countries, financial services, life insurance, and pension schemes have done – is a distinct possibility. Stable nations such as Australia, the United States, or Brazil may provide attractive business possibilities.

Singapore continues to develop its food security strategies, seeking opportunities and addressing risks in an increasingly complex environment. One relevant lesson that other Asian countries could learn from the city-state is the understanding that food security does not mean food self-sufficiency, since no country can be self-sufficient in all food products. National food security depends on both domestic production and imports, and requires effective distribution, in addition to diversification, partnerships, and good long-term planning. These are the reasons why Singapore, which imports most of its food, has become the second-most food secure country in the world.

Appendix 2 - MINTOPE - CIP- SoCI - Singapore Fact Finding Mission - 7 to 10 February 2017

Hervé Calmy - Program Manager, MINTOPE

Stephanie Lai – Project Officer, Phosphate Resources Limited

Chris Su – Governance, Research, Policies & Grants Officer, Shire of Christmas Island

Face to face meetings in Singapore with:

- Adrian Lochrin – Australian Deputy High Commissioner
- Frank Belitz – Senior Investment Director – Austrade
- Peter Warring – Dean, Murdoch University, Singapore Campus
- Chris Vas - Singapore Centre for Research & Innovation, Productivity & Technology
- Prof. Paul Teng – Principal Officer – National Institute of Education
- Zeng Wanting – Manager Agri-commodities – International Enterprise Singapore
- Lim Tzu Ling – Manager Metals & Minerals - International Enterprise Singapore
- Jian Xiong David Tan – Research Assistant Dep. Biological Sciences NUS

Email contact with: Peter Chia Leong Bin – COO Temasek Life science Laboratory (TLL)

Australia Singapore Comprehensive Strategic Partnership (CSP)

The overarching aim of the CSP is to facilitate the ultimate economic integration of Australia and Singapore. It has an evolving function similar to the trans-Tasman relationship.

From Australia's perspective, the CSP allows access to the broader Asian market whilst attracting Singaporean investors into Australia.

Singapore is the financial hub for South East Asia (SEA) and has access to Singaporean and other SEA capital investors. Singapore is the 4th largest foreign investor in Australia. The most common investment presently is in real estate, and Singapore is the 3rd largest investor in Hotels (including interests in Casinos/Genting Headquarters in Singapore).

Singapore investors are interested in established businesses that are trending up (growth), with 20% return potential. Singapore private enterprises tend to wait for a policy position to be put forward by the Singaporean Government before investing. The government also listens to private industry for direction.

Temasek (net portfolio value at S\$242 billion) are normally not interested in investment opportunities under \$100 million, targeting businesses \$500 million or more. Current investment interests are Farms, Industries, Innovation and Food Security.

Singapore private wealth is currently investing in hotels and is getting attracted to agriculture, however, they usually require full scope of feasibility studies.

There is consensus of opinion in Singapore that the Indian Ocean Territories (IOT) could ultimately play a role in the CSP, in particular in the fields of education, research, innovation, tourism and food production. From a commercial and business perspective the most efficient way to put the IOT on the map and attract investment from Singaporean businesses is through *Austrade* (Chris Rees) and the *Northern Australia Initiative* (NAI). The NAI is interested in innovation & partnerships and James Cook University has already seized upon such opportunity in Singapore.

Food security

Food security is critically important to Singapore's sustainability. Singapore imports almost 90 percent of its food (worth over \$15 billion per annum), and less than 1 percent of its land area is used for agriculture. Yet Singapore is recognised as the second-most food secure country in the world.

The Agri-Food and Veterinary Authority (AVA) has established the *Food Security Roadmap* to enhance the city-state's food security, provide further resilience against potential food supply disruptions, diversify its external food sources and optimise local productions

The Roadmap aim is achieved by:

- Boosting local "high tech urban farm" productivity (*Food Fund*)
- Securing long term arrangements with external suppliers (Malaysia, Thailand)
- Purchasing external farmland in nearby locations (Batam, Bintan, Johore)
- Developing R&D programs (floating farms, soils/nutrients, land reclamation)
- Facilitating partnerships, financing, trade and new technologies\

In the context of developing agri-businesses and partnerships, AVA's main focus is on food import whilst the Ministry of National Development (MND) focuses on food and water security. The Singapore government is also involved through Temasek Holdings in a major aquaculture project at St John Island.

The MINTOPE program, disused mining areas outside the National Park on Christmas Island and to some extent Cocos Islands (with aquaculture) all have a realistic potential to align with, and be part of, AVA and MND's long term food security strategy.

Next Generation Sequencing (NGS) of phosphate solubilising bacteria

The MINTOPE/Australian Research Council (ARC) program currently sends biological samples from Christmas Island for genome sequencing to Victoria, Switzerland or the USA.

16

There is NGS capability in Singapore at the Nanyang Technology University, Singapore (NTU). A joint research scenario between NTU and Murdoch University, in partnership with the ARC, may be possible. A key contact in Singapore is Professor Stefan Shuster, from the Centre for Life Science and Engineering (SCELSE). The research steps would be:

- Bacteria field prospecting and culture
- Identification of phosphate solubilisation bacteria (solubilisation tests).
- Whole genome sequencing (NGS) to identify the genes involved in phosphate solubilisation
- Experiment with production of dedicated phosphate solubilising bacteria
- Experiment plant growth responses to these bacteria in soils with high levels of unavailable phosphate.

Another NGS research avenue could be through the Department of Biology of the Singapore Museum currently involved with fungi. The MINTOPE team has already undertaken a macro fungal survey on Christmas Island given the importance of fungi as potential pathogens, a valuable source of food and central to the production of antibiotics.

Aquaculture

MINTOPE is involved in a modest and successful aquaponics program on Cocos Home Island. There is recognition that the IOT offers a bio-secure environment with clean water most appropriate for aquaculture, high value hatcheries and the development of fish vaccine businesses. There may be an opportunity for a research and development partnership with the Singaporean St John Island Centre for Aquaculture Research.

The Salem group (an Indonesian private family investors headquartered in Singapore, Mr Tan) are also large aquaculture investors with farms in Batam Island (piggeries and crocodiles). There is also a particular interest in Singapore for Groper as a high financial return farmed fish.

Air transport

Improvement of air access into the IOT from Singapore remains a key challenge for prospective businesses and potential educational initiatives. In order to progress the cabotage possibilities regarding SG/CI/Perth, it is advised to refer to the Singapore-Australia Free Trade Agreement.

Tourism Australia is also involved in the establishment of contracts between airlines.

Shipping

A new shipping line, commissioned by QUBE, is now active between Singapore and Dampier, with an opportunity to backload from Dampier to Singapore, possibly via Christmas Island, given the island's position on that route.

Other miscellaneous opportunities

- I. The Red Crab migration would be of interest to the World Crustacean Society. The 2017 chair is Ms Shirley Lim, who is a co-worker at the Singapore Institute of Education.
- II. There may be an opportunity to engage with the Singapore Zoo to create the world's first Robber Crab enclosure.
- III. 70% of imported eggs into Singapore originate from Malaysia where Avian Flu risks are high. Chicken products originating from a disease-free environment, such as the IOT, is becoming critical in Singapore.
- IV. There are limited opportunities for field studies in Singapore. The IOT offers access to a very rich "living laboratory" environment for agronomy, aquaculture, pharmaceutical, bio-prospecting and bio-security with monetisation prospects.
- V. There is recognition that the IOT offers good opportunities for Singaporean undergraduate students to undertake one field unit on Christmas Island for 2-3 weeks. A field unit could be in environmental management, biology and/or agronomy.
- VI. The IOT also offers opportunities for MBA students to investigate ideas for business start-ups and undertake internship-like study with existing businesses to improve their commercial position.
- VII. It is worth pursuing investigation for high value research with Chris Vas from the Singapore Centre for Research and Innovation, Productivity and Technology.