

# ***Te Papa Hauora Health Precinct*** Programme Business Case

*CERA / Health Precinct  
Advisory Council*

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# Executive summary

## ***Te Papa Hauora/Health Precinct: a world-class hub for health education, research and innovation***

Te Papa Hauora/Health Precinct (“the Precinct”) is one of 17 anchor projects in the Christchurch Central Recovery Plan (CCRP). The CCRP describes the Precinct as:

*“... an inspirational project in which private research and professional partners, educational and medi-hotel facilities will be within walking distance of the main hospital site. It will also form a world-class facility for learning and teaching in medicine ...”*

The Precinct occupies four blocks between Hagley Avenue, St Asaph Street, Montreal Street and Oxford Terrace. It will accommodate public and private sector organisations that have a focus on medical, nursing and allied health research, health sciences, tertiary and postgraduate education and research, and business innovation.

**Figure 1: The Health Precinct (based on 2013 master planning scheme)**



The Precinct concept is about more than just co-locating complementary organisations physically. The primary objective is to facilitate the development of networks that foster greater collaboration for the achievement of mutual objectives. In this regard the Precinct will build on the strong collaborative culture that already exists between the Precinct partner organisations (Canterbury District Health Board, University of Canterbury, University of Otago and Christchurch Polytechnic Institute of Technology), CERA, Matapopore, and between those organisations and the private sector. The Precinct will enhance the strong cross-organisational collaboration that already exists in Christchurch.

The expectation is that the Precinct will:

- Be a world-class hub for health education, research and innovation.

- More effectively link the health system with industry to commercialise innovative health technology products and services.
- Have an international profile as a premier destination for health-related companies, academics, researchers and students. This will boost New Zealand's health research and education sector through new investment and research partnerships between public institutions and the private sector, and increased student numbers.
- Contribute to the rebuild of Christchurch (in particular the city centre), and to the city and region's economic growth.

The Precinct will be an attractive area with public spaces. It is bordered by Ōtākaro/Avon River to the north, with green spaces for cyclists and pedestrians beside the river. There are open public spaces, and proposed new north-south streets and lanes that will promote engagement with the river and connections and collaboration within the Precinct.

In many respects the Precinct is already underway. There are private and public sector projects in progress. In particular:

- Christchurch hospital, along with the University of Otago (UO) medical school, anchors the Precinct. Construction has started on the new 400-bed acute services building at Christchurch Hospital.
- Canterbury District Health Board (CDHB) will relocate corporate offices into the Precinct at 32 Oxford Terrace in 2016.
- CDHB has confirmed plans for a new outpatients facility directly opposite the main Hospital building.
- Christchurch Polytechnic Institute of Technology (CPIT), the University of Canterbury (UC) and CDHB have committed to working with a developer to deliver a new Health Research and Education Facility (HREF).
- At the time of writing, UO was considering options for the redevelopment of Terrace House, its leased building at 4 Oxford Terrace and options for its site at 24 Oxford Terrace.

The Precinct's development is being overseen by the Health Precinct Advisory Council (HPAC). HPAC comprises an independent Chairman and representatives from each of the partner organisations (CDHB, UC, UO, CPIT and CERA). It is supported by an Executive Officer and administrator.

HPAC was established in 2014 by the partner organisations to oversee the realisation of the vision for the Precinct. It works closely with CERA, which undertook preceding work on the Precinct and which continues to contribute management, expertise and resource.

Given the various developments being undertaken or planned, the purpose of this Business Case is not to determine whether the Precinct should be developed, nor to seek funding from a single investor in order for the project to go ahead. Rather it is to:

- Document the Precinct's strategic direction and objectives.
- Identify what is required over and above the presence of individual organisations to deliver a successful Precinct.
- Identify and assess options for those requirements.
- Outline a potential implementation approach.

### *Collaborating as a means to critical mass and international recognition*

Precinct partners have been collaborating in various ways for a number of years, particularly in research settings. In this regard the Precinct will not introduce a completely new way of working. Rather, it will provide the opportunity for the partners to co-locate within walking distance of the Christchurch hospital with its associated teaching facilities and to enhance their collaborative networking. Enhanced collaboration within the Precinct is likely to take a range of forms, from informal and ad hoc cross-pollination of ideas that occurs by virtue of physical proximity (in a "water cooler" style), through to formalised collaborative projects between public and/or private organisations with their own investment and governance structures.

The collaboration that has been occurring between the partners in the absence of a Precinct has been frequent and successful. A single teaching hospital, a single medical school and a single funder have together provided an environment conducive to relatively high levels of co-operation and collaboration.

However, collaboration is typically driven at an individual, rather than organisational level. In a research context, it is dependent on individual researchers networking, seeking funding, engaging with external sectors and driving projects, with relatively low levels of strategic steering or discussion on how best to leverage collaboration to achieve shared aspirations. In this sense, existing collaboration is somewhat fragmented.

Enhanced and more strategic collaboration will enable the partner organisations to produce even better quality research and increase their critical mass. This will, among other things, help them be recognised internationally and increase their credibility as partners for private sector companies. Private sector partnerships not only bring additional investment, but they increase the likelihood of research being commercialised and translated into clinical practice, which is of course an important goal of health research.

Creating a quality research and education environment will also help universities attract more students and top quality staff. This in turn contributes further to the tertiary education “virtuous circle”, with funding following student enrolments, and high calibre staff attracting interest and investment from the private sector. This feeds back into and adds further to the benefits described above, and to wider economic growth for Christchurch city and the Canterbury region.

### *Collaborating as a means to innovative health workforce development*

Locating Christchurch’s three health workforce education facilities together, close to the teaching hospital, will provide an opportunity to change the way health care professionals are taught. The Precinct environment will enable stronger integration between theory and practical elements of training, and shared teaching and learning experiences. UO, UC and CPIT will be able to train doctors, nurses and other health professionals in a team, simulating clinical experience. This will help produce graduates that are more workforce-ready, and a workforce that is better equipped and more adaptable to meet the changing demands on the health system. Again, with top quality training future doctors and nurses are attracted to a sector that often faces recruitment and retention challenges.

### *A long term goal of reducing the global burden of care*

CDHB has innovative models of care, such as its integrated health record system (HealthOne). It has recently won IPANZ awards for business transformation and public sector excellence and the Kings Fund<sup>1</sup> recently found that the Canterbury health system had made appreciable progress towards becoming an integrated system.

The Precinct will support CDHB’s efforts to continually improve its model of care in terms of health outcomes and efficiency, taking into account the shifting demographics and the burden this will place on the health system in the future.

The Precinct is expected to lead to improved health outcomes for Canterbury, the South Island and the country more generally in several ways:

- Innovative models of teaching producing a better equipped and more adaptable health workforce serving patients.
- Improved models of care (particularly primary and community-based care) developed and tested through collaborative projects.
- Improved health outcomes for the general population as findings from research and clinical trials are commercialised and/or translated into clinical practice more quickly due to collaboration within the Precinct.
- Leveraging an integrated ICT system. This is expected to support and improve the quality, safety, efficacy, efficiency and experience of patient care, developed collaboratively between public and private sector health organisations.

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<sup>1</sup> The quest for integrated health and social care - A case study in Canterbury, New Zealand”, Nicholas Timmins and Chris Ham, The Kings Fund (2013).



These broad outcomes follow the broad nature of the Precinct's health collaboration aspirations. This business case focuses on health research and education, which the Precinct's initial activity is likely to centre on, by virtue of the partner organisations being the local DHB and tertiary education organisations. However, the Precinct is intended to be about more than research and education. As momentum builds among private sector organisations, the Precinct is expected to have increased focus in areas such as clinical trials.

### *A boost to the Christchurch rebuild and economy*

As identified in the CCRP, Christchurch has a unique opportunity to build a new central city that will include clustering of organisations within Precincts. This opportunity, combined with the planned redevelopments at Christchurch Hospital, Christchurch's existing history of excellent health research and education and the significant contribution the health sector makes to the local economy makes the city an ideal location for a world class health precinct.

The Precinct can play a leading role in catalysing the recovery of the central city, both in the development of its infrastructure and when it is operational. It will accommodate a large number of researchers, health sector workers, students and staff. The employment of these people and the associated activity will bring economic benefits to the city and the region. Importantly, it will help to revitalise the central city and contribute to the benefits of the programme of work to rebuild the central city:

- Increased participation in central Christchurch as a place to invest, work, live and play
- Increased productivity for central Christchurch which, with the benefit above, will contribute to the economic growth and social wellbeing of greater Christchurch and Canterbury.<sup>2</sup>

The Precinct also directly supports a number of initiatives outlined in the Christchurch Economic Development Strategy (CEDS) and associated action plan, including:

- Improving productivity through innovation.
- Successful central city design and build.
- Workforce.
- Sector development.
- Connections and business networks.

### *Buildings alone will not deliver the benefits of the Precinct*

Physical co-location alone may be necessary, but is not a sufficient condition to support strong collaboration and to enable a successful Precinct. There are a number of themes and learnings from experiences in other (international) locations, not just health precincts but from other initiatives that aim to leverage the benefits of physical location (e.g. science parks, innovation clusters and hubs). These consistently point to the importance of a culture of collaboration, private sector involvement<sup>3</sup>, strong leadership<sup>4</sup>, support for commercialisation<sup>5</sup>, funding<sup>6</sup> and active management of the partner group as an entity<sup>7, 8</sup>.

The missing elements that represent the key service requirements for the Precinct have been identified by comparing the existing arrangements with those typical of successful health precincts.

### *Options to support a successful Precinct*

This Business Case presents a series of options, across two core dimensions:

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<sup>2</sup> Draft Christchurch Central Implementation Plan: Programme Business Case

<sup>3</sup> Battelle Technology Partnership Practice (2007). *Characteristics and trends in North American Research Parks: 21<sup>st</sup> century directions*.

<sup>4</sup> OECD (2009). *Clusters, Innovation and Entrepreneurship*.

<sup>5</sup> McDougall and Witte (2010). *Knowledge hubs, Innovation Precincts, technology parks, employment centres*. Economic Development Australia Vol 4(3), 29-32.

<sup>6</sup> OECD (2009). *Clusters, Innovation and Entrepreneurship*

<sup>7</sup> Cabral (1998). *Refining the Cabral-Dahab Science Park Management Paradigm*. International Journal of Technology Management, Vol. 16, pp. 813-818.

<sup>8</sup> European Commission (2007). *Regional research intensive clusters and science parks*.



- Operational delivery structures for the Precinct, ranging from the status quo with limited formal mandate, to a formalised joint venture between the founding partners that could also incorporate private sector parties in the future, if not at the outset.
- The nature and scale of centrally owned or controlled facilities and equipment. Options range from no direct ownership or lease of any shared spaces, through to the acquisition or head lease of all available Precinct space, with a view to sub-letting to establish the desired tenant mix (possibly including subsidised rents).

Overlaying these two core dimensions is a spectrum of direct or indirect investment options for government.

## ***Recommendation***

It is recommended that:

- A central Precinct Team of three staff (full time equivalents) is established with the mandate and resources to:
  - Develop the Precinct's identity and value proposition.
  - Facilitate and promote collaboration across organisations and individuals within the Precinct.
  - Provide support to assist partner organisations attract new students, staff and industry into the Precinct.

It is likely that the most logical and economical way to establish this team will be to leverage an existing structure such as HPAC.

- Some shared spaces are leased to encourage collaboration. This will likely involve a mix of social spaces, for example cafeterias, common rooms and working spaces e.g. hot desking areas, study spaces and/or laboratory facilities. The Health Research and Education Facility (HREF) building already includes these features in its design brief.
- Options to attract an anchor tenant(s) to the Precinct continue to be explored and evaluated. This will include consideration of different forms of incentives or subsidised rents, though noting that these types of option would likely require additional Crown and/or potentially philanthropic support.

This approach represents an initial step. As the Precinct evolves, it will be important to review the scope and scale of investment, to ensure it is appropriate based on its success and demand.

A high level cost estimate has been prepared which suggest, indicatively, that the annual cash cost of the Precinct Team and the shared spaces would be approximately \$650,000 - \$750,000 and one-off establishment cash costs would be approximately \$650,000. These costs do not include incentives or subsidies to attract an anchor tenant, as this is presented as an optional or additional recommendation, and the scale of potential subsidies is at this stage entirely flexible, and probably best managed on a case-by-case basis.

The business case presents several options for meeting these costs, including increasing funding from partner organisations, developing a membership fee option, creating revenue by holding conferences or events, diverting existing budgets, or seeking new funding from government or philanthropic sources.

## ***A successful Precinct can drive considerable economic benefit***

The nature of this project means that generating meaningful and robust measures of economic benefits is challenging. However, the nature of potential economic impacts can be described and the potential scale of the benefits estimated, assuming a successful Precinct.

The table below presents potential areas of economic benefit and indicative assessments of the scale of these economic benefits, if achieved.

**Table 1 Economic benefits**

Benefit	Description of impact	Assumption	Direct value added (annual gain)
Economic activity from new private sector investment	Synergies between organisations, and improved research connections attracts new private sector investment into the Precinct.	Modest investment	\$8.4 million per 100 FTEs
New research funding	Effective research collaborations are more successful at winning research funding. Increased partnering with the private sector attracts research investment.	9.7% increase over baseline Crown investment	\$573,000
More research commercialised	Improved commercialisation support for researchers supports greater commercialisation. In addition, stronger links with the private sector provides information and direction to researchers that enable more effective commercial application of research.	One new small business begins generating export revenue, one small exporting business becomes a medium sized exporting business	\$5.6 million
Expenditure from increased student numbers	The Precinct attracts greater numbers of students both from New Zealand and internationally.	150 new domestic students, 86 international	\$1.6 million
Improved models of care	Innovations in workforce training, closer integration of theory and practical training, and increases in cross-discipline training improves the capability and capacity of the health workforce.	3% productivity uplift for CDHB	\$26.2 million
Infrastructure efficiencies	Ability to share equipment, lab space, teaching space, common area costs across organisations. Convenience benefits.	Agglomeration benefits applied	\$1.7 million
City centre revitalisation	Development of the Precinct leads to increased local activity and supports local businesses and the broader city centre redevelopment.	Not specifically quantified	Small uplift, as largely displaced from elsewhere

*PwC analysis*

This analysis shows that potential economic benefits from a successful precinct are significant, particularly if the Precinct can:

- Attract new investment.
- Meaningfully support the commercialisation of research.
- Drive improvements in the capacity or capability of the Christchurch health workforce.

# Strategic Context

## Overview of organisations

The key partner organisations of the Precinct project are:

- **Canterbury District Health Board (CDHB):** the main planner, funder and deliverer of health services in Canterbury. CDHB provides a wide range of health services to the region, including supporting teaching, professional development and research activities.
- **University of Canterbury (UC):** a leading University with a significant portfolio of health research across a range of disciplines. UC incorporates a School of Health Sciences and offers professional education in Audiology, Clinical Psychology, Nursing, Medical Physics and Speech and Language Pathology.
- **University of Otago (UO):** a leading University and a provider, through its Division of Health Sciences, of biomedical and public health research and professional health workforce programmes (including medicine, dentistry, nursing, oral health, medical laboratory science, radiation therapy, physiotherapy, and pharmacy).
- **Christchurch Polytechnic Institute of Technology (CPIT):** the largest South Island provider of education and workforce training for nursing, midwifery, medical imaging, social work and other nursing and health careers (from Certificate to Masters qualification).
- **Canterbury Earthquake Recovery Authority (CERA):** a New Zealand Government Department providing leadership and oversight of the recovery from the earthquakes of 2010 and 2011.
- **Ngāi Tahu / Matapopore:** Matapopore is the Ngāi Tūāhuriri earthquake recovery steering group and has been working closely with the Crown, providing advice on the CCRP. Matapopore became a party by invitation to the HPAC in August 2014, agreeing to contribute advice and support to the project in-kind.

A detailed summary of each of these organisations is provided in Appendix A.

The **Health Precinct Advisory Council (HPAC)** oversees the Precinct programme. HPAC was established in 2014 by its stakeholder institutions (CDHB, UC, UO, CPIT and CERA) to ensure realisation of the vision of the Precinct, recognising that success will require strong leadership, investment in kind and funds, and collaborative effort to achieve long term goals. HPAC comprises an independent Chairman (Dr Ian Town), as well as a representative from each of the partner organisations listed above, and an Executive Officer. HPAC is resourced jointly by its partner organisations. CERA, CPIT, UC and UO each contribute \$40,000 p.a., and CDHB contributes \$50,000 p.a. to give a total of \$210,000 in current annual funding. This funds three paid roles: 0.2 FTE Chair, 0.6 FTE Executive Officer, and 0.2 FTE Administrator. These roles currently provide project resource and secretariat for HPAC.

HPAC works closely with CERA, who undertook preceding work on the Precinct, and who continue to contribute management, expertise and resource.

The jointly signed Collaboration Agreement which established HPAC outlines HPAC's responsibilities as follows:

1. Enhancing the delivery of health care
2. Attracting highly qualified researchers and clinical staff to the region in all health related disciplines
3. Enhancing professional training and development
4. Attracting research funding to the Precinct
5. Enhancing training in all health related disciplines
6. Encouraging innovation and commercialisation of intellectual property
7. Identifying collaborative opportunities.

HPAC has developed a Strategic Plan 2015-2020, as well as a Work Plan, which it is currently implementing (see below).

## ***Alignment to strategy***

### ***Alignment with strategic aims of organisations***

The Precinct has strong alignment with the strategic aims of the key partner organisations. This is evidenced not only in strategic documents such as the CCRP, the HPAC Strategic Plan 2015-2020 or the UC Futures Plan, but also by the commitment all organisations have made to the Precinct by signing the Collaboration Agreement in May 2014 and participating in the resulting HPAC.

In particular, the HPAC's Strategic Plan 2015-2020 identifies six strategic themes to progress towards the Precinct:

1. Enhance the profile of the Precinct
2. Enable the development of a HRCoE
3. Develop innovative models of training and education
4. Contribute to advancements in clinical simulation
5. Enable the growth of clinical trials
6. Strengthen the innovation ecosystem by enabling and facilitating advancements in health IT.

This business case has been prepared according to these aims for the Precinct.

The summary of partner organisations in Appendix A also includes a summary of organisations' strategic objectives and their aspirations for their involvement in the Precinct and HRCoE.

Several common themes emerge from these documents, and from interviews and workshops held during the development of this business case:

- A commitment to growing strong and productive relationships among the public sector stakeholders as well as between public and private health organisations operating in Canterbury.
- Collaboration as a means to achieving benefit for individual organisations (for example in a collaborative research, teaching or workforce development project), as well for the public good (for example, through better and faster translation of research into clinical practice).
- A need to ensure health workforce training is geared to meeting the growing and changing demands on Canterbury's health services.
- A desire to contribute to positive health outcomes for the people of Canterbury in practical ways, such as developing and testing new models of care, and innovative workforce development.
- Making a positive contribution to the re-building and re-shaping of Christchurch city, and to the city and region's economic growth.

### ***Alignment with broader policy objectives***

The Precinct concept is aligned with local and central government priorities in a number of sectors, particularly the Business Growth Agenda, Tertiary Education Strategy, draft National Statement of Science Investment, CCRP, Christchurch Economic Development Strategy and the South Island Regional Health Services Plan. The relationships to these strategies are summarised in Appendix B.

### ***The Canterbury landscape***

Central Government identified the rebuild of Christchurch as a priority following the 2010 and 2011 earthquakes. It established CERA to be the lead agency responsible for facilitating the recovery of the central business district and wider regions. CERA prepared the CCRP which was approved by Cabinet<sup>9</sup> and came into effect on 31 July 2012.

The vision contained in the CCRP is for central Christchurch to become the thriving heart of an international city that embraces opportunities for innovation and growth. An integral part of the CCRP is

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<sup>9</sup> CAB Min 12 (26/8)

the Blueprint Plan, which defines the future form of the central city, sets out the locations of the 17 key anchor projects needed to optimise recovery, and outlines 'block plans' which show what the central city could look like in the future.

Among the 17 anchor projects are a number of precincts. These have been designed to cluster complementary organisations into a common space, such as the Convention Centre Precinct, Justice and Emergency Services Precinct, Performing Arts Precinct, and Te Papa Hauora/Health Precinct.

The Precinct is aligned with the draft Christchurch Central Implementation Plan: Programme Business Case, which is designed to act as an agreed framework for Crown investment in the central city and to provide a clear framework for the programme of work being undertaken. This document includes the Precinct as a Stage 2: Catalysing Investment (2014-2017) project. The Precinct is expected to contribute to the programme benefits identified in the Christchurch Central Implementation Plan: Programme Business Case:

- Increased participation in central Christchurch as a place to invest, work, live and play
- Increased productivity for central Christchurch which, with the benefit above will lead to:
- Contribute to the economic growth and social wellbeing of greater Christchurch and Canterbury.

The Precinct also builds on the need to redevelop parts of Christchurch hospital, due both to earthquake damage and pre-existing need for additional capacity.

The rebuild and the implementation of the CCRP are well underway. Rebuild activity appears to be nearing or reaching its peak, although estimates for how long activity will remain at the current level are mixed<sup>10</sup>. Non-residential building work is likely to start representing a larger portion of total building work<sup>11</sup>, and there are a number of large-scale private and public building projects either underway or planned, particularly in the Christchurch CBD. These include the 17 anchor projects set out in the CCRP.

### *New Zealand's health sector*

Health services in New Zealand are provided through a network of public sector and private sector organisations. It is a large and complex system with multiple decision-makers. The health system absorbs more than a fifth of government spending, with core Crown health expenditure of \$15.9 billion for 2015/16<sup>12</sup>.

New Zealanders enjoy health outcomes comparable with those of people in other developed economies, although performance in some areas is mixed, and there is evidence of clear ethnic disparities<sup>13</sup>.

As in other developed countries, the New Zealand health system will need to adapt to meet changing population health needs in the medium term. An ageing population is a key challenge for Canterbury, which has the largest total population aged over 75 years in New Zealand. By 2026 one in every five people in Canterbury will be over 65, and the number of people aged over 85 will have doubled.<sup>14</sup> A rising incidence of chronic conditions such as diabetes and obesity nationally<sup>15</sup> is also a major challenge.

As these conditions represent an increasing proportion of our population health needs, the demands on our health system will change. For example, chronic conditions typically require sustained management over many years, with most of this care occurring outside of hospital. Many patients will suffer more than one chronic condition, and will need to be cared for in an integrated way.<sup>16</sup>

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<sup>10</sup> Quotations, statements and reports from ASB, Westpac, MBIE, the Canterbury Employers' Chamber of Commerce and the Canterbury branch of the Master Builders' Association support the suggestion that rebuild activity is nearing or reaching its peak. ASB and Westpac estimate activity to continue at the current level for about one year, while the Canterbury Employers' Chamber of Commerce expects the current rate of spending to continue for 4-5 years. All cited in 'Is the Canterbury rebuild hitting its peak? [sic]', by Marta Steeman and Tess McClure. Published 18 July 2015 and accessed at <http://www.stuff.co.nz/the-press/business/70318325/Is-the-Canterbury-rebuild-is-hitting-its-peak>. See also MBIE (March 2015). Quarterly Canterbury Job Matching Report.

<sup>11</sup> Westpac Chief Economist Dominick Stephens, cited in 'Is the Canterbury rebuild hitting its peak? [sic]', by Marta Steeman and Tess McClure. Published 18 July 2015 and accessed at <http://www.stuff.co.nz/the-press/business/70318325/Is-the-Canterbury-rebuild-is-hitting-its-peak>. MBIE's March 2015 Quarterly Canterbury Job Matching Report also noted an 8.2 per cent rise in non-residential construction activity, compared with a 0.3 per cent rise in residential activity in the March 2015 quarter.

<sup>12</sup> [www.beehive.govt.nz/feature/budget-2015](http://www.beehive.govt.nz/feature/budget-2015), accessed 15 August 2015

<sup>13</sup> Ministry of Health, November 2014. Briefing to the Incoming Minister of Health.

<sup>14</sup> 'Our Region' section of CDHB website. Accessed 21 July 2015 at <http://www.cdhb.health.nz/About-CDHB/Pages/Our-Region.aspx>

<sup>15</sup> Treasury and Ministry of Health Briefings to the Incoming Minister of Health, November 2014.

<sup>16</sup> Treasury Briefing to the Incoming Minister of Health, November 2014.



To meet these future service demands our health system will need to rebalance, with a probable increase in focus on primary and community-based care and patient self-management. This doesn't mean, however, simply increasing the quantity of primary and community care as it is delivered today.

Future primary health services need to not only provide excellent care, they need to be accessible, co-ordinated across organisations, care sectors and regions, and make the best use of available technology. Hospital care will of course still be a very large and integral part of the health system, and its services will also need to adapt to changing demands as New Zealand's health needs change.

This will also have implications for the health workforce. Our future health system will require a different mix of skills and a more flexible workforce. In terms of primary sector care, it may be possible, for example, to have nurses and other healthcare workers carry out a wider range of functions than they do currently. There may also be a possible increase in 'nurse practitioner' roles or new ways for healthcare workers to co-ordinate their services across the sector.

The projected changes in health service demand add up to a need for innovation in health service delivery models, and changes to the way the health workforce is trained and developed.

### *New Zealand's tertiary education sector*

New Zealand is recognised internationally for its integrated tertiary education system that supports people to study at a variety of levels and in different learning environments. The tertiary education sector is a large part of our economy and communities. In 2013 there were half a million people studying. Over one third of 18- to 24-year olds were in some form of tertiary education, and 127,000 domestic students completed a qualification.<sup>17</sup>

However, increased global competition in the tertiary education sector is likely to occur. Higher education is growing rapidly across the world as governments look for ways to speed their nations' recovery from the global financial crisis. Developing countries across Asia, Latin America, and the Middle East are investing heavily to increase their numbers of graduates. Meanwhile, in the western world many countries are grappling with high levels of public debt following the global financial crisis. A significant number of those countries are relying on more private investment in tertiary education, in the face of declining public investment.<sup>18</sup>

This global investment in tertiary education has several key implications for New Zealand<sup>19</sup>:

- Preparing our young people for an increasingly skilled and educated international job market.
- Competing for academic teaching and research talent.
- Competing for international students.

The tertiary education system will need to make some key changes to address these challenges. The Tertiary Education Strategy 2014-2019 suggests the need to:

- **Build international relationships that contribute to improved competitiveness:** TEOs need a stronger connection to the world through academic and research links, cross-border education and business relationships. New Zealand needs to strategically extend these relationships to realise new opportunities, especially in emerging markets.
- **Support business and innovation through development of relevant skills and research:** TEOs need to develop the skills and knowledge essential for innovation and business growth. New Zealand needs TEOs and industry to work together more closely, to enhance knowledge transfer and the relevance of the skills and knowledge developed.
- **Improved outcomes for all:** A more prosperous society supports all individuals to achieve their aspirations. New Zealand needs to ensure that more people, including more people from priority groups, have the transferable skills in demand as employment rises, and that will support them in other areas of their lives.

<sup>17</sup> Briefing to the Incoming Minister of Tertiary Education, November 2014

<sup>18</sup> Tertiary Education Strategy 2015-2019

<sup>19</sup> Paraphrased from Tertiary Education Strategy 2014-2019



- **Continuing to improve the quality and relevance of tertiary education and research:** Growing international competition for talent means that New Zealand needs higher quality, more relevant provision from TEOs that offers value for money and improved outcomes for the country.

The first two changes listed above are of particular relevance to the Precinct concept, which is based on the concept of strengthening relationships and encouraging collaboration among TEOs, as well as between TEOs and industry. Through this collaboration, one of the Precinct's objectives is to contribute to the fourth change above – the delivery of more top quality health tertiary education and research.

Projects within the Precinct, such as the HREF and the HRCOE are also expected to generate profile and attract international students, including PhD students, to study at UO and UC. This will create financial and strategic benefit for the institutions, particularly in the context of increased global competition for international students.

The fourth point is relevant to the HRCOE, particularly in terms of research. It is expected that bringing together expertise and equipment, the amount and quality of research generated by HRCOE partner organisations will increase.

### *The broader New Zealand research and development sector*

This sector has seen increased focus and considerable change in the past five years, with a 54% increase in Government funding (from \$628m in 2007/2008 to \$967m in 2014/15), the integration of the former Ministry of Science and Innovation into the Ministry of Business, Innovation and Employment (MBIE) in 2012, the creation of Callaghan Innovation in 2013 and the establishment of the National Science Challenges in 2013.

However, while New Zealand's Research and Development (R&D) funding has grown substantially in recent years, it is still low by international standards. The 1.28 per cent of GDP that New Zealand spends on science is well below the OECD average of 2.06 per cent. There are many reasons for our comparatively low science spend, although a significant portion of the disparity is due to our low investment in the business sector.

Furthermore, we don't necessarily reap the potential benefits of our R&D spend. Although New Zealand is ranked 13<sup>th</sup> out of 143 countries on the quality of our innovation inputs (such as quality of education, presence of skilled workers, and flexible regulatory environment), we are only ranked at 66<sup>th</sup> for our ability to convert innovation inputs into innovation outputs (such as patents, new businesses, and high-tech exports).<sup>20</sup>

A number of different pieces of research have investigated the challenges and constraints to improving the effectiveness of New Zealand's R&D ecosystem<sup>21</sup>. Issues identified include:

- Lack of scale and a limited presence of large, internationally-focused companies. This also manifests in low levels of venture capital.
- Low levels of business R&D investment relative to other small OECD countries and low levels of enrolment to study qualifications germane to these companies.
- The quality of research. New Zealand ranks 6<sup>th</sup> globally in terms of scientific and technical articles relative to GDP, but 26<sup>th</sup> for the rate at which this research is cited<sup>22</sup> (although these rankings may be biased because of New Zealand's research being related to unique factors of production).
- Poor targeting of research that constrains its ability to be effectively commercialised.
- High levels of silos and fragmentation leading to a lack of effective collaboration.

HPAC have also identified issues relating to fragmentation in research and development funding. They consider that:

- Uncertainty about funding continuity negatively impacts on career pathways for those working in research.
- The cost of application and reporting erodes research productivity.

<sup>20</sup> By the Global Innovation Index (GII), cited in MBIE's 2014 Briefing to the Incoming Minister of Science and Innovation

<sup>21</sup> See for example, New Zealand Institute, "Standing on the shoulders of science" and the "Draft National Statement of Science Investment"

<sup>22</sup> Draft National Statement of Science Investment

- Incentives to participate within the clinical environment are mixed.
- Clinical innovations are often not taken up nationally.
- Commercialisation of research is challenging.

A premise of the Precinct concept is that closer links between health service delivery organisations, TEOs and industry will facilitate collaboration, particularly in research, and that this collaboration will attract greater investment into health R&D, as well as improving the efficacy of that investment. The HRCoE is also expected to help address the fragmentation issues described above by enabling institutions to share some research support services (for example, grant applications or commercialisation support).

### *Collaboration across health, tertiary education, research and commercialisation for a range of benefits*

The strategic context of the Precinct concept and project is based in the projects and developments that are already going ahead within it. That is, the redevelopment of Christchurch Hospital, the nearby land available for development, and the development of education and research facilities within the Precinct offer an opportunity to build a network of complementary organisations and to create a whole that is more than the sum of its parts.

This Business Case is therefore about the elements of the Precinct that sit in between and around the organisations themselves – the glue that holds them together and enables them to achieve mutual objectives through collaboration.

If it is successful, the Precinct will be able to help partner organisations address challenges across their various sectors, including:

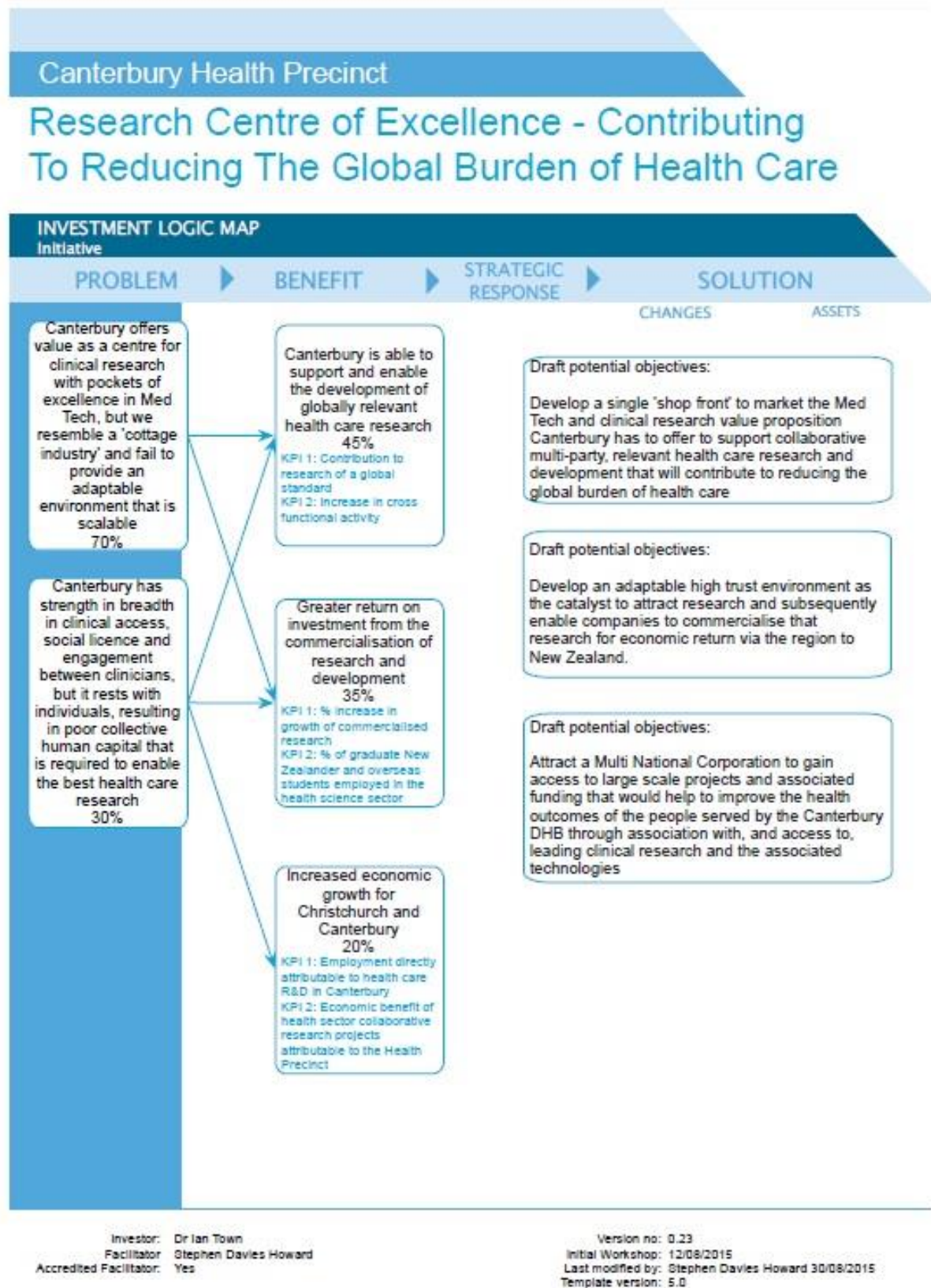
- Fragmentation in research and development, and suspected under-developed research relationships and partnerships between public research institutions and the private sector.
- Increasing, but still low research and development funding, with a suspected low rate of return.
- Increased global competition in the tertiary education sector, impacting on many components of our tertiary education system (learning, teaching, research and export education).
- Changing population health and corresponding demands on the health system, requiring innovation in the way the health workforce is trained and health services are delivered, both in Canterbury and nationally.

At the same time, the Precinct as an anchor project can create and catalyse economic uplift for Christchurch throughout its development and as it becomes operational, and contribute a vibrant and bubbling quarter to the revitalisation of the central city.

### ***Investment Logic Map (ILM)***

An ILM workshop was held in Christchurch on 11 August 2015 (see Appendix E for participants). This was focussed on the Health Research Centre of Excellence (HRCoE), but the themes are also relevant to the Precinct. The resulting ILM is included on the following page, and was used as a basis for the investment objectives and key service requirements that follow.

**Figure 2: Investment Logic Map for HRCOE**



# Investment objectives, existing arrangements and service needs

## Introduction

This section establishes:

- What the partner organisations expect the Precinct to achieve for individual organisations and for the Precinct collectively (**investment objectives**).
- The current state (**existing arrangements**).
- The problems or issues in bridging the gap between the current state and desired future state (**business needs**).

## Investment objectives

**Table 2: Precinct investment objectives and measures**

Objective	Measures
Create synergies between organisations and enable them to build critical mass	<ul style="list-style-type: none"> <li>• Investment attracted from new sources (private sector, off-shore)</li> <li>• Global recognition of Precinct as a health research and education “shop front” e.g. through citations, study visits, website interest etc.</li> </ul>
Increased research and development activity by both universities and private sector organisations, and increased commercialisation of that research	<ul style="list-style-type: none"> <li>• Increased number of clinical trials in Christchurch</li> <li>• Increased number of research partnerships between universities (UO and UC) and private sector companies</li> <li>• Increase in published peer reviewed health research and citations from Precinct institutions</li> <li>• Increase in commercialisation of IP from Precinct institutions (e.g. licencing deals, number of patents, spin-off firms)</li> </ul>
More competitive tertiary education organisations	<ul style="list-style-type: none"> <li>• Increased number of health students / graduates at CPIT, UC, UO</li> <li>• Increased number of international health students at CPIT, UC, UO</li> <li>• Increased competition for or calibre of candidates for health academic and research positions at CPIT, UC, UO</li> <li>• Increase in published peer reviewed health research from UC, UO</li> </ul>
Increased capacity and capability of the Canterbury health work force through: <ul style="list-style-type: none"> <li>• innovations in health workforce training</li> <li>• closer integration of theory and practical in health workforce training</li> <li>• more cross discipline training programmes to build broader knowledge of the system response.</li> </ul>	<ul style="list-style-type: none"> <li>• Greater proportion of health workforce training in practical settings rather than in the classroom</li> <li>• Shared teaching resources and working or learning in teams across health workforce teaching programmes, and evaluation of this teaching (for example, learning in teams comprised of student doctors, nurses and other healthcare professionals)</li> <li>• Number of health care professionals</li> <li>• Greater number of professionals qualified and working in priority vocations</li> </ul>
Innovations in models of health care, particularly primary care	<ul style="list-style-type: none"> <li>• Number of collaborative or joint pilot projects testing new approaches to health service delivery</li> </ul>
Revitalisation of Christchurch CBD and economic uplift for Canterbury	<ul style="list-style-type: none"> <li>• Number of FTE students and staff located within the Precinct</li> <li>• Take up of vacant office / research space</li> <li>• Jobs created within the Precinct</li> <li>• Economic measures relating to city or regional impacts. Examples could include local and national business confidence surveys, regional economic outlooks such as those prepared by major banks, trends in health sector employment in the Precinct and surrounds (based on Census mesh block or Area Unit analysis)</li> </ul>

Objective	Measures
	<ul style="list-style-type: none"> <li>New private sector investment</li> </ul>

The objectives and measures here are built on further in the Benefits section, which sets out expected benefits and an initial draft performance measurement framework for the Precinct.

The investment objectives align with HPAC's overarching outcomes:

- The vision, purpose and strategies of HPAC are identifiable by members of the public, health providers and the private sector locally, nationally and internationally.
- The HRCoE contributes to the economic uplift of the region.
- Improved delivery of health care and increased capacity and capability of the workforce in high priority workforce vocations.
- Improved safety and quality of care delivered resulting in improved patient outcomes.
- Improved health outcomes as a result of changes to service delivery, medical interventions and treatment options that arise from the growth and expertise in clinical trials.
- Health IT platforms are streamlined, consistent and provide timely and effective information across the Canterbury Health System.

While not listed as a specific objective of the programme, it is expected that the Precinct will contribute to improved health outcomes for the Canterbury population over the long term, primarily through faster and better translation of new health research into clinical practice, and improved models of care, which the Precinct is designed to enable. This is discussed further in the Benefits section of this business case.

### ***What Precinct success looks like***

Measures of the Precinct's success will include widespread and in some instances international recognition that it:

- Is a premier destination for health professionals, students, academics, researchers and firms.
- Is home to a collaborative and connected community spanning the length of the health value chain and will contribute to the revitalisation of central Christchurch.
- Is an attractive place to work and study. Its pedestrian areas and modern facilities will ensure it is a bubbling and vibrant part of a revitalised central city.
- Has a large community of students from disciplines and institutions that converge on a shared campus.
- Provides innovative health teaching that gives students 'real world' experience and prepares them to meet current and future demands on the health system.
- Provides education providers with opportunities to build breadth to the teaching offered by leveraging the different courses and expertise of the institutions, and 'cross-teaching'. This also avoids unnecessary replication and is more cost effective (from a government perspective) than having the institutions compete.
- Is supported by world-class integrated health ICT infrastructure that supports and enhances the quality, safety, efficiency, efficacy and experience of patient care.
- Will, in the long term, contribute to reducing the global burden of health care through new research, innovative models of care, and a skilled and adaptable health workforce.

### ***Existing arrangements***

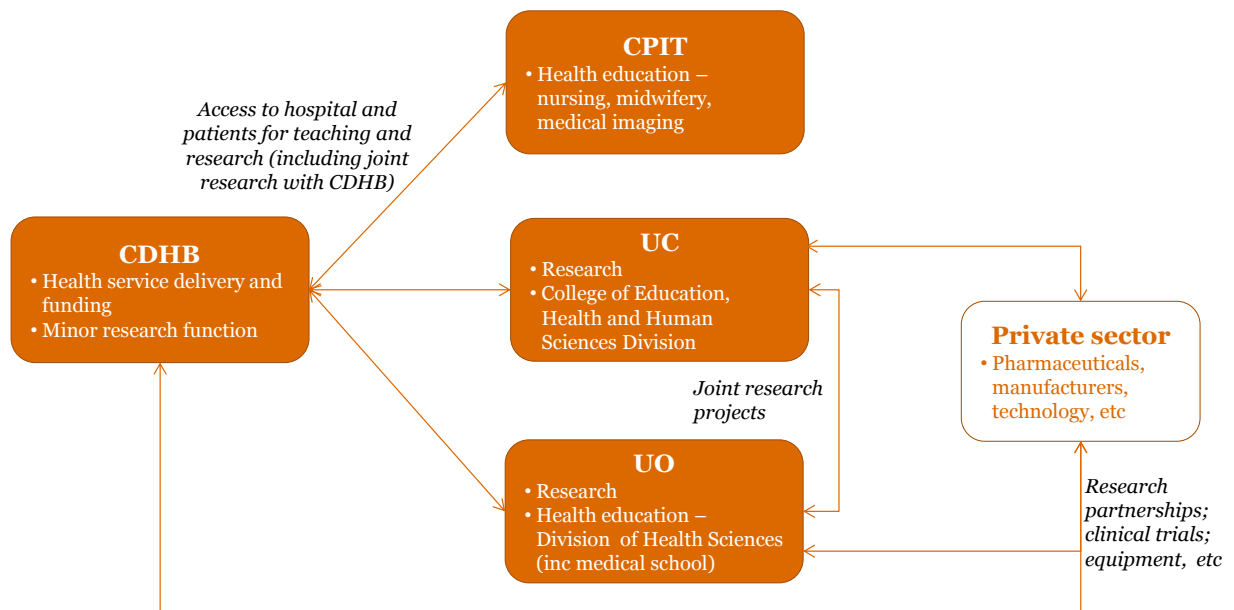
The Precinct will involve several sectors of the New Zealand economy, including health, tertiary education and research and development. Existing arrangements are therefore complex and involve a number of public and private sector stakeholders.



## Activities and relationships

The diagram below shows at a high level the current activities of and relationships between the partner organisations, as well as the private sector.

**Figure 3 Overview of existing activities and relationships between partner organisations**



## Relationships between public sector organisations

There are existing collaborative relationships between CDHB, UO, UC and CPIT. For example, there is a formalised relationship between UO's School of Medicine and CDHB, where the organisations enable each other to carry out their core business. In fact, the existing level of co-operation in Christchurch is thought to be high relative to other cities (such as Auckland or Wellington), because Christchurch has a single teaching hospital, single medical school and a single funder of each.

There are also research relationships between the two universities (and other New Zealand and international universities), and examples of successful collaborative research projects and networks between them. Included below are case studies on the MARS Spectral Molecular Imaging Project and the Consortium for Medical Device Technologies.

Practically speaking, there are few barriers to collaborative research, with minimal constraining management or governance requirements. However, this also means collaboration is dependent on individual researchers networking, driving projects, leading collaboration with peers and the private sector, and seeking funding. There appears to be relatively low levels of strategic steering or discussion of how best to leverage collaboration to achieve shared aspirations. Collaboration between public sector organisations can therefore be seen as somewhat fragmented.

This fragmentation also contributes to inefficiencies in collaborative projects. For example, in clinical trials involving a number of parties, participating organisations each complete their own ethics approval process. When collaborative research projects lead to commercialisation opportunities, partners may be required to follow their own IP management processes and advice. The ability to share information across partners is in some circumstances limited.

While collaboration between the public sector organisations is certainly possible, and already occurs, there are many opportunities for it to be more cohesive, to operate on a larger scale, and to present this in a more organised and targeted fashion internationally.

HPAC also represents an important aspect of the relationship between these organisations, although it relates to the development of the Precinct specifically, rather than to organisations' existing business interactions (for example, collaborative research or education activities).

The jointly signed Collaboration Agreement which established HPAC notes that the signatory partner organisations wish to lead and help contribute to "a health service delivery, research, education and training ecosystem as a framework for collaboration and shared activities of mutual interest" in the

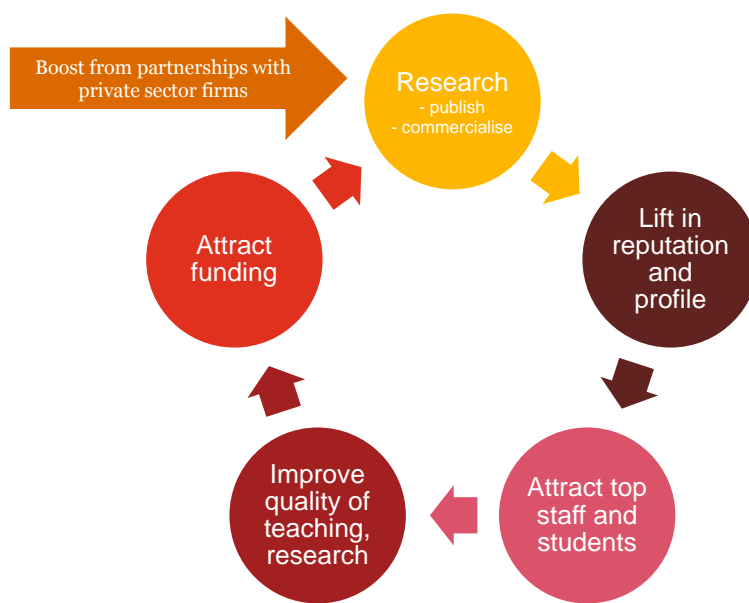


Precinct. In signing the agreement partner organisations also made a financial contribution to the operation of HPAC. This indicates partner organisations see value in fostering greater collaboration in the areas and ways proposed in the Precinct programme.

### Relationships between the public and private sectors

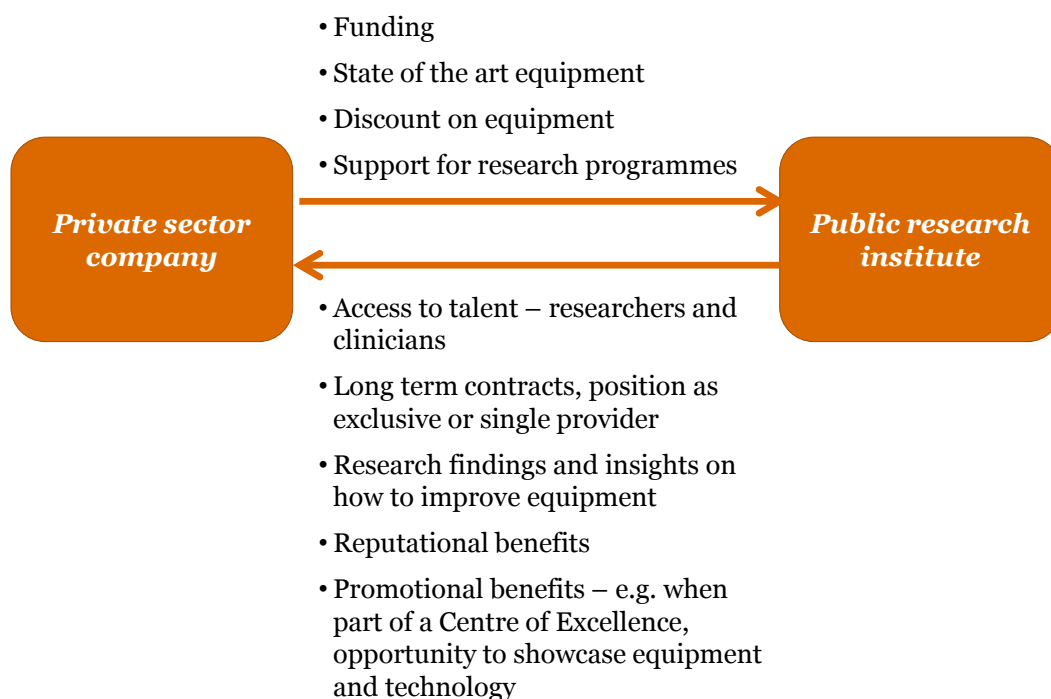
Partnerships between public research institutions and private sector companies are highly sought after and celebrated by researchers, because they boost a “virtuous circle” of tertiary research and education. They may bring new funding from outside the tertiary education system (and which has therefore not been re-appropriated from other research projects), and they offer a clear path towards the commercialisation of ideas generated through research.

**Figure 4: "Virtuous circle" of tertiary research and education**



The figure below gives a general sense of the contributions and gains for public research institutions and private sector companies in partnerships, using an example of a partnership involving medical research equipment.

**Figure 5: Example contributions and gains in public / private research partnership**



While there are examples of successful consortia and partnerships across the public and private sectors (see case studies below), these are fairly infrequent. UC, UO, CDHB and CPIT have all confirmed a desire for more collaborative partnerships with private sector companies.

When they do occur, relationships between public and private sector organisations present similar challenges and opportunities as those between research institutions. As with university research collaboration, there are few practical or bureaucratic barriers or constraints to partnerships with private sector firms. Partnerships with the private sector also tend to be linked to top individual researchers, rather than organisations; and while individual researchers will drive projects and pursue private sector partners, private sector companies also scout and seek out top talent in areas of commercial interest.

An important consideration for public/private research partnerships is the motivations of the private sector. Private sector companies tend to invest for commercial outcomes, although they may be innovative in the route to those outcomes, and they may have some flexibility in the time frame. While private sector companies will understand the need for outcomes that benefit all partners or stakeholders, they will be drawn to invest in the Precinct for primarily commercial reasons.

Anecdotal evidence suggests that the minimal strategic oversight of collaboration represents a missed opportunity (on research institutions' part) to strategically target potential markets or funders. The fragmentation described above prevents Canterbury or New Zealand from presenting a unified "shop front" overseas, which some researchers consider would enable the promotion of Christchurch or New Zealand as a destination for excellent clinical trials (for example).

HPAC also consider that the uncertainty in continuity of funding impacts negatively on career pathways for those working in research.

### ***Case studies***

Two case studies are provided below – one for a research project (MARS Spectral Imaging Project), and one for the Consortium for Medical Device Technology (CMDT) and MedTech CoRE. Although the latter is not a single research project, it provides an illustration of how health research collaboration and building of critical mass can be encouraged and supported within existing arrangements.

### **Case Study:** **MARS Spectral Imaging Project**

The MARS Project is a collaborative effort between the Universities of Canterbury, Otago and Auckland. In partnership with various industrial groups, the focus of the project is to develop a commercial spectral (MARS) scanner for molecular imaging. The MARS scanner will be able to provide more detailed images of the body than traditional MRI scans and computer tomography, leading to the earlier detection, diagnosis and treatment of major diseases.

The MARS project has received approximately \$12 million in external funding. Its main external funder has been the Ministry of Business, Innovation and Employment (MBIE), which has invested \$4 million over 6.5 years through the High Value Manufacturing Services Research Fund, and through a parallel contract with MARS Bioimaging Ltd.

The MARS project has signed a partnership agreement with GE Healthcare, which will provide funding and the x-ray tube to be used in the system. Several health-related and collaboration grants also provide funding to the project, such as the National Health Foundation; the NZ Arthritis Foundation; the New Zealand Royal Society; and the Royal Australian and New Zealand College of Radiologists.

The goal of the project is to have a full-scale MARS scanner system developed in three years, with use for humans in about five years. As well as the health improvement benefits the MARS scanner will confer, the likely economic benefit to New Zealand will be substantial if the project is successful – the MARS scanner is a high-value product and there are no such scanners commercially available today. This will also lift the profile and competitiveness of New Zealand's technology manufacturing sector in the area of medical imaging. The partnership with GE Healthcare is expected to open new pathways for knowledge sharing and provide a platform for New Zealand to showcase its high-tech manufacturing capabilities globally.

#### *References:*

Centre for Bioengineering and Nanomedicine. *Biomedical imaging*. Retrieved from [www.otago.ac.nz/bioengineering/research/otago037899.html](http://www.otago.ac.nz/bioengineering/research/otago037899.html), August 2015.

Dr Bas Walker. *Global partnership for MBIE funded research*. Retrieved from [www.mbie.govt.nz/about/whats-happening/news/2014/global-partnership-for-mbie-funded-research](http://www.mbie.govt.nz/about/whats-happening/news/2014/global-partnership-for-mbie-funded-research), August 2015.

### **Case Study:**

#### **Consortium for Medical Device Technology (CMDT) and MedTech CoRE**

CMDT is a national industry-research network that was established to help grow the medical device industry in New Zealand and to “provide a single point of contact to NZ's capability and resources in medical technology (MedTech)”. The CMDT network is a collaboration between Auckland University of Technology (AUT), Callaghan Innovation, the Universities of Auckland, Canterbury, Otago and Victoria University of Wellington.

By enhancing opportunities for collaboration, facilitating access to funding and international connections for both researchers and start-up companies, CMDT is able to provide a single access portal to link research activities with “companies, healthcare providers, regulatory and industry bodies, the Health Innovation Hub, and the Commercialisation Partner Networks.”

In 2014, the CMDT partners successfully applied to the Tertiary Education Commission (TEC) for funding to establish the MedTech Centre of Research Excellence (MedTech CoRE). The MedTech CoRE, hosted by the University of Auckland, is focused on developing new technologies to improve “hospital, community and home-based healthcare, for the benefit of all New Zealanders, and also nurture an enhanced MedTech business sector that contributes to the growth of the New Zealand economy.”

#### *Reference:*

CMDT and MedTech CoRE Website, [www.cmdt.org.nz](http://www.cmdt.org.nz)

### **Current physical location**

Partner organisations currently operate from various parts of Christchurch city:



- **CDHB:** Health services currently provided at Christchurch Hospital (as well as other locations such as Burwood). The corporate and administrative services that are intended to be based in the Precinct from late 2015 are currently based at Princess Margaret Hospital in Cashmere. Health Care of the Elderly is based at Princess Margaret Hospital in Cashmere.
- **UC:** Health Sciences education and research are mainly based at UC's campus in Ilam.
- **UO:** Most of UO's Christchurch-based health sciences education and research is already based within the Precinct, primarily in the central campus building (adjacent to Christchurch hospital), with some departments based at Christchurch Hospital, at Christchurch Women's Hospital, or at Terrace House (4 Oxford Terrace).
- **CPIT:** Nursing, midwifery and radiology education is currently based at CPIT's facilities in Madras Street.

### **Impact of the 2010-2011 Canterbury earthquakes**

All partner organisations are experiencing significant ongoing disruptions due to earthquake damage to their physical facilities, or to facilities or infrastructure they rely on to deliver their services. New developments in the Precinct are in part driven by a need to repair or rebuild following earthquake damage. However, the concept of better collaboration and building critical mass pre-dates the earthquakes.

The earthquakes certainly accelerated the concept, due to the opportunity presented by the land that became available following the earthquakes, and due to individual organisations' needing to initiate refurbishments or developments, or accelerate existing redevelopment plans. The earthquakes also arguably created an opportunity to broaden the concept for the same reasons.

### ***Conclusion: opportunities for more strategic collaboration***

While some strong relationships exist between CPIT, UO, UC and CDHB, and to a lesser extent, with industry stakeholders, these are largely ad hoc and often informal. Collaborative projects occur frequently, but these are driven by relationships at an individual staff member level, and based on feedback through workshops and interviews, involve high transaction costs.

Strong formal and informal relationships already exist between Precinct partner organisations. Collaboration does occur under existing arrangements, but it is heavily tied to individuals and individual relationships, with minimal strategic oversight. All partner organisations also collaborate successfully with private sector organisations on research projects, but these collaborations are infrequent and again, tied to individual researchers.

There is physical separation between the organisations, and many of the organisations are still experiencing interruptions to business due to the 2010 and 2011 earthquakes.

Changes in the way research funding is allocated have also started to drive a more strategic approach to research. For example, the National Science Challenges has funding or eleven areas of research considered particularly pressing for New Zealand.

### ***Business needs***

The key focus of this business case is to identify an approach that addresses the business needs. The business needs include addressing a number of problems with the current state, including:

- Lack of critical mass and unified "shop front" for partner organisations to promote their research capability and facilities globally.
- Lack of overarching strategic direction for collaborative research between universities.
- Increasingly competitive tertiary education market (potentially impacting domestic and international enrolments, recruitment and research).
- Low levels of private research and development funding compared to other OECD countries, and a relatively low conversion of innovation inputs to outputs.
- Changing demands on the health system and workforce, with likely increased focus on primary and community-based care.
- Ongoing interruptions to partner organisations' services due to physical damage from the 2010 and 2011 earthquakes.

Importantly, the business needs include a need to leverage the opportunity presented by the redevelopment of Christchurch hospital, and the building (or rebuilding) of facilities of health research and education organisations in close proximity. This is an opportunity to make something more than the sum of its parts – to create collaboration and synergies out of co-location for the benefit of all partners.



# Scope and key service requirements

## Overview of the Precinct concept

The Precinct concept is to develop a strong cluster of mutually supporting activities that builds out from the existing Christchurch Hospital and the UO Medical School, in the area bounded by Hagley Avenue, St Asaph Street, Montreal Street and Oxford Terrace.

The Precinct is a key component of the South Frame, which helps define the core of the central city. The South Frame includes Te Papa Hauora/Health Precinct, Innovation Precinct and the three blocks between them (collectively referred to as the South Frame).

Three of the four blocks of land in this area were initially designated under s168 of the Resource Management Act 1991, to secure outcomes of the CCRP, although designation was lifted off a number of sites in December 2014. Designation now only remains on Crown-owned land required for public space and facilities for health and education in the Precinct. The fourth block (the south west block in the diagram below) is owned by CDHB.

The map and tables below outline the known and intended developments of the Precinct, and the services and activities expected to be based there. It is important to note that these maps and tables represent a point in time, and are subject to change as developments progress.

**Figure 6: Indicative concept map of Te Papa Hauora / Health Precinct**





**Table 3: Expected Precinct developments as at September 2015**

Map ref	Project	Description	Lead/s and support/s	Existing services	Estimated timing
1	Acute Services Building	New Acute Services building, featuring additional operating theatres, around 400 beds (including purpose-designed spaces for children), an expanded intensive care unit, state-of-the-art radiology department and rooftop helipad.	MoH / CDHB	Adds new facilities and replaces some already existing at Christchurch Hospital	Early 2018
2	Proposed Outpatients Facility	No further information available at this stage.	MoH / CDHB	Outpatient services currently delivered at Hagley Outpatients (next to Christchurch Women's Hospital) – a temporary solution to help with physical constraints following the earthquakes	Mid 2017
3	4 Oxford Terrace (currently Terrace House)	Redevelopment of 4 Oxford Terrace. Decisions yet to be made, although likely to include imaging facilities, clinical research facilities and academic office space.	UO	Most services that would be provided at a redeveloped 4 Oxford Terrace are likely already provided from within the Precinct.	TBA – currently at business case stage
4	Health Research and Education Facility (HREF)	A new shared facility. It will accommodate the teaching, research, simulation and workforce development requirements for CDHB, along with teaching and research space for CPIT and UC.	CDHB, CPIT, UC. Project being led by HREF Health Precinct Limited (developer of the HREF)	UC's teaching and research is currently based at its Ilam Campus. CPIT's nursing, midwifery and radiology education is based at its Madras Street facilities. CDHB's Clinical Skills Unit is based on 5th floor at CHCH hospital. Some of the staff focused on professional learning & development are based at Princess Margaret	Early 2017
5	Pegasus Arms	Restaurant and bar	Pegasus Arms		Open
6	31 Tuam Street	Christchurch Clinical Studies Trust	Nosbor Holdings Ltd	Houses Christchurch Clinical Studies Trust	Open
7	Tillman Site	Proposed planning for a new reserch facility set down for 2020	UO	-	TBA
8	32 Oxford Terrace	New building now complete. Will accommodate corporate and administrative functions of CDHB.	Countrywide Property Trust Limited	CDHB corporate and administrative functions currently based primarily at Princess Margaret.	October 2015
9	36 Oxford Terrace	Multi-story development currently being designed	Countrywide Property Trust Limited	This development is likely to accommodate new services/activity in to the Precinct	TBA

10	Proposed CDHB Carpark	No further information available at this stage	MoH / CDHB	-	Early 2018
11	Corner of Antigua and Tuam Streets	Multi storey development currently being designed	TBA	This development is likely to accommodate new services/activity in to the Precinct	2017

The following table provides a high level overview of the potential features of the Precinct and its development within the context of the rest of the city. It is important to note it is intended as a guide only; realisation of many of these proposed features will depend on private investment or other initiatives.

**Table 4: High level summary of Te Papa Hauora/Health Precinct features**

Summary <sup>23</sup>	
Functions and services	<ul style="list-style-type: none"> <li>• Hospital services – including from new acute services building and planned new outpatients facility</li> <li>• Health-related tertiary education and workforce development</li> <li>• Health-related research</li> <li>• Structured car parking</li> <li>• Proposed hotel beds (medi and standard) and serviced apartments</li> </ul>
Proximity and associations	<ul style="list-style-type: none"> <li>• Metro Sports Facility</li> <li>• Convention Centre Precinct</li> <li>• Public transport super stops</li> <li>• Bus Interchange</li> <li>• Hagley Park</li> <li>• Medium density accommodation</li> <li>• Ōtākaro/Avon River</li> </ul>
Public spaces and environmental features	<ul style="list-style-type: none"> <li>• Precinct bordered by Ōtākaro/Avon River to the north, with green spaces for cyclists and pedestrians beside the river</li> <li>• Open public spaces</li> <li>• Enhanced public realm through proposed new north-south streets and lanes to promote engagement with the river and connections and collaboration within the Precinct</li> </ul>
Sector involvement	<ul style="list-style-type: none"> <li>• Health information technology</li> <li>• Biotechnology</li> <li>• Medical devices</li> <li>• Sports medicine</li> </ul>
Commercial opportunities	<ul style="list-style-type: none"> <li>• Serviced accommodation</li> <li>• Specific retailing</li> <li>• Hospitality</li> </ul>
Approximate areas	<ul style="list-style-type: none"> <li>• Site area: approximately 72,000m<sup>2</sup></li> <li>• Up to 71,000m<sup>2</sup> GFA current indicated interest, excluding car parking (59% public, 15% private investor, 26% private car parking operation)</li> <li>• 150,000m<sup>2</sup> GFA potential total development capacity</li> <li>• Capital expenditure of over \$200m over the next 5 years</li> </ul>
Interested organisations	<ul style="list-style-type: none"> <li>• Key partner organisations: CDHB, UO, UC, CPIT, Matapopore, CDC</li> <li>• Private sector health companies / industry</li> <li>• Non-government organisations</li> <li>• Government departments and agencies</li> </ul>

### *Current work to develop and drive the Precinct programme*

As noted at the beginning of the Strategic Context section, HPAC is overseeing the development of the Precinct. It has a Strategic Plan 2015-2020 and a Work Plan which it is currently implementing. In May 2015 it confirmed the following six strategic themes to guide its work to 2020:

1. Enhance the profile of the Precinct
2. Enable the development of a Research Centre of Excellence
3. Facilitate the development of innovative models of training and education

<sup>23</sup> Based on Christchurch Health Precinct Master Planning Advice, May 2013.

4. Contribute to advancements in clinical simulation
5. Enable the growth of clinical trials
6. Strengthen the innovation eco-system by enabling and facilitating advancements in Health IT.<sup>24</sup>

These strategic themes cover both work to progress the Precinct as a programme (for example, enhancing the profile of the Precinct), and others that are likely to become strengths for which the Precinct is known (for example, innovative workforce development models, or clinical trials).

This business case is expected to contribute to themes 1 and 2.

### *Health Research and Education Facility (HREF) and HRCoE*

Two key projects are proposed to be included within the Precinct: the HREF and the HRCoE. The HREF is a proposed shared research and education facility (a physical building), while the HRCoE is a collaborative research network which may or may not involve dedicated physical space.

#### **HREF**

As part of the Collaboration Agreement between the partner organisations, a Memorandum of Understanding has been signed to develop a shared facility known as the Health Research and Education Facility near the planned CDHB outpatient facility on Oxford Terrace. The HREF will accommodate the teaching, research, simulation and workforce development requirements for CDHB, along with teaching and research space for CPIT and UC.

The HREF will be a teaching and research centre where researchers are closely linked and integrated with health service delivery and the teaching of health professionals. The shared use of spaces will see better fusion of research into clinical practice as well as the integration of the entire health journey of education, research and training. Close links with bio-medical and clinical research, along with health innovation and industry partnerships will help bring additional economic activity into the Precinct. Collaboration like this will drive innovation within the Precinct and is vital to its on-going status as a world class Health Precinct.

#### **HRCoE**

The HRCoE will be the centre of the Precinct's research offering, and is expected to be a flagship for the Precinct. It is expected to be a primary point of attraction for private sector and international organisations.

The term HRCoE refers to a proposed entity which brings together a network of researchers, students and clinicians with a clear focus on particular areas of research and innovation. It may, but does not necessarily, involve a physical space or building, but brings together expertise, equipment and funding in a collaborative framework. An Indicative Business Case for the HRCoE is currently being prepared.

### *Why Christchurch?*

The rebuild of the Christchurch central city presents a special opportunity for clustering mutually supporting organisations and creating precincts within the CBD. Designating one of these precincts for Health makes sense, given the contribution of the sector to the local economy (around 9 per cent of the GDP in Christchurch<sup>25</sup>, and employing around 15,800<sup>26</sup>). The redevelopment of Christchurch Hospital makes a neighbouring Precinct even more attractive.

However, Christchurch is well positioned to accommodate a Precinct for a number of other reasons which pre-date the 2010 and 2011 earthquakes:

- A proud history of health research and teaching, dating back to the early 1970s. Today the research programmes in Christchurch are nationally and internationally renowned.
- Christchurch is home to the largest provider of nursing training in the South Island, and a range of allied health qualifications at CPIT.

<sup>24</sup> Health Precinct Advisory Council, 2015. Strategic Plan 2015-2020.

<sup>25</sup> Cited in Health Precinct Master Planning Advice

<sup>26</sup> 2011, Health only, StatsNZ, cited in Health Precinct Master Planning Advice

- Existing collaborative relationships between CDHB, UO, UC and CPIT. The level of co-operation in Christchurch is thought to be high relative to other cities (such as Auckland or Wellington) because Christchurch has a single teaching hospital, single medical school, and a single funder of each.
- CDHB's New Zealand-leading shift to a single patient record system, HealthOne. Under HealthOne, all of a patient's data across services and providers is collected, stored and accessed in a single record. This is relevant because of the data collected through the system and the opportunities that provides – for example, to CDHB in order to examine and improve its service delivery and efficiency. More information on HealthOne is provided in Appendix D.
- CDHB is also recognised as a high-performing and innovative organisation. In 2013, the King's Fund report<sup>27</sup> investigated the Canterbury health system's transformation toward integrated health and social care, and found it had made "appreciable progress" on this journey. CDHB won four IPANZ awards in 2015, including awards for business transformation and public service excellence.
- Offers access to a population of the appropriate size for teaching, research, and clinical trials.

### ***The role of health ICT within the Precinct***

Information and communications technology (ICT) has been an underpinning theme in the development of the Precinct concept to date.

The health system increasingly faces challenges of how to collect, distribute, share and use health information and health data. ICT will have an increasingly prominent role in supporting health care delivery and improving care quality and safety, effectiveness, efficiency and patient experience.

Achieving the benefits that ICT can deliver requires a balance of automation, strategic innovation, health and business analytics and change management. Investment will be required in hardware, software, and systems but the real value lies in the data that the systems hold and how it is processed, communicated and used.

Change management programs will be needed to support health professionals and health workers to move to new ways of working but with a continuing focus on the needs of the patient and system efficiency. Whatever is done must be "best for patient and best for system".

The Canterbury Health System has a proven record in ICT innovation. An example of this is presented as a case study in Appendix D: HealthOne – Canterbury's single electronic health record system, HealthOne, which was developed as a partnership between CDHB, Pegasus Health, the Canterbury Community Pharmacy Group, Nurse Maude and healthcare software development company Orion Health. The Canterbury health system has strategic relationships with health ICT vendors (in particular a strategic partnership with Orion Health) and the capability to complete large scale change.

Christchurch is also home to thousands of innovative students and a large number of SMEs in the software industry. Leading companies such as Orion Health and McKesson are already investing in Christchurch and others have signalled an interest in this area (for example, Hewlett Packard, GE Healthcare and Lightfoot). The opportunity exists for key industry players, the CDHB and Canterbury Development Corporation to collaboratively develop an integrated and innovative platform and solutions that will enable health providers to deliver a more integrated and personalised level of care. This is increasingly expected by patients and needed to ensure effective and efficient health care delivery given the increasing complexities of the health system.

Christchurch is well positioned to become nation- and world-leading in its development and use of integrated health ICT. The Precinct can support this in several ways:

- Providing an environment that fosters relationships and collaboration between key partners such as CDHB, workforce training providers and private sector ICT firms – not only to encourage the development new ICT solutions, but to encourage relationships that facilitate data integration across organisations (as appropriate).
- Advancing Health ICT as one of the Precinct's 'themes' and a salient point in its value proposition.

<sup>27</sup> "The quest for integrated health and social care - A case study in Canterbury, New Zealand", Nicholas Timmins and Chris Ham, The Kings Fund (2013).

- Helping organisations gain critical mass in order to access new funding to research, develop or build integrated ICT solutions.

Strengthening the already strong innovation ecosystem could provide the following benefits:

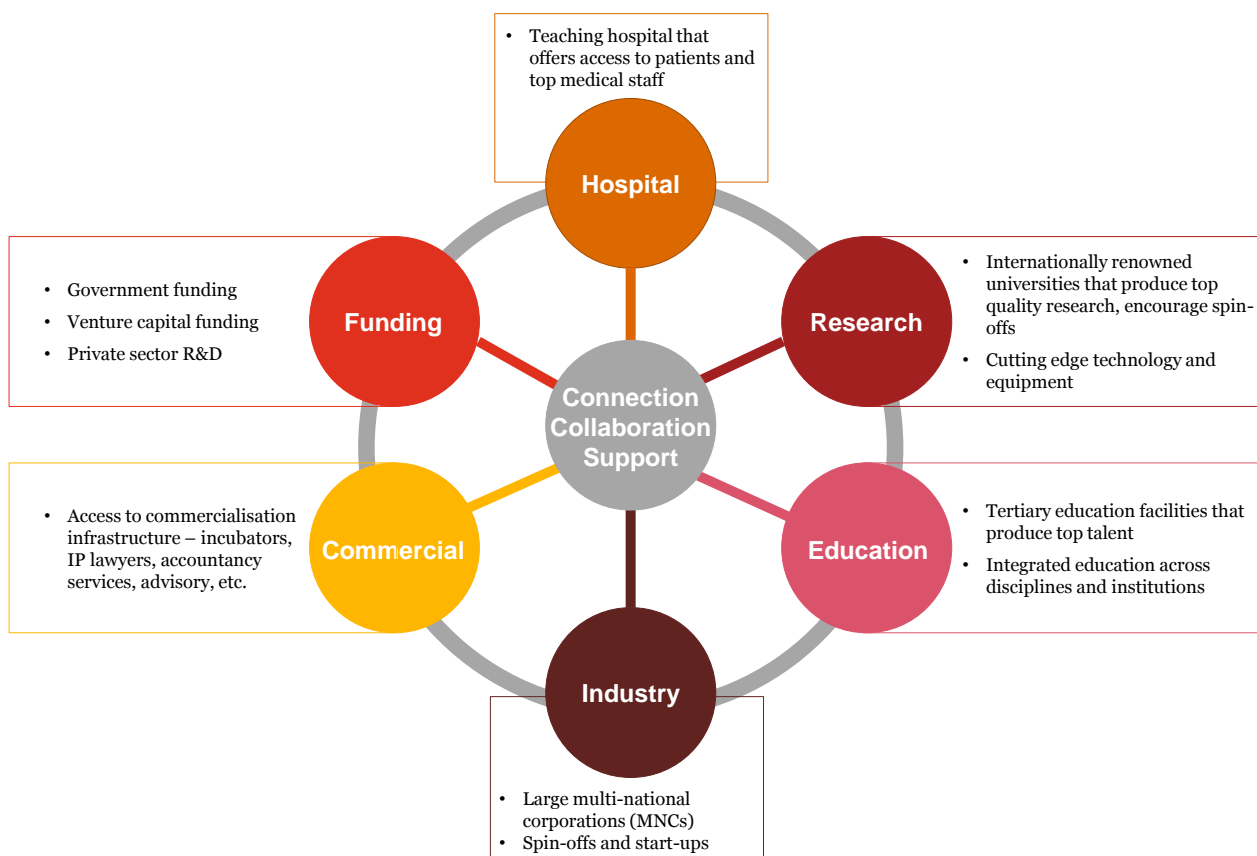
- Patient driven appointment systems that reduce non-appearance and cancellation costs.
- Mobile technology that provides patients with time-series, convenient and interactive information regarding their treatment and recuperation leading to improved patient compliance and engagement.
- On demand clinical reference material (such as dosage calculators) delivered and available on nominated mobile devices.
- Remote real time monitoring of patient health status.
- Automated reminders and bookings for routine/regular diagnostic tests (such as blood tests) delivered directly to patient's mobile devices.

HPAC has identified “Strengthening the innovation ecosystem by enabling and facilitating advancements in Health IT” as one of its six strategic themes. HPAC intends to contribute to advancements in this area by supporting the work of the Canterbury Development Corporation and Canterbury District Health Board as key stakeholders in this project but also recognises that broader opportunities exist for those across all levels of the health system including researchers, clinical trials, students, primary care and of course consumers.

### ***Potential Precinct business scope and key service requirements***

The diagram below shows at a high level the required components of a successful health precinct. This set of components has been developed based on the Business Case team's experience with other precincts in New Zealand and Australia, and based on the interviews and workshops held with partner organisations and other stakeholders.

**Figure 7: Required components of a successful health precinct**





This comprises six key service or business areas, supported by a central or shared service which supports collaboration and connections between the areas, as well as between the Precinct and international audiences. Support refers to the broader support services of the central or shared function, as well as external support such as favourable policy and regulatory settings.

This Precinct already has at least three of the seven components in this diagram: Christchurch Hospital (CDHB), Research (at UO and UC, and to a lesser extent CDHB and CPIT), and Education (UO, UC, CPIT). Those organisations also have existing funding (from government and other existing revenue streams). The remaining elements are not yet present in the Precinct:

- An industry presence.
- Commercialisation support.
- Additional research funding from non-government sources and venture capital for start-ups.
- Some form of active management to support collaboration and connections within and external to the Precinct, and to drive the Precinct's attraction of the preceding three elements.

The international case studies presented in the next section of this Business Case illustrate different models of how these elements can be put together. All three case studies include all these elements, including active management.

The options identification and analysis which follows then explores ways to attract these elements. An industry presence, for example, will be attracted by the benefits set out in Figure 5, although additional effort, such as a subsidised lease, may be required.

### ***Precinct key service requirements***

The table below builds on the diagram above, and details the key services to be delivered as part of the Precinct. Service requirements have been classified as:

- **Minimum:** representing the “must have” or core service requirements essential for the Precinct to be successful;
- **Desirable:** requirements that are not critical to the success of the Precinct, but which are to be considered if they represent good marginal value for money; and
- **Optional:** more aspirational requirements which may be included in the proposal if they can be added at low marginal cost and are likely to be affordable.

These minimum, desirable and optional service requirements align with the high level diagram above.

**Table 5: Precinct key service requirements**

Level	Key service requirements	Current status
<b>Minimum service requirements</b>	<ul style="list-style-type: none"> <li>• Teaching hospital with access to patients and top medical staff</li> <li>• Research institution(s)</li> <li>• Tertiary education institution(s)</li> <li>• Coordinated workforce development / professional learning and education</li> <li>• Active management with responsibility for supporting collaboration between organisations, promoting the Precinct internationally as a single “shop front”</li> <li>• Access to commercialisation infrastructure (e.g. incubators, support for patent development) – could be accessed directly</li> </ul>	<ul style="list-style-type: none"> <li>• UO teaching hospital exists at the precinct</li> <li>• Both UO and UC are active</li> <li>• UO, UC and CPIT</li> <li>• HREF is in planning stages</li> <li>• HPAC responsible for overseeing development of the Precinct, and includes representatives from all partner organisations. No active management in place yet for the operation of the Precinct once established.</li> <li>• No explicit access or active management of a process to provide support to this</li> </ul>

Level	Key service requirements	Current status
	within the Precinct, or through the nearby Innovation Precinct	infrastructure (which could be provided through Otago innovation or the new Christchurch innovation precinct).
	<ul style="list-style-type: none"> <li>Access to new funding for research projects, from non-government sources (e.g. through private sector presence or interest)</li> <li>Access to venture capital for start-ups and spin-offs – as with commercialisation infrastructure, this may be based directly within the Precinct or elsewhere</li> <li>Clinical trials infrastructure</li> <li>Shared spaces and facilities to encourage collaboration</li> <li>Presence of industry</li> </ul>	<ul style="list-style-type: none"> <li>Limited to existing mechanisms</li> <li>No explicit presence, and no active mechanism to connect companies to investment</li> <li>Through CDHB, but not comprehensive</li> <li>In limited cases only</li> <li>Not currently</li> </ul>
<b>Desirable service requirements</b>	<ul style="list-style-type: none"> <li>HRCOE as a flagship institution which anchors the research focus of the Precinct</li> <li>An ‘anchor tenant’, preferably a multi-national corporation</li> </ul>	<ul style="list-style-type: none"> <li>At business case stage. UO development at 4 Oxford Terrace could be viewed as a first stage, though this does not have a collaborative focus</li> <li>Negotiations underway, but no commitments</li> </ul>
<b>Optional service requirements</b>	<ul style="list-style-type: none"> <li>Health Information Centre</li> <li>Presence of NGOs</li> <li>Accommodation (medi-hotels and serviced apartments)</li> </ul>	None in place at this stage

Not all minimum service requirements will necessarily be required from the outset – some commercialisation infrastructure, and providers of funding, for example, could be added or attracted as the Precinct (and HRCOE) builds momentum. An important feature of options will be that they create an environment that enables these aspects to join the Precinct as it grows.

# Benefits, risks, constraints and dependencies

## Precinct Benefits

The Precinct will drive a broad range of benefits. These will be focussed in the research and tertiary education sectors to begin with, and later flowing into the health sector. The Precinct will also deliver economic growth benefits to Christchurch and wider Canterbury, both during its development phase and once it is operational. The benefits in the table below have their basis in the Precinct investment objectives (see Table 2).

**Table 6: Benefits of Te Papa Hauora/Health Precinct**

Benefit	Sector	Stakeholder	Type
Increase in peer-reviewed published research and citations	Research	UO, UC	Non-monetary Quantitative
Increased research funding from new sources (private sector, off-shore)	Research	UO, UC, CDHB	Monetary Direct
New research partnerships resulting from global recognition of Precinct	Research	UO, UC, CDHB	Non-monetary Quantitative
Increase in commercialisation of IP	Research	UO, UC, individual researchers	Non-monetary Quantitative
Improved calibre of candidates for staff positions	Research Tertiary education	UO, UC, CPIT, CDHB	Non-monetary Qualitative
Increased revenue from increased health students (domestic and international)	Tertiary education	CPIT, UO, UC	Monetary Direct
Increased number of clinical trials in Christchurch	Research Tertiary education Health	UO, UC, DHB, Private sector	Non-monetary Quantitative
Health graduates more workforce-ready	Tertiary education Health	UO, UC, CPIT, CDHB	Non-monetary Qualitative
Lower median age of health workforce professionals	Health	CDHB	Non-monetary Quantitative
Increased professionals qualified and working in priority areas	Health	CDHB	Non-monetary Quantitative
Improved models of care, particularly primary care	Health	CDHB	Non-monetary Qualitative
Improved health outcomes for Canterbury patients	Health	CDHB	Non-monetary Qualitative
Revitalised and attractive environment within Christchurch CBD	Christchurch	Christchurch city	
Economic benefit from physical developments within Precinct	Christchurch	Christchurch City, construction and service industries	
Economic benefit from Precinct employment and activity once operational	Christchurch and Canterbury	Christchurch City, wider Canterbury;	

Benefit	Sector	Stakeholder	Type
		national economy	

### Performance measurement

The mix of benefits set out in the table above, and the way they are able to be attributed to activity within the Precinct, means that performance measurement will be best based on a mix of input, output and impact targets. This will enable the capture of direct activity as well as its expected outcomes.

An initial draft and high level performance measurement framework has been included below. This has been designed to align with the investment objectives set out earlier. As Precinct planning progresses (particularly with regard to the HREF and HRCoE), this framework will be further developed and targets set.

**Figure 8: Initial draft Te Papa Hauora/Health Precinct performance measurement framework**

	Research	Education and Workforce Development	Health	Economy
<b>Input</b>	<ul style="list-style-type: none"> <li>Brand development and promotion of Precinct</li> <li>Applications for funding for collaborative research</li> <li>Engagement with private sector on development / research opportunities</li> </ul>	Establishment of HREF		<ul style="list-style-type: none"> <li>Number of FTE students and staff located within the Precinct</li> <li>Investment in construction developments</li> <li>Opportunity for supporting services (e.g. hospitality)</li> </ul>
<b>Output</b>	<ul style="list-style-type: none"> <li>Global recognition of Precinct "shop front"</li> <li>Increased number of clinical trials</li> <li>Increased research partnerships</li> <li>Increased published peer reviewed health research and citations</li> <li>Increased commercialisation of IP</li> <li>Research investment attracted from new sources</li> </ul>	<ul style="list-style-type: none"> <li>Greater proportion of health workforce training in practical settings</li> <li>Greater integration across disciplines and health workforce teaching programmes</li> </ul>	<ul style="list-style-type: none"> <li>Number of collaborative or joint pilot projects testing new approaches to health service delivery</li> </ul>	<ul style="list-style-type: none"> <li>Jobs created within HRCoE and Precinct</li> <li>Take-up of vacant office / research space</li> <li>Attract new students</li> <li>Fulfil role in CBD revitalisation</li> </ul>
<b>Impact</b>	<ul style="list-style-type: none"> <li>Improved calibre of candidates for clinical and academic positions</li> <li>Increased numbers of health students (domestic and international)</li> <li>Number of new companies, spin-outs formed</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation of innovative teaching models</li> <li>Lower median age of health care professionals</li> <li>Greater number of professionals qualified and working in priority areas</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of new models of care, particularly primary care; and evaluation of new models</li> <li>Translation of research into clinical practice</li> </ul>	<ul style="list-style-type: none"> <li>Contribution to Christchurch economy from Precinct employment and activity</li> </ul>

### Precinct Risks

The Precinct is a complex programme with multiple projects and stakeholders. As such, there is a complex set of risks to the programme's objectives. These are outlined in the table below, along with proposed mitigations.

**Table 7: Programme Risks**

Risk	Estimated likelihood	Estimated consequence	Proposed mitigation
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Risk	Estimated likelihood	Estimated consequence	Proposed mitigation
Organisations are co-located but there is no increase in collaboration	Medium	Medium	<ul style="list-style-type: none"> <li>• Active management of the Precinct</li> <li>• Good design (e.g. including collaborative meeting places)</li> <li>• Financial incentives that encourage collaboration (e.g. research funding that is accessible only to joint/collaborative projects)</li> </ul>
Breakdown in relationship between partner organisations	Medium	Medium	<ul style="list-style-type: none"> <li>• Active management of the Precinct</li> <li>• Clear, supported and formalised active governance arrangements between partners</li> <li>• Aligned incentives to achieve mutual objectives</li> </ul>
Precinct fails to attract investment from new sources	Medium	Medium	<ul style="list-style-type: none"> <li>• Test proposition with potential investors early</li> <li>• Good promotion of Precinct</li> <li>• Secure anchor tenant to create investor confidence</li> <li>• Consider subsidised rental space for appropriate organisations</li> </ul>
Loss of key individuals (e.g. clinical, academic or research staff)	Medium	High	<ul style="list-style-type: none"> <li>• Attractive remuneration packages as well as additional support for staff</li> <li>• Nurture new appointments with effective on-boarding and support services, particularly for international appointments</li> <li>• Incrementally build talent to reduce risk</li> <li>• Active succession planning</li> </ul>
Precinct adds complexity, impedes ease of research or commercialisation	Medium	High	<ul style="list-style-type: none"> <li>• Ensure active management of Precinct is proportional to need</li> <li>• Test operational delivery models with partners and seek feedback for continuous improvement</li> <li>• Review active management at early and then regular intervals</li> </ul>
Change in central government priorities or funding models	Low	Medium	This is a risk to individual organisations under any model (including the status quo); in fact, involvement in the Precinct may lessen individual organisations' exposure.
Private sector developments are leased to non-health-related tenants	Medium	Low	<ul style="list-style-type: none"> <li>• Build in conditions and requirements where possible and appropriate</li> </ul>

## Precinct Constraints

Key constraints affecting the Precinct include:

- 1 **Funding:** The working hypothesis of this business case is that investment from partner organisations will need to come from within their existing funding envelopes. Direct investment from the private sector may be available and discussions are progressing at the time of writing.
- 2 **Control over developments and tenancies:** Partner organisations are only able to directly control the development and tenancies of buildings or land they already own. This constrains the



ability to manage tenancies in a co-ordinated way. In the case of some land, conditions may be written into sale and purchase agreement (for example, that a given percentage of the floor area must be leased for health-related activity), but in practice these may be difficult to enforce, particularly in the long term.

- 3 **Physical development constraints.** The development of the Precinct will be constrained by the size of the area earmarked for inclusion (the South Block) and by the capacity of the construction sector to execute development projects. There is also limited opportunity currently for development or property investment in the Precinct. These are not expected to be high impact constraints.
- 4 **Commercial property market constraints.** Other than the committed or planned builds for HREF, outpatients, acute services and 4 Oxford Terrace, much of the development of the Precinct involves commercial builds, and will be affected by the wider issues influencing commercial developments in the CBD and wider core areas. Currently commercial development is facing challenges around construction costs (due to local inflationary pressures, and a weakening New Zealand dollar), delivery (due to resource availability issues) and quality (due to skills and materials shortages). To obtain bank funding, developers typically need confirmed tenancies of 60%-70%.

Currently approximately 361,000 square metres of commercial building space is planned for the greater CBD with currently around 60%-66% leased. This compares with pre-earthquake space of around 450,000 square metres 80%-85% tenanted.

While there are significant commercial tenants who would like to move back into the inner CBD, tenant lease rates for A grade space are currently around \$290-\$350 per square metre. This is significantly lower than predictions made in 2013 of around \$500-\$600 per square metre. These lower rates and currently low occupancy is impacting development and investment.

The impact of population growth and the east frame and multi-sports facility developments over the next four to six years, will likely drive increased general and business activity. This is likely to correct some of the current imbalances in costs, supply and demand in the inner city commercial sector.

One potential advantage of this situation is that pressure to develop in the Precinct for non-health purposes is probably not high at this stage.

## ***Precinct Dependencies***

The primary dependency on initiatives outside the Precinct itself rests with the redevelopment of Christchurch Hospital and building of the new outpatients' facility. While Christchurch Hospital will itself form part of the Precinct, its redevelopment is being progressed as a separate initiative which would proceed regardless of whether the Precinct went ahead.

The Precinct is also dependent on other initiatives relating to the central city rebuild, such as the new central city travel network which makes it easy, safe and enjoyable to move around as notated in the An Accessible City transport chapter, an addendum to the CCRP, and integration between the Precinct and the rest of Christchurch city.

# International case studies

Three international examples were researched as this Business Case was developed:

- The Consortium for Integration of Medicine & Innovative Technology (CIMIT) in Boston, Massachusetts, USA.
- The Agency for Science, Technology and Research (A\*STAR) in Singapore.
- Parkville Precinct and Biomedical Research Victoria in Victoria, Australia.

The table on the following pages provides a high level summary of each centre's background, physical profile, area(s) of research focus, operating model, funding model, local environment and impacts.

The case studies set out different models for bringing together organisations, encouraging them to collaborate, and then promoting the fruits of that work and engaging with the private sector. The variables tend to run along the following dimensions:

- **Governance and management:** This relates to how closely organisations link themselves to form a Precinct or Centre. For example, CIMIT has a consortium model; Biomedical Research Victoria is a representative body with fee-based membership; A\*STAR is a single public sector agency overseeing a large number of research and research support entities.
- **Physical profile:** This relates to how much (or what kind of) shared property or equipment is owned or controlled by the Precinct or Centre. For example, CIMIT and Biomedical Research Victoria do not jointly own laboratory or work space, or research equipment, but have an office base with central staff, while A\*STAR's entities are accommodated within two purpose-built precincts with state of the art research facilities.
- **Government involvement:** This relates to how the Precinct or Centre interacts with state or central government in terms of funding and governance. For example, CIMIT is a consortium of hospitals and universities, with government partnerships; Biomedical Research Victoria has received co-investment from the Victorian government over its development, and works with both Commonwealth and State government to establish priorities for investment and inform policy development; and A\*STAR is a public sector agency.
- **Funding model:** This is tied to government involvement, and describes to how a Precinct or Centre is funded. Case studies range from full government funding (A\*STAR), to a co-funding model at Biomedical Research Victoria, to a model which focuses more on philanthropy and venture capital, albeit with some government support at CIMIT.

The way universities and hospitals are funded in each of these cities has an impact on whether the level of funding or governance is described as coming from "government". In general when referring to government involvement and funding, we are referring to specifically tagged and usually direct involvement or funding from central government.

The models used in or approach adopted under each dimension will also be influenced by each jurisdiction's unique local context – for example, the local population size, health needs, government and regulatory environment, and existing international reputation and relationships of participating organisations.

While each example is very different, of relevance to the consideration of options for the Precinct, each case study incorporates the components identified in Figure 7 and in each of these case studies, there:

- Is a broad range of partner organisations, including hospitals, universities, research organisations and the private sector.
- Are clearly identified areas of research focus.
- Is a dedicated precinct management function (though not necessarily dedicated governance).
- Is a focus on the provision of commercialisation support.

In the case of Victoria, there is also a focus on creating critical mass to improve the combined competitiveness of the partner organisations, and an emphasis on inspiring career paths for students.

**Table 8: International case studies**

	<b>CIMIT (Boston)</b>	<b>A*STAR (Singapore)</b>	<b>Parkville Precinct (Melbourne) and Biomedical Research Victoria</b>
<b>Background</b>	<p>The Consortium for Integration of Medicine &amp; Innovative Technology (CIMIT) was formed in 1998.<sup>28</sup> CIMIT is a non-profit consortium of Boston's leading teaching hospitals and universities, with strategic international affiliations and government partnerships.</p> <p>CIMIT's mission is to accelerate the healthcare innovation cycle by facilitating collaboration among experts through the development and implementation of novel solutions to improve patient care.</p>	<p>The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector agency that spearheads economic-oriented research to advance scientific discovery and develop innovative technology.<sup>29</sup> It was formed in 2001 from a combination of existing government agencies and research institutes.</p> <p>A*STAR now oversees 18 biomedical and physical sciences and engineering research entities. It comprises research entities, commercialisation entities and scientific and shared services.</p>	<p>Melbourne's Parkville Precinct is home to the University of Melbourne, three major tertiary hospitals, medical research institutes and commercial biotechnology organisations. It is generally regarded as one of Australia's leading biomedical clusters.</p> <p>The Bio21 Project was established in 2000 by the University of Melbourne, the Royal Melbourne Hospital, the Walter and Eliza Hall Institute of Medical Research and the Victorian Government to promote excellence in education, in basic and clinical research, and to foster biotechnology development in Parkville and its environs. The Bio21 Project has since developed into <b>Biomedical Research Victoria</b>, the state-wide peak body representing the heart of Australia's biomedical research. Biomedical Research Victoria's office is still located in the heart of the Parkville Precinct.</p>
<b>Physical profile</b>	<p>CIMIT has no central laboratories; work is carried out in the laboratories of chosen project leaders.</p> <p>CIMIT's team of Facilitation Leaders (see below) is based at Charles River Plaza, a medical, office, research and retail complex in the Boston CBD, adjacent to Massachusetts General Hospital.</p>	<p>The entities A*STAR oversees are primarily located in purpose-built twin precincts known as Biopolis and Fusionopolis. These precincts provide purpose-built, state of the art research facilities for public and private sector research, and also retail, office and hospitality space.</p>	<p>The Parkville Precinct is located on the northern edge of Melbourne's CBD. It includes 25 entities located within easy reach of each other.</p> <p>As well as the organisations outlined above, the Precinct contains heritage residential areas, urban parkland, playing fields, a golf course, the Melbourne Zoo, the Melbourne Juvenile Justice Centre and the site for the 2006 Commonwealth Games Village.</p>

<sup>28</sup> CIMIT: Consortium for Integration of Medicine & Innovative Technology. Retrieved 25.08.2015 from <http://www.cimit.org>

<sup>29</sup> A\*STAR. About A\*STAR. Overview. Retrieved 25.08.2015 from <http://www.a-star.edu.sg/About-A-STAR.aspx>

	<b>CIMIT (Boston)</b>	<b>A*STAR (Singapore)</b>	<b>Parkville Precinct (Melbourne) and Biomedical Research Victoria</b>
<b>Areas of research focus</b>	<p>CIMIT focuses on patient care in the following focus areas:</p> <ul style="list-style-type: none"> <li>• Clinical Systems Innovation</li> <li>• Simulation</li> <li>• Neurotechnology</li> <li>• Traumatic Brain Injury &amp; Neurotrauma</li> <li>• Traumatic Stress Disorders</li> <li>• Biodetection &amp; Sepsis Control</li> <li>• Biomaterials &amp; Tissue Engineering</li> <li>• Cardiovascular Disease</li> <li>• Global Health Initiatives</li> <li>• Image Guided Therapy</li> <li>• Inhalation Technology</li> <li>• Minimally Invasive Surgery</li> <li>• Optical Diagnostics</li> <li>• Trauma &amp; Casualty Care</li> </ul>	<p>A*STAR's Biomedical Research Council oversees entities focused on biomedical sciences such as pharmaceuticals, medical technology, biotechnology and healthcare services.</p> <p>A*STAR's Science &amp; Engineering Research Council oversees entities focused on communications, data storage, materials, chemicals, computational sciences, microelectronics, process manufacturing and metrology.</p>	<p>The Parkville Precinct is acknowledged as one of Australia's leading centres for medical and bio scientific research, education, clinical practice, clinical trials and development of pharmaceuticals and biotechnology products.</p> <p>Healthcare, research and education institutions within the Parkville Precinct together have established centres of excellence in areas including Cancer, Immunology, Diabetes, Neuroscience and Infectious Diseases.</p>
<b>Operating model</b>	<p>CIMIT's consortium partners are:</p> <ul style="list-style-type: none"> <li>• Massachusetts General Hospital</li> <li>• Brigham &amp; Women's Hospital</li> <li>• Charles Stark Draper Laboratory</li> <li>• Massachusetts Institute of Technology</li> <li>• Beth Israel Deaconess Medical Center</li> <li>• Boston Medical Center</li> <li>• Children's Hospital of Boston</li> <li>• Newton-Wellesley Hospital</li> <li>• Northeastern University</li> <li>• Partners HealthCare</li> <li>• VA Boston Healthcare System</li> </ul> <p>CIMIT has a CEO, COO and Chief Academic Officer, and an executive committee comprising CEOs (or equivalent) from each of the consortium partners.</p> <p>Projects are led by clinicians, so that there is a</p>	<p>A*STAR is a public sector agency, rather than a partnership or consortium. The model is based on clustering public and private sector research institutes within close physical proximity, and then promoting the exchange of ideas to develop and exchange new technologies and knowledge that will result in increased industry, education and public well-being.</p> <p>The two Research Councils outlined above represent A*STAR's research functionality. A*STAR also includes:</p> <ul style="list-style-type: none"> <li>• a Joint Council which facilitates interaction between the two Research Councils, and between A*STAR and external organisations.</li> <li>• A Scientific and Shared Services division, which manages research facilities and shared administrative services / central functions</li> <li>• Commercialisation entities which provide IP management, and facilitate and support public</li> </ul>	<p>The Parkville Precinct itself is not governed or managed by a formal body. However, Biomedical Research Victoria and its predecessor The Bio21 Project represent organisations within the Precinct (and now, across the state) as members.</p> <p>Biomedical Research Victoria is a not-for-profit company with seven staff. The principal activity of Biomedical Research Victoria is to facilitate biomedical and health research related projects in support of its members and the objectives of the company. This is achieved through creating forums for the exchange of knowledge and promotion of clinical research and its translation; delivering selected state-wide programs; and developing a shared vision to enhance collaboration and build networks to enable Victoria's researchers to work together more effectively and create new knowledge, treatments and products.</p> <p>Biomedical Research Victoria seeks to add value to</p>

	<b>CIMIT (Boston)</b>	<b>A*STAR (Singapore)</b>	<b>Parkville Precinct (Melbourne) and Biomedical Research Victoria</b>
	<p>‘clinical pull’ focus to innovation.</p> <p>However, CIMIT also has a full time team of Facilitation Leaders – business and commercialisation experts that help researchers progress their ideas beyond the lab.</p> <p>CIMIT also has Program Leaders in various medical areas, and Site Miners within each consortium institution.</p>	<p>private partnerships and drug development</p> <ul style="list-style-type: none"> <li>• The A*STAR graduate academy which provides under- and post- graduate scholarships</li> </ul> <p>A range of collaboration mechanisms support industry to work with A*STAR (e.g. provision of lab space, joint research programmes).</p> <p>Collaboration between tertiary and medical institutions and A*STAR research centres provides for “clinical pull” of innovative technology, as well as “research push”.</p> <p>A*STAR’s commercialisation function provides funding for technology and business incubation (up to S\$1m per project).</p> <p>IP developed solely by A*STAR is licensed to industry, with A*STAR researchers involved receiving 1/3 of the net licensing revenue, and the remainder representing return on investment to the government.</p>	<p>its members and the biomedical sector by:</p> <ul style="list-style-type: none"> <li>• Working effectively with governments to establish priorities for investment and to inform policy development</li> <li>• Advising on research strategy and securing funding opportunities (through their Scientific Advisory Council)</li> <li>• Advancing clinical research and its translation to the benefit of patients and to improve health care services (through their Hospital Research Directors Forum and Victorian Clinician Researcher Network)</li> <li>• Inspiring biomedical career paths for students (through their Undergraduate Research Opportunities Program)</li> <li>• Driving networks for shared use of sophisticated research equipment and other infrastructure (with the Victorian Platform Technologies Network)</li> <li>• Supporting commercialisation (through the Business Development Forum)</li> <li>• Creating a critical mass in Victoria that’s capable of competing effectively with the emerging life sciences centres in the region.</li> </ul>
<b>Funding</b>	<p>CIMIT actively seeks various sources of funding to support the programme (donations, angel funders, venture capitalists, entrepreneurs and philanthropists). CIMIT maintains a high profile using social media and innovation competitions which garner mainstream media coverage. It is also dependent on contributions from consortium institutions. CIMIT initially received considerable</p>	<p>The Singapore Government funds A*STAR and its research centres as part of its development of R&amp;D capital. A return on investment comes via licence and royalty fees.</p> <p>Some research centres have been developed in partnership with industry, and other industry players have paid to have their own premises constructed in the precincts.</p>	<p>Bio21 Australia receives revenue primarily from membership fees and government grants. The company does not directly fund research, it rather carries out support and facilitation activity to encourage collaboration and commercialisation of research.</p>



	<b>CIMIT (Boston)</b>	<b>A*STAR (Singapore)</b>	<b>Parkville Precinct (Melbourne) and Biomedical Research Victoria</b>
	<p>support from the US Department of Defence.</p> <p>CIMIT required more than \$150m from various sources over 10 years to continue functioning.</p> <p>The consortium has acknowledged financial sustainability is difficult, especially attracting funding for facilitation activities, where the link to project objectives is more abstract.</p> <p>CIMIT Grants are provided to support early stage, collaborative research projects for improving patient care, with emphasis on devices, procedures, diagnosis and clinical systems. Proposals that reach across consortium institutions and those that may result in technologies that could benefit several medical disciplines are encouraged.</p> <p>CIMIT does not support drug development, IT-centric projects, basic research or clinical trials, or funding for industry. It does provide a CIMIT Engagement Programme to allow collaboration of companies with the CIMIT community.</p>	<p>The long-term financial sustainability of the model appears to be dependent on continued government support, simply because of the scale of the precincts. The current BMS initiative ends in 2015, having injected \$16.1 billion into breakthrough research programmes into Singapore Biomedical Sciences.</p>	
<b>Local environment</b>	<p>CIMIT is based in Boston, which is a world-renowned centre of public and private research and technology excellence, and has many medical device companies.</p> <p>Boston has the top US position in both NIH and Venture Capital funding, which helps research in this area prosper. There is also likely to be greater access to philanthropic organisations than would be available in a smaller centre.</p> <p>CIMIT's success was also enhanced by pre-existing relationships and collaboration between key personnel, industry and government.</p>	<p>The Singapore Government has established a pro-business environment with strong IP laws. The Government has invested heavily in the past two decades to raise Singapore's R&amp;D profile, to attract and retain talented staff, and to attract multinational corporations to the country. Singapore has excellent logistics connections with key markets and world class infrastructure.</p>	<p>The Parkville Precinct is based in Melbourne, in the state of Victoria, which is home to more than 40 per cent of Australia's biomedical researchers.</p> <p>The Victorian State Government has provided funding to or been involved with Bio21 and Biomedical Research Victoria throughout their existence.</p>
<b>Impacts</b>	<p>CIMIT initiated a Clinical Impact Study which examined 362 projects supported by CIMIT grants</p>	<p>As at October 2009, A*STAR's commercialisation arm was managing close to 3,000 active patents, had granted more than 250 licences for A*STAR's</p>	<p>Biomedical Research Victoria's website lists the following collaborative projects that have arisen from the Bio21 Project:</p>

CIMIT (Boston)	A*STAR (Singapore)	Parkville Precinct (Melbourne) and Biomedical Research Victoria
<p>between 1998 and 2006.<sup>30</sup> Findings showed:</p> <ul style="list-style-type: none"> <li>• &gt;20% of project clusters had received regulatory approval for clinical adoption of innovations</li> <li>• &gt;30% of project clusters had a licensing agreement with a company or had formed a company</li> <li>• &gt;60% of project clusters had generated follow-on funding, at about 9x the level initially provided by CIMIT</li> <li>• CIMIT's greatest "bang for buck" occurred in projects with funding between US\$100K-\$300K</li> <li>• Targeted and skilled facilitation is very effective at any stage of the innovation cycle</li> <li>• Projects conducted as part of a 'cluster' of related activities are more effective than those done in isolation</li> </ul> <p>CIMIT's Fact Sheet<sup>31</sup> cites the following results:</p> <ul style="list-style-type: none"> <li>• 200+ invention disclosures</li> <li>• 200+ patent applications</li> <li>• 30+ patents issued</li> <li>• 10+ licences</li> <li>• 15+ companies formed</li> <li>• 60+ industry partners</li> <li>• 550+ projects funded</li> </ul>	<p>technology, and had created 24 spin-off companies. Estimated licence revenues were in excess of S\$500M.</p> <p>According to Datamonitor, Singapore was the third fastest growing market globally in the export of pharmaceutical goods between 2000 and 2010.<sup>32</sup></p> <p>Since 2000, Singapore has experienced the following:</p> <ul style="list-style-type: none"> <li>• Biomedical sciences employment has increased 2.5x</li> <li>• Manufacturing output has grown 5x</li> <li>• R&amp;D jobs have doubled</li> <li>• R&amp;D expenditure has increased 6-fold</li> <li>• 7/10 top pharmaceutical companies, and all top 10 med tech companies have regional or global commercial operations based in Singapore.<sup>33</sup></li> </ul>	<p><i>Platforms and capabilities (noting collaborating organisations)</i></p> <p><b>Bio21 Molecular Science and Biotechnology Institute</b> – a multidisciplinary research centre, specialising in medical, agricultural and environmental biotechnology. (<i>Uni Melb</i>)</p> <p><b>Joint Proteomics Facility</b> – focuses on analytical biochemistry and technical developments in protein separation and characterisation, as well as proteomics. (<i>WEHI, LICR</i>)</p> <p><b>BioGrid</b> – provides a flexible and secure method for interrogating multiple data sources where thousands of records of patient data are re-linked across different databases and institutions. (<i>Melbourne Health, Western Health, Austin LifeSciences, Alfred Health, Peter Mac, WEHI, LICR, Cancer Trials Australia</i>)</p> <p><b>Collaborative Crystallisation Centre (C3)</b> – provides the infrastructure to advance the process of protein crystallisation and the production of the crystals required to obtain atomic-level protein structures. (<i>CSIRO, WEHI, SVI, Austin LifeSciences, MIPS</i>)</p> <p><b>800 MHz Nuclear Magnetic Resonance Spectrometer (NMR)</b> – an instrument with high</p>

<sup>30</sup> CIMIT Clinical Impact Study: Paving the way for future success. Retrieved 25.08.2015 from <http://www.cimit.org/about-clinical-impact-study.html>

<sup>31</sup> CIMIT Fact Sheet. Retrieved 25.08.2015 from [http://www.cimit.org/images/about/CIMIT\\_Fact\\_Sheet\\_2009.pdf](http://www.cimit.org/images/about/CIMIT_Fact_Sheet_2009.pdf)

<sup>32</sup> JLL Global Life Sciences Report 2014. Retrieved 25.08.2015 from <http://www.jll.com/Research/2014-global-life-sciences-report-JLL.pdf?654be919-ae61-45a0-bef3-ab01d0a4ece6>

<sup>33</sup> The Biopolis Story: Commemorating ten years of excellence, p66. Prepared by A\*STAR and accessed at [http://www.a-star.edu.sg/portals/o/media/otherpubs/Biopolis\\_Comm%20Book.pdf](http://www.a-star.edu.sg/portals/o/media/otherpubs/Biopolis_Comm%20Book.pdf)

CIMIT (Boston)	A*STAR (Singapore)	Parkville Precinct (Melbourne) and Biomedical Research Victoria
<ul style="list-style-type: none"> <li>• 500+ peer-reviewed publications</li> </ul>		<p>sensitivity and resolution and can elucidate structures of normally intractable proteins in solution. It complements the capabilities of the Australian Synchrotron and the Bio21 Institute's high resolution cryo-electron microscopy facility. <i>(Uni Melb)</i></p> <p><b>High Throughput Chemical Screening Facility (HTCS)</b> – enhanced technological capability in high throughput screening and medicinal chemistry, a state of the art automated system and unique collection of 100,000 diverse chemicals for lead compound discovery. <i>(WEHI)</i></p> <p><b>Facilities for Human Cellular Diagnosis and Therapy</b> <i>(SVI, SVH, MCRI, RCH, WEHI, RMH)</i></p> <p><b>Bioresources Facilities</b> – A virtual rodent facility with common high health standards allowing transfer of animals across facilities. <i>(SVH, SVI, Austin LifeSciences, Melbourne Health, Uni Melb)</i></p> <p><b>Victorian Platform Technologies Network (VPTN)</b> – provides awareness of, and access to, the varied platform technologies and expertise across Victoria and facilitates effective research-industry sector linkages. <i>(BioMedVic, Monash Uni)</i></p> <p><b>Undergraduate Research Opportunities Program (UROP)</b> – gives undergraduate students an early opportunity to experience life in a research laboratory and gain insight into careers in biomedical research.</p> <p><b>Victorian Clinician Researcher Network (VCRN)</b> – provides a forum for clinician researchers to network and explore issues of</p>

CIMIT (Boston)	A*STAR (Singapore)	Parkville Precinct (Melbourne) and Biomedical Research Victoria
		<p>common interest</p> <p><i>Invisible Hand</i></p> <p><b>Victorian Cancer Biobank</b> – a consortium of tissue banks to provide researchers with high quality tissue samples and data in order to facilitate cancer research discoveries.</p> <p><b>Victorian Comprehensive Cancer Centre</b> – a world class cancer centre that will bring together eight BioMedVic Member organisations.</p> <p><b>CRC for Cancer Therapeutics</b> – aims to discover and develop new small molecule drugs for the treatment of cancer. The WEHI/Bio21 High Throughput Chemical Screening facility is a major platform for this CRC.</p> <p><b>Life Science Computational Centre of the VLSCI</b> – an e-research centre focusing on computational solutions for life science research (operational model developed following discussions at SAC).</p>

*International examples: General references*

CIMIT Website: [www.cimit.org](http://www.cimit.org)

A\*STAR Website: [www.a-star.edu.sg](http://www.a-star.edu.sg)

Biomedical Research Victoria website: <http://biomedvic.org.au>, including the 2015 Financial Statements

Parkville Precinct Strategic Plan and Government Response 2005/2006

# Economic case

## Introduction

This section presents the principal programme options for delivering the services required from the Precinct. These are assessed against a set of critical success factors (CSFs) as well as the investment objectives and potential benefits, costs and risks. The outcome of this process is a shortlist of options and preferred way forward.

## Critical success factors (CSFs)

The CSFs are the attributes essential to the successful delivery of the Precinct. These are listed in Table 9.

There are five standard CSFs within Treasury's Better Business Cases Guidelines; these are the first five listed in the table below. One further CSF has been added which is unique to this Business Case:

**Clear purpose and enables strong leadership.** A clear purpose is critical to the success of the Precinct and its ability to achieve and retain the commitment of its partner organisations. It is also vital for attracting interest from the private sector. Strong leadership goes hand in hand with this. While strong leadership relates to how an option is implemented, rather than the option itself, options need to provide a platform for strong leadership if they are to be considered realistic and merit further investigation.

**Table 9: Critical Success Factors**

Critical Success Factor	Description and relevance to Precinct
<b>Strategic fit and business needs</b>	How well the option meets the agreed investment objectives, related business needs and service requirements – that is, how well the option supports or incentivises collaboration, enables partner organisations to achieve critical mass, and to attract international and/or private sector interest
<b>Potential value for money</b>	How well the option optimises value for money – that is, the scale of the benefits (e.g. how much of an increase in research, commercialisation, attraction of students, etc.) the option is likely to lead to, relative to the investment required
<b>Supplier capacity and capability</b>	The ability of potential suppliers to deliver the required goods or services - for example, ability to procure research equipment, physical buildings, or appropriately skilled staff, should the option propose these; and how likely the option is to result in a sustainable arrangement that optimises value for money over the term of the contract
<b>Potential affordability</b>	How well the option can be met from likely available funding – for example, whether the option can be met from within partner organisations' existing funding envelopes, or from an alternative source
<b>Potential achievability</b>	How well the option is likely to be delivered with the current capability and capacity of partner organisations
<b>Clear purpose and enables strong leadership</b>	How clearly the Precinct's purpose can be articulated under the option, the extent to which it enables strong leadership, how likely the option is to support good working relationships between partner organisations, and how well the option maintains the independence, autonomy and governance of partner organisations

## Options identification

The investment objectives, business needs, key service requirements, benefits, risks, constraints, dependencies and CSFs of the Precinct and HRCoE, as well as the three international examples of similar concepts, provide the basis for identifying the options for the development of the Precinct.

With the Precinct's physical location and dimensions determined, this option identification focuses on the key required components of successful precincts that are not already present in Te Papa Hauora/Health Precinct (refer Figure 7, page 31):

- Industry
- Commercialisation support
- New research funding
- Central support for collaborations and connection ("active management").

The final point in this list, active management, is a key connector to the other elements. Active management refers to anything that belongs to or represents the Precinct (or the HRCoE) an entity in its own right, rather than to any of the partner organisations individually. Active management is the "glue" that will bring the key partners, tenants and other stakeholders together to deliver the benefits of co-location. Without active management, the Precinct would simply be individual organisations working as they have always done, but doing so next to one another.

Research and case studies conducted during the development of this business case found that all precincts or multi-party research centres reviewed have some kind of central service or management to co-ordinate activity, to support partner organisations, and/or to provide a single voice or "shop front" for the precinct in engaging with external parties<sup>34</sup>.

Active management can include 'soft' infrastructure (such as human resource, marketing, research support services) and 'hard' infrastructure (such as buildings and equipment).

Active management is a connector for the other elements in that it can either:

- Help attract the other remaining elements to the Precinct by developing, contributing to and promoting the Precinct's value proposition; and/or
- Facilitate the Precinct community's access to those elements if they remain outside the Precinct (for example, 'active management' could include connecting researchers with commercialisation support from the nearby Innovation Precinct, if there was not (yet) commercialisation support present in Te Papa Hauora/Health Precinct itself).

This business case therefore identifies options for **active management** of the Precinct, based on the view that active management will help the Precinct secure, or at least access, the remaining required components to be successful.

Options for the Precinct's active management sit along two dimensions:

### Operational delivery

The 'soft' infrastructure, for example: arrangements to co-ordinate collaboration and relationships between Precinct partner organisations; central support and facilitation services; a combined 'voice' or 'shopfront' for engaging with external organisations or sectors, and so on. The Precinct delivery functions would only operate within parameters agreed by the partner organisations – as per the CSFs, arrangements should not interfere with each partner organisation's existing individual autonomy, independence or governance.

<sup>34</sup> This is not to say that individual organisations should not have or should not seek to cultivate their own relationships with organisations and sectors outside the Precinct or HRCoE; but that there appears to be value in having a recognisable front door to facilitate communication, particularly multilateral communication..

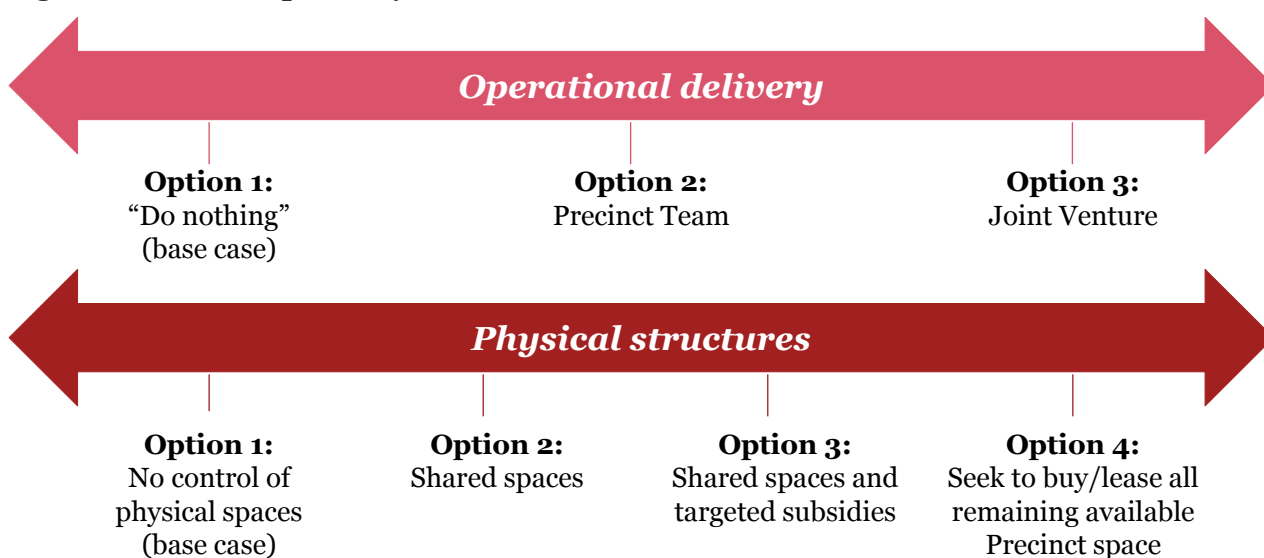


## Physical structures

Physical spaces or buildings used to co-locate Precinct partner organisations and so support collaboration and co-ordination.

Set out below is a selection of options for the Precinct under each dimension. These options represent points of reference and intervals between them that seem sensible, given the preceding considerations of this Business Case. However, as the dimensions are continuous, any number of slightly 'lighter' or 'heavier' touch options would be possible, and the progression from one option to the next is somewhat artificial. Options can be adjusted to sit slightly to the left or right.

**Figure 9: Precinct Options by Dimension**



A broad range of options have been included for this stage of the options identification process. Those at either ‘extreme’ of the spectrum may appear untenable, but they provide useful points of reference. Untenable options will be excluded quickly at shortlisting stage.

Descriptions of the options, along with a high level indication of their advantages and disadvantages are provided on the next page. More detailed analysis of the options against the investment objectives and CSFs is provided later in this section.

**Table 10: Precinct delivery options**

<b>Precinct: Delivery options descriptions</b>	
<b>1. “Do nothing” (base case)</b>	<p>Any governance or management initiatives continue to form organically with no formal or organised arrangements between partner organisations (noting that HPAC and its six strategic themes already exists, with funding confirmed through 2016).</p> <p>This option presents no specific additional cost to partner organisations. Any governance or management initiatives that do arise will be driven by need or mutual benefit (i.e. there are no “forced marriages”).</p> <p>However, this option offers limited additional leveraging of physical proximity or investment in equipment or support. Collaboration under this option is likely to be bilateral rather than multilateral. It is unlikely to lead to a step-change in collaborative practices.</p> <p>In terms of private sector involvement, this option does not offer anything more than a group of proximate organisations. It will likely have limited appeal to new investors. A lack of active attraction of health-related tenant companies increases the risk that tenancies are not filled with health-related activity.</p> <p>This option offers no economic benefit to Canterbury above that of individual developments of partner organisations.</p>
<b>2. Central Precinct Team</b>	<p>A team of 2-3 FTE (at least initially)<sup>35</sup> would be established (either to replace or build on the existing HPAC structure which currently involves 1 FTE in total across three roles)<sup>36</sup>. The team would be based within the Precinct and report to a joint committee made up of (say) partner organisation CEOs. The team’s purpose would be to:</p> <ul style="list-style-type: none"> <li>• Identify opportunities for collaboration, and facilitate and support as required across Precinct organisations (including research, education and other collaborations)</li> <li>• Provide research support services (assistance with grants applications, connections with commercialisation support, etc.)</li> <li>• Develop and promote the Precinct’s unique identity and value proposition</li> <li>• Facilitate engagement with external organisations and sectors</li> <li>• Attract new students, staff and industry to the Precinct, including brokering arrangements between potential tenants and landlords or developers.</li> </ul> <p>Team roles might include:</p> <ul style="list-style-type: none"> <li>• Director: Recognised leader tasked with delivering on the Precinct Vision – for example, by supporting relationships and collaborations between organisations and with external parties, engaging with industry, assisting researchers or companies identify and access providers of funding (grants or venture capital), promoting the Precinct, organising conferences, pursuing and negotiating tenancies, etc.</li> <li>• Commercialisation support: Assisting with the commercialisation of research – for example, by matching researchers with IP legal resource, market intel, etc. Connect with nearby Innovation Precinct as much as possible.</li> <li>• Marketing function: development and promotion of Precinct identity to attract industry, new students, investors.</li> <li>• Administrative function</li> </ul> <p>The team would be based in a physical office within the Precinct, which would also serve as the reception or face of the Precinct – a literal and figurative ‘shop front’.</p> <p>Estimated annual cash cost is likely to be \$650,000-\$750,000 per year to cover salaries, rent and overheads, marketing, travel, events, hosting, etc. (the indicative cost estimates are discussed in the Financial Case Outline section). Costs may be reduced by leveraging existing partner resources/services. This is a relatively low financial cost, but will require financial commitment</p>

<sup>35</sup> This figure based on the current scale of HPAC roles and based on the minimum size considered necessary to be effective in the Precinct’s initial phases. This figure was tested in interviews with stakeholders.

<sup>36</sup> There are currently 3 paid HPAC roles – 0.2 FTE chair, 0.6 FTE executive officer and 0.2FTE administrator. These roles currently provide the project resource and secretariat for HPAC. Funding commitment for these resources is in place for 2015 and on agreement being funded for 2016.

## Precinct: Delivery options descriptions

	<p>from partner organisations.</p> <p>This option leverages proximity, helps enable collaborative practices to develop, and helps build critical mass. It would enable communication of collaborative research capability to external parties and would likely help increase commercialisation of research. This option would contribute to a revitalised Christchurch CBD over the long term and economic uplift for Canterbury.</p> <p>However, it will involve a heavy reliance on the Director role (finding and retaining an individual with the appropriate skills, network and profile, and ensuring the role is not spread too thinly). It also requires strong mandate from partner organisations to succeed – for example, for the team to have credibility when engaging with external organisations, see the earlier Melbourne case study for example.</p> <p>The option encourages, rather than formalises or incentivises collaboration between partner organisations. There is also potential risk of confusion or complication between Precinct and partner organisations' existing identities.</p>
<b>3. Joint Venture</b>	<p>This option builds on the Central Precinct Team option above, and includes a formal Board with representatives from each partner organisation (and potentially independents). The Central Precinct Team would also have an ability to commit resources of partner organisations (e.g. the use of equipment, facilities) within agreed parameters.</p> <p>There may also be a pool of funding contributed by partner organisations which the Board has authority to distribute, subject to agreed criteria and policies. This could include favouring applications for collaborative or multidisciplinary projects.</p> <p>This option is likely to have higher costs and less agility than Option 2, but involves a formalised cultural change. It would send a clear signal to the private sector of commitment by the partner organisations.</p> <p>As with Option 2, there are risks around the reliance on the Director role and the confusion or complication of identities. This option may also provide a higher degree or more complexity in governance than is required or desired by partner organisations at this time.</p>

**Table 11: Precinct physical spaces options**

## Precinct: Physical spaces options descriptions

<b>1. No control of physical spaces (base case)</b>	<p>There is no ownership or lease of shared Precinct spaces.</p> <p>There are no costs or specific effort required of partners. As arrangements are effectively negotiated on an ad hoc basis, they are of mutual benefit - there are no "forced marriages".</p> <p>However, there will be limited leveraging of physical proximity and investment in equipment or support. Also, there will be limited opportunity for synergies and collaboration is likely to be bilateral rather than multilateral. The option is unlikely to lead to a step change in collaborative practices.</p> <p>The option does not signal anything more than a group of proximate organisations and is therefore likely to have limited appeal to new investors.</p>
<b>2. Shared spaces and a Precinct office</b>	<p>There would be a physical office within the Precinct, where the Precinct Team would be based and which would also serve as the reception or face of the Precinct. In addition this option would include Precinct-owned or managed shared work and/or social spaces for collaboration, such as "hot desking" work or study spaces, common rooms, cafeterias, laboratories, etc.</p> <p>This option would likely be relatively low cost but it will require a financial commitment from and cost-sharing arrangements between the partner organisations. Space may be able to be negotiated into proposed developments (e.g. by providing shared spaces in different sites without increasing total overall space).</p> <p>Shared spaces would help enable collaborative practices to develop, and may also provide options for hosting events or small conferences. However, it may not be a sufficiently significant step to attract private parties to invest in the Precinct.</p> <p>This option would likely best be pursued in combination with a Central Precinct Team (see Precinct delivery Options 2 and 3 above).</p>
<b>3. Shared spaces and</b>	<p>Shared spaces, as per Option 2, plus targeted subsidies of rents to attract an anchor tenant(s).</p>

## Precinct: Physical spaces options descriptions

<b>targeted subsidies</b>	<p>Costs will be higher than Option 2 and may involve a step change in cost commitments (although this could potentially be managed with implementation options).</p> <p>This option would fast track private sector involvement and opportunities for collaborations. Securing anchor tenant(s) would likely attract other smaller organisations to the Precinct. This option would enable the key components of the Precinct to be put in place more quickly than other options.</p>
<b>4. Buy/lease all remaining available Precinct space</b>	<p>The partner organisations would seek to collectively rent or buy all remaining available space within the Precinct and sub-let to tenants thought to deliver most value to the Precinct. This option would likely only be effective in conjunction with a dedicated Precinct delivery team, or joint venture (see Precinct delivery Options 2, 3 and 4 above).</p> <p>This option offers the benefits of Options 2 and 3 above, plus full flexibility to design the Precinct, ability to future-proof for growth, and ability to select tenants that ensure the collective desired focus of the Precinct.</p> <p>However, this option will require significant dedicated funding to develop or rent spaces. It may also involve more management and design than is desirable (i.e. it may crowd out development that would otherwise naturally occur). This option has a risk that demand is not significant and/or the level of subsidies required are unaffordable.</p>

## Options analysis

Formal business case analysis involves assessing each option against:

- The investment objectives (set out in Table 2).
- The CSFs set out at the beginning of this section.

Analysis is presented on the following pages, with one table for each dimension, and each option within the dimensions being considered against these two aspects. The criteria are coded either green - meets, orange – partially meets or red - does not meet.

**Table 12: Precinct Options: Operational delivery dimension**

Assessment criteria	1: “Do nothing”	2. Precinct Team	3. Joint Venture
<b>Investment objectives:</b>			
Synergies between organisations, build critical mass	Synergies based on individual relationships occurring without any direction or encouragement.	Potential for cross-organisational opportunities to be identified and encouraged by central team, who can also provide strategic steering.	As per Precinct Team (option 2), but potential to create organisational incentives around collaboration, and/or structurally mandate collaborative efforts.
Increased R&D among organisations	There is planned investment in R&D within the Precinct under the status quo, including the proposed University of Otago development at 4 Oxford Terrace. Collaboration continues to rely on relationships between organisations.	In addition to the status quo, the Precinct Team would have responsibilities for identifying opportunities and encouraging cross-organisational R&D.	As per Precinct Team (option 2).
Increased commercialisation of research	Relies on existing structures, word of mouth and individual researchers or research projects finding their own way through the commercialisation process.	Ability for precinct team to actively connect research with commercialisation support. Could also run seminars or courses on commercialisation as part of its programmes.	As per Precinct Team (option 2).
More competitive TEOs	No specific initiatives to build competitiveness of TEOs.	Potential for greater competitiveness to follow from reputation gains in increased R&D and commercialisation attracting staff and students..	As per Precinct Team (option 2), but possibly larger benefits through formalised collaborations.
Increased capacity and capability of Canterbury health workforce	Physical location of the HREF within the precinct should help support workforce development. It will provide specific efficiency benefits due to its close proximity with the hospital. No active connection of workforce capacity and capability with research initiatives.	As per the base case (option 1). In addition, may help identify opportunities to connect research with workforce training etc. Potential softer benefits by having research as a central theme of the Precinct, setting expectations around innovation.	As per Precinct Team (option 2).
Innovations in models of care	Potential for co-location within the Precinct to lead to improved or accelerated translation of research into workforce practice. However, this relies on the continuation of the current collaboration models between organisations.	Potential to actively identify opportunities to connect research to new models of care. Potential to provide support in enabling new models of care to be adopted in clinical settings.	As per Precinct Team (option 2).

Assessment criteria	1: “Do nothing”	2. Precinct Team	3. Joint Venture
Revitalisation of Christchurch CBD, economic uplift for Canterbury	Likely that the Precinct will continue to evolve organically, supporting a revitalised CBD. Similarly, economic uplift will evolve organically, largely dependent on the success of individual organisations, and their partnering.	May accelerate the development of the Precinct, through actively targeting investment from the private sector.  If the precinct team is successful (i.e. in encouraging new investment, supporting R&D development, supporting commercialisation and building TEO competitiveness) there will be economic uplift relative to the base case.	As per Precinct Team (option 2). There may be accelerated benefits if a formal structure provides a stronger signal to the private sector, and leads to more or earlier investment.
<b>CSFs:</b>			
Strategic fit and business needs	No. Except to the extent that outcomes occur organically through co-location, this option effectively represents business as usual. It does not respond to the significant strategic challenges outlined in the strategic case, and fails to respond to business needs around for example, establishing a unified “shop front” *	Yes. Actively focuses on addressing identified business needs, and aligns with overarching strategies.	Yes. Actively focuses on addressing identified business needs, and aligns with overarching strategies.
Potential value for money	Yes. No additional costs beyond baselines.	Relatively low cost and light touch. Ability to scale up as and if success and value is demonstrated.	No. Likely to be expensive to establish, and relatively inflexible. No significant additional benefits associated with this option vis-à-vis option 2, but likely to incur significant additional cost.
Supplier capacity and capability	Yes.	Yes.	Yes.
Potential affordability	Yes. Sits within current base lines.	Yes. Likely to be affordable within baselines, though will require additional funding.	No. High level of management and governance may create unnecessary transaction costs, hinder agility and impede innovation.
Potential achievability	Yes, status quo.	Yes. Potential to build on existing structure under the HPAC model. Likely to be some resistance to additional funding.	No. Unlikely to be achievable, as it would require significant commitment from partner organisations, and may be viewed as undermining institutional autonomy.



Assessment criteria	1: “Do nothing”	2. Precinct Team	3. Joint Venture
Clear purpose and strong leadership	No. Relies on individual organisations organically making decisions or conducting operations with a joint interest.	Yes. Provides a clear, focused team with a purpose and accountability for delivering the benefits.	Provides a clear, focused team with a purpose and accountability for delivering the benefits. However, may undermine autonomy of individual organisations and cause role confusion.
Overall assessment	While this is unlikely to undermine the establishment of a physical Precinct, it may slow some development, and does not provide a framework to leverage broader benefits. Not recommended for shortlisting.	A pragmatic approach, involving limited investment, but an explicit effort to build a Precinct that is more than physical co-location. Provides flexibility to adjust the scale as required. Does not involve establishing new organisational structures, and reduces risks of role and accountability confusion. Recommended for shortlisting and further analysis.	Likely to be too large a step at this stage of the development of the Precinct. This option could evolve at a later date depending on the success. Not recommended for shortlisting at this time.

**Table 13: Precinct Options: Physical spaces dimension**

Assessment criteria	1. No control of physical spaces (base case)	2. Office, and shared spaces only	3. Subsidise rent to attract anchor tenant(s)	4. Seek to rent/own all remaining available space
<b>Investment objectives:</b>				
Synergies between organisations, build critical mass	Limited opportunities to build collaboration through use of shared spaces. Risk of silos being established across the Precinct.	Readily enables mixing of people from different organisations, enabling collaboration and seeding it. Provides a physical presence at the Precinct which supports operational delivery in connecting organisations and building critical mass.	In addition to option 2, would enable the early presence of a commercial anchor tenant, helping attract others and building critical mass.	In addition to option 2, could seed/subsidise a range of other commercial entities into the Precinct to accelerate establishment of critical mass.
Increased R&D among organisations	There is planned investment in R&D within the Precinct under the status quo, including the proposed University of Otago development at 4 Oxford Terrace. This provides for some shared spaces, but under control of University of Otago.	In addition to option 1, use of shared spaces would enable a range of collaboration focused initiatives thorough hot-desking work, study and lab spaces, common rooms, and hosting events and small conferences.	As per option 2, but enable new partnerships with private sector parties.	As per option 3, but potentially additional opportunities through the presence of a wider range of commercial entities.
Increased commercialisation of research	No specific changes to enable this.	Potentially increased through better collaboration, though primarily relies on active management rather than physical spaces.	Opportunities for partnerships with private sector increased, which should enable greater commercialisation using existing delivery chains.	As per option 3, but could locate any required commercialisation support functions or organisations within the precinct
More competitive TEOs	No specific initiatives to build competitiveness of TEOs.	Potential for greater competitiveness to follow from reputation gains in increased R&D and commercialisation	As per option 2, though potentially higher if reputation for commercialisation is enhanced.	As per option 3, though potentially higher if reputation for commercialisation is enhanced.
Increased capacity and capability of Canterbury health workforce	Physical location of the HREF within the precinct should help support workforce development. It will provide specific efficiency benefits due to its close proximity with the hospital.	As per option 1	As per option 1 and 2	As per option 1, 2 and 3
Innovations in models	Nothing directly related to the	Nothing directly related to the	As per option 2	As per option 2 and 3

Assessment criteria	1: No control of physical spaces (base case)	2. Office, and shared spaces only	3. Subsidise rent to attract anchor tenant(s)	4. Seek to rent/own all remaining available space
of care	physical space	physical space, though shared spaces may enable indirect benefits through building connections between researchers and clinicians in a way that supports the adoption of innovations		
Revitalisation of Christchurch CBD, economic uplift for Canterbury	Likely that the Precinct will continue to evolve organically, supporting a revitalised CBD.	As per option 1	As per option 1. In addition, attracting an anchor tenant may have economic spin-offs for the region.	As per option 2. In addition there may be economic benefits associated with attracting other commercial entities to the Precinct.
<b>CSFs:</b>				
Strategic fit and business needs	No. Does not leverage physical proximity, and is unlikely to lead to a step change in collaborative practices.  Does not signal anything more than a group of proximate organisations; which is likely to have limited appeal to new investors.	Yes. Provides a physical ability to establish a shop front for the Precinct and the HRCOE.  Actively focused on leveraging the significant investment in the Precinct.	Yes. In addition to option 2 this option specifically targets early private sector participation through an anchor tenant.	Yes. In addition to option 2 and 3, this provides a mechanism to build a more substantial ecosystem within the Precinct.  This is an aggressive option, that could fast track a more 'comprehensive' Precinct, and that could support objectives around commercialisation of research.
Potential value for money	Yes. Status quo costs only, though by definition no additional benefits to the base.	Yes. Establishment of some shared spaces is a cost effective way of delivering a meaningful difference in terms of opportunities to drive greater cross-organisational collaboration, and create a sense of a unified Precinct.	Unclear. Would depend on the cost of any potential subsidy, and an assessment of the quantified benefits of the presence of the anchor tenant.	Unclear. Would depend on the cost (and risk) associated with taking a head lease or acquiring all available space, relative to expected benefits.
Supplier capacity and capability	Yes.	Yes.	Yes.	Yes.
Potential affordability	Yes.	Yes. Funding to rent space across the Precinct for offices and collaboration spaces, should primarily be able to be achieved within existing budgets, particularly where those budgets could be redirected.	Maybe, depending on subsidy required.  May be difficult to achieve consensus across the partner organisations which may	No. Seems highly unlikely that funding to enable such a comprehensive investment would be available, even if benefits were significant. The high risk of taking responsibility for the whole Precinct suggests this option is not

Assessment criteria	1: No control of physical spaces (base case)	2. Office, and shared spaces only	3. Subsidise rent to attract anchor tenant(s)	4. Seek to rent/own all remaining available space
Potential achievability	Yes, status quo	Yes, though it would require commitment from the partner organisations.	undermine achievability.	affordable or achievable.
Clear purpose and strong leadership	Not related to physical space	Not related to physical space	Not related to physical space	Not related to physical space
Overall assessment	Does not provide a framework for addressing business needs. Limited ability to direct or catalyse physical collaboration opportunities. Risk of physical silos. Not recommended for shortlisting.	Enables opportunities to physically enable collaboration, without significant costs or risk. Also provides a physical “shopfront” which helps build the identity for the Precinct and HRCoE Recommended that this option be shortlisted and carried forward.	Provides a step-up in impact from option 2 by securing a private sector anchor tenant. Difficult to ascertain whether this is a value for money initiative, without further information. Recommended that this option is carried forward for further analysis.	Likely to have the largest impact in terms of accelerating the development of a successful Precinct, but also presents much greater risks, and is unlikely to be affordable or achievable. Seems unlikely that the additional costs and risks over option 3 would justify the additional benefits. Not recommended for shortlisting.

## ***Consolidating and shortlisting options***

The two dimensions have so far been treated separately, although in practice they are closely related – for example, it would make little practical sense to combine heavier touch Precinct delivery with no control of physical spaces; or on the other hand, to seek to gain significant control over physical spaces without an adequate governance structure in place.

On this basis the options can be combined across dimensions into some consolidated final options:

- Option 1:**      **Base Case** (combines Option 1 under both dimensions)
- Option 2:**      **Precinct Team with some shared spaces** (combines Option 2 under both dimensions)
- Option 3:**      **Precinct Team with some shared spaces and subsidised rent** (combines delivery dimension Option 2 with physical structure dimension Option 3)
- Option 4:**      **Formalised Joint Venture** (combines delivery dimension Option 3 with physical structure dimension Option 4)

As set out in the analysis tables above, Option 1 and Option 4 are not recommended for shortlisting or further analysis. This leaves a shortlist of two options: Option 2 and Option 3.

## ***Preferred way forward***

Option 3 is in practice an extension of Option 2. This means there is an essentially a preferred way forward comprising two recommendations and an additional option for further consideration. It is recommended that partner organisations:

- Establish a central Precinct Team of 2-3 FTE staff as described in Table 12, to provide strategic co-ordination of the Precinct and support services to partner organisations.
- Lease some shared spaces for to encourage collaboration – this is to include an office for the Central Precinct Team, and will also likely involve a mix of social spaces (such as cafeterias, common rooms, kitchenettes) and working spaces (such as hot desking areas, study spaces and/or laboratory facilities). (Noting some of these spaces are planned within the HREF.)

*And potentially also:*

- Make available subsidised rents to attract an anchor tenant(s) to the Precinct (though this would require some specific additional funding e.g. from the Crown and/or philanthropy).

It will be important for the size of the Precinct Team and the investment in shared spaces to be reviewed periodically to ensure it appropriately reflects needs.

## ***Further options and dimensions***

There are, of course, further sub-options within these, relating to implementation and funding – for example, how quickly the option is implemented, how large the Precinct Team is, what scale and type of spaces are leased, what equipment is included within the scope of the access arrangement, the level of rent subsidy, and so on. There are also options relating to the funding model, and in particular, the contribution of central government. These are touched on below and explored in further detail in the Financial, Commercial and Management Cases.

## ***Funding options***

The shortlisted options have operating cost implications. It is assumed, for the purpose of this business case that the primary funding would be from partner organisations' existing budgets. This assumption will need to be tested in due course.

There is also a spectrum of funding options in relation to central government support.

This includes both direct and indirect central government involvement, if any. At one end of the continuum is the status quo: no specific central government funding or involvement other than:

- The support CERA, through CCDU, has provided to the Precinct programme. This is not insignificant<sup>37</sup>. To date, funding and support has been focussed on development of the concept and planning for the Precinct – that is, funding has not been provided for actual Precinct infrastructure or activity (e.g. research, equipment or buildings).
- The support and investment of partner organisations, who are all to a lesser or greater extent related to and receive funding from central government.

At this end of the spectrum, no central government involvement means no direct or indirect government funding specifically tagged to the building and/or operation of the Precinct.

At the other end of the continuum is explicit government funding for the Precinct. This could be in the form of direct funding for physical assets, for example building(s) or direct funding of research or other activities within the Precinct, for example co-funding specific research projects with the private sector.

In between these ends of the continuum is a range of more indirect or facilitation options. For example, enabling institutions such as CPIT to participate by ensuring they are funded to a level necessary to lease space in the Precinct.

Each “end” of the continuum has its own pros and cons –explicit government funding for the Precinct would likely help cement the joint relationship between the partner organisations, and would inject some momentum into the programme. Importantly, it would likely enhance the profile of the Precinct and encourage private sector involvement by giving new investors confidence in it.

However, government investment comes at a financial and opportunity cost. There is also a risk that too much government investment “crowds out” the market and makes it unlikely that the private sector would become involved. Private sector investment would bring explicit incentives and drivers for achieving commercial, demand driven success that might not be as strong with government financing.

Central government funding has not featured highly in interviews or workshops. While this is potentially due to an assumption that none is available, there was also acceptance that significant government funding had occurred or is occurring in the Precinct, and it is a responsibility of the partner organisations to effectively leverage this investment.

Funding models, including government support are outlined in the Financial Case.

### *Implementation options*

There is also a set of sub options within the preferred options relating to how they are implemented. These relate to the Precinct delivery model, timing and scale.

#### **Precinct delivery model**

The establishment of the Precinct Team could:

- Build off the existing HPAC structure and team.
- Leverage the infrastructure of the Canterbury Medical Research Foundation (potentially a better fit to help resource elements relating to the HRCOE, though this team is only 2.5 staff at present).
- Involve appointing a specific specialist precinct operations entity.

The most appropriate approach at this stage is to build off the existing HPAC model. This option would leverage an existing structure that is representative of the key organisations involved. It provides continuity with existing knowledge both at a management and steering team level. This does not prevent investigating other options or enhancements at a later date.

A case study of the Sydney Alliance for Healthcare, Research & Teaching (SAHRT) is provided later in this section. The scale and number of participating organisations is greater than that of the current Precinct partner organisations, but the structure and learnings from this model, along with the earlier case studies presented in this business case provide some points of reference for developing a Precinct Team and structure.

<sup>37</sup> CERA has provided significant resource to activities including establishing the planning framework, acquiring land required to develop public works, legal support services, and amending and improving the transport network. CERA has also (along with CPIT and CDHB) contributed to the cost of Master Planning Advice. CCDU has a significant operating expenditure budget for supporting the Precinct programme.



## Timing options

Timing considerations include when the preferred option should be implemented and what length of commitment is necessary.

While there is no specific imperative around timing, the only constraint to proceeding with the preferred options is likely to be related to approvals from HPAC and its partner organisations. This in turn is likely to relate to financial affordability considerations.

Notwithstanding these constraints, it is desirable to proceed as quickly as possible. Having an effective Precinct Team on board early will help embed some of the collaborative culture being sought from the Precinct. It will also help inform elements of the physical planning and design of the committed buildings, potentially including identification of office space for the team, and collaborative spaces.

A commitment should be made to the recommended approach of at least three years to provide a sufficient time scale to become properly established and build momentum.

## Scale options

There are a variety of scale options including the number of employees, the amount of physical space, equipment and any potential incentives to attract private parties.

Consistent with the options analysis earlier, a smaller scale intervention is preferred at this time. An important part of delivering the options will be further analysis to determine and agree elements such as space requirements and any commercial arrangements with anchor tenants. These elements are described in more detail in the Management Case outline.

## ***Case study: Sydney Alliance for Healthcare, Research & Teaching (SAHRT)***

The Sydney Alliance for Healthcare, Research and Training (SAHRT) was established in 2012. It is an inclusive, collaborative network comprising four Academic Health Science Centres (AHSCs)<sup>38</sup> in the Greater Sydney area. The Alliance includes members drawn from Universities, key participating hospitals and independent medical research institutes.

SAHRT is dedicated to facilitating the bringing together of the Alliance partners' intellectual and clinical expertise, infrastructure, resources and capabilities to enable effective and efficient support for the delivery of their objectives of improving the health and wellbeing of their communities.

SAHRT partners have the key elements for success including the intellectual drive, integration with health systems and community, clinical expertise, infrastructure, equipment, research capability and expertise necessary to impact and reduce the burden of human disease in their communities. Missing from these elements is a systematic way for investigators from disparate disciplines and organisations to efficiently and effectively:

- Find each other and form teams.
- Share knowledge, tools, equipment and technologies.
- Receive advanced training and education in principles and practice of research, clinical research and translational science.
- Identify capabilities supporting new areas of investigation and funding.

SAHRT's goal is to develop the governance, operational infrastructure and systems that will facilitate collaboration and working together.

### *Governance and resourcing*

SAHRT has established a strong governance structure to guide the development of the activities and operations of the Alliance. Formal governance of SAHRT was established through the parties signing a collaboration agreement in November 2012 and the establishment of the SAHRT Executive Council. The

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<sup>38</sup> Academic Health Sciences Centres (AHSCs) are collaborations of Health Service Providers, Medical Research Institutes and Universities established to facilitate and streamline, teaching, training, and the flow of research into clinical practice and of clinical practice into relevant research questions and thereby to optimise clinical practice and health outcomes for populations, communities and patients. They can also play a valuable role in more rapid commercialization of discoveries in basic research.

SAHRT Executive Council membership comprises senior health administrators, clinicians and researchers from within the Alliance partners.

The work of the Executive Council covers:

- Strategic development including the development of a collective strategic direction for research, education and clinical services and the development and management of strategic partnerships and collaborations.
- Operational matters covering the sharing of research infrastructure, equipment and facilities and the alignment of administrative process and services.
- Research including the setting of research priorities, promoting research translation, collaboration and integration in areas of current and emerging research strength and oversight of multidisciplinary site projects, and providing incentives for novel collaborations.
- Teaching and training to increase research capacity, promote translation and prepare the workforce for the collaborative research environments of the future.
- Quality of clinical care including the monitoring and evaluation of hospital clinical care to identify opportunities improve standard of patient outcomes, to integrate care across inpatient, outpatient and primary care settings and develop primary care excellence through joint program initiatives. Develop disease specific networks in areas our identified areas of research and teaching strength.

The Alliance partners make an annual contribution to support the role of the Executive Officer, who also holds the role of Associate Dean (Strategy) at the University of New South Wales Medicine (UNSW Medicine).

SAHRT cites the following factors of success in its operating model:

- Activity focussed on creating an environment that facilitates collaboration and a moving to a common approach to research governance across participating organisations.
- Focus on developing effective governance of SAHRT. Different organisations have different cultures and objectives, and SAHRT initiatives need to add value to each organisation. Members of SAHRT governance teams also needed to be in positions to influence resource priorities within their own organisations to allow SAHRT governance to act effectively.
- The appointment of the Executive Officer as the Associate Dean – Strategy at UNSW Medicine has added recognisability within a tertiary education context and has made a difference to SAHRT's ability to influence and ability to facilitate change to meet its objectives (and to therefore solve problems impacting its members and to create new opportunities for them).

## Summarising the Economic Case

In summary, this business case recommends a light touch approach to continuing to progress the establishment of the Precinct. This would involve building on the existing resources and commitments of partner organisations via HPAC, but with additional resource and funding, and a more focused direction and mandate. This approach gives flexibility to build the team further in the future based on its success and demand. The team's responsibilities would include:

- providing leadership to deliver the vision for the Precinct
- identifying opportunities for collaboration, and facilitating and supporting these as required
- providing research support services (assistance with grants applications, connections with commercialisation support, etc.)
- developing and promoting the Precinct's unique identity and value proposition
- facilitating engagement with external organisations and sectors
- attracting new students, staff and industry to the Precinct, including brokering arrangements between potential tenants and landlords or developers
- regularly reviewing the scale of the investment in the Precinct Team to ensure it is appropriate based on its success and on demand.

It is also recommended that some shared spaces are leased to encourage collaboration – this will likely involve a mix of social spaces (such as cafeterias, common rooms, kitchenettes) and working spaces (such as hot desking areas, study spaces and/or laboratory facilities). (Noting that many of these aspects will be delivered through the HREF building.)

## Assessing the economic benefits of the preferred option

The nature of this project means that generating meaningful and robust measures of economic benefits is challenging. However, the nature of potential economic impacts can be described and the potential scale of the benefits estimated, assuming a successful Precinct.

An important consideration in assessing the potential benefits is whether they can be ascribed to the Precinct or whether they would have occurred anyway.

Table 14 below presents potential areas of economic benefit. Indicative assessments of the scale of these economic benefits, if achieved, are presented in the text following the table.

**Table 14: Potential economic benefits of the Precinct**

Benefit	Description	Nature and scope of impact
New private sector investment	Synergies between organisations, and improved research connections attracts new private sector investment into the Precinct.	New investment leads to more businesses, economic activity and jobs in the health and science research sector in Christchurch
New research funding	Effective research collaborations are more successful at winning research funding. Increased partnering with the private sector attracts research investment.	Successful collaborations lead to higher shares of Crown funding for health research in the region. Increased economic output and jobs for the health and science research sector in Christchurch.
More research commercialised	Improved commercialisation support for researchers supports greater commercialisation. In addition, stronger links with the private sector provide information and direction to researchers that enable more effective commercial application of research.	Increase in private sector revenue inflows and export receipts to researchers and businesses in Christchurch.
Increased	The Precinct attracts greater numbers of students	Increase in spending in

Benefit	Description	Nature and scope of impact
student numbers	both from New Zealand and internationally.	Christchurch and New Zealand if visits are international.
Improved models of care	Innovations in workforce training, closer integration of theory and practical workforce training, and increases in cross-discipline training leads to improvements in the capability and capacity of the health workforce.	Reduced care costs per patient (relative to the do minimum scenario). Improved health outcomes for the Canterbury region.
Infrastructure efficiencies	Ability to share equipment, lab space, teaching space, common area etc. costs across organisations. Convenience related benefits.	Agglomeration benefits associated with proximity.
Increased academic exchanges	Recognition of the Precinct globally leads to study visits, academic exchanges etc.	Business tourism benefits for Christchurch and New Zealand if visits are international.
City centre revitalisation	Development of the Precinct leads to increased local activity, supports local businesses and the broader city centre redevelopment.	Primarily local benefits. Unclear whether there will be significant incremental benefits relative to the do-minimum scenario, though timing of changes may be different.

Table 14 above describes the potential economic benefits of the preferred option. A monetised assessment of the potential economic benefits, along with the underlying assumptions, is described below.

The likelihood of achieving the potential economic outcomes has not been assessed. This would be addressed in a benefits realisation plan. The benefits below represent what could be achieved through the Precinct, should it achieve its goals

Where economic multipliers are used, they relate to New Zealand-level multipliers, rather than Canterbury specific multipliers, due to data availability. The impacts on direct value-added and direct employment are expected to be reasonably similar.

### ***New private sector investment***

The overall economic activity as a result of new private sector investment is uncertain at this stage. Displacement effects (where existing businesses and researchers from within Christchurch move to the new development) are likely. Displaced businesses do not produce new economic activity for the city.

There is also the need to consider the degree of saturation in the industry, and movement of staff between existing and new organisations in Christchurch. To generate true economic benefits, new jobs need to be not only additional in the sense that they don't involve an existing Christchurch business simply relocating to the Precinct, but also that the presence of the new business does not in some way crowd out existing jobs in other Christchurch-based businesses.

Notwithstanding these impacts, it is expected that the Precinct will generate economic benefits if new businesses, especially international businesses invest and locate in there.

Based on average labour productivity of \$83,547 per worker<sup>39</sup>, the additional economic value-added produced at the preferred option site is \$8.4 million per 100 new FTEs employed. This is a significant benefit from a reasonably modest estimate of new FTEs. To the extent that the Precinct can attract new investment, it is anticipated that this will drive a large share of economic impact.

**Table 15: Benefits from new private investment**

Benefit	Direct value added (annual)	New employment
Economic activity from new	\$8.4 million per 100 FTEs	Moderate uplift

<sup>39</sup> Average labour productivity for workers in the Professional, Scientific and Technical Services sector in Christchurch City from PwC's Regional Industry Database (2014).

Benefit	Direct value added (annual)	New employment
private investment		

*PwC analysis*

### ***New research funding***

The Health Research Council of New Zealand (HRCNZ) administers the Crown's investment in health research. In 2014, the HRCNZ granted new partnership contracts worth \$13.0 million and new research contracts worth \$107.4 million to New Zealand researchers.<sup>40</sup> Researchers in the Christchurch area received 8.5% of the total funds allocated in these two categories.<sup>41</sup>

The preferred option could increase the share of Crown health research funding received in Christchurch. If the proportion of New Zealand residents with higher university degrees residing in Christchurch (9.4%<sup>42</sup>) is used as a basis for estimating the capture of increased funding then in 2014 there could have been an extra \$1 million in research funding, or an increase of 9.7% over baseline Crown research funding levels.

The value-added and employment effects are estimated using the professional, scientific and technical services gross output to value added and employment multipliers for New Zealand. The estimate is outlined in Table 16 below.

**Table 16: Benefits from new crown research funds**

Benefit	Direct value added	New employment
Economic activity from new crown research funding	\$573,000	6 FTEs

*PwC analysis using Insight Economics national input-output tables (2011)*

### ***More commercialised research***

If the preferred option enables businesses to commercialise more research sooner then they may be able to grow and gain scale quicker than might otherwise be the case. Moreover, an increased rate of commercialisation could generate new export revenue streams as a result of firms that had been domestically focused beginning to generate export revenue and firms already exporting offering new products and services, entering new markets or increasing the value of their current contracts.

It is assumed that one small firm, not currently exporting, begins to generate overseas income, and one small firm becomes a mid-sized firm.

The value-added and employment effects are estimated using data from Statistics New Zealand's Business Operations Survey (2011) on overseas income by business size. It is assumed that the additional export revenue for the domestic firm can be produced within current capacity constraints. However, the small firm which becomes a mid-sized firm must expand to support the growth in export receipts, generating 40 new jobs.

**Table 17: Benefits from more commercialised research**

Benefit	Direct value added	New employment
Greater export receipts from more commercialised research	\$5.6 million	40 FTEs

*PwC analysis using Statistics New Zealand data*

<sup>40</sup> Health Research Council of New Zealand Annual Report 2014, available at <http://www.hrc.govt.nz/sites/default/files/Annual%20Report%202014%20Website%20version.pdf>

<sup>41</sup> Ibid, PwC analysis

<sup>42</sup> Statistics New Zealand Census 2013 dataset. Higher degrees are calculated as the sum of i) post-graduate and honours degrees, ii) masters degrees, iii) doctorate degrees.

## ***Expenditure from increased student numbers***

More students studying at Christchurch-based institutions will result in increased local expenditure on accommodation, food and retail. The Precinct is expected to attract more New Zealand based students through two mechanisms:

- Health and related sciences students from the Canterbury region stay within the region (instead of going to another New Zealand university),
- The Precinct is recognised for excellence and it attracts health and science students from the rest of New Zealand,

Additional students based in Christchurch will lead to extra spending on accommodation, food and retail, which supports the retail and hospitality sector in Christchurch.

The value-added and employment effects of the additional expenditure from domestic students are outlined in the following table. This estimate is based on an assumption of 150 new domestic students (approximately 5% over baseline health and science students) spending \$200 per week on accommodation and food and during the 36 week academic year.

**Table 18: Benefits from new domestic students**

<b>Benefit</b>	<b>Direct value added</b>	<b>New employment</b>
Economic activity from new domestic students	\$607,000	15 FTEs

*PwC analysis using Insight Economics national input-output tables (2011)*

The Precinct could also attract more international students to the Canterbury region. The following assumptions have been used to quantify the impact on an increase in international students:

- An uplift of 5% of international students studying health and science per year, equivalent to an extra 86 international students.<sup>43</sup>
- Average annual expenditure per international student of \$21,810 in 2014 dollars. This is based on a 2008 estimate of average annual expenditure per international student of \$19,364<sup>44</sup>.

The economic impact of this spending is outlined in below.

**Table 19: Benefits from new international students**

<b>Benefit</b>	<b>Direct value added</b>	<b>New employment</b>
Economic activity from new international students	\$1.0 million	26 FTEs

*PwC analysis using Insight Economics national input-output tables (2011)*

## ***Improved models of care***

It is difficult to quantify the benefits from improved models of care, but in line with expectations it is assumed that there are operational efficiencies that arise from improved communication between health care providers.

In the year to June 2014, CDHB had expenses relating to providing services of \$1.3 billion.<sup>45</sup> A 3% uplift in productivity in healthcare as a result of the preferred option<sup>46</sup> is assumed. This is equivalent to an extra

<sup>43</sup> The baseline number of international students in the Canterbury region in 2014 was 8,582 from Education Counts (available at <http://www.educationcounts.govt.nz/statistics/international-education/international-students-in-New-Zealand>). It is assumed that 20% of students study health or science.

<sup>44</sup> Infometrics (2008) *The economic impact of export education*. Available at [http://www.educationcounts.govt.nz/\\_data/assets/pdf\\_file/0007/35368/EconomicImpactReporto8.pdf](http://www.educationcounts.govt.nz/_data/assets/pdf_file/0007/35368/EconomicImpactReporto8.pdf)

<sup>45</sup> Operating expenses relating to employee benefit costs, treatment related costs and external service providers from the CDHB Annual Report 2015, available at <http://www.cdhb.health.nz/About-CDHB/corporate-publications/Documents/CDHB%20Annual%20Accounts%20to%2030%20June%202014.pdf>



\$40.3 million in new services, supported by existing employment. The value-added contribution of the new services is estimated as:

**Table 20: Benefits from improved models of care**

Benefit	Direct value added	New employment
Economic impact from improved models of care	\$26.2 million	N/A

*PwC analysis using Insight Economics national input-output tables (2011)*

### **Infrastructure efficiencies**

The benefit from researchers and health workers using shared equipment and common areas can be estimated using a proxy. Agglomeration benefits, which are the increase in labour productivity from increased employment density, can be used to proxy the benefit in labour productivity for researchers and health workers.

A New Zealand estimate of the agglomeration benefits for knowledge intensive industries such as professional, scientific and technical services is 8.7%.<sup>47</sup>

The agglomeration elasticity is applied to the uplift to productivity estimated for the improved models of care (3%). This produces the following estimate of value-added:

**Table 21: Benefits from infrastructure efficiencies**

Benefit	Direct value added	New employment
Economic impact from infrastructure efficiencies	\$1.7 million	N/A

*PwC analysis*

This analysis shows that potential economic benefits from a successful precinct are significant, particularly if the Precinct can:

- Attract new investment.
- Meaningfully support the commercialisation of research.
- Drive improvements in the capacity or capability of the Christchurch health workforce.

<sup>46</sup> OECD research on fragmentation of administrative boundaries suggests that for a given population, an area with twice the number of municipalities has six percent lower productivity, which is halved with the existence of a governance body at the metropolitan level. Refer to [http://www.oecd-ilibrary.org/urban-rural-and-regional-development/what-makes-cities-more-productive-evidence-on-the-role-of-urban-governance-from-five-oecd-countries\\_5jz432cf2d8p-en;jsessionid=1niarmjvp3ss8.x-oecd-live-03](http://www.oecd-ilibrary.org/urban-rural-and-regional-development/what-makes-cities-more-productive-evidence-on-the-role-of-urban-governance-from-five-oecd-countries_5jz432cf2d8p-en;jsessionid=1niarmjvp3ss8.x-oecd-live-03)

<sup>47</sup> Mare and Graham (2009) *Agglomeration elasticities in New Zealand* available at <https://www.nzta.govt.nz/assets/resources/research/reports/376/docs/376.pdf>

# *The Commercial Case Outline*

## ***Low-key procurement***

The commercial case outline in a PBC or IBC is intended to provide an initial assessment of the commercial viability of the preferred option, in terms of its attractiveness to potential suppliers and its ability to deliver long-term value for money to the organisation.

In the case of the Precinct, there are no large scale asset or capital works to be procured<sup>48</sup>, which makes the typical assessment of a procurement strategy redundant.

For the Precinct, the recommended options from the Economic Case involve the formal establishment of a Health Precinct Team, under the control/governance of the HPAC. The Economic Case also recommends establishing:

- Dedicated office space within the Precinct for this team.
- Shared spaces and collaboration spaces within the precinct.
- Rules and procedures for sharing spaces.

To meet these service requirements, a procurement strategy will need to be developed that addresses the following:

- The basis on which the Partners agree to participate in the Precinct. This could be the existing collaboration agreement or, more likely, a new agreement that will deal with matters such as cost contribution, and any commercial arrangements for and ownership of jointly developed products, IP or services etc. (particularly for elements such as the HREF and HRCoE).
- The basis for cost sharing between the precinct partners. This will set the basis for the Partners' contributions to the cost of the Precinct Team.
- A resource plan and recruitment approach. This should include identifying the mix of desired skills, including a manager with the ability to drive and champion the Precinct.
- Budgets for staff, development of position descriptions etc. (Noting that these could build on the existing budgets for HPAC staff and their position descriptions.)
- Office space requirements, including a budget, a preferred site, and rental arrangements.
- Opportunities across the Precinct for shared working spaces e.g. hot-desks, labs etc. and procedures for using these spaces.
- Shared social spaces – e.g. a common room / kitchen, or engaging with private sector for interest in opening a café.
- Early stage activation of a strategic approach to attracting the private sector, which could potentially include incentives or subsidies to target an anchor tenant. (This element is discussed in more detail below.)

With respect to attracting the private sector, and supporting the growth of the Precinct, it is important to note that the majority of the land is not under the control of either the partners or the HPAC. In most cases land is controlled by external parties.

In general, growth in the Precinct beyond that already planned and committed will require new development. This in turn will require negotiation between land owners/lease holders, developers and potential tenants. It is expected that the Precinct Team can play a role in brokering these discussions. In limited circumstances it could also be part of the arrangement, for example, by taking some space, or providing side commitments to tenants such as agreeing to acquire equipment etc. (or gaining commitments from partners).

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<sup>48</sup> Based on the options analysis presented above. If in future a different preferred option were to be selected which involved, for example, a physical building for the HRCoE, procurement analysis would be required.

Some of this type of brokering activity is already occurring. The Canterbury Development Corporation has contracted a consultant to start discussions with potential private sector tenants, with a view to linking them with potential developers.

There have been ongoing discussions with GE Healthcare, which has expressed an interest in being an anchor tenant in the Precinct. As noted, securing a private sector anchor tenant for the Precinct would provide significant momentum.

It will be important for the procurement strategy to include guidance on the commercial parameters for negotiating with GE and any other private sector parties.

### ***Requirement for a legal entity***

The recommended way forward involves hiring or contracting a small team of individuals and transacting with a range of parties for goods and services, for example for premises. This will require a legal entity to act as the contracting party. That is, a legal entity will be needed to enter into employment agreements, lease agreements etc.

Options for providing a legal entity are:

- One of the partners enters into contracts, agreements etc. on behalf of all of the partners. For example, the host partner will employ the Precinct Team (as currently occurs).
- A standalone legal entity is established.

The advantages and disadvantages of one of the partners acting as the contracting party are:

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• Lower compliance costs: no need to go through the process of establishing an entity.</li> <li>• Scale benefits: can use the partner's existing systems and processes and so avoid the cost of establishing standalone systems.</li> <li>• Timeliness: will enable a relatively fast start-up.</li> </ul>	<ul style="list-style-type: none"> <li>• Funding agreements: will require the host partner to enter into funding agreements with the other partners to ensure equitable sharing of costs.</li> <li>• Cost allocations: funding arrangements will require a transparent cost allocation method. For example, are services provided by the host partner on a marginal cost basis or will there be an allocation of overheads?</li> <li>• Risk: the host partner will take on legal and other risks associated with the Health Precinct Team.</li> <li>• Governance: how the HPAC would exercise governance over the Health Precinct Team would need to be determined. There is a risk that non-host partners might perceive that the host partner has undue influence over the Health Precinct Team.</li> </ul>

The advantages and disadvantages of establishing a new entity are:

<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"> <li>• Independence: the entity can be set up to be arms-length from all partners and so not necessarily overly-influenced or controlled by one partner. Financial reporting will not be complicated by internal costs allocations.</li> <li>• Equitable influence and control: will enable a transparent and flexible ownership structure to be established. The partners ownership shares can be structured in whatever way is deemed appropriate. For example, equal ownership or ownership in proportion to some measure such as financial contributions.</li> </ul>	<ul style="list-style-type: none"> <li>• Higher compliance costs: there will be costs associated with establishing the entity and, depending on its form, with on-going compliance.</li> <li>• Scale dis-benefits: it will be relatively costly for the entity to put in place its own systems and processes. A sensible solution would be for the entity to contract services from the partners and take advantage of the partners' scale.</li> <li>• Timeliness: will require some time for the partners to agree the commercial and legal parameters for their participation in the entity</li> </ul>

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### Advantages

- Flexible: ownership can be structured to accommodate changes in partners.
  - Transparent governance and accountability: the form of the entity will dictate to some extent the nature of the governance and accountability. However, the governance and accountability structures are likely to be well understood and robust. The form of the entity could be structured in a way to incorporate the HPAC. For example, if the entity was a company then the HPAC could become the board of directors.
  - Risk: depending on the form of the entity, risks can be ring-fenced and sheltered within the entity.
- 

### Disadvantages

and for the required documentation to be put in place. The latter should be relatively straight forward but the former could be more complicated.

All other things being equal, a stand-alone entity would be the preferred option. Although it would be controlled by the partners, it can be established as an independent entity acting in the best interests of the Precinct for the benefit of all partners. Importantly, it can have a transparent governance and accountability framework that allows the partners to exercise an agreed level of influence in a structured and transparent manner.

However, the recommendation in the Economic Case is predicated on taking a measured approach to the development of the Precinct. In this regard establishing a stand-alone entity at the outset could be seen to be imposing unnecessary compliance costs and governance complexity.

An alternative approach would be to establish the Precinct Team within one of the partners as a transition measure. An independent entity could be established when the Precinct gains traction and the activities of the Precinct Team ramp up. This will allow the Precinct Team to establish itself and its credibility with the partners and effectively plan for it becoming an independent entity. The establishment of the independent entity can then be undertaken in a measured and cost effective manner.

# The Financial Case Outline

The Financial Case outline involves providing an initial assessment of the overall affordability of the preferred programme option, and identifying possible funding sources and requirements.

As discussed in the Economic Case, the recommended options will involve an increase over current costs. Estimated costs have been developed to be flexible enough to accommodate growth in investment as the success of the Precinct grows.

In effect, the preferred options represent initial steps to leverage committed investment and help pull the Precinct into a coherent whole.

A high level cost estimate has been prepared which suggest, indicatively, that the preferred option would have annual cash costs of approximately \$650,000 - \$750,000 and one-off establishment cash costs of approximately \$650,000:

**Table 22: Indicate cost estimates for Precinct Team**

	Lower range \$000	Higher range \$000
Salary and associated costs for 3 FTE staff, including a manager or director with appropriate skills, networks, profile (etc.) to provide strong leadership and drive for the Precinct	370	395
Office space to locate this team and serve as a physical 'shop front' for the Precinct, collaboration spaces and associated accommodation and support costs	200	200
Marketing	30	50
Event hosting, project funding and travel	80	100
<b>Total annual cash costs</b>	<b>680</b>	<b>745</b>
<b>One-off establishment costs for recruitment, lease negotiations, fit-out, asset purchases etc. (potentially within new CDHB office building or HREF).</b>	<b>640</b>	<b>670</b>

Potential incentives or subsidies to attract a private sector tenant to the Precinct have not been included here, as this is an optional additional recommendation. The scale of potential subsidies is at this stage entirely flexible.

Costs may be reduced by leveraging existing partner resources/services.

While the partner organisations are large organisations with considerable capital bases, they are not without resource constraints. The University of Canterbury and the CDHB for example have both faced major disruptions following the earthquakes, which has necessitated significant capital outlays. Canterbury University has also faced operational disruptions which have impacted their operational finances.

There are several funding options available (which are not mutually exclusive):

- Increased funding from partners via the HPAC. Currently the HPAC has a budget of \$40,000 per annum from UO, UC, CPIT and CERA, and \$50,000 per annum from CDHB, giving a combined budget of \$210,000. This budget has recently been reconfirmed for 2016. However, it is unlikely that CERA will be able to make an ongoing commitment. A key element of any increased funding will be to agree a cost sharing mechanism, which may not involve equal shares.
- Development of a membership fee option like that used by Biomedical Research Victoria. Under this model "founding partners" have particular status, but then can also reap fees from any other research institute (or potentially private partner) that wants to join. This could include, for example,

places like the Brain Research institute or Christchurch Clinical Studies Trust. (This option is probably more relevant to the HRCOE.).

- Revenue from holding conferences and other possible activities.
- Diverting existing budgets. The funding of shared collaboration spaces should not collectively involve increased costs for the stakeholder organisations – particular if they can utilise pre-existing locations, or new spaces being built into forthcoming developments (e.g. 4 Oxford Street, HREF, or the CDHB administration building).
- Philanthropic sources or sponsorship arrangements.
- Seeking funding from other government providers such as CERA, Regenerate Christchurch, MBIE, MoH, TEC and Callaghan Innovation.

In respect of this last option, there was clear direction from stakeholder workshops and our interview programme, that a major scale investment was not required at this stage of the programme. Indeed it was noted that significant Crown investment had already been incurred, and is continuing to be incurred in the Precinct either directly or via Crown funded entities such as the CDHB and educational institutions.

This programme business case is consequently more focussed on effectively leveraging that investment. However, it is noted that as the success of the Precinct grows, there may be opportunities to pursue funding for specific needs from different areas of government.

In summary, the proposed next steps in building the financial case are to:

- Firm up the estimated cost of the preferred options.
- Work through an appropriate cost sharing mechanism for the individual partner organisations.
- Seek in principle endorsement for this budget and cost sharing from HPAC.
- Seek approval from the partner organisations.



# The Management Case Outline

The Management Case outline provides an initial assessment of the capacity and capability of the organisation to implement the preferred programme, taking into account readiness and available resources.

The HPAC was established by the partner organisations with the explicit goal of establishing the Precinct and advancing the HRCoE. In this respect it is the logical group to implement the preferred options. It has proven capability and capacity through its relationships with and into the partner organisations, and the broader health sector stakeholder community. It is expected that HPAC will continue to leverage in-kind resources from CCDU, and potentially partner organisations, as well as employing contract support as required.

The following table contains a summary of the key aspects of the plan for establishment of the Precinct Team. These would form the basis of an establishment and implementation plan.

The table does not include a timetable. The timetable is dependent on agreement to the proposal in this business case and the Partners agreeing to the “speed” at which they want to implement the recommendations.

**Table 23: Indicative programme**

Proposed key milestones
Have the relevant agencies endorse the business case (at least at an ‘in-principle’ level).
Develop outline budgets for the proposal in this business case, particularly in relation to staff costs, marketing, and space requirements, building on existing budgets and investment.
Agree the identity of the contracting entity – Partner that will “host” the Precinct Team (currently provided by CDHB).
Develop the transition strategy, particularly the factors that will trigger the transfer of the Precinct Team to an independent entity. This should include assessment of the forms of the entity and recommendation on a preferred form.
Document the processes and various agreements that will be needed to enable the Host Partner to commence the process of employing the Precinct Team (potentially building off those currently in place through CDHB).
Determine and agree the arrangements for funding the activities of the Precinct Team. If this will include the Partners funding some or all of the costs, agree the basis for sharing and managing the costs.
Determine and agree the Precinct Team’s scope, delegated authorities and accountability framework and the arrangements for governing, managing and monitoring its activities.
Determine and agree the establishment plan for the Precinct Team. For example, the Partners agree on the job description for the Precinct Team manager and delegate a subgroup from the Partners to undertake recruitment. Once employed, the Health Precinct manager would be charged with recruiting other staff and managing the establishment process with the Host Partner
HPAC to prepare and commence implementation of a stakeholder engagement plan. The responsibility for the plan will be passed to the Precinct Team once it is established.
Review HPAC’s constitution (the collaboration agreement) and identify changes that might be required to ensure HPAC’s scope and mandate is consistent with its role as the governing entity for the Precinct Team.
Determine and agree the arrangements between the Partners in relation to their participation in the Precinct (and the HREF and HRCoE), including arrangements in relation to access to assets and facilities, ownership arrangements for jointly developed IP, joint marketing activities etc.
Present necessary documentation to HPAC for endorsement in principle of the steps, processes and procedures to establish, manage and govern the Precinct Team and its scope of activities.
HPAC members seek endorsement from their own organisations of the preferred option, the funding

arrangements for the Precinct Team, including cost sharing arrangements, if relevant, the indicative budgets and the arrangements for the Host Partner.
Develop a resource plan and recruitment approach. This should include identifying the mix of desired skills, including a manager with the ability to drive and champion the Precinct. This should also include a detailed budget.
Developing detailed plans for physical space requirements for the Precinct.
Develop detailed budgets in relation to marketing / branding of the Precinct.
Seek formal approval for proposed budgets.
Progress discussions with private sector providers with a view to supporting/brokering a deal between an anchor tenant and a Precinct property developer.
Develop rules and procedures for sharing spaces.
Development of a marketing plan for the Precinct, and key collateral such as websites etc.

# Appendix A: Overview of partner organisations

## Canterbury District Health Board (CDHB)

<b>Overview</b>	<p>CDHB is funded by central government to purchase and provide health and disability services for the people of Canterbury. CDHB is:</p> <ul style="list-style-type: none"> <li>• the main planner and funder of health services in Canterbury;</li> <li>• a tertiary provider of hospital and specialist services – both for the Canterbury population and also for the populations of other DHBs where more specialised services are unavailable;</li> <li>• a promoter of the Canterbury population's health and wellbeing; and</li> <li>• the largest employer in the South Island, employing over 9,000 people across its services.</li> </ul>
<b>Role / interest in the health sector</b>	Provider and funder of primary, hospital and specialist health services.
<b>Strategic goals</b>	<p>CDHB's vision is an integrated health system that keeps people healthy and well in their own homes by providing the right care and support, to the right person, at the right time and in the right place. This includes:</p> <ul style="list-style-type: none"> <li>• the development of services that support to people / whānau to stay well and take greater responsibility for their own health and wellbeing</li> <li>• the development of primary and community-based services that support people / whānau in the community and provide a point of ongoing continuity (which for most will be general practice)</li> <li>• the freeing-up of hospital-based specialist resources to be responsive to episodic events, provide complex care and provide specialist advice to primary care.</li> </ul>
<b>Current operating environment</b>	<p>CDHB's Annual Plan 2014/2015 notes the following challenges and factors in the operating environment:</p> <ul style="list-style-type: none"> <li>• The 2010-2011 earthquakes continue to impact CDHB with: reduced capacity of the health sector, increasing demand for services (e.g. mental health services, health conditions caused by poor living arrangements), pressure on workforce.</li> <li>• Canterbury's growing and ageing population is a key challenge for CDHB; it is expected to place significant pressure on its workforce, infrastructure and finances.</li> <li>• CDHB currently has major construction projects underway. The redevelopment of Christchurch and Burwood Hospitals is expected to be complete in 2018. Upwards of \$600m is to be invested across the two sites. This will involve disruption and restricted services as CDHB relocates services and awaits construction work.</li> <li>• The Government has given clear signals that all DHBs need to live within their means and rethink how they deliver improved health outcomes in more cost-effective ways.</li> </ul>
<b>Aspirations for involvement in Precinct and/or</b>	<ul style="list-style-type: none"> <li>• Redevelopment of Christchurch Hospital and the new outpatients' facility is a key part of the strategic context of the Precinct. Christchurch Hospital is a teaching hospital, and will be one of the busiest hospitals in Australasia once</li> </ul>

## HRCoE

redevelopments are complete.

- As a major employer and home to the South Island Regional Training Hub (SIRTH), CDHB has extensive responsibilities for workforce development, training and professional development across health workforce groups. CDHB has strategic relationships with a variety of tertiary education providers including UO, UC and CPIT.
- The development of the HREF will provide the opportunity for co-location of and collaboration among staff from a range of organisations. CDHB considers this will lead to the development of and access to a shared services model for the wider Canterbury Health system staff including those working in primary care.

More information is available at: [www.cdhb.health.nz](http://www.cdhb.health.nz)

## University of Otago (UO)

<b>Overview</b>	UO is New Zealand's first university, established in 1869. It offers a full range of courses, including a medical school, with 18,800 FTE students and 3,788 FTE staff in 2014.
<b>Role / interest in the health sector</b>	UO's Division of Health Sciences has campuses in Christchurch, Dunedin, and Wellington. It delivers undergraduate programmes in Dentistry, Medical Laboratory Science, Medicine, Pharmacy, and Physiotherapy. It also offers bachelors' degrees in Oral Health, Dental Technology, Radiation Therapy, and Biomedical Sciences. Recognised internationally for the high standard of its graduates and research, the Division aims to provide New Zealand society and other communities with a highly qualified workforce in the health professions.
<b>Strategic goals</b>	<p>UO's vision: A research-led university with an international reputation for excellence.</p> <p>UO's mission: The University of Otago will create, advance, preserve, promote and apply knowledge, critical thinking and intellectual independence to enhance the understanding, development and well-being of individuals, society and the environment. It will achieve these goals by building on foundations of broad research and teaching capabilities, unique campus learning environments, its nationwide presence and mana, and international links.</p> <p>The following strategic imperatives have been identified by the University:</p> <ul style="list-style-type: none"><li>• Excellence in Research</li><li>• Excellence in Teaching</li><li>• Outstanding Student Experiences</li><li>• Outstanding Campus Environments</li><li>• Commitment as a Local, National and Global Citizen</li><li>• Strong External Engagement</li><li>• Sustaining Capability.</li></ul>
<b>Current operating environment</b>	<ul style="list-style-type: none"><li>• Priority Development Plan (PDP) – a \$650 million programme of building developments to be completed over the next 15 years. Projects on the PDP include teaching and research facilities and a new faculty for the national Dental School.</li><li>• UO's Annual Report 2014 noted that while UO continues to rank well internationally, UO and other New Zealand universities are gradually slipping in the context of an increasingly competitive global environment. Over the past two decades, New Zealand government funding per student has</li></ul>

gradually declined in real terms and, as a result, the numbers of staff per student have been negatively affected.

#### **Aspirations for involvement in Precinct and/or HRCOE**

- UO is a leading New Zealand provider of undergraduate and postgraduate education and training in health workforce professions. It also leads research in the related medical, public health and biomedical sciences.
- The Division of Health Sciences has its main campus in Dunedin, but Christchurch and Wellington are critically important for clinical training, postgraduate training and research. The Christchurch campus is a key component of the Division's national infrastructure.
- UO's strategic goals and objectives for participating in the Precinct and on the HPAC are:
  1. To further enhance and strengthen the University's and the Division of Health Sciences' core activities and contributions in education and training in health workforce professions and biomedical sciences; research; and community service.
  2. To support and foster strong and productive collaborative relationships across tertiary institutions and health provider organisations in Canterbury. Collaborations may include teaching and research activities and support of broader workforce development activities.
  3. To make a strong positive contribution to the re-building and re-shaping of the central city. The University is committed to adding to the vibrancy and ethos of the Precinct for the benefit of the wider Canterbury population.
  4. To maintain and where appropriate expand the University's research and teaching programmes in Christchurch.
  5. To work constructively with CCDU to determine the optimal site for the University's planned new building (noting that the University currently owns the former Tillman site on Oxford Terrace).
  6. To develop plans for the new health and biomedical research building with the aim of completing construction in 2018.

For more information see [www.otago.ac.nz](http://www.otago.ac.nz)

### ***University of Canterbury (UC)***

#### **Overview**

UC in Christchurch is New Zealand's second oldest university. The university offers degrees in Arts, Commerce, Education (physical education), Engineering, Fine Arts, Forestry, Health Sciences, Law, Music, Social Work, Speech and Language Pathology, Science, Sports Coaching and Teaching. In 2014 the University had 11,943 FTE students and 1,886 FTE staff (2014).

#### **Role / interest in the health sector**

UC's School of Health Sciences offers undergraduate and postgraduate programmes and research activities that respond to the dynamic nature of the health and education sector and its workforce. These include postgraduate programmes in Counselling, Specialist Teaching, and Child and Family Psychology, as well as various population health and clinical endorsements within the Postgraduate Diploma and Masters of Health Sciences.

#### **Strategic goals**

UC's vision: People prepared to make a difference.

UC's mission is to contribute to society through knowledge in chosen areas of endeavour by promoting a world-class learning environment known for attracting people with the greatest potential to make a difference.

UC aspires to provide all graduates with the opportunity to graduate:

- Having mastered their chosen discipline;
- Employable, innovative and enterprising;
- Biculturally competent and confident;
- Engaged with the community; and
- Globally aware.

UC's 2015/2016 Goals are to:

- Enhance the UC student experience
- Recover student numbers
- Engage staff
- Enhance research reputation and performance
- Connect and collaborate
- Improve campus and IT infrastructure
- Manage resources prudently.

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#### **Current operating environment**

- Ongoing challenges from the impacts of the 2010-2011 earthquakes
  - Building programme over the next 2-3 years, signalling a major investment in University property
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#### **Aspirations for involvement in Precinct and/or HRCOE**

In its response to the earthquake sequence of 2010-2011 the University has developed its UC Futures programme which seeks to contribute to its recovery process through a multi-pronged series of new initiatives in which the Precinct initiative plays a key part. The University sees its involvement in the development of the Academic Health Sciences Centre as a major strand of its approach to consolidating its already well developed portfolio of health research and teaching. A unique opportunity now exists for UC to join a strong, collaborative partnership with CPIT and UO to work alongside the CDHB and industry to build a world-class academic health science development where internationally significant research, innovation and teaching are delivered within the Precinct.

The University seeks to contribute to the first phase of the HREF through teaching, initially at the post-graduate and post-qualification levels, with limited specialised undergraduate professional education provision being considered. UC also anticipates the location of key research entities which will promote elements of translational research in clinical practice and create new knowledge in fundamental and applied health research, all of which will contribute to economic growth.

UC is a key partner in the National Sciences Challenge – Better Start project and there are further opportunities to develop Christchurch as a South Island hub for research for the National Sciences Challenge initiatives. These programmes will have a seminal role in improving the health and wellbeing of Cantabrians.

Selected programmes and projects will have the potential to gain significant synergies and benefits by co-location in the Precinct alongside the largest concentration of health professionals and patients/clients in the South Island. Being positioned within the Precinct will also increase capacity in UC's strategic health research through access to a range of urban and rural populations. The collaborative opportunities for staff and students of the University in the Precinct will enable UC to further enhance its vision of being people prepared to make a difference – tangata tū, tangata ora.

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For more information see: [www.canterbury.ac.nz](http://www.canterbury.ac.nz)



## Canterbury Polytechnic and Institute of Technology (CPIT)

<b>Overview</b>	CPIT is a tertiary education provider with approximately 6,700 FTE students in 2014. CPIT provides full- and part- time education in technologies and trades.
<b>Role / interest in the health sector</b>	CPIT provides tertiary qualifications in the areas of Nursing, Midwifery, Medical Imaging, and Applied Science (including human nutrition, sport and exercise science, physical activity and health promotion), among others.
<b>Strategic goals</b>	<p>CPIT's vision: Leading education for employment in partnership with communities.</p> <p>CPIT's goals for 2015-2017 are:</p> <ul style="list-style-type: none"> <li>• Market relevance</li> <li>• Graduate outcomes</li> <li>• Dynamic learning and environment.</li> </ul>
<b>Current operating environment</b>	<ul style="list-style-type: none"> <li>• In August 2015, CPIT and Aoraki Polytechnic presented a joint business case to the Minister for Tertiary Education, Skills and Employment proposing that a joint Canterbury-wide organisation be established.</li> <li>• CPIT Campus Master Plan: a programme of major redevelopment work of construction and refurbishment through to 2022.</li> </ul>
<b>Aspirations for involvement in Precinct and/or HRCoE</b>	<p>CPIT is committed to becoming the major health sector training provider in the South Island, working in conjunction with stakeholders to ensure that all opportunities for integrated learning are developed to produce high quality graduates in all areas. CPIT is committed to ensuring that all programmes are kept current and future focused through continued involvement in national development processes and connection with international advances. The first steps to this commitment were taken by participating in the development of the Precinct in Christchurch and the delivery of Master Planning Advice to the CCDU.</p> <p>It is of strategic importance to CPIT to have a presence in the Precinct and delivery at the Precinct will include all CPIT Nursing, Medical Imaging and Midwifery immediately and in due course a range of allied health teaching. It is projected that other academic facilities could be developed as the Precinct is expanded. Significant increases in workforce demands in the next five to 15 years is recognised by CPIT as a catalyst for ensuring that the delivery of training is redeveloped to provide greater ease of access and continuing high quality at all levels.</p> <p>Training in the health area at CPIT specialises in quality, under-graduate provision although CPIT is committed to responding to increasing demand for the provision of on-going graduate and post graduate training and research which is essential to the vigour of the health sector.</p> <p>Themes of delivery have been developed to support the changes that accompany the re-siting of delivery to the Precinct:</p> <ul style="list-style-type: none"> <li>• Teaching &amp; learning strategies for collaborative active learning</li> <li>• Learning as a pervasive and inclusive activity based on social interaction</li> <li>• Future-focused physical spaces for learning</li> <li>• Technology-enhanced learning</li> <li>• Infrastructure to support learning</li> <li>• Student demographics and needs.</li> </ul> <p>Situating nursing and associated health training in the Precinct will mean greater integration of that training with 'real life' experiences in the hospital. The gap between theory and practical training will be lessened and opportunities for the training to be timetabled in new and accessible ways are a feature of this</p>

placement.

The development and economies of scale in costs of the facilities will be enhanced by being a collaborative process with the other stakeholders. Opportunities for development of alternative sources of income will be enhanced by proximity to other health sector activities.

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For more information see: [www.cpit.ac.nz](http://www.cpit.ac.nz)

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## ***Canterbury Earthquake Recovery Authority (CERA) and Christchurch Central Development Unit (CCDU)***

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### **Overview**

CERA and the Christchurch Central Development Unit (CCDU) have a key role to play in the development and implementation of the Precinct through the CCRP. CCDU is an active member of the HPAC and plays an important role in supporting and enabling the work of the other organisations and institutions represented on the Advisory Council.

CERA will remain on the Advisory Council and will fulfil its recovery role in the following capacity:

- Manage the acquisition of land required in the Precinct
- Facilitate private sector led development
- Lead targeted marketing strategies to attract private sector investment
- Support the stakeholder organisations to leverage philanthropic interests in the Precinct
- Support the stakeholder organisations to advance their strategic directions and overcome roadblocks by utilising Crown levers available under the CER Act
- Facilitating opportunities for the Precinct to contribute to economic recovery
- Take a neutral and enabling role behind the scenes to facilitate collaborations across organisations while the stakeholder organisations provide the outwards face of the Precinct.

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For more information see: [www.cera.govt.nz](http://www.cera.govt.nz) and [www.ccdi.govt.nz](http://www.ccdi.govt.nz)

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## ***Matapopore / Ngāi Tahu / Ngāi Tūāhuriri***

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### **Overview**

Matapopore is the Ngāi Tūāhuriri earthquake recovery steering group and has been working closely with the Crown, providing advice on the Central City CCRP.

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### **Role / interest in the health sector**

Matapopore have an interest in relation to improving health outcomes for Maori.

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### **Aspirations for involvement in Precinct and/or HRCOE**

Matapopore are cautiously interested in the concept of developing a research centre in the Precinct with a focus on Maori health and particularly chronic diseases which impact Maori disproportionately, such as diabetes.

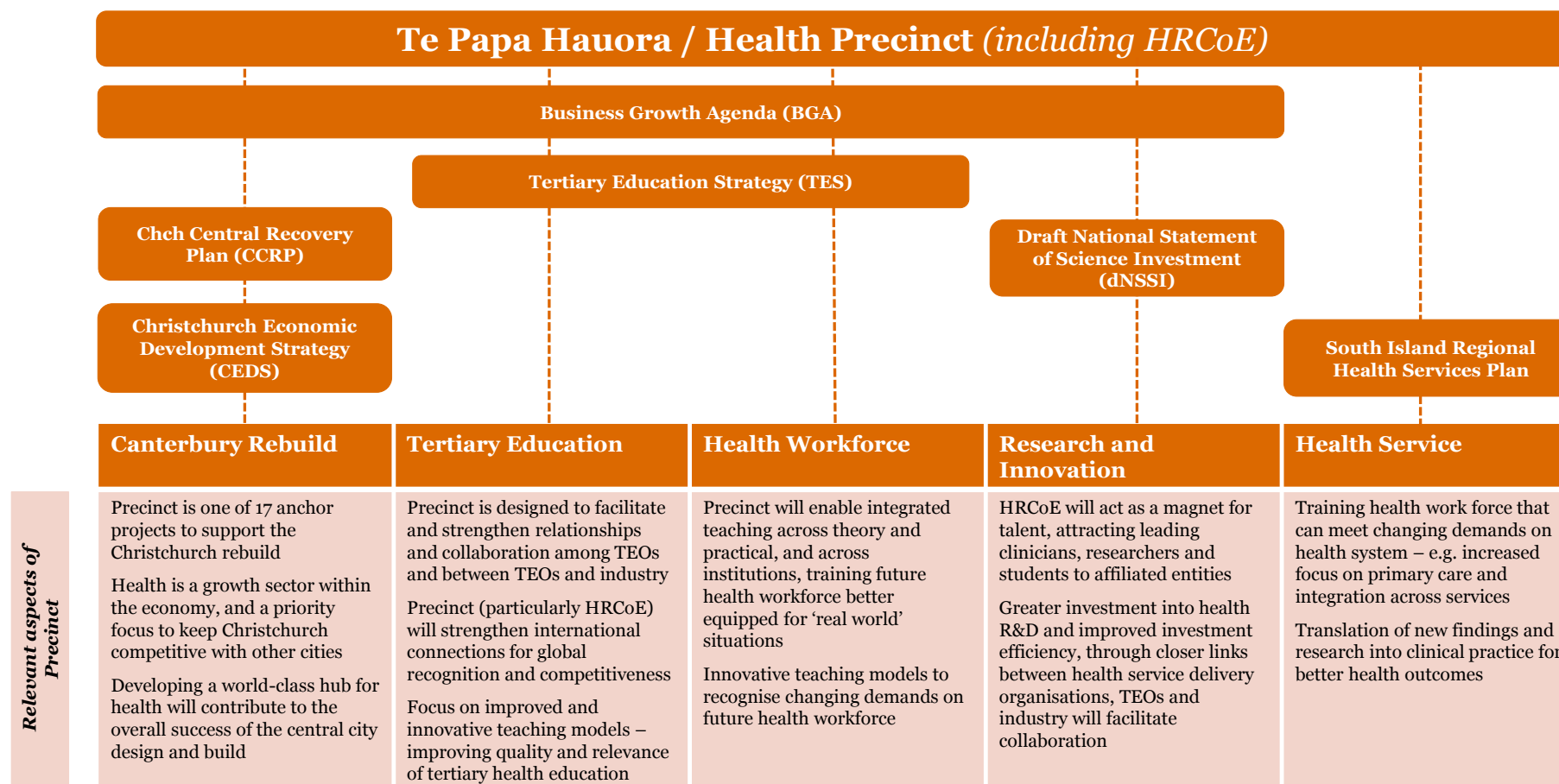
They also have a long-term interest in land ownership within the precinct.

It should be noted that it is early days in determining the appropriate form and nature of a potential role in the Precinct. Engagement will continue with mana whenua and Maori at a high level over time to align intergenerational health and education outcomes.

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# Appendix B: Alignment with policy objectives

The diagram below shows the alignment of the Precinct and HRCoE concepts with various central and local government priorities and strategies. A summary of each of the strategies is provided on the following page.



## Summary of relevant central and local government priorities and strategies

Strategy	Description
Business Growth Agenda (BGA)	<p>The BGA is the Government's top level programme of work to support New Zealand businesses to grow, in order to create jobs and improve New Zealanders' standard of living. The goal of the BGA work programme is to build a more productive and competitive economy.</p> <p>This goal will be achieved by "building business confidence, and addressing the issues that matter to firms." Specifically, the work programme focusses on six key inputs businesses need to succeed, grow and add jobs. Of the six, three inputs have particular relevance to the Precinct concept: Innovation; Building Skilled and Safe Workplaces; and Infrastructure.</p>
Tertiary Education Strategy (TES)	<p>The TES is one of the key initiatives of the BGA's <i>Building Skilled and Safe Workplaces</i> inputs. To improve the tertiary education system, the Government is focussing on four priorities: Build international relationships that contribute to improved competitiveness; Support business and innovation through development of relevant skills and research; Continue to improve the quality and relevance of tertiary education and research; and Improve outcomes for all.</p>
Christchurch Central Recovery Plan (CCRP)	<p>Rebuilding Christchurch is one of the Government's four key priorities, and the CCRP is the blueprint and long-term vision for this transformation. With a focus on creating a framework for investment and building a world class city, the CCRP "gives certainty to business based on the combined infrastructure commitment of the Council and Government." In order to provide assurance and clarity to investors and Christchurch residents alike, the CCRP is based around 17 'anchor' projects which will drive the Christchurch rebuild and economic growth. The Precinct is one of these projects.</p>
Christchurch Economic Development Strategy (CEDS)	<p>Canterbury Development Corporation (CDC) is the economic development agency for Christchurch City Council, and the CEDS provides the framework for long term growth goals and priorities for Christchurch. CEDS "brings together the views of various businesses and agencies in the region to identify ways in which to optimise our economy so that by 2031 Christchurch has a higher quality of life, better income, greater employment and is a vibrant and growing city attracting people from around the globe."</p> <p>The CEDS action plan is based around 5 GDP 'game changers' and eight further initiatives to keep the city competitive with other cities. Several of these initiatives have specific relevance to the Precinct concept: Improving productivity through innovation; Successful central city design and build; Workforce; Sector development; and Connections and Business Networks.</p>
South Island Regional Health Services Plan	<p>The South Island Regional Health Services Plan articulates the regional direction and key principles for the South Island DHBs that will inform regional service development, service configuration and infrastructure requirements over the next several years. The South Island Health Services Plan progresses the direction and key principles that continue to inform regional service development, service configuration and infrastructure requirements.</p> <p>One of the key areas of focus for the plan is to strengthen the education and training network across both the South Island and nationally. Given the changing nature of health service delivery, this focus area is built around encouraging, enhancing and sharing innovative and multi-disciplinary approaches to healthcare delivery.</p>
Draft National Statement of Science Investment (dNSSI)	<p>The dNSSI sets out the Government's priorities for its investment in science and innovation. To support the ongoing development of New Zealand's economy, investment will be directed not just towards primary industries, but towards growth sectors such as ICT, health, high-value manufacturing and processed primary products, and environmental innovation.</p>

# Appendix C: Acronyms

Acronym	Refers to
A*STAR	Agency for Science, Technology and Research (Singapore)
AUT	Auckland University of Technology
CBD	Central Business District
CCDU	Christchurch Central Development Unit
CCC	Christchurch City Council
CCRP	Central City Recovery Plan
CCST	Christchurch Clinical Studies Trust
CSF	Critical Success Factor
CDHB	Canterbury District Health Board
CERA	Canterbury Earthquake Recovery Authority
CIMIT	Consortium for Integration of Medicine and Innovative Technology (Boston)
CMDT	Consortium for Medical Device Technologies
CPIT	Christchurch Polytechnic and Institute of Technology
HPAC	Health Precinct Advisory Committee
HRCOE	Health Research Centre of Excellence
HREF	Health Research and Education Facility
IP	Intellectual Property
MoH	Ministry of Health
MBIE	Ministry of Business, Innovation and Employment
MedTech CoRE	MedTech Centre of Research Excellence
NGO	Non-Government Organisation
R&D	Research and Development
SIRTH	South Island Regional Training Hub (delivered by South Island Alliance on behalf of the five South Island DHBs and funded by Health Workforce New Zealand)
TEC	Tertiary Education Commission
TEO	Tertiary Education Organisation
UO	University of Otago
UC	University of Canterbury

# Appendix D: HealthOne

HealthOne (formerly known as Shared Care Record View or eSCRV) is a secure electronic system that gathers patient health information into a single record for each person, and makes the record available to health professionals involved in that patient's care.

The concept was not a result of the 2011 earthquake – CDHB had already been considering the development of an electronic system to share patient records – but the earthquake accelerated the system's development.

Before HealthOne, healthcare providers collected and managed their own patient records, which increased the incidence of duplication, discrepancies and clinical risk. Although some information was transferred between services, few – if any – providers had a complete picture of a patient's history.

Under HealthOne, health professionals can access a patient's record securely at the point of care, making it quicker and easier for health professionals to access the information they need. The system:

- provides a faster and more effective way for clinicians to access important information
- allows community and hospital health professionals, pharmacies, general practitioners, laboratories and nursing services to share information
- displays essential patient information and diagnostic test results (for example, details about allergies or chronic conditions, x-rays and blood tests)
- prevents duplication of diagnostic tests, which has significant benefits in terms of cost savings and cutting time wastage for both patient and provider
- increases capability for clinicians to deliver services in a non-hospital setting
- improves patient safety and reduces clinical risk
- supports a whole-of-system approach to health and wellbeing.

All health information stored on eSCRV is confidential, with a number of protections embedded in the system to ensure privacy of patient information and security of users. eSCRV may only be used by healthcare providers for the treatment of patients in their care and each clinician can only see information relevant to their role. The system covers the entire patient population, although patients are also able to opt out and withhold their information if they choose not to participate.

- The shared record system is an initiative of CDHB, in partnership with Pegasus Health, the Canterbury Community Pharmacy Group, Nurse Maude and healthcare software development company Orion Health. The initiative is overseen by a clinically-led governance group representing the major clinical groups in the Canterbury health system.
- The system cost around NZ\$1 million to develop (the CDHB's total operating budget is approximately \$1.4 billion per annum). Its potential benefits are significant; its costs offset by it being substantially more cost effective over time.
- Clinicians have described HealthOne as the best thing since the invention of the stethoscope. Other clinicians have said HealthOne has made a huge difference in their management of patients and saves significant time by making calls through to the hospital unnecessary. The system has proved so successful it will be rolled out to all other DHBs in the South Island.

## References:

State Services Commission. August 2012. *Christchurch Innovations Case Study 4: Shared Care Record View*. Wellington: State Services Commission.

Ministry of Health. 2013. *Sharing Health Information: Toward better, safer care*. Wellington: Ministry of Health.

[www.healthone.org.nz](http://www.healthone.org.nz)

[www.cdhb.health.nz](http://www.cdhb.health.nz)



# Appendix E: Interviews

As part of developing this Programme Business Case, interviews were held with the following individuals and organisations:

Individual and Position	Organisation
Chris Doak	Development Director – Anchor Projects, Christchurch Central Development Unit, CERA <sup>49</sup>
Dr Gavin Clarke	Director Research and Enterprise, Otago Innovation Ltd
Prof Peter Crampton	Pro-Vice Chancellor Health Sciences, UO
Prof Harlene Hayne	Vice Chancellor, UO
Prof Richard Blaikie	Deputy Vice Chancellor, Research and Enterprise, UO
John Patrick	Chief Operating Officer, UO
Paul Morrison	General Manager, ENZTEC
Asst Prof Anthony Butler	Chair, HRCOE Project Working Group UO UC MARS Bioimaging Ltd
Dr Ross Keenan	Director of Research, Pacific Radiology Group
Prof Gail Gillon	Pro-Vice Chancellor Education, Health and Human Development, UC
Kay Giles	Chief Executive, Christchurch Polytechnic Institute of Technology
Prof Peter Joyce	Dean, UO, Christchurch
Stella Ward	Executive Director Allied Health, CDHB
Kate Russell	Chief Executive, Canterbury Medical Research Foundation
Mandy Forster, Stephen Atkins, Tim O'Meara, David Dembo	GE Healthcare
Ingrid van Elst	MBIE
Gavin Hall	Treasury
Te Maire Tau	Matapopore
Andy Matheson	IGNESCO Limited, commercial advisor

<sup>49</sup> Further input from CERA was obtained through workshops (see below)

Several workshops were also held. The dates and participants of these are set out below:

Workshop / Purpose	Date and Venue	Participants
Initial Business Case Workshop	24 June 2015, Christchurch	Dr Ian Town, Health Precinct Advisory Council Emma Hodgkin, Health Precinct Advisory Council Dr Helen Lunt, UO Christchurch and CDHB via Innovations Dr Michael MacAskill, NZ Brain Research Institute Nigel Anderson, UO Christchurch and MARS bioimaging David Grimmett, UO Dr Wendy Lawson, UC Cathy Andrew, CPIT Greg Hamilton, CDHB Dr Geoff Shaw, CDHB Andrew Priest, commercial advisor Adam Naiman, CERA Gareth Stiven (Business Case team) Dr Damien Angus (Business Case team)
Investment Logic Mapping (ILM) Workshop	11 August 2015, Christchurch	Stephen Davies-Howard (facilitator) Dr Ian Town, Health Precinct Advisory Council Emma Hodgkin, Health Precinct Advisory Council Asst Prof Anthony Butler, UO, UC, CDHB Dr Tim Woodfield, UO, UC Dr Michael MacAskill, NZ Brain Research Institute David Grimmett, Otago Innovation Limited Dr Geoff Shaw, CDHB Dr Bruce Davey, ARANZ Medical Dr Chris Wynne, Christchurch Clinical Studies Trust Adam Naiman, CERA Bridget Woodham, CERA Gareth Stiven (Business Case team) Dr Damien Angus (Business Case team) Jemma Adams (Business Case team)
HRCoE Options Workshop	14 September 2015, Christchurch	Ian Town, Health Precinct Advisory Council Emma Hodgkin, Health Precinct Advisory Council Anthony Butler, UO, UC, CDHB David Grimmett, Otago Innovation Limited Dr Bruce Davey, ARANZ Medical Dr Michael MacAskill, NZ Brain Research Institute Sheila McBreen-Kerr, CPIT Dr Mark Smith, CDHB Kate Russell, Canterbury Medical Research Foundation Dr Geoff Shaw, CDHB Dr Maggie Meeks, UO Bridget Woodham, CERA Damien Angus (Business Case team) Gareth Stiven (Business Case team) Jemma Adams (Business Case team)

# References

The following documents were reviewed as part of the development of this Business Case:

## *Health Precinct and HRCoE Strategic Documents*

- Health Precinct Advisory Council Terms of Reference
- Health Precinct Advisory Council Collaboration Agreement
- Health Precinct Advisory Council Strategic Plan 2015-2020 (condensed and full versions)
- Health Precinct Investment Gaps and Opportunities paper
- Health Research Centre of Excellence Project Working Group Terms of Reference
- Health Research Centre of Excellence – Report of Workshop held September 2014
- Health Research Centre of Excellence – Report of 2014 Study Tour to Singapore
- Health Research Centre of Excellence Feasibility Study
- Health Precinct Master Planning Advice
- Health Precinct Information and Updates on Christchurch Central Development Unit website, [www.ccdtu.govt.nz](http://www.ccdtu.govt.nz)

## *Relevant central and local government reports and plans*

- Christchurch Central Recovery Plan (CCRP)
- An Accessible City: Transport Chapter Addendum to Christchurch Central Recovery Plan
- Draft Christchurch Central Implementation Plan: Programme Business Case
- Briefing to the Incoming Minister of Health (Ministry of Health), 2014
- Briefing to the Incoming Minister of Health (Treasury), 2014
- Briefing to the Incoming Minister of Tertiary Education, 2014
- Briefing to the Incoming Minister of Science and Innovation, 2014
- Tertiary Education Strategy

## *Reports and plans of partner organisations*

- CDHB Annual Plan 2014/2015
- UO Annual Report 2014
- UC Annual Report 2014
- UC 2015 Plan
- UC Futures Report
- CPIT Annual Report 2014
- CDC Christchurch Economic Development Strategy.

References for case studies and other specific points within the Business Case are included as footnotes.