Lithium Valley Concept – Dassault 2019

LITHIUM VALLEY

STRATEGIC PLAN SUMMARY

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Lithium Valley – Strategic plan notes

1 Vision

The vision for Lithium Valley is to be:

"World leader in power storage design, production, research, operations, technology and applications."

Lithium Valley is a concept, not a location or mineral. Although Lithium Valley is expected to concentrate on power storage for homes, businesses, utilities, defence, agriculture and resources as opposed to electric vehicles. The Lithium Valley concept also encapsulates other industries and products, such as transport or hydrogen, that are part of the **global transformation of energy.**

The reasons for this focus are;

- There are local businesses specialising in these areas,
- Australia has a major competitive advantage of being a source of raw materials,
- Australia has ongoing demand for power storage due to the transformation of the energy market,
- Australia has a long history of remote power generation,
- The transport market for power storage is dominated elsewhere in the world.

The Committee will remain flexible and opportunistic and if other future opportunities arise, facts change or other threats emerge then the strategic plan may change accordingly.

1.1 LiV Park

LiV Park is the trading name for Li Valley WA Incorporated (IARN: A1032382U), a not-for-profit entity that aims to provide concierge services and business development services to new companies entering Lithium Valley and facilitating industrial symbiosis activities for existing companies.

LiV Park aims to be internationally disruptive by establishing a centre that allows new companies to enter and existing companies to expand in the energy transformation business. This would be a major global energy transformation Industrial Park and will emphasise the power storage and electric vehicles sectors. LiV Park provides the environment for start-up companies to be more dynamic, agile and more rapidly innovate.

LiV Park will be centred on Kwinana however aims to be a global platform concentrating on the **global transformation of energy.** LiV Park aims to support companies around Australia and the world in developing the energy industry.

2 Strategic priorities or aspirational goals

The strategic priorities and aspirational goals are to proactively facilitate the development of Lithium Valley by supporting and encouraging the growth of local and international companies in the sector. This can be achieved through the relentless pursuit of industrial symbiosis within Lithium Valley trading as LiV Park. Industrial Symbiosis is how a network of diverse organizations can foster eco-innovation and long-term culture change, create and share mutually profitable transactions - and improve business and technical processes.

Although geographic proximity is often associated with industrial symbiosis, it is neither necessary nor sufficient—nor is a singular focus on physical resource exchange. Strategic planning is required to optimize the synergies of co-location. In practice, using industrial symbiosis as an approach to commercial operations – using, recovering and redirecting resources for reuse – results in resources remaining in productive use in the economy for longer. This in turn creates business opportunities, reduces demands on the earth's resources, and provides a stepping-stone towards creating a circular economy.[1] Also see 13.5 Industrial symbiosis.

Based on initial feedback from industry, the initial specific issues to focus on are;

- Tailings and by products disposal
- Regulation
- Access to raw materials and reagents
- Materials handling and improving chemical processing efficiency
- Dark factories
- Inputs for batteries
- Staff and visas
- Recycling

It is intended that workshops will be organised to discuss and find solutions for these specific issues. As more feedback from companies is received then the workshops will be modified accordingly.

3 Stakeholders

Lithium Valley will be an open access regime. It should be open to all parties and service providers including both primes (major companies) and juniors. However, local service providers will be differentiated from non-local service providers.

A local service provider has the following attributes;

- Head office is in WA
- At least one company Director resides in WA

At this stage there is no professional management. Lithium Valley will be co-ordinated by the Committee and interested members until the Committee decides otherwise.

4 Objectives and strategic initiatives[2]

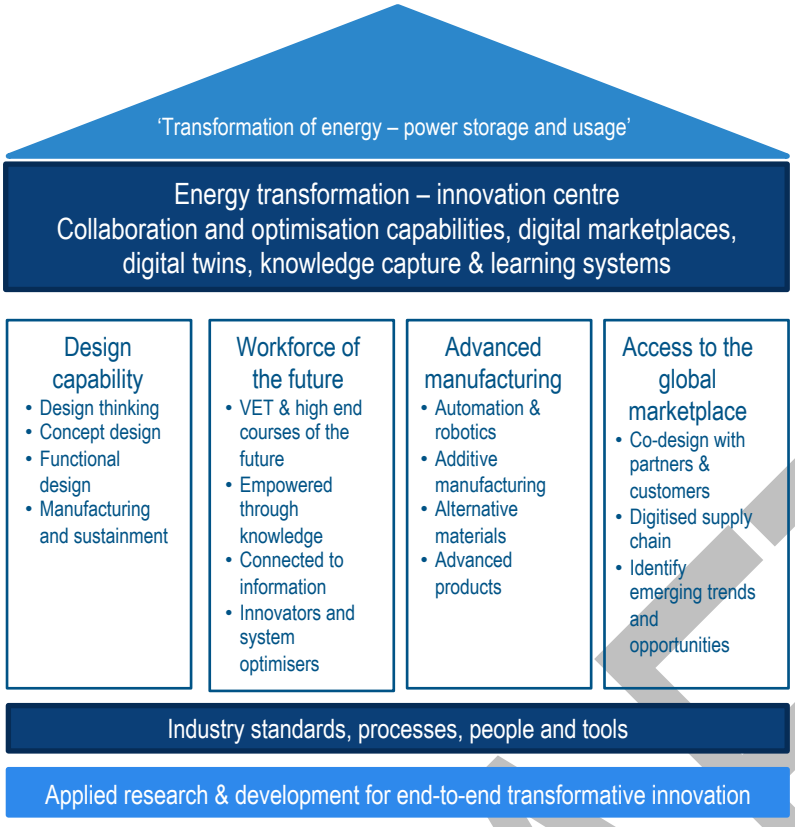
4.1 Conceptual Framework

Design of conceptual framework pillars

- The key inputs into design
- Global platform for collaboration
- Access to industrial symbiosis exchanges
- Facilitated industrial park – concierge service
- Digital environment
- International capital and expertise
- Access to resources
- Access to skilled workforce

[1] https://en.wikipedia.org/wiki/Industrial_symbiosis

[2] Reference : Tahoe Reno Industrial Center (TRI)



4.2 Objectives for the first year

- Establish the company and build the brand
- Launch event in April 2020 (suspended due to Covid 19)
- Two industry functions (suspended due to Covid 19)
- Establishment of the business directory
- Secure a minimum of 25 members
- Prepare an action plan for 2021

4.3 Establish a Cohesive Economic Development Operating System.

- Unify the Economic Development Effort
- Implement the State Plan and communicate Lithium Valley's economic advantage
- Advocate on behalf of business and jobs
- Support Regional Development Authorities
- Prepare regional economic development plans where necessary

4.4 Develop Data and Metrics That Matter.

- Establish a clearinghouse of economic development information. This will be co-ordinated by Dassault.

4.5 Develop Strong Working Knowledge about Targeted Opportunities.

- Work with industry to prepare sector acceleration plans
- Grow Sectors through Recruitment, Retention, and Expansion
- Provide access to assistance with financing and incentives
- Support Sector Enhancement in the Regions
- Convene targeted industry summits and continue to improve the business environment

4.6 Expand Global Engagement.

- Facilitate Export Growth
- Assist Lithium Valley businesses to engage in exporting goods and services
- Increase Foreign Direct Investment in Targeted Sectors
- Promote investment opportunities to international visitors and through trade representatives

4.7 Enhance Global Network.

- Boost Lithium Valley's international representation and relationships
- Support international business councils

4.8 Develop State-wide Innovation and Commercialization Structure.

- Execute plan for technology-based economic development
- Increase industry collaboration with Universities and schools
- Connect R&D capacities with business needs
- Build complete entrepreneur support structure
- Launch a web-based resource centre. This will be co-ordinated by Dassault.

4.9 Align Education, Career Training, and Workforce Development to Targeted Opportunities.

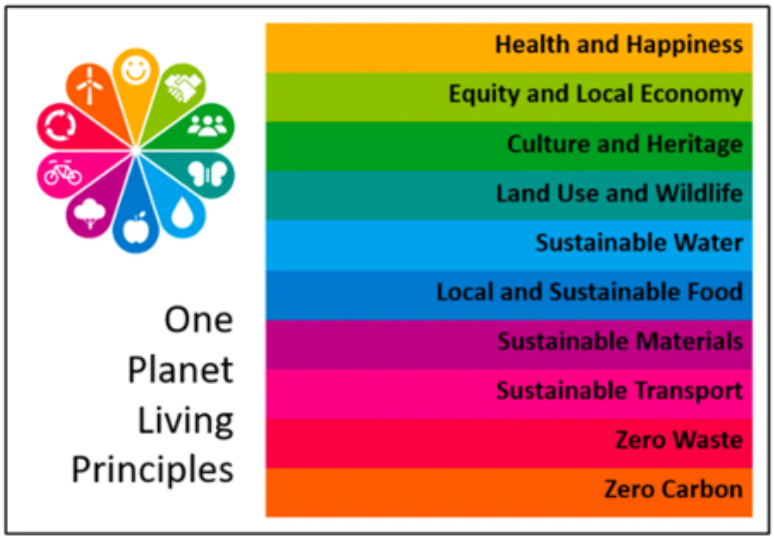
- Coordinate strategic planning efforts between education and economic development
- Reorganize the Workforce Investment System to Align with Targeted Sectors
- Strengthen Sector Councils, partner with education
- Improve Educational Achievement
- Focus policies for high-quality instruction and student achievement

4.10 Battery testing facilities

Battery testing facilities are intended to be established at Murdoch University in collaboration with UWA, ANU and any other learning institution that is interested. The main aim is to test batteries for the use in the power storage market including for export. The collaboration will be led between Magellan Energy and UWA. It is intended to be for open source collaboration and will endeavour to include the Future Batteries CRC, as well as local and other Australian universities. Discussions about locations within a new industry focused facility at UWA are ongoing although it is expected a suitable location will be finalised by March 2020. There is expected to be no conflict of interest with the Future Batteries CRC testing facilities in Queensland as those facilities are more for early stage research and not industry testing.

5 One Planet Living framework

It is proposed to use the One Planet Living framework as a basis for the sustainable development of Lithium Valley. The One Planet Living framework comprises ten principles that cover all aspects of social, environmental and economic sustainability which are;



The Committee resolved that jobs, knowledge and recycling are priorities for the future development of the region and the State. Recycling of materials and products produced or refined in Lithium Valley should consider selling or leasing of products, particularly critical raw materials, to encourage an integrated circular economy.

One Planet Living principles include;

- Putting people first – focusing on the reality of how people live their lives rather than box ticking.
- Being holistic.
- It's about true sustainability – there's no greenwashing.
- It reaches hearts as well as minds - One Planet Living is used to inspire people across the world to get involved in sustainable change.
- The balance between economic, social and environmental is critical. In Lithium Valley, jobs of the future and the ongoing development of knowledge are especially emphasised.
- In Lithium Valley a strategic focus is to develop a closed loop economy.

The design and operations of Lithium Valley should assume ongoing changes in the environment consistent with climate change predictions. Below is a closed loop process to minimise carbon as described by the CRC Low Carbon Living.

Figure 1 - A schematic of a circular economy. Sources: WBCSD & BCG, 2017, The New Big Circle: Achieving Growth and Business Model Innovation through Circular Economy Implementation

For more information please refer to the CRC Low Carbon Living.[3]

6 What is the value of being part of lithium valley

The value of being part of Lithium Valley is expected to be:

- Networking opportunities
- Sponsorship opportunities
- Grant funding
- Business introductions
- Service provision
- Listed in the directory
- Lower operating costs (comparative industrial parks worldwide have lower operating costs by approximately 15-20%)
- Greater access to local off takers and suppliers
- Assistance with business development
- Greater government support.

7 Resources

Revenues

- Free membership
- Revenues from sponsorship, forum/ conference costs

No membership fees will initially be charged so costs will need to be covered from sponsorship and event income. This will be organised by members on a voluntary basis.

8 Costs

- Website
- Membership
- Key contacts

[3]http://www.lowcarbonlivingcrc.com.au/sites/all/files/publications_file_attachments/lclguide_buildingsmes_web

- Directory

The budget will be determined and approved by the Committee based on guidance from the Committee.

Members have an expectation that functions are at least break even.

9 Differences to the Future Battery Industries Cooperative Research Centre

The CRC is a university led research initiative that has 5 years to deliver on a suite of research programs across battery manufacturing, led by industry partners who have contributed significant funding in support of this research. This funding helped to leverage funding from the state and federal governments and WA.

The Lithium Valley process (started in late 2017) triggered both the state and federal interest in this space, with the state government announcing both the battery taskforce and $5M funding for the CRC 2 days after the 2018 US Consul General cocktail party where the Valley cohort brought Tesla to WA. Behind the scenes Lithium Valley has been pursuing and influencing and ensuring that the development of the industry stays on track and has a strong presence in WA.

Lithium Valley are focusing on companies globally and encouraging dialogue and investment in WA and the CRC can benefit from that facilitation, such as bringing BASF to WA and BASF joining the CRC.

Lithium Valley is a facilitator that works to enable this emerging industry to move forward and hold those involved accountable to what they have said about what they will do or what they want to do. As Lithium Valley is not a government or academic organisation restricted by protocol, it has the capacity to meet with anyone globally that will support, enhance, drive and invest in this emerging industry in WA specifically. It has been stated publicly that Lithium Valley is a concept that will benefit the whole state – and as the cohort behind this initiative, the combined networks, vast relationships and wealth of skills across multiple areas will drive this industry to success.

The intent is to have WA's resources used locally, driving new energy industries locally, creating our children's future jobs locally. This is a collaborative effort and Lithium Valley will work with whomever supports the common goals, especially the relationship with the CRC.

10 Timings

The next Lithium Valley forum was scheduled for April 2020 however this has been suspended due to Covid 19. Timings and content are to be developed.

10.1 Launch April 2020 (suspended due to Covid 19)

To be reviewed at a more suitable date.

10.2 Action items

Action item	Responsibility	Timing
Establish the company and build the brand		

Launch event in April 2020		(suspended due to Covid 19)
Two industry functions (details to be confirmed)		(suspended due to Covid 19)
Establishment of the business directory		
Secure a minimum of 25 members		
Prepare an action plan for 2021		
Preparation of policy papers in preparation for the WA election		
Co-ordinate with Universities and CRC. South Metro Tafe – Energy metals.		

11 Election items

1. Administration and planning agency for development of the entire Western Trade Coast
2. Administered under a similar legislation framework as the Airport. For example the Airport's Act or the MRA
3. Adoption of the One Planet Living framework
4. Local content means Head office is in WA and at least one Director resides in WA
5. Zero carbon supply chain
6. A detailed set of actions points from the State government Lithium Valley Report
7. Suitable port facilities to support the development of Lithium Valley

12 Background information

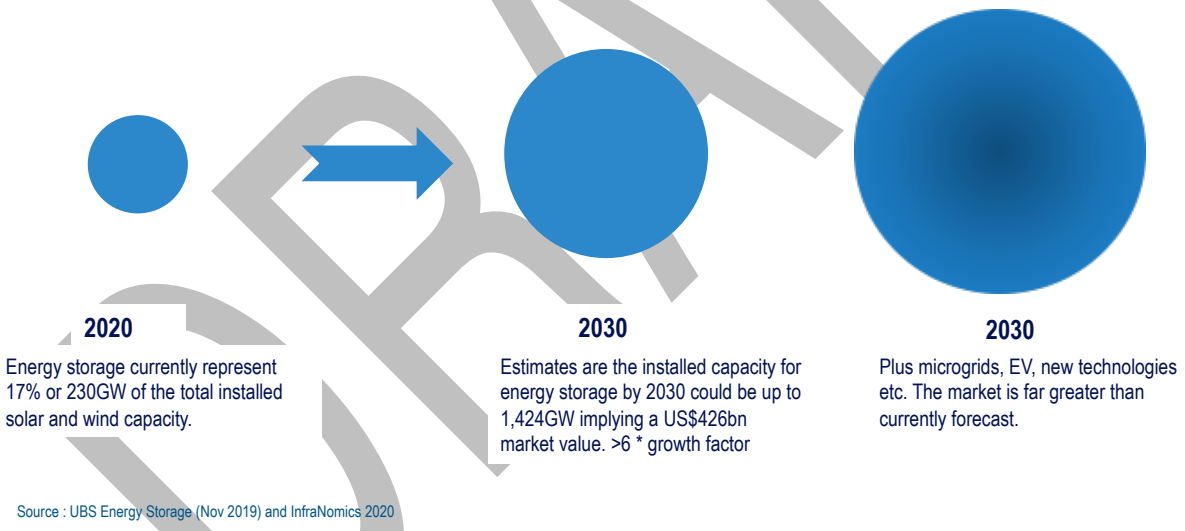
12.1 Market size

By 2025, it is expected that energy storage costs will decrease by an estimated 70%, which will further increase the attractiveness of renewables, batteries, electric cars and related materials and chemicals. These price decreases are driven by the very aggressive electric vehicles targets published by automobile companies, the massive global R&D investment, capacity expansion, experiences gained from battery production and sales, the reduced cost of materials and the reduction in power system costs.

UBS forecast that the power storage market will be up to US$426bn by 2030E – 6x vs. now. They also estimate that the installed global solar and wind capacity at end-2018 was 1,105GW while storage capacity was only 188GW. Energy storage are estimated to account for up to 13% of global power capacity in 2030E versus only 3% in 2020E.[4]

While at the same time, battery costs have decreased significantly from over US$1,100 per kilowatt-hour in 2010 to US$156/kWh in 2019 or 87% in real terms. By 2023, average prices will be close to $100/kWh, according to the latest forecast from research company BloombergNEF (BNEF).[5]

12.2 Sector growth – energy storage



12.3 Location

Lithium Valley is a concept and not a specific geographical location. From the mines to the processing facilities, assembly companies, implementation and operations companies

[4] https://www.ubs.com/global/en/investment-bank/in-focus/2019/energy-storage.html

[5] BNEF's 2019 Battery Price Survey. 2019

Kwinana Industrial Area – Land availability December 2019

Rockingham Industrial Zone – Land availability December 2019

13 Tactical planning points

13.1 Education and research

Education and research are central to the development of the businesses within the industrial area. It is proposed to integrate with but be separate from the Future Battery CRC. This will allow research to be focused more on what the members of the Lithium Valley require for their commercial operations. In addition, there needs to be ongoing educational programs with schools, colleges and universities.

13.2 How to manage an Industrial Park

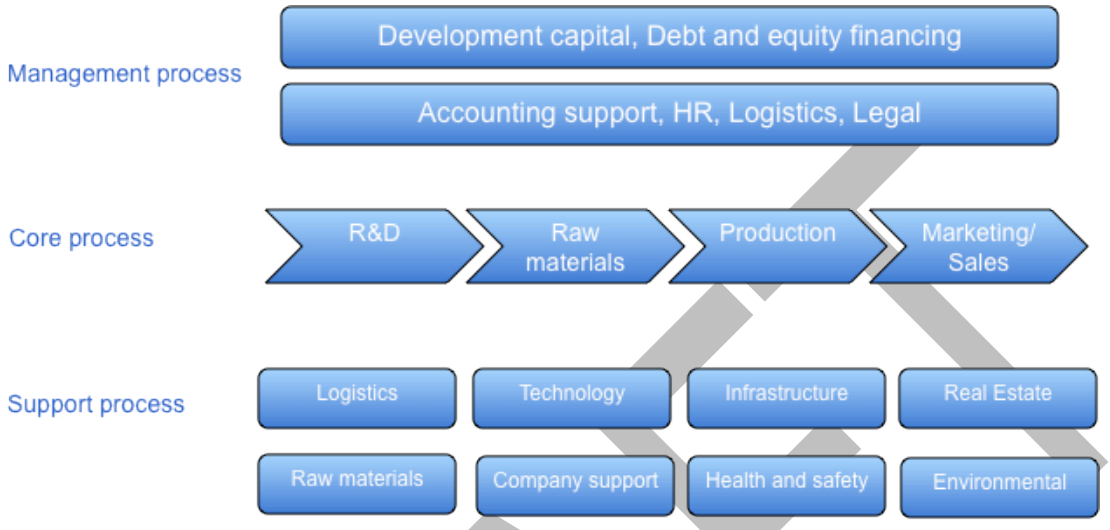
Successful Industrial Parks are centrally managed by competent and experienced management and staff. This is not a property developer or resource type focus, **it is about services**, manufacturing, infrastructure, logistics and stakeholder communication.

Management of an Industrial Park have duties in three main areas.

1. Firstly Administration, which includes standard maintenance and repairs, liaising with stakeholders, compliance with local laws and regulations and ensuring the park operates smoothly. This also includes being responsible for co-ordinating and providing all services and infrastructure to companies in the Industrial Park.
2. The second, and arguably more important is **finding new connections between companies** and looking for **value adding opportunities**, and
3. Finally, to actively search for new connections between companies, reducing by-products, increasing efficiencies, looking for value-adding functions, co-operate and continually work

with the business community and encourage dialogue/ communication between businesses.

Below is a flowchart detailing management process, core industry processes and support services in an Industrial Park.

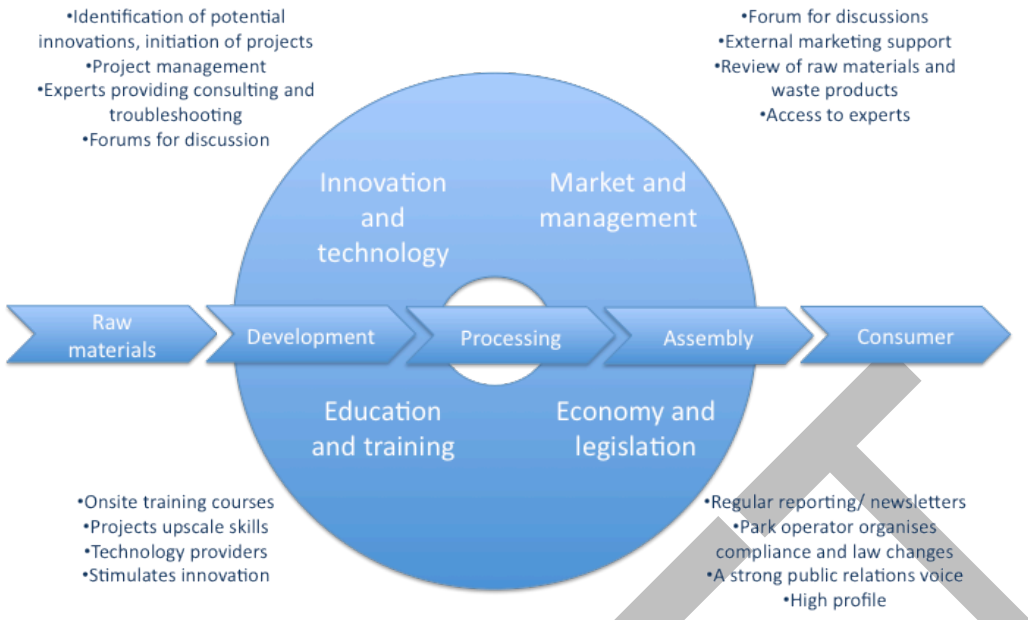


In the Rockingham Industrial Zone, companies can concentrate on their business and site operators can provide all required business support including access to investors while receiving the benefits of scale.

Source : InfraNomics 2015

It is important that the Industrial Park provides a one-stop shop to businesses, such as a plug-and-play infrastructure delivery process. This ensures that companies can benefit from economies of scale, concentrated expertise and the companies can focus on their businesses.

The below diagram shows the main areas of service that an Industrial park can provide.



Source : InfraNomics 2015

13.3 Key Performance Indicators

There are a number of potential KPIs that may be suitable and depends on what the Committee is aiming to achieve. KPIs can be categorised in a number of ways, some of which are:

Quantitative - The amount of a product or service
Qualitative - Structured perception of structured feedback
Cost efficiency - The unit cost of achieving a specified amount of service
Cost effectiveness - The unit cost of achieving a specified amount of service to a designated level of quality
Timeliness / Responsiveness - The time taken to perform a service, or the number of transactions or products within a time cycle
Work team productivity - The amount of output of a workforce unit or group
(Earthlines consortium, 1999)

Examples of industrial park KPIs are:

- Industrial park accident/ injury rate
- % of land utilised
- Economic benefits generated by the industrial Park to the State
- Export values from the Industrial Park
- Import values through the Industrial Park
- Customer satisfaction
- Timeliness of utilities interconnection
- % Utilities up time
- Total employment
- Gross Industrial Park Product
- Maintenance costs as a % of capital investment
- Costs per person on site per day
- Cost per Ha

13.4 Site operator – Corporate Governance

Corporate Governance is clearly an important aspect of how Lithium Valley operates. Normal corporate Governance procedures and structure should be implemented. Items to consider are;

- A clear mandate to the manager setting our operating parameters
- Implementation of the Key Performance Indicators measuring performance, detailed above
- A mechanism so that under-performing management can be replaced.
- A detailed yearly budget for running costs etc
- Regular reporting, say quarterly. Actuals to budget
- Cash and accounting separated from management.
- 3rd party auditing
- Differing authorisation limits. For example outgoings or liabilities >10% of budget require signoff. All new lease contracts
- The manager should not take direct operation or construction risk. These functions should all be outsourced to local reliable companies with a proven track record

13.5 Industrial symbiosis

ADVERTORIAL

KWINANA INDUSTRIES COUNCIL

KIC Community Update

Fostering positive relationships between industry, community and Government

JUNE, 2019

Chris Oughton, Director KIC

INDUSTRIAL SYMBIOSIS - WHAT ON EARTH IS THAT?

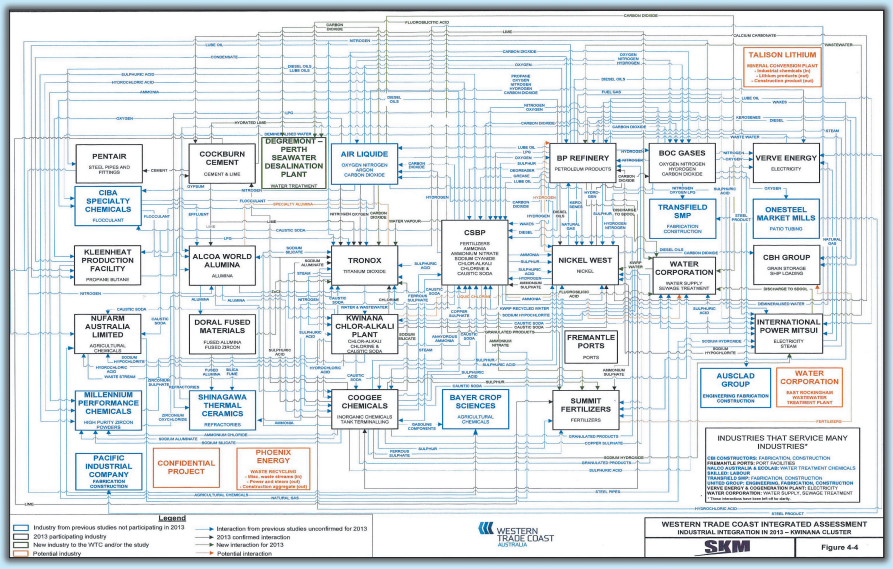
When two individual companies exchange a manufactured product, or waste product, usually on commercial terms, this is known as a synergy exchange. Industrial symbiosis is where a whole cluster of industries have many exchanges going on – like in the Kwinana Industrial Area (KIA). These exchanges grow over time as more companies move into the area.

The synergies help to make the participating companies more internationally competitive, and this is good. It's also good for the environment because one company's waste becomes the input for another.

The KIA is referred to as the world's best practice example of industrial symbiosis at work. The schematic maps the synergy exchanges as they were in 2013. We have on our doorstep the best example of industrial symbiosis in the world, right here!

Normally people talk about synergies as products and by-products, like in the diagram. I say there are two more kinds: the 'human resource' synergy; and the 'secondary industry' synergy.

The 'human resource' synergy refers to the 30,000 highly skilled and experienced workers employed in the industrial area. Two thirds of these workers live locally, and choose to work here rather than away, and they will move between companies. When a new company builds its plant, it will more than likely attract workers from within the local area. The new company starts up with experienced employees. Poetry.



The third synergy is the 'secondary industry'. Surrounding our industrial area is a belt of companies that exist to service the nearby major industries. These are the expert fabricators, constructors and equipment maintainers. There is a strategic advantage in having these secondary companies present because aside from being on industry's doorstep, they deliver top quality local content products and services.

There is a big, new wave of industry heading for Kwinana to set up their processing plants so they can take their place in the lithium battery value chain. Why? Because we have all three types of synergies in Kwinana, and few others do.

Take a look at our website www.kic.org.au and under the 'Education' tab you'll see what Kwinana industry is doing to show the kids in our high schools that their future careers may be closer to home than they think.