Otaki Clean Technology Centre and Park
Economic Opportunities for the Kapiti Region

A Strategic Operational Review

Prepared for

Kapiti Coast District Council
and
Pritchard Enterprises

Prepared by

Green Chip, Ltd.
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Project Team

Brian Catts, Associate, Green Chip Ltd.
Tucson, USA

Neil MacKay, Director, Green Chip Ltd.
Wellington, NZ

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Otaki Clean Tech Report

1. Introduction

Research and technology-focussed industrial parks like the Otaki Clean Tech Park are emerging as strong sources of entrepreneurship, talent, and economic competitiveness for regions, states, and nations. They have become a key element in the infrastructure supporting the growth of today's knowledge economy. By providing a location in which a diverse array of technology companies can interact in close proximity with other firms and prominent stakeholders from the research and tertiary sectors, technology parks create an environment that fosters collaboration and innovation and promotes the development, transfer, and commercialization of technology.

The purpose of this report/proposal is to review the current circumstances and practices of the Otaki Clean Tech Park (hereafter referred to as OCTP), and propose a revised business plan that looks ahead to operations under KCDC's strategic oversight from these perspectives:

- Assess the potential that can be achieved with anticipated funding levels from identified public and private sources;

- Determine what kind of park the CTP can become within the framework of anticipated resources, and how that is likely to evolve into the longer term; and,

- Provide recommendations for future operations that will most effectively drive the commercial success of its tenants and the region's larger Clean Tech sector at the national and international scale.

The study has been conducted on behalf of two sponsors, Kapiti Coast District Council, the hosting governmental authority, and Pritchard Enterprises, the private developer of the OCTP.

The contents of the report were derived primarily from a series of OCTP stakeholder interviews and focus group discussions that were conducted over seven days during the latter half of September 2011, and involved over 30 representatives of the Clean Tech industry and its stakeholders. With an emphasis on input from the companies, there was also consultation with regional economic development agencies, tertiary education institutions, industry associations and consultants, government and private development, all drawn from a region focused on the Kapiti Coast, extending south to Wellington City and north to Palmerston North. A list of these companies and organizations can be found in Appendix A.

Proposal summary

The proposal outlined later in this report seeks establishment funding in the likely area of $1.5m to deliver a comprehensive suite of services to retain current, attract new CT businesses into the OCTP, and to ensure both their growth. The OCTC aims to be fully financially sustainable by its fourth year

going forward, generating revenues through the delivery of these services. The benefits back to the District by year 4 will be:

1. Net economic benefit in current CT businesses retained, and their research and development functions grown in and through the OCTP;

2. The attraction and growth of complementary research and development, and supporting services;

3. The attraction and deployment of significant technology test projects, leveraging the Energise Otaki concept and MSI funding, thereby enabling the rapid scale up of proven technologies; and,

4. The on-going generation of an investment seed fund to continue to invest in new technologies, buildings and the suite of professionally delivered services.

2. Review and Assessment of Progress

Clean Tech firms – CTC members and others

The companies interviewed during September 2011 for this report are a diverse group of enterprises, in keeping with the far-flung range of technologies and products associated with the Clean Tech Sector, with locations ranging from Wellington City and Lower Hutt north to Levin. Some have current relationships with the CTC, some have the potential to become involved as tenants of the OCTC or larger OCTP, and others are simply members of the region's CT sector with no current plans or intent to locate in the park facility.

Those companies currently associated OCTP are OCTC tenants and/or members since there are no Park tenants apart from the Clean Tech Centre at this time. Their relationships with the OCTC range from onsite tenancy, using the Centre as their primary business site, to a part-time presence as renters of desk space, to an off-site affiliation. Irrespective of the degree of onsite presence, these companies are eligible to participate in the OCTC's programs and utilize its services. Some of the companies outside of this sphere are potential members of the OCTC or tenants of the larger OCTP.

Companies without an onsite presence in the OCTP or formal relationship with the OCTC at the time of the interview fall into two groups – prospective tenants or those with no plans to locate at the Park facility. In either case they are linked by an interest in the OCTP/OCTC facilities' actual or potential contribution to the success of the larger regional CT sector.

Member companies in the OCTC and others interviewed for this study would all be considered small companies, but were variable in size and maturity. Employment ranged from one to over a hundred, but most companies had fewer than 10 employees. The maturity of the company and/or its product development ranged from conceptual to market success. For the purposes of this report the growth continuum of business maturity will be referred to through the following 3 stages:

Stage	Stage 1 – Business startup	Stage 2 – Commercial products and revenue	Stage 3 – Exporting business
Indicative business needs	Low cost desk space Start-up support Product validation	Low cost office space Scale up support Product delivery	Low cost R&D activity New product development

The positive, negative and proscriptive input (referred to, respectively, as "What Works", "What Doesn't Work" and "Change and Opportunities") provided by Clean Tech companies interviewed for this report can be classified in two general categories: 1) operational, related to the enterprise-building programs and services offered onsite, and 2) circumstantial, ranging from the serendipitous benefits of association to the quality and functionality of the facilities and cultural environment.

What works

A variety of positive themes emerged from the company interviews.

Operational advantages

- Irrespective of any concerns and criticisms voiced in the interviews, there seemed to be unanimous appreciation for the underlying concept behind the Otaki Clean Tech Centre, as well as the commitment and capabilities demonstrated by the individuals – Steven Finlay in particular – charged with its operation.

- Likewise, there was broad awareness and gratitude, mentioned in almost every interview, for the financial support of the Kapiti Coast District Council, considered noteworthy as one expression of a policy commitment that broadly embraces environmental and clean tech ethics.

- There is a perception that KCDC advocates for the industry in a variety of ways, including addressing unfulfilled commitments at the OCTC facility.

- Incubation-themed services oriented towards very early stage companies were viewed favourably.

- The companies recognize many advantages in CTC membership, and encourage efforts to provide more comprehensive support for company formation and expansion, technology commercialisation, and the expansion of market and production capabilities. These needs clearly go beyond the CTC's capacities or mission, and there was significant company interest in the formal organization of a trust or similar structure to effectively access, coordinate and deliver a wide range of "fast-lift" resources and programs to the regional Clean Tech sector.

- Several companies considered the on-site office of the regional economic development agency (Nature Coast) to be an asset due to the support from that staff.

Circumstantial advantages

- Various aspects of co-location with companies that are a part of, or related to, the Clean Tech Sector featured most prominently in the benefits mentioned during the interviews, including:

    - Relationship and network building with other CT companies and the cross-pollination of ideas are the primary benefits for all but the earliest-stage companies, and these factors have spawned many opportunities;
    - The OCTP provides a recognised collaborative environment that fosters productive lateral and vertical linkages between companies of diverse maturities and technological emphases. This is critical to a diverse, productive CTP "ecosystem" within park and for the community at large; and,
    - Peer support in the OCTC works well for companies at all stages of maturity, and is considered better than is typical in similar situations.

- The concept and intent behind the development of the larger park and the OCTC facility are fundamentally supported and remain backed and/or are looked upon with good intent by the major stakeholders.

- The OCTC is considered a safe and affordable hearth for product development by the companies that utilize it for that purpose; however the current capacity for hosting that function is limited by space and on-site facilities.

- Tenancy in the OCTC provides credibility, particularly for the small start-up firms that would otherwise be operating out of informal facilities. It is an advantage for early-stage companies to be associated with a larger, stable identity.

- The prospects for the sector's and by extension the OCTP's, success are enhanced by strong market prospects nationally and internationally for clean tech innovation, products and services. The NZ Clean Tech industry has momentum and seems well positioned to take advantage of these market opportunities.

- Participation in the OCTC and tenancy in the OCTP provide a unique opportunity (within the region) to accelerate development and growth of enterprise.

- Despite the shortcomings recognized in this report, member companies (and even those considering the OCTP as a future site) continue to recognize the validity of the concept and exhibit a willingness to continue their participation.

- For some firms, future access to the KAREN network is a critical advantage and the key justification for locating operations in the OCTP.

The role of Grow Wellington

Although the companies used the interviews to voice a variety of concerns about GW's initial service design and delivery capabilities, these basics are clear:

- The CTC would not have been created or exist today without GW's backing and continued support.

- GW's sponsorship and operational oversight of the CTC tangibly integrates the Centre with the larger regional economic development effort, fostering various benefits, including:

    - Promotes development of the larger CTP;
    - Opens partnership and funding possibilities for a Clean Tech Trust; and,
    - Substantially expands the opportunities for advancing the Kapiti region's larger clean tech strategy.

- During the period following the September 2011 interviews Grow Wellington has reconfirmed (with KCDC) its commitment to provide adequate financial and programmatic support for the Clean Tech Centre as well as giving the clean tech sector a more prominent role in the larger regional economic strategy.

The role of KCDC

The role that KCDC has played to promote CT enterprise via funding and policy support is broadly recognized and appreciated by the clean tech companies. As GW's funding partner in the OCTC, KCDC is perceived as a stronger advocate for the member companies (and, beyond this group, of the sector at large) and many expressed the desire that KCDC assume a dominant role in the Centre's operations.

KCDC's continued staff and council support has maintained the faith with OCTC member companies, and this has been key to their continued participation in the Centre. It was striking to find a significant majority of the companies were very aware of the political and financial support that the Council has, and continues to provide.

Companies realize that KCDC's support for the Centre, coupled with larger policy objectives for the regional CT industry, provides an opportunity to pioneer new collaborative models between local businesses and with local government. This type of collaboration can have the mutual benefit of de-risking both commercialisation efforts on the part of companies, and policy implementation by the Council.

What isn't working

Not surprisingly during the early stage of operations leading up the September 2011 company interviews, a number of the key support services and features originally envisaged for the Clean Tech Centre and larger Park fell short of the companies' expectations. There seems to be a willingness to address some of the problems outlined in this report, but all stakeholders will need to remain watchful that an adequate level of resources and organizational commitment remain in play.

Operational disadvantages

At the time of the company interviews, the Clean Tech Centre – as the centrepiece of the OCTP – had not met tenant expectations established by Grow Wellington's initial CTC proposition. This remains an issue in the sense that it has disappointed some of the participating firms, and generated some caution amongst those considering involvement.

Some of the more general critiques of the OCTC include:

- The availability of business support services available to OCTC member companies had been incomplete, poorly targeted and fragmented in scope. This is due to under-resourcing, the absence of an effective entity/clearinghouse dedicated to the CT sector, and the lack of a comprehensive all-partner CT development strategy.
- With the exception of some collaboration with WelTec PolyTechnic, there has been little progress in establishing relationships with research and tertiary institutions, the science community and investors; none of these organizations have an active presence at the OCTC/OCTP.

- There is no common forum for the tenants and stakeholders to review the Centre's operations and programs, and offer input on their suitability and optimization.

- A large number of interviews, particularly those involving more mature members of the OCTC, indicated disappointment in services provided for companies that had moved beyond the start-up/incubation phase.

Circumstantial disadvantages

The Clean Tech Centre is, to date, the only developed component of the larger Otaki Clean Tech Park. The facilities and operations of the OCTP were also subject to criticism by OCTC members, as well as companies considering a future location in the OCTP, albeit at a substantially lower order of magnitude than those levelled at Grow Wellington.

The perceived shortcomings of the larger OCTP include these perspectives:

- Resident companies and others believe the Park should be a showcase for clean tech development, yet this is the case in name only and the absence of CT features limits the cachet of a location in the OCTP/OCTC. There were comments about the need for electric vehicle charging stations, water harvesting systems, requirements for on-site PV systems, basic green building practices and other visible manifestations of clean and green technologies that are virtually absent from the site at this time.

- The Park has not been effectively marketed due to weak branding, the lack of professionally developed marketing materials, a need to align its promotion more closely with the OCTC and regional clean tech sector, to offer more than vacant parcels, and to provide more in the way of clean tech features.

- There is concern about the slow rate of development and land absorption. The lack of concrete plans for erecting the second building limits the potential for locating additional small companies or expanding onsite options for new OCTC members. At the same time, there has been no immediate interest in the purchase of land by larger companies capable of developing their own facilities.

- The physical location of the OCTP is not optimal. The Park site and Otaki community are perceived by many in the greater Wellington region as a remote location relative to population, employment, mass transit, key tertiary institutional stakeholders, and professional services. The Otaki area is economically disadvantaged, with high unemployment and a low skill basis in the local workforce.

The role of Grow Wellington

Grow Wellington's role as operator of the OCTC came under criticism during the September discussions with tenant companies. There was a perception that GW had not followed through on service commitments that were made to encourage membership in the CTC and the leasing of desk space, and that GW did not sufficiently recognize the Clean Tech sector's potential as a substantial

contributor to the regional economy. On the other hand, there was a general level of support expressed for the GW employees charged with overseeing the OCTC's operations and programs.

In summary, the criticisms voiced by the Clean Tech companies were triggered by these factors:

- Grow Wellington did not initially live up to the promises that were made when promoting the Clean Tech Centre to prospective tenants. Once sufficient space was leased to fund GWs master agreement with the Park developer, there were not adequate resources to fulfil those initial commitments and satisfy the companies' expectations.

- GW received NZTE RSF funds based on a proposal to support the regional CT sector through hiring a CT-dedicated specialist, developing a commercialisation strategy, designing marketing materials and establishing a website to promote the Clean Tech Centre and larger industry.
    - The RSF funding package was used to promote the launch of the OCTC and attract tenants, but the anticipated commercialisation and marketing program elements and the website was not sustained.
    - This was a source of disappointment for CTC member companies. It was clear during the interviews that a lack of support for the CTC website and other promises generated concern.

- The opportunity to participate in GW's Creative HQ virtual incubation program was offered as a major benefit during the lead-up to the OCTC's launch, but only one CT company had been admitted to CHQ to date. There was a perception that CT companies were generally considered to fall below Creative HQ's admission standards.

  This has added to the CT companies' perspective that although they easily met the thresholds for acceptance as rent-paying CTC tenants, once they'd made that commitment they were deemed insufficiently advanced to qualify for its support programs. There was also the perspective that CHQ's criteria for success were set too low, measured by the deployment of programs rather than the success of companies.

- Under circumstances at the time of review, the CT companies generally felt that GW could be a more effective conduit or partner for CT sector development. As things stood during September 2011, the lack of progress was reflected in following ways:

    - There was no CT-dedicated expertise for commercialisation
    - There was no effective marketing program
    - GW had not supported professional/technical support companies to become involved with the CTC as an alternate strategy for filling the shortfall in commercialization and other services
    - Limitations related to program resourcing and space availability made it difficult to recruit new OCTC membership.
    - There was a perception that KCDC and GW were not aligned in their respective visions for the OCTC..
    - Some of the companies felt that GW was capable of offering useful generic business support services. However, the more specialised services most in demand by this sector, at this stage of maturity, were not available to the Centre membership.

A letter describing perceived shortfalls in the OCTC's performance was addressed to Grow Wellington in July 2011 under the common authorship of the OCTC member firms. It served as a key

impetus for commissioning this study and subsequent indications of an increased commitment by GW and KCDC to the Centre's viability. The letter contains a number of useful suggestions for better shaping the Centre's services to match the reality on the ground. The contents of the letter were congruent with the input from the interviews and can be summarized as follows:

Vision – The companies felt the purpose and mission of the CTC had lost focus, shifting from building Clean Tech enterprise to the objectives of Grow Wellington. There was a perception that the primary objective of the CTC appears to be the "renting of office and work space" rather than promoting the success of its member companies. Program emphases need to be focused on supporting clean technology commercialization, and the membership requested that the CTC management revamp and present for stakeholder discussion: 1) clear vision for the CTC, 2) a new definition of Clean Technology, 3) revised requirements for membership, and 4) effective goals for supporting member companies.

Support Services – There was a mismatch between the OCTC's emphasis upon incubator services and the needs of later-stage firms that make up a majority of the membership. Many of the member companies had grown beyond the need for early-stage support services, already having business plans, products, marketing strategies and management capabilities. They argued that the OCTC lacked the more sophisticated and integrated services required to accelerate their commercial objectives. To address these needs, the OCTC was asked to develop a restructured service package that better supported effective market engagement for the member firms' products, technologies and solutions.

Prominence – The OCTC needed to develop a strong national identity and international presence to provide the stature necessary for supporting its membership's market objectives. The intended effect of a greater national/international prominence is to establish higher quality networks that will better contribute to the success of the member firms, and lower barriers to market adoption of their products and services. To further these objectives, the membership requested that OCTC management revise its definition of national prominence and international presence and develop strategies to achieve both with the objective of improving market engagement and outcomes.

Networking – Although the benefits of networking factored prominently in the positive comments voiced during the company interview, the effect was considered more incidental (passive) than a matter of design, and there was significant room for optimization. The member companies requested a more effective approach that features designed, thematic events with participation beyond OCTC membership to include outside (of the OCTC) peers, potential partners (vertical relationships as well as horizontal), investors, customers, institutions (tertiary and research), regional to national ED agencies, professional service providers and other stakeholders.

The role of KCDC

Although there was a high level of awareness about KCDC's support for clean tech and this was judged by the companies in largely positive terms, there were concerns about achieving a more effective working relationship with Grow Wellington in order to deliver an effective package of enterprise-building services that better served the CTC's diverse membership.

Companies noted that the Council's economic development priorities needed to be more focussed, using the example of Nature Coast, the ED agency funded by the Council at the time of the interviews. Nature Coast lacked a clear mandate to focus on the support of the CT sector, meaning that the Council had no direct, or even indirect, capability to affect outcomes.

Companies' recommendations for business support services

A major emphasis of the interviews was to determine 1) which outside business support services are in demand by the CT companies, 2) if those needs have been met or unmet under current (primarily OCTC) programs, and 3) their suggestions and priorities for adding value and reshaping the function and availability of business services to better meet the needs of the clean tech sector.

This section of the report reflects much of the range of suggestions for enhancing the availability of professional, managerial, educational, informational and other support that are considered to be useful-to-critical to a firm's success. The emphasis during the interviews and in this section is on those services that are not easily and/or affordably found in the open market.

It bears mentioning that the key service needs that came up in the discussions were not made under any assumptions regarding provider (though the need for coordination to assure full coverage and avoid duplication was emphasized) and that a number of companies expressed a willingness to pay for business services, with the expectation that fees would be reasonable and subsidies would be available for early-stage companies.

Another emphasis was that services offered through the CT Trust should be available at the OCTP whenever feasible, enabled by affordable facilities made available on a full-time or periodic basis. At this time, restricted access and the limited availability of suitable office, classroom and meeting space constrains the potential for significant program expansion at the Clean Tech Centre.

Management services

Not surprisingly for a group of early stage entrepreneurs, the availability of management services – ranging from periodic consultations to taking an active daily role in the company – was a top priority. Availability of management services and advisement to date has been limited due to GW's limited offerings and policies that discouraged affiliations between outside providers and the OCTC.

- Looking forward, companies express a need for pragmatic management support that is specifically tailored to the needs of CT entrepreneurs, including:
    - Management support on different scales as needed; comprehensive or project-specific
    - CT-specific business model generation
    - Movement from early technology/prototype to production
    - Assistance with developing export strategies
    - Real-world measurement and testing of opportunities
- Direct and active management support should be available in a variety of forms from a mix of CT Trust-affiliated advisors and outside consultants. Respondents seemed to view the cost of these

services realistically, and indicated a willingness to support these costs through variety of mechanisms, including offering an equity position in their companies.

- Companies want to see an organization that can effectively train, educate and provide decision support that is tailored to the needs of CT management. This requires a dynamic and agile approach to providing a comprehensive range of training and seminars, involving of key stakeholders, in-house staff capabilities, peer-to-peer expertise, and outside specialists.

- Companies will expect a CT organization to function as their eyes and ears, systematically identifying critical market factors and opportunities, and utilizing efficient mechanisms to put that information in front of the companies. Company input and feedback is critical to keeping programs relevant.

- One of the challenges identified in the interviews was that NZ entrepreneurs tend to be overly averse to risk-taking, hence unbiased and objective risk analysis consultation was specifically identified as a valuable management service.

Marketing support

Nearly all of the companies interviewed said they could use help with some aspect of marketing – ranging from matching a product to its market, establishing distribution channels, to acquiring/utilizing market intelligence to guide business decisions. Many of the early pre-commercial CT companies are founded around an engineering or scientific expertise, but don't have the staffing capacity to create internal marketing capabilities. Later stage companies often need marketing support on a different level, with an emphasis on perfecting market intelligence and trying to take a product or service up to national or export distribution.

Some of the categories of market support that were mentioned include:

- An online source of information for and about the CT membership;

- Market/product validation, feedback into development cycle, assessment of product uptake;

- Prospect qualification;

- Market insertion;

- Actively generate pre-qualified deal flow;

- Identify and provide linkages to domestic trial customers; and,

- Develop export relationships.

Financing/Banking

Access to sufficient financing has always been a challenge for start-up tech companies in NZ. A number of companies commented that they would like to see more done to identify, inform and attract sources to back NZ CT at the various funding intervals, as well as more done to bring Interviewed companies to the attention of investors. When discussion moved to the concept of a CT Trust, the importance of board members' investment connections was raised as a priority.

Access to public funding was also discussed, with a lot of focus group discussion on the need to enlist professional grant writers on the companies' behalf, not just passively provide a list of application opportunities.

As in other areas of industry support, the needs of companies vary with size and maturity. Smaller firms seeking first time investment may need help with investor presentations and materials, while larger, experienced companies have more sophisticated financing needs. It will be a challenge for the OCTC or a larger CT organization needs to provide a comprehensive program that serves the diverse needs of this industry group.

Some of the desired financial support services that came up during the company interviews include:

- An extension of the innovation funding model currently provided by KCDC on specific areas
- A clearinghouse that identifies sources and opportunities for all stages of financing, from proof of concept funding through to post-commercialisation expansion.
- Support for preparation of business plans and investor materials to make companies investment ready
- Commercial banking services familiar with high tech industry
- A CT-dedicated organization should involve well-connected staff and board members with the ability to identify and/or cultivate funding opportunities at different levels
- Provide education via seminars and online resources for lenders, investors and venture capitalists about investment considerations and opportunities in the CT sector
    - Promote a realistic perspective on realistic valuation and the extent of VC capitalization required to carry early stage companies to next funding stage
- Active assistance and support for grant application
    - Provide professional grant-writing expertise in addition to passively identifying opportunities
    - Extremely difficult for companies to do effectively
        - Short on time and experience
        - Intimidating process, companies need hand-holding

Other business support services

Although the demand was not as prominent as the need for managerial, marketing and financial services, there was also significant company interest in education and training, legal and other professional services, engineering support and on-site IT services and infrastructure enhancement. These are not capabilities that would typically be vested internally within an incubator facility or industry support organization, but they represent services that can be provided through strategic relationships with public and private stakeholders and other partners.

Education and training

- Technical seminars
- Managerial, marketing and trades-related training for employees

Legal and professional services

- IPO advisement and services
- Intellectual property protection and advisement
- Green accounting

Engineering support

- Industrial design services
- Product refinement
- Prototype-to-manufacturing expertise
- Environmental engineering
- Smart system design

IT support services and infrastructure on-site

- Availability of qualified and affordable IT support
- Establish a robust hosting centre

Kapiti Coast District Council

The Kapiti Coast District Council has indicated a strong philosophical support for the Clean Tech Centre and its potential for contributing to the regional economy and well-being, but the facility has fallen short of some of its original objectives, and its mode of operation can be improved. The primary CTC shortcomings that were identified by the Council and staff include:

- Grow Wellington's sense of the mission, role and purpose of the OCTC needs to be better defined, and used to guide its operations;

- At the time of the research, the OCTC is just providing a generic service package that generally is not a good or well-adapted fit with member companies; and,

- There has been minimal effort to match CT enterprises with investors and other institutional and professional sources of support.

Two major purposes of this study are to help the Council determine if its promotion of the CT sector on a micro-regional scale will generate a realistic opportunity that produces measurable results, and how to effectively apply limited resources to achieve a set of strategic goals. The separate discussions with KCDC elected and appointed leadership indicated that by playing a proactive role in promoting Clean Tech enterprise, the Council foresees the opportunity to:

- Use increased funding and support for the Clean Tech Centre and/or a CT Trust as in intervention instrument for accelerating development;

- Lift and imprint the regional economy with the green/environmental "brand";

- Further larger regional environmental goals related to energy self-sufficiency, water conservation and waste management; and,

- Pioneer new collaborative models between local business and local government.

However, the interviews with KCDC representatives indicate there are still questions that need to be answered before an expanded Council role in developing the region's Clean Tech sector can be embraced politically and translated on a programmatic and budgetary level.

- Will this sector respond to and benefit from a greater level of early-stage intervention and support?

- Can a meaningful concentration of CT industry develop and flourish in the Kapiti Coast region, and will the CTC provide a comparative advantage for businesses locating in the area?

- Given the limitations of KCDC's innovation funds and the magnitude of its economic objectives for the CT sector, how can they be most effectively applied – in terms of program design and vestment of responsibility – and will that investment trigger a significant impact?

- Is the Clean Tech Centre, as originally conceived, an adequate vehicle for developing the regional industry or does it need to be rolled into a more comprehensive initiative to be effective?

- Can the CTC gain enough traction and critical mass to form effective linkages with major stakeholders and eventually become self-sustaining?

    - The CTC and a Clean Tech Trust will need to work in close synchrony.

- Tertiary and research institutions are critical partners if the role of the CTC is to expand beyond early-stage incubation support.
- Linkages with NZTE and other national agencies lead to grant opportunities and support for eligible companies
- Can the CTC attain a stature that is adequate to avoid being challenged and overwhelmed by competing initiatives in the Greater Wellington region?

The role and utility of the Clean Tech Centre will factor largely in the Council's anticipated CT-promotion strategy, thus it must be acknowledged that there are limits to the Council's ability to influence the degree and nature of Grow Wellington's support. Insofar as the primary recommendation of this study is the need for a more comprehensive and coordinated approach to developing the CT sector, the Clean Tech Trust will play an important role in completing the sector's support umbrella by assuming the high-priority development functions that fall outside of the Centre's adopted purview.

Pritchard Enterprises

The Otaki Clean Tech Park was subdivided and developed, and is currently owned, by Pritchard Enterprises, a private development company that is one of the sponsors of this study. As a 6.75ha multi-tenant, ready-to-build, purpose-developed industrial site dedicated to Clean Tech enterprise, it is the largest facility of its type in New Zealand. An overview of key features includes:

- 42 lots ranging from 770m^2 to 2720 m^2 in size, with the potential to assemble parcels up to 4000m^2; development is planned in four phases, with Stage 1 currently underway;

- Zoned throughout for industrial uses that permit light industrial, warehouse, commercial, office and retail functions; compatible usage is protected by covenants, with land available on a freehold or leased basis and the option of turnkey development services;

- Favourably located relative to transportation (access to SH1), at the north coastal edge of the Wellington metropolitan area, roughly midway between Wellington and Palmerston North;

- Infrastructure elements include adequate water, ultra-fast broadband (with access to the KAREN network for eligible users), and self-contained drainage/storm runoff;

- The Otaki community has an available workforce, and both Weltec and Whiterea Polytechnics have expanded into the Kapiti Coast District to offer tertiary services and workforce training; and,

- The most significant on-site feature at the Park currently is the Otaki Clean Tech Centre (the primary topic of this report), an incubator facility specialising in Clean Tech companies, with operations well underway and an impressive and diverse group of companies as members.

Although this study tends to be focussed on organizations rather than individuals, it bears mentioning that Pritchard Enterprises and its Chief Executive, Stuart Pritchard, constitute a more or less inseparable identity. All interview discussions regarding the OCTP involved Mr Pritchard as the sole spokesperson for those interests.

Positive factors

Reviewing the status of the OCTP project to date, the interviews with PE established a number of favourable factors.

- The favourable and unique circumstances of the Park and its environs offer a variety of comparative advantages when compared with other sites and facilities in the Greater Wellington region and the nation at large:
    - Lower cost factors than urban location provide a hearth for start-ups with limited funding;
    - Development-ready land in a contiguous facility with dedicated purpose and design;
    - High-speed fibre network access (KAREN network) and other infrastructure availability are critical to some companies' site requirements; and,
    - Titled land covenants will enable a strongly- CT development theme if the will and means are sufficient to follow through with clean tech- and environmentally-themed development standards.

- Significant, fundamental progress has already been made. The Clean Tech brand is in place and the facility is operational.

- Despite its growing pains, the existence of the Clean Tech Centre on-site is a substantial asset for the larger Park.
    - The OCTC's function as an incubation and commercialisation support facility for early stage "home-grown" clean tech enterprises will be a source of new tenants as those firms "graduate"
    - from the OCTC facilities and an attractant to larger firms desiring proximity to a fresh stream of innovation and technology.

- A private developer can react more quickly to opportunities, with greater flexibility/agility, and assume greater risk than a public body.

Challenges and constraints

A number of challenges and constraints also emerged during the interview discussion:

- Slow pace of land absorption to date, as there have been no sales or leases of land to commercial end-users;

- Construction of second leasable building incorporating CT features is necessary for the expansion of the OCTC, but entails substantial risk for the developer of the OCTP;
- Challenge of longer-term planning and infrastructure investment for subsequent development phases;
- Land prices may be higher than the market will bear at this stage of development;
- Financial challenge of developing a facility that "walks the walk", i.e. incorporating a range of CT features in site infrastructure and leasable buildings;
- Unrealistic expectations for below market lease rates and premium amenities by current and prospective tenant companies;
- Maturing tech spinouts from CTC will not be adequate (by themselves) to populate facility; and,
- Competing CT initiatives within region and nationally that exist today or are yet to emerge.

Incorporating clean tech and other environmental features in the Park infrastructure and building design is challenging because the higher investment is difficult to justify when balanced against current market rates for leases and land sales. On the other hand, failure to broadly implement CT improvements could impede market acceptance of the facility, and certainly diminish the comparative advantages that are needed to set it apart from the competition elsewhere in the region and NZ at large. As one potential tenant commented, the OCTP needs to "live and breathe the CT ethos" in common areas, infrastructure and building space.

Facility Expansion

The expansion and enhancement of the CTC's mission and services raises demands for developing additional tenant-ready work space and common-area amenities prior to lease revenues being in place and possibly in the absence of a guarantee or timetable for their absorption/utilization. Getting ahead of the demand for space and facilities by erecting speculative buildings, particularly if they include significant green and clean tech design elements, entails significant financial risk. Possibly more risk than Pritchard Enterprises can be expected to bear without some form of mitigation.

Assumption of the master lease on the OCTC building by GW took that cost and risk off the shoulders of PE and made it possible to rent the facility to a mixed group of small subsidized tenants. Similar formulae may be necessary to de-risk (for PE) the development of building two and other OCTP site investments.

Green building

As requested by current CTC members and/or potential park occupants, the next building should fully incorporate green technologies to 'walk the talk' and act as a catalyst for complementary

tenants. This building may be able to demonstrate sufficient technologies for standalone energy provision such that an advanced level of energy security can be provided to meet the stringent criteria for data centre activity, further bolstering the park's cachet. While not without cost, this technology demonstration opportunity can, if done right, generate a marketing impact that money cannot buy.

3. Considering a "Clean Tech Trust"

Formation of a CT Trust

Given the unanimity of concern about an incomplete package of company support services, it's not surprising that the foremost suggestion from the CT companies was to form a trust or other structure in addition to the OCTC's operations in order to offer a substantially more comprehensive support package than currently exists. For purposes of this discussion, this hypothetical organization with be referred to as the "CT Trust".

The companies and other stakeholders are looking for a single point of responsibility that can offer, broker and coordinate a continuum of services, from multiple sources, that are comprehensive enough to support the needs of enterprises ranging from a 1-man idea to an export-ready company. The theme being heard from the CT sector is to think large.

Although the interview questioning generally did not pre-suppose the existence or form of a CT Trust, the input from the companies repeatedly came back to the limitations described previously and the conviction that a sector-dedicated organization of some kind was required to focus on CT's priorities at a scale that was comprehensive and effective enough to produce substantial results.

Several of the CT companies, while embracing the supporting role that a CT organization could play, also expressed concerns that generally fell into two categories, 1) scale, structure and operational efficiency, and 2) whether an organization of this type can mobilize a range of benefits to the especially diverse CT sector that will advance it in an effective, quantifiable way.

A number of themes emerged suggesting potential roles, functions and purposes that the CT companies believe are needed and could be assumed by a CT-dedicated organization.

Scale and Structure

- The CT Trust should be efficiently structured, with a lean staff and budget. Its role should emphasize designing, coordinating and bringing to bear a comprehensive range of business and commercialisation services, utilizing existing programs and networks whenever practical, to maximize impact and to avoid duplication and the inefficient use of resources. "In-house" capabilities should be limited to services that are not otherwise available, affordable, or well adapted to the needs of the CT sector.

- A two-stage approach should be used to establish and govern the CT Trust by appointing a transitional board to shape the form and function of a CT Trust, followed by a governing board that includes key players with the connections and "mana" to effectively advance the CT agenda.

- The new organization must to be steered *and enabled*, by a well-connected, business-driven governing board that will actively champion the interests of the CT sector amongst key stakeholders, create access to national and international markets, and develop channels and relationships to investors.

- Clean Tech firms want to be consulted and actively involved in the in the planning and establishment of a new "purpose built" CT Trust, particularly since it will be dedicated to a much broader advancement of the region's Clean Tech enterprise than the bounded mission of the Clean Tech Centre.

Trust benefits

The formation of a CT Trust provides a fit-for-purpose vehicle for:

- Retention and management of benefits accruing to clean tech developers, and therefore the district and region;

- Oversight and management of a fit for purpose green building to act as a catalyst and attractor for candidates;

- Organizing and capitalizing a CT-focussed investment fund to attract broader commercial investment for growing companies and an innovation fund to attract public and private funds for promoting technology development;

- Targeting and attraction of central government support and funding;

- Bringing to bear the status and mana of a government backed entity to build an international reputation;

- Creating a Voluntary Carbon Market in NZ based on CDM type auditing tools;

- Generating credits for verified emission reductions which can be bought by NZ domestic investors, thus incentivising clean tech developers to commercially deploy and demonstrate technology;

- Building the assessment capability to advise on fundable technology projects; and,

- Rolling out programmes to a regional, national and international level.

Implementing the CT Trust

Beginning with an assessment of progress and shortcomings to date, this report builds a case that a new organization, referred to as the CT Trust, would be the most effective vehicle for coordinating a comprehensive service package that advances the underserved interests of the region's CT industry. Questions about form, role, purpose and the method and sequence of implementation naturally follow. The critical considerations would include:

- Founding an initial governing board with responsibility for determining the form and charter of the organization;

- Defining and filling management positions;

- Definition of role and purpose;

- Designing the initial slate of incubator and commercialisation services offered by the Trust directly and through collaboration with other stakeholders;

- Confirming a strategy for the present OCTC members and initiate recruitment efforts to secure new companies;

- Identifying projects that encourage collaboration between multiple companies, link with outside funding to minimize risk, create a revenue stream for companies and the Trust, and establish new stakeholder relationships;

- Defining the nature and extent of the Trust's role vis a vis operations of the OCTC and determine what, if any, new onsite (OCTP) facilities are required to support Trust programs; implement green building technologies in any subsequent OCTP development; and,

- Establishing a permanent governing board made up of individuals with the connections, credibility and experience to effectively steer and advocate for the CT industry agenda.

Determining a new approach and direction

Properly designing and implementing the CT Trust should be a deliberate and objective process, requiring an founding board with a short-term sunset that brings a unique set of talents and political connections to guide the formative process. These need to be pragmatists with capabilities that bring together professional experience in economic and organizational development, relationships with current stakeholders and those being courted as partners, industry representation (in close communication with the OCTC members) and experience with the political landscape.

Acknowledging that establishing the organisation requires individuals with a different set of talents and political connections than those who guide its long-term operations, there should be a planned transition from the founding board to a permanent operational board once the new CT Trust becomes operational.

Management structure

There will be a need for professional staffing from the outset of this process, to give legs to the establishing board and begin work on a long list of tasks that will be applicable irrespective of the organizational details. Since the need for a CE position predates the chartering of the new organization, it should be established on a temporary contract basis prior to the formation and funding of the CE Trust.

Defining role and purpose

Determining the direction, scope, role and mission of an organization like the CT Trust at an early stage establishes its guiding principles and can play a powerful role going forward. This process should be collaborative, involving all primary funders/stakeholders and companies in the CT sector (including and beyond the CTC membership), in addition to the establishing board.

One significant change of perspective that should occur is moving to a mission of serving the CT sector at large, throughout the south-western quadrant of the South Island, in addition to the member-based focus required for OCTC operations.

CT Trust services

An initial slate of Stage 1 and Stage 2 support services (eventually progressing to Stage 3 support) offered through a CT Trust and CT Centre collaboration should also be developed in close consultation with the client companies and major stakeholders. Without trying to determine the precise hand-offs between the CT Trust and CT Centre, those services and functions would follow this path:

1. Beginning in the CTC, incoming companies would be supported with **Stage 1** incubator-level start up and business expansion services and desk space in the Centre.

2. As the companies mature and their needs advance, they will require yet-to-be-built office and working space that goes beyond the CTC desks, more sophisticated **Stage 2** business scale-up services and technology support to advance beyond prototypes and beta-testing to commercially ready products backed by appropriate marketing strategies.

3. As firms advance through stage 2, they'll emerge with the need for additional facilities and support (ideally on-site at the OCTP) for research and development, manufacturing and/or distribution capabilities and back end functions. These services represent the **Stage 3** level of support capabilities for the CT Trust that should be anticipated, but are not encompassed in the proposal being advanced by this study.

A more detailed compilation of the service needs identified by the CT companies interviewed for this report can be found in Section 2.

New partnerships

Since it is neither possible nor practical to for the CT Trust to develop internal capacities that offer all things to all companies, forming partnerships are critical to maximizing the Trust's capabilities, through collaboratively sharing services and combining resources in order to pursue opportunities

that would otherwise be unattainable. The initial and most critical partnership and coordinating challenge will be between the Clean Tech Centre and Clean Tech Trust, but that's just the beginning.

Relationship-building will be a much higher priority under a CT trust and it can be anticipated that creating successful partnerships, and the opportunities and capabilities that will flow from them, will gather momentum rapidly. Some of the key targets for partnerships will include:

- Tertiary institutions – both Polytech and University – are critical gateways to workforce and career training, technology licensing and co-development, and other capabilities needed by the CT sector. Universities also have in-place mechanisms for technology transfer, joint research with private partners, and commercialisation in order to move institutional research into the public arena. The Trust can broker and promote direct relationships between its member companies and these institutions.

  There is currently a growing relationship between a few of the companies and WelTec Polytechnic and at the time of the research done for this report, negotiations were underway for WelTech to provide training for the "Little Greenies" construction program.

  The relationship with Massey University is not developed, but shows strong potential, with a number of CT-complementary programs, geographical proximity and a well-developed external relations and tech transfer program working in that favour. The Massey BioCommerce Center, and associated but independent organization formed to promote commercialisation of Massey-developed technologies, would also be a logical partner.

  Closer to home, Te Wananga o Raukawa is a major employer and educational services provider in the Otaki community. The philosophical confluence between the Maori environmental ethic and the foundations of the CT sector, as well as the Iwis' emphasis on extractive industries and, more recently, telecommunications – sectors that require and/or foster clean tech and environment-friendly solutions – offer significant potential for relationship with the CT Trust.

- Crown research institutes and other public and private research facilities that offer technology overlap with the CT sector. Research organisations are magnets for innovation and the larger companies and financial sources that pursue it, so relationships with them can offer unanticipated opportunities to create partnerships and access financing. The CRIs also tend to be more inward-looking and risk-averse than tertiary institutions so the value proposition of the relationship needs to offer clear benefits to both parties.

  Although there are relationships between OCTC affiliated companies and IRL, for example, there has not been significant progress towards creating a formal relationship between the OCTC and the CRIs. The CT Trust should be able to present itself as a more substantial and credible partner in partnership with the OCTC.

- Other industry organizations, industry-targeted commercial and technological initiatives, regional and national-scale economic development agencies, and similarly-themed technical parks offer significant partnering opportunities. Some organisations like the Heavy Engineering Research Association (HERA) are well developed, and in addition to providing collaborative opportunities on projects themes like Marine Energy and Geothermal, they are living case

studies that provide useful examples of how an industry organization can operate efficiently and effectively on behalf of its constituency. These relationships should not be restricted to New Zealand; a forward-looking CT Trust management will pursue strategic international relationships to provide its members with access to technical collaboration, financing channels and marketing opportunities abroad.

Operating through the CT Trust allows the formation of independent relationships with national agencies like NZTE and MSI. These relationships will better put the Kapiti Coast/Greater Wellington region's CT sector on the radar screen of the critical technology initiatives that are embraced and promoted by central government.

- Professional service providers are the sources of critical capabilities that cannot be directly met by the CT Trust or within a network of partnerships. When management- or technical-support requirements go beyond advisement to in-place support, or more sophisticated consultation is required in environmental accounting, intellectual property protection, capital acquisition or IPO preparation, to name a few examples, outside professional services (typically fee-based) are required. Qualifying and paying for this kind of expertise can be a hazardous challenge for early-stage companies. The CT Trust has a role to play in pre-qualifying and forming relationships with professional service providers in order to negotiate favourable rates for member companies in return for providing access to a client base.

Retention and recruitment

It can be anticipated the formation of the CT Trust and attendant increase in capabilities proposed by its formation and expansion of OCTC services will re-kindle the enthusiasm of current OCTC members and encourage new companies – both as "incubatees" and (particularly) supporting partners – to become involved in the Trust and/or Centre.

The immediate limitation to recruiting new companies as on-site Centre members is a lack of capacity in the current building, so significant expansion will not be possible until the erection of building two. Leasing a desk or other space is not a requirement for OCTC membership at this time; it is assumed that policy will remain in place and recruitment of new companies will resume with the option of remaining off-site by choice or until such time as more space becomes available in the OCTP.

Worth adding that the CT Trust could adopt a membership structure that is open to all CT-related companies, with the OCTC-affiliated companies being a subset of the larger industry group. This would bode well for the promotion of the OCTC with its targeted audience, and facilitate the qualification and selection of technology- and/or management-strong companies as OCTC members.

Collaborative projects

One of the forms of business support that was most prominent in the OCTC member interviews was the generation of commercial opportunities. This is understandable since micro-to-small enterprises like these are often heavily committed to day-to-day operations; the awareness of opportunities, and the ability to pursue them, are often beyond their current capacity.

It is possible for a dedicated organization like the CT Trust to have both the strategic insight and standing to identify and take advantage of these opportunities, forming the technical and managerial collaborations needed to populate the project from its constituency. Standing is particularly critical when there is public funding from MZTE, MSI or other agencies for projects and/or to encourage industry capacity-building.

Three projects have been identified during the timeframe of this study that offer the opportunity for assembling multi-company teams of OCTC members:

Test Project Description	Features	Benefits	Customers
Off-Grid Pacific Eco-Village MSI Co-Funding Available	3 Green Energy Pods demonstrating education health and technology benefits	• Unique Test Site • Off Grid Demonstrator • Tourism co-benefits • Data Centre Energy Security Backup	Rural remote locations seeking grid infrastructure e.g. Pacific Islands (initially), Vietnam, India, etc.
Electric Vehicle & Fuel Testing & Certification Service MSI Co-Funding Available	APT fuel and engine dynamometer to test emission reductions in bus and commercial fleet; Rolling road able to test new EV demonstrators	• Regional Voluntary Emission Reduction with GWRC- developing carbon reduction and certification • National Rollouts	• Runcimens test fleet • EV developers at CTC • Ferry and Commercial bus fleet
Little Greenie & Weltec Sustainable Housing Demonstrator MSI Co-Funding Available	New sustainable housing test site with integrated data monitoring tools	• Off Grid / Sustainable House Test and Certification Site • Smart Grid Test Site • Upgrade Local Building Industry	• New product technology developers • Local and regional new housing developers and purchasers

Additional collaborative initiatives that have been proposed on the basis of sector + stakeholder capabilities and market opportunities include testing technology, implementation of project- and community-scale smart grid technologies, and environmental building construction and testing.

A Board of Champions

As the beginning of this section it was suggested that a two-phase approach to governance could be used to ensure that the right capabilities were in place at the right times by 1) establishing a transitional founding board made up of individuals with strong organizational and economic development talents, and then 2) once the CT Trust was chartered, staff was hired, and a budget in place, transition to a long-term operational board that emphasises experience in business development, access to financing, relationships with critical stakeholders, connections and mana that are required for the board, and its individual members, to effectively champion the interests of the CT cluster and its members.

It's a given that transitional and long term governance would include representation from the key stakeholders (particularly KCDC, as the primary investor), and the CT Sector, but the selection of members for the permanent board should emphasize the kind of movers and shakers that can advocate effectively on behalf of the CT sector, i.e. those with the right connections and mana to work their connections in the halls of industry, finance and government, as champions for this industry.

4. Findings and Recommendations

OCTC Operations

Findings

1. There seems to be unanimous appreciation for the underlying concept behind the Otaki Clean Tech Centre, as well as the commitment and capabilities demonstrated by the individuals – Steven Finlay in particular – charged with its operations. Likewise, there is an awareness of and gratitude for the Kapiti Coast District Council's financial support and enlightened environmental agenda and commitment towards the Centre.

2. Despite support for the basic concept, the companies and other key stakeholders are acutely aware that the original business, funding and management models for the Otaki Clean Tech Centre have not produced a support program with the capability or capacity to advance the region's budding Clean Tech sector in a significant way.

3. Most of the companies interviewed agreed that there is a shortfall in services – both in degree and comprehensiveness. The package of business support services available has been incomplete, poorly targeted and fragmented in scope. This is due to under-resourcing, the absence of an effective entity/clearinghouse dedicated to the CT sector, and the lack of a comprehensive all-partner CT development strategy.

4. The collaborative arrangement whereby KCDC promulgated the formation of the OCTC and partnered with Grow Wellington did not achieve the desired outcomes. There were differences in perspective between KCDC and GW regarding the Centre's mode of operation, but there seems to be progress in reaching a mutual agreement on its programme delivery.

5. The management practices and programme alignment of the Otaki Clean Tech Centre has not been congruent with the expectations of the member companies and KCDC. The service portfolio does not meet the needs of the membership and promised site amenities have not been fully implemented.

    a. There has been an emphasis on early-stage business formation incubator service for stage 1 companies, rather than the scale-up and commercialisation services (stage 2) that are in demand by a large share of the OCTC company membership.
    b. Services provided "in-house" are of variable quality and were described as piecemeal and ad hoc in their coverage. Many of these gaps in service could be filled through partnerships with other public and private stakeholders, but GW has generally held back from arranging for qualified services through outside providers.

6. There was broad concurrence that the absence of a coordinated industry development strategy and designated central agent responsible for its execution remain as critical barriers to the success of the Centre and Park.

7. There has been little progress in establishing critical relationships with research and tertiary institutions, the science community and investors; with the exception of WelTec PolyTechnic, none of these organizations currently has an active presence or role at the OCTC/OCTP. This is largely due to the Centre's immature status at this time, an incomplete service package and lack of collaborating opportunities

8. As of September 2011, there was an absence of cornerstone CT projects similar to the Solar Village, EV and fuel testing, and sustainable housing projects currently proposed for 2012. Collaborative projects of this type: a) afford practical opportunities for technology refinement and joint ventures between member companies, b) bring credibility to the CT Trust and thus attract the involvement of CRIs and tertiary institutions, and c) provide access to grants and other outside funding.

9. Due to the full utilization of building 1 at this time, the growth and progress of the Clean Tech Centre, in terms of a) accommodating on-site growth of current member firms, b) recruitment of additional companies, and c) expanding capacity and functionality for on-site instruction, technology development and other service functions, requires the construction of a second building.

10. A workplace that physically reflects the environmental ethos is important to current and potential OCTC members and they are disappointed by the lack of clean and green technology deployed in the Clean Tech Centre and larger Park. The design and construction of the second building will need to reflect this in a substantial way.

Recommendations

1. *Expansion of services* – Based upon input from clean tech firms that are current or potential members of the OCTC, several areas of service provision require reinforcement over the current programs, which have emphasized early-stage business formation support.

    - Management services
    - Governance services
    - Marketing support
    - Financing/banking
    - Education and training
    - Legal and professional
    - Engineering support
    - IT support

    It is not practical for the Centre to develop the entirety of these capabilities internally; offering a comprehensive program to support companies through the first and second stages of company development will require coordinating closely with the Clean Tech Trust and establishing a number of other key partnerships and collaborations.

2. *One stop shop* – Based on experience to date, it is well proven that organizing the complex array of services and relationships that are necessary to create and sustain a robust support program cannot be achieved under fragmented oversight. It is also clear that the current OCTC management and funding arrangement is not adequate to embrace this scope of activity. The theme being heard from the CT sector is to take a comprehensive approach. These responsibilities need to be vested in a single point of responsibility that can offer, broker and coordinate a continuum of services, from multiple sources, that are comprehensive enough to support the needs of enterprises ranging from start-ups to international companies.

3. *Formation of Clean Tech Trust* – To further the concept of focusing responsibility for providing services and executing a coordinating support strategy in single organization, it is recommended that a Trust be established to further the comprehensive interests of the Clean Tech sector in the Otaki region initially, with the potential for embracing a larger geographic sphere as its capabilities evolve. It is strongly recommended that well-networked, experienced individuals be recruited for a high profile, internationally-focussed governing board.

4. *Expansion of facilities* – If the OCTC is to fulfil its mission and purpose as the primary hearth for nurturing early-stage CT companies, it requires additional space for a) recruiting new companies, b) establishing and expanding the on-site operations of existing members, and c) providing facilities for training, technology development and other functions not available today. A collaboration between the CT Trust, Clean Tech Centre (GW), KCDC and the OCTP developer (Pritchard Enterprises) must be forged that will permit the timely construction of second building.

   This study recommends that the means be found to develop the second building as an internationally-recognized showcase for integrating designed and outfitted with appropriate clean tech features in an office/industrial facility.

5. *Support PE development/marketing* – The fortunes of the Clean Tech Centre, the Clean Tech Park and, to a major extent, the nascent Clean Tech Industry in the Kapiti region are linked and mutually interdependent. It will be critical for the Clean Tech Trust, as the assumed management force behind the Clean Tech Centre, and the operators of the Park to have a seamless relationship in order to facilitate mutual interests ranging from marketing and development of the Park facility, to ensuring that building services and infrastructure are available in an uninterrupted and robust capacity for the Park residents.

OCTP Operations

Findings

1. Despite its growing pains, the Clean Tech Centre is a substantial asset for the OCTP. Significant progress has already been made; the Clean Tech brand is in place and the Centre is operational with strong prospects for growth.

2. Successful promotion of the OCTP requires developing a public relations strategy that goes beyond the targeted business sector to familiarize the entire Otaki community and Kapiti Coast region with the Environmental/Green/ Clean Tech identity and specialisation of the Park.

3. Development and absorption of land at the Park has been slow to date. The Park has not been effectively marketed due to weak branding, the lack of professionally developed marketing materials, a need to align its promotion more closely with the OCTC and embrace the clean tech theme more prominently in its infrastructure and development standards

4. Although additional building space is required to order to expand the OCTC, developing speculative space and facilities in the absence of tenant commitments entails substantial financial risk. In order to expand the availability of leasable space, methods must be found to de-risk site development if space is to be created on a speculative basis.

5. The Park has been criticized due to the minimal integration of clean tech and green development features in existing park infrastructure and building one. This deficit diminishes the appeal of the OCTP for some potential tenants and hampers its marketability.

6. Creating a diverse "company ecosystem" enhances the benefits of locating in the OCTP. Vertical linkages between larger/smaller and producer/consumer firms can offer greater synergies than happenstance lateral connections between a group of similar early stage IP/prototyping companies

7. *Locational pros and cons* – Location is a two-edged sword for the OCTP. Advantages include lower cost factors than an urban location, an abundance of development ready parcels with good transportation access, ultra-high speed data network access, and a regional government that strongly embraces and supports the clean tech sector.

   On the other hand, the physical location of the OCTP is not optimal. Many in the greater Wellington region perceive the Park site and Otaki community as a remote location relative to population, employment, mass transit, key tertiary institutional stakeholders, and professional services.

Recommendations

1. Use every opportunity (and invent new ones) to publicize and bring attention to the OCTP as the regional gravity pole for all things related to the environment, green movement, clean technologies, etc.

   - Partner with other organizations whenever possible to amplify participation and add credibility;

- Endeavour to host (sponsor) events on site – no opportunity is too large or small;
    - National and International professional conferences;
    - Ideal site for joint meetings between Massey and Vic faculty; and,
    - Local community and school events – Earth Day, etc.
- Offer vacant parcels as sites for demonstration projects and other temporary uses; and,
    - Energy efficient buildings, solar energy demonstrations, etc.
- Partner with other organizations whenever possible to amplify participation and add credibility.

2. Develop a more effective marketing program for the OCTP:
    - Broaden marketing targets to include companies/sectors that share a clean ethic, even if that is not their product focus;
    - Tie the identity of Park more closely with industry sector – seamless marketing with CT Trust;
    - Develop well-polished presentation materials, with a unified message that comes across consistently to every audience; and,
    - Examine the competitiveness of current lease rates and land prices, given the distance from Wellington and the level of business amenities in the Kapiti Coast region.
3. The OCTP must become an exemplar of what it represents, with a greater integration of clean tech features in buildings and infrastructure.
    - Park has to be an environmentally friendly facility in order to capitalize on the cachet of its theme. Subsequent development – buildings and Park infrastructure – should deploy more green and clean tech features.
    - As a powerful expression of the Park's theme and potentially the dominant marketing tool for the Park, building 2 should be developed as an internationally-recognized showcase for the affordable integration of clean technology and green building practices in an office/industrial facility. The next building should make a strong statement with a creative combination of prominent clean tech features.
    - To accommodate the demand in a timely way for additional tenant space on site, work with the yet-to-be-established Clean Tech Trust to determine a strategy that will sufficiently de-risk the investment in Building 2.

5. Revised Clean Tech Business Case Option

Acknowledging the reality that there are resource limitations that constrain how much can be done, and how soon, the Kapiti Council and other major stakeholders need to be aware of the possibilities, costs, paybacks and benefits associated with a range of possible actions.

Financial Analysis – 3 Scenarios Going Forward

Option	Benefits (+) & Risks (–)	KCDC Investment
1. Business as usual (hold investment at present levels)	+ Lowest cost option – Growth stage requires support – Risk to stage 2 growth remains	$<0.5m pa over 3 years
2. Measured public/private partnership between KCDC and Pritchard Enterprises	+ Measured risk – cost neutral + Opportunity for public-private partnership – Full growth unsecured	$1.5m 1st year
3. KCDC becomes full investor / park owner and manager	+ Full growth secured – Highest cost option; limits to investment could limit potential – Controversial investment w/ political risk	$>5.0m 1st year

Option 1 features

This option entails a continuity of current assumed investment in specific test projects and any additional FTE overhead carried by KCDC . In essence, the complementary role by KCDC defers responsibility of growth and delivery of service to GW, which has not proven itself as responsive to business' needs.

Option 2 features

This option takes a more directed investment approach. It establishes a fit-for-purpose delivery mechanism to act as a catalyst for eliminating the gaps in company support services outlined earlier by creating a CT trust. The actions suggested in Option 2 are in part determined by a budget that is estimated to be the maximum available public investment at this time.

Option 3 Features

In contrast with Option 2, this option fully de-risks the development of the park by undertaking a full public investment in the park. This option creates the maximum level of land and building support, but may crowd out private sector investment. Additionally, limits to public investment and greater risk aversion would likely limit the potential for developing a showcase facility and lengthen the development horizon. Option 3 is included to indicate what could be done with substantially more

resources, however this scale of investment is assumed to be beyond the political and budgetary capacities of regional government. Additionally, option 3 would put KCDC in the politically sensitive and financially risky position of being a major investor in what would remain a private enterprise.

The following figure differentiates between three possible service options, and the benefits they offer in regards to Stages 1-3 of CT business development.

Option	Stage 1 Business Start-up	Stage 2 Commercial Products and Revenue	Stage 3 Exporting Business
Indicative Business Needs	• Low cost desk space • Startup support • Product validation	• Low cost office space • Scale up support • Product delivery	• Low cost R&D activity • New product development
Option 1 Business as usual	Status Quo	• Limited scale up + service support • Limited recruitment and retention	• Fewer candidates • Prone to competition from other centres
Option 2 CT Trust and Scale Up Services CT "Off Grid" Building Developed	Implementation of CT Trust upgrades Stage 1 performance, e.g. • More robust support services package • Resume recruitment of start-up companies.	• More effective leverage of current opportunities • Acts as 'success magnet' for other stakeholders and candidates • Innovation fund seeded	• Increase recruitment and retention of key R&D capabilities • Rapidly accelerating new product development for national and international pilots and rollouts • Innovation fund grown
Option 3 Same as Option 2 plus full park development	No change over option 2	No change over option 2	In addition to Option 2, • Transference of some buildings and land to public ownership. • Public ownership could jeopardize private sector involvement

Option 2 represents the level of intervention that would be most feasible for KCDC without supplementary funding from other sources. This option addresses the shortcomings of the current model and positions the Park and the regional CT sector to achieve their combined growth and development potential. The following activities are designed to increase service provision and physical capacity, and by doing so, attract additional tenants and other key stakeholders.

The first step is to recruit an Establishing Board of Governance. This entity will secure the appropriate mix of industry skills and capabilities required to attract stakeholders, recruit and appoint CT Trust CEO and provide CEO support with KPIs and appropriate performance incentives, and determine a draft strategy and establishment plan for CT Trust.

Once a CEO and lean team has been brought on board, it will provide continuity between stages 1 and 2, with responsibility for developing and delivering operational outcomes, including tenant attraction and retention. Other responsibilities will include coordinating and filtering service packages to business needs (exampled below), seeding a CT innovation fund and building key international relationships to encourage stage 3 growth.

Another key early step for the CT Trust will be the resourcing of technology projects to attract new device developers to test and trial devices at the OCTP. This will create an international 'sales site' to support CT developers, and generate revenues to service start-up debt servicing. It will also enable the demonstration of new technologies to encourage local and national adoption and complementary industry adoption.

Also important is the timely erection of a new building incorporating "off-grid" and other green building technologies that will attract related IT R&D activity with off grid energy security and provide a demonstrate site for the use of clean technologies in a commercial building. This will also create revenue streams to service start-up debt and attract key candidates to the Park.

This investment should generate the following impacts:

- Provide an immediate catalyst for carrying OCTP companies into Stage 2 growth
- Attract private investment for Stages 3 onward
- Invest in a) bespoke services, b) technology development support, and c) construction of Building 2
- Enable borrowing costs to be both underwritten and repaid by technology developers ($1.1m cover)
- Enable borrowing costs ($0.2 pa) to be repaid in near term and create a position of fiscal neutrality over the medium term
- Collateral economic, social and environmental benefits will accrue from the stage 2 investment
- Provide a lower risk strategy for realizing NZTE's assessment of the economic benefit of the OCTP, estimated as a potential ROI of $750m in net economic benefit and 350+ clean tech jobs over 10 years to the district and the region.

The three initial service components that are deemed most critical to fund are:

Service:	Funding for:	Revenue Potential
CT commercialisation services	Purchasing and providing best of breed knowledge and support	Service/professional fees, success fees for meeting or surpassing targeted goals, and dividends from equity positions.
CT Building and Park services	Head lease on new buildings, lease of required shared equipment	Revenue on lease margin, shared equipment use fee.
Technology Test Project Assessment and Support	Leveraged CG funding for scalable technology test projects, eg. Eco village, fuel testing, housing, marine.	A range of service fees generated by OCTC support of the technology test project, e.g. data and certification services.

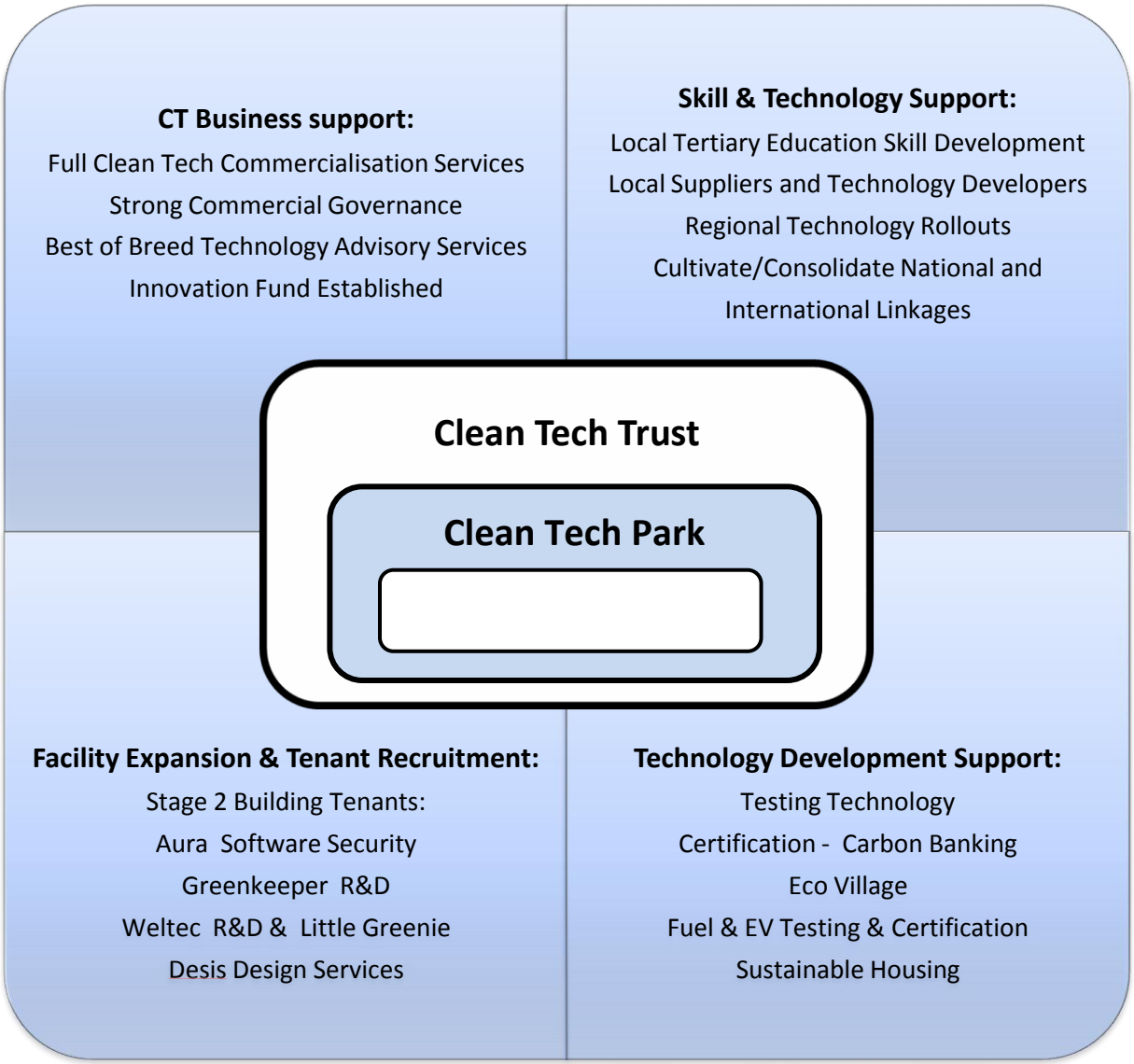
The service components included in Option 2 (above) are expected to provide these results across growth stages 1-3.

- CT commercialisation services
    - Stage 1 – Customer identification, sales and brokerage support
    - Stage 2 – Local investment brokerage and manufacturing support
    - Stage 3 – Export growth path, local R& D scale up support

- CT building and park services
    - Stage 1 – Low cost entry and growth as required
    - Stage 2 – Scaled up building, IT capacity and green tech implementation
    - Stage 3 – Develop R&D building space and populate with equipment

- Technology Test Project Assessment and Support
    - Stage 1 – Single application test sites plus performance data
    - Stage 2 – Local and regional testing, customer identification and deal facilitation
    - Stage 3 – Community- and town- scale test sites and services

The Option 2 model that has been suggested will have the following characteristics. These are in line with the CT sector development and tech park management best practices discussed later in the report. This figure indicates a nested business support network – the Centre within the Park under the Trust's coordinating umbrella – that will collaborate to provide services and activities shown in the four quadrants.



Implementation timetable

The following is a key implementation timetable and the associated milestones and dates (subject to funding availability):

1. Project start-up (PS)
    - Establishment Governance Board recruited

2. PS + 1 month

- CEO recruited

3. PS + 2 months
   - Key tenants for stage 2 building identified and pre-qualified
   - Key stakeholders for Stage 2 identified and pre-qualified

4. PS + 3 months
   - Test projects identified and funded
   - Assess tenants needs and recruit service packages as required

5. PS + 4 months
   - Test and delivery key service packages
   - Turnkey stage 2 building ready for occupancy (or earlier if available)

Risk Assessment

Of course, no bold venture is without risk, and all involved parties and stakeholders must be mindful of the possibilities for a variable outcome. This table provides an assessment of the risk potential associated with some of the key elements of a new CT development strategy.

Risk	Impact	Mitigation
Financial – insufficient tenants for yr 2	Additional costs to be covered	Closely monitor yr 1 tenants. Hold over unspent underwrite for yr 2 shortfall
Marketing and promotion – unclear message, not connecting with audience	Value proposition of park and test centre not realised	Develop clear marketing message and direct market to key stakeholders and candidates. Develop effective collateral in a timely fashion.
CEO Unsupported or Over stretched	Loss of performance or motivation Dilution of Effort across too many priorities	Clear agreement on KPIs, reimbursement and performance rewards. Clear board support. Effective use of team resources for best effect
Tenants Early Exit or Dissatisfaction	Loss of revenue Reputational Risk	Early tenants identified and pre qualified Key service support and technology in place. Tenant needs met and feedback sought.
Technology diffusion – no clear complementarily	Loss of Value proposition and collaboration opportunities.	Target mutually beneficial technology demonstrations. Encourage diversity within a coherent technology offering.

6. Benchmarking, Best Practices, and Long Term Vision

The analysis and activities described in this report take the process through second stage, and into third, but not beyond. Consideration needs to be given to the further growth and development of this facility. This section provides a best practice context for the follow-on governance/guidance of the CT Trust, from two perspectives; Clean Tech sector promotion initiatives and the operation of similar green-themed business parks in other world settings.

Over time, it will be critical for the CT Trust to identify and take advantage of critical relationships and collaborations with similar ventures around the world, both to learn from their best practices and for commercial and research partnerships that will further the interest of member companies. The following case vignettes examine successful practices at the University of Arizona Science and Technology Park and the Danish national strategy for CT sector development, among other examples.

These are all considerations that need to be further developed as the governance group considers its long term vision and strategy for the sector, and as Pritchard Enterprises plans the marketing and development of the OCTP facility. They will need to address populating the park via business attraction strategies and how to connect with regional, national and international CT networks.

The range of methods and possibilities for raising and applying capital deserve particular attention. As markets grow to the national and international scale, a significant amount of capital will be needed to underwrite this emerging group of clean tech companies' expanding staffing and production requirements. Particularly given the relative difficulty of adequately financing early- to mid-stage ventures in New Zealand, integrating a sector-dedicated source of funding with a regional development strategy is a very effective tool. Although the revolving loan fund programs that have proven their effectiveness in the US are not widely adopted in New Zealand, they could provide a useful model.[1]

Networking – Belonging Requires Joining

The beneficial relationships available to the OCTP and Clean Tech Trust within and outside of NZ are innumerable. Given the limitations of staffing, time and resources these relationships should be selected judiciously for maximum benefit.

There are estimated to be over 700 research, science and tech parks in varying stages of development worldwide. One broad avenue for network-building is affiliation with one or both of two dominant international organizations of science and technology-based industrial parks, the International Association of Science Parks (IASP), based in Malaga, Spain, and the Association of University Research Parks (AURP), based on Tucson, Arizona (USA). Their combined memberships includes a majority of the global facilities.

[1] The US-based Council of Development Finance Agencies (www.cdfa.net) offers its membership extensive information and multi-level training programs for establishing and managing a revolving loan program.

The International Association of Science Parks (www.iasp.ws), is an international organization of science and technology parks with a membership that is largely outside of North America. IASP's membership is largely drawn from the EU (about 55%), with under 10% in North America (US, Canada and Mexico) and the balance well distributed around the industrialized and developing spheres. Within the IASP's almost 400 members, a sizable number indicate onsite specialisations in environmental (roughly 20 per cent) or energy/renewable energy technologies (also about 20 per cent), though it should be noted that the majority of these facilities are larger and more thematically diverse than the OCTP with tenant bases that do not specialise solely in clean technologies.

The Association of University Research Parks (www.aurp.net) originated in the US and although its membership remains dominated by major North American science and tech park facilities and associated service providers (planners, consultants, architects, developers and construction firms specializing in this highly-technical endeavour), it has become more international in scope over time.

Both of these organizations offer an array of useful member services, including significant catalogues of related publications and research summaries, professional development, and conferences and events that provide a wealth of face-to-face networking opportunities. The OCTP's participation in one or both organizations should be strongly encouraged to recognize and take advantage of invaluable networking and partnering prospects, remain abreast of operational/organizational best practices, identify funding opportunities, access peer advisement and professional training, and other benefits.

Industry Development – Lessons from the Danes

In the Danish economy, similar in scale to New Zealand's, CT has been recognized as one of the primary national industries with significant growth potential. As a result, there are a variety of public policy initiatives to promote its growth, and as a result the fortunes of this sector are closely monitored and analysed. The comparability of the circumstances between the two national settings suggests that lessons learned in Denmark may have some applicability in New Zealand.

One of the main macro-scale issues raised in a recent 2011 publication on the status of Clean Tech in Denmark[2] was that although the Danish government provides robust subsidies for the research and development phase of the product cycle, there is inadequate support for the production and commercialisation phase that follows. The same argument could be made for the priorities of central government's promotion of key technologies in New Zealand.

The study postulated that the lack of emphasis on supporting the push from companies (production and commercialisation support) and the pull from consumers (incentives to purchase clean tech products) has caused many product lifecycles to stagnate between the completion of product development and the effective uptake by the market, trapped somewhere between scale-up issues and inadequate market demand. Half of this missing area of support – providing adequate subsidies to encourage market adoption – is beyond the scope of the study subject, but assisting companies

[2] "Cleantech – with the customer in focus – The Golden Egg of Danish economy 2011 – with inspiration from seven cases", Brøndum and Fliess, June 2011

with production and commercialisation is at the heart of the Clean Tech Centre's and Clean Tech Trust's missions. Identifying the critical need for this support is a broad affirmation of the programs and roles that are encouraged in this study.

Since technology development and refinement will be predictably favoured by the funding programs of central government, the CT Trust should 1) develop a particular capability for creating proposals and applying for those technology development grants, and 2) focus its budget and programs where funding from other sources is less available – e.g. enhancing production and commercialisation through the provision of management and marketing assistance, access to capital for expansion and other key support services.

The Danish study also illustrates the value and utility of ongoing sector analysis to fine-tune program functionality and measure progress, and these metrics are strongly encouraged to optimize programs that will be undertaken by the Clean Tech Trust through, or apart from, the OCTC. Using the Danish study as an example, assumptions about what companies need or find useful can only be affirmed by the companies themselves. In the table below, the ranking of various forms of Clean Tech business support by the Danish companies may follow a different pattern than those in the public sector or economic development field would assume. For example, cluster support organizations often promote their value as a one-stop source for business information, but in the Danish survey, companies gave this function the lowest priority.

It shouldn't be assumed that the preferences of NZ firms mirror those of Denmark, but this illustrates the importance of measuring firm perspectives for the sake of effective program design.

Rank	Categories of Business Support	% of firms that chose as a priority
1	Participation in CT-related development projects	61%
2	Initiatives that focus on marketing and market insight	44%
3	Expand availability of testing and demonstration facilities	44%
4	Identification of market trends and opportunities	30%
5	Access to competencies in research institutions	29%
6	Entrepreneurial support	27%
7	Attraction of international companies, employees and conferences	18%
8	One-stop source of CT-related information	11%

Park Operations – University of Arizona Science and Technology Park

Comparing facilities, the University of Arizona Science and Technology Park (UASTP) is dissimilar from the OCTP in size (500ha land, w/ 200,000m2 buildings), technical focus (broad high tech) and institutional affiliation (University-owned), yet it offers a number of applicable lessons – two of which will be discussed here.

Creating the brand and walking the talk

One of the recommendations of this report (see *Section 4 - Findings and Recommendations*) is to use every opportunity to reinforce the Clean Tech theme of the Park in the minds of the public, from elected officials and industry players to the typical person on the street. Although playing off a broader theme of portraying the facility as hearth for high tech commercialisation and promoting its links to the University of Arizona, the UA Science Tech Park management utilizes opportunity (beginning with the takeover of a repurposed facility) to direct the attention of industry and the public to its high tech mission and the economic benefits it brings to the community.

This can take many forms, ranging from hosting technology events and conferences to offering University classes at a site nearer to many in the metropolitan Tucson area than the main University campus, to providing a parcel for construction of a tech-themed high school, to establishing the Park site as a nationally prominent setting for testing and evaluating utility-scale photovoltaic arrays.

To cite a major example that falls within the Clean Tech sphere, the UASTP has established a solar test facility called the “Solar Zone”, the largest multi-technology solar evaluation site in the United States. This enables various technologies to perform side by side, under identical operating conditions, so developers may determine when systems are most efficient and economical for the company. The site is host to over 25mW of generating capability distributed between several parcels, each operated by a different prominent company and utilizing different generation technologies, as well as testing various forms of mounting and tracking equipment. The site will also be hosting experimentation in University- and Corporate-sponsored thermal and compressed air energy storage technologies. It should be noted that the approximately 100ha of land dedicated to the Solar Zone generate a substantial income from multi-year ground leases.

In addition to, and likely surpassing the value lease revenues, this venture brings substantial industry attention to the UASTP, which can also offer a comprehensive on-site package that combines leasable or build-to-suit space for R&D, manufacturing, distribution, testing/metrology, and administrative functions on a full-service site that can provide everything from utilities, to food service, to workforce training ranging from assembly work through advanced degrees.

Initiatives like this have allowed the UASTP to grow from 2 tenants and 1200 employees at the time the University purchased the facility from IBM in 1994 to 43 companies and over 7000 employees today. Even during the difficult period following the economic downturn in 2008, UASTP vacancy never fell below 5 per cent, and that has rebounded to full occupancy today.

Although the amount of available land at the OCTP precludes a project on the scale of the UASTP Solar Zone, the feasibility of making vacant land at the OCTP available on a transitional basis (several

years prior to development) for a facility that evaluates package-scale renewable energy, off-grid and/or smart-grid technologies represent just one area of possibilities. Vacant parcels in Phase 4 of the OCTP development scheme total approximately 1.2 hectares, and if Phases 3 and 4 are combined, the vacant land area totals approximately 2 hectares.

An OCTP venture of this type could open the door to partnering opportunities with utilities and solar-generation companies, as well as a provide revenue from ground leases. A prominent onsite facility of this type would raise the stature of the Park, adding to a green/environmental/clean tech cachet that will enhance its image and marketability.

Measuring Impacts

Economic impact studies play a very useful role in demonstrating the value public investment at a moment in time, as well as the return on that investment over the course of time. The management team of the UASTP was drawn from a University unit that specialised in researching the economic impact of the University and various public policy initiatives, so establishing a tradition of annual impact studies for the UASTP was second nature. The documentation of that growth over time has been a persuasive tool for justifying the expansion of the Park's facilities and overall mission. Although the UASTP has been largely self-sustaining financially over time, the demonstration of its financial contribution – currently measured at 3 billion USD per annum – to the regional economy has ensured that onsite revenues are largely reinvested in the Park rather than "harvested" for the benefit of the University of Arizona's larger budget, despite severe cutbacks in state-sponsored funding over the last decade.

The example this offers for the OCTP is obvious, and consideration should be given to measuring its growing impact on the region's employment and economy on an annual basis.

Appendix A – Study Interviewees, September 2011

Company/Organization	Name	Position	Industry/Institution type
Astara Technologies, Ltd.	Iian Jarret	Director	Battery management systems for electric motorcycles
Aura Software/Redeye	Andy Prow	CE	Software - security
Critchlow Ltd.	Jos Kunnen	CEO	GIS/geospatial mapping
Electra	John Yeoman	CE	Electrical transmission
Electra	Ross Leggett	Group General Manager - Commercial	Electrical transmission
ESG	Curtis Reid	General Manager, Alternative Energy	Renewable energy
ESG / Proven Technology	Tony Pearson	Technical Director	Renewable energy
Greenkeeper Systems	Helen Joronen	CEO	Software - PC power management
Grow Wellington	Jeff Smith	Business Growth Manager (attached to Nature Coast)	Economic development
Heavy Engineering Research Association (HERA)	Nick Inskip	Industry Development Manager	NZ-based Industry organization
Independent Consultant	Alistair Mallet	Involvement in marine energy and other initiatives	Consulting, marine energy tech involvement
Infinergy	John Beavon	Technical Director	PV and solar heating systems
Infinergy	Trevor Monk	Director	PV and solar heating systems
Infinergy	Brian Sharpe	Director, Sales and Marketing	PV and solar heating systems
KCDC	Gael Ferguson	Senior Management for Council, Developer of Council Strategies	Regional government - economic development
KCDC	Phillippa Richardson	Strategic Projects Manager	Regional government - economic development
KilNZ	Colin Knox	CE	Pyrolysis for forest product waste conversion
Massey University	Dr. Russell Wilson	Commercialization and IP Advisor, Research Management Services	Tertiary/University
Nature Coast	Chris Barber	CE	Economic development
Pritchard Enterprises	Stuart Pritchard	CE	Property development
SpectioNZ	Mike Henare	General Manager	Pyrolysis for biowaste conversion
Tupu Association	Anthony Royal	Consultant, representing Te Wanonga o Raukawa	Tertiary/Wanonga
Ventech Systems	Dennis Hill	Director	Weatherproof electronic cabinets
WelTec	Paul Mather	Director Technology Development and Transfer / WelTec Connect	Tertiary/Polytech
WelTec/Whiterea Board	Roger Sowry	Crown Overseer	Tertiary/Polytech
Zero Emission Vehicles	Andrew Rushworth	Managing Director	Electric vehicles, heavy transport