Gold Coast Emerging Biomedical Industry -Forecasting the Industry's Growth

# **STUDY + ACTION PLAN** November 2023

Delivered in partnership by



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# Acronyms

ABS	Australian Bureau of Statistics
ADaPT	Advanced Design and Prototyping Technologies Institute
ANZSIC	The Australian and New Zealand Standard Industrial Classification
ARC	Australian Research Council
CTU	Clinical Trial Unit
DSDILGP	Department of State Development, Infrastructure, Local Government
	and Planning
ESG	Environmental, Social and Governance
GCHKP	Gold Coast Health & Knowledge Precinct
GCore	Griffith Centre of Rehabilitation and Biomedical Engineering
GCUH	Gold Coast University Hospital
GMP	Good Manufacturing Practice
GU	Griffith University
lfG	Griffith University Institute for Glycomics
MHIQ	Menzies Health Institute Queensland
MRFF	Medical Research Future Fund
MTP	Medical Technology, Biotechnology and Pharmaceutical
NHMRC	National Health & Medical Research Council
PhD	Doctor of Philosophy
R&D	Research and Development
SCU	Southern Cross University
TGA	Therapeutic Goods Administration

What is the biomedical sector?

Biomedicine is a field of study and research that explores the biological factors of health conditions and associated treatments. Queensland Government

Medical technology, biotechnology and pharmaceuticals (MTP) sector. MTP Connect

For the purpose of this study, the Gold Coast biomedical industry is defined as including related fields of study or business activity such as research, education, clinical trials, start-ups, emerging industries, SME's and multinational biomedical companies.



# - Study Overview Stage 1

# **1.0 EXECUTIVE SUMMARY**

The Gold Coast's biomedical industry has experienced remarkable growth since its inception just two decades ago. The city has evolved into a vibrant location for biomedical innovation, startups, emerging industries, forward-thinking SMEs, and a top-ten global pharmaceutical company. This rapid growth trajectory has set the Gold Coast on a path to become a leader in Australia, and globally, in specialist fields of biomedicine.

This report quantifies the value of the Gold Coast's biomedical industry today and provides recommendations that will help to continue to deliver its growth into the next decade.

#### **Economic Impact**

The Gold Coast biomedical sector is an evolving and vital component of the future of the Gold Coast economy and central to State and City of Gold Coast strategies to diversify the economy. The key features are:

- Employment growth in the Gold Coast biomedical sector from 2016 to 2021 was estimated to be nearly double the employment growth rate for the total Gold Coast economy;
- The industry has high value jobs mainly in education, research and development, health, manufacturing and distribution and is expected to double in the next decade;
- Expected future annual employment growth of 7%, which is more than double the rate of growth that is expected for total Gold Coast employment;
- Expected future annual economic growth of 7%, which is double the rate of growth that is expected for the total Gold Coast economy;
- The current level of employment has a direct value-add effect of nearly \$300m annually to the Gold Coast economy, and a total effect of \$592m annually;
- The direct and flow-on economic impacts are also expected to double; and
- Direct capital investment of \$270m in buildings (excluding fit out and equipment) has been invested to reach the current industry status and a further \$381m is expected in the next decade.

Gold Coast biomedical sector expected to grow twice as fast as the total economy



THE SALE

Sector currently directly contributes \$300M annually and a total effect of \$592M - expected to double in next decade





# **1.0 EXECUTIVE SUMMARY**

#### **Key findings**

The following key findings were established:

- The Gold Coast biomedical sector has grown rapidly over the last two decades and is forecast to continue growing faster than the total economy;
- There is significant capability in early research and late clinical development with growing capability in pre-clinical development, early clinical development and production;
- Growing capability in pre-clinical development would help build a local translational pathway;
- The City has rapidly established strong capability and profile, with forecast growth dependent on:
  - attracting research champions with global reputation;
  - training the next generation of leaders in specialised areas of research and industry strength;
  - building new facilities aligned with a robust whole of city sector strategy;
  - fostering new partnerships;
  - attracting the best companies aligned with sector strategy; and
  - refining Gold Coast-specific policy and advocacy settings.
- Continuing development of sophisticated and strategic investment pathways for the Gold Coast will facilitate continued growth; and
- There is opportunity to grow the profile of the sector on the Gold Coast and build governance structures that have been successful in growing the events, education, tourism and cultural sectors.



Thriving innovation sector consisting of start-ups, small to medium enterprises and multinational biomedical companies

# 1.0 EXECECUTIVE SUMMARY - 10 Year Action Plan

The Action Plan provides a summary of the outcomes for the Gold Coast Emerging Biomedical Industry Study. It includes a vision, outcomes and a suite of actions to bring the vision to realisation. Responsibility for delivery will include government, agencies, education providers, universities and industry.

VISION	The Gold Coast is Australia's leading regional biomedical city			
PILLARS	ACTIONS	OUTCOMES		
People	<ul> <li>Strategic attraction and retention of local and global research champions</li> <li>Develop a collaborative investment strategy involving multiple parties, including government, industry and universities with the aim of attracting the worlds best talent (research champions) in specific fields of identified research growth opportunity for the Gold Coast</li> <li>Build critical mass in targeted areas of research opportunity through sector specific curriculum, Work Integrated Learning and Industry PhD's</li> <li>Industry sponsored PhD's programs are adopted to retain and attract talent</li> </ul>	<ul> <li>Recognition as a world-leader in specialist fields of biomedicine through a targeted research champion attention strategy to build focused critical mass</li> <li>The next generation of global leaders of biomedicine through education, training and industry engagement</li> </ul>		
Place	<ul> <li>Develop a robust multi-party strategy and continue investing in physical and digital infrastructure in identified areas of industry and research strength</li> <li>Expansion of biomedical research facilities to enable continued attraction of highly-skilled personnel, build capacity in identified areas of research opportunity and to accelerate technology pipeline development</li> <li>Implement incubator laboratories (such as Jlabs/CSL) and shared infrastructure to foster startups and drive innovation</li> <li>Facilitate prototype device capability to support biomedical and advanced manufacturing (examples include the Advanced Design and Prototyping Technologies Institute facility)</li> <li>Enable a co-located clean manufacturing location adjacent to the GCHKP</li> <li>Deliver nationally significant medical and surgical training facilities (virtual and in-person) to catalyse a specialised industry cluster</li> <li>Deliver a multi-organizational and multi-level government strategy to attract the next major players from around the world to deliver a truly</li> </ul>	<ul> <li>Unrestricted growth opportunities in identified areas of industry and research strength through world class facilities</li> <li>Our facilities are accessible and tailored to meet the evolving growth and development requirements of emerging SME's</li> <li>We have the infrastructure (built form and digital) required to accelerate the continued growth of the sector</li> <li>Our facilities complement those of other precincts in Queensland and throughout Australia</li> <li>We are a preferred location for world-leading biotechnology and</li> </ul>		
i u u u u u u u	<ul> <li>Deriver a mater organizational and materies government solution in the world to deriver a dary unique biomedical hub within a world-best lifestyle environment</li> <li>A whole of city biomedical industry development, advocacy and investment attraction strategy</li> <li>Increasing capability workshops and events designed to foster networking opportunities</li> <li>Industry specific web-based capability guide of Gold Coast biomedical resources/companies</li> <li>Attract and host international and national biotech conferences</li> <li>Develop advanced and strategic funding alternatives for the biomedical sector</li> <li>Investigate the potential for more strategic TGA engagement</li> <li>Expansion of the GCHKP Office capability – facilitation, project support and concierge service</li> </ul>	<ul> <li>pharmaceutical companies, and biomedical service providers as we become a leading biomedical hub in Australia</li> <li>Through fostering collaboration, we aim to amplify our collective impact, contributing to the growth of the sector and earning global recognition.</li> <li>The citywide economic strategy highlights the value of the biomedical sector as a key industry</li> </ul>		
Policy	<ul> <li>Establish a City-wide industry and research opportunity strategy to position the Gold Coast as a global leader in specialist areas of biomedicine</li> <li>Define the advocacy approach to support the growth of the Gold Coast biomedical sector</li> <li>Provide a detailed overview of specific support pathways designed to facilitate the growth of exports and the development of robust supply chains</li> <li>Development of a Gold Coast biomedical reference group</li> <li>Cultivating strategic relationships to enhance the City's standing with the Federal Government and secure increased allocations for research funding</li> <li>Exploring the possibility of initiating a pilot project for place based economic development, offering incentives to support innovation and enhance sovereign capability growth</li> <li>Dedicated approach to providing anonymised, clean data for predictive analysis (Health Data Pilot Project)</li> <li>GCHKP wide standardised agreements</li> </ul>	<ul> <li>The Gold Coast has a strategic approach to developing the biomedical sector through pursuit of identified key areas of industry growth and research opportunities supported by a robust investment strategy</li> <li>The Gold Coast strategically positions people of standing and influence to grow the sector locally, nationally and internationally</li> </ul>		

# 2.0 INTRODUCTION

The Gold Coast Emerging Biomedical Industry - Measuring the industry's projected growth study (the study) was commissioned through a partnership between Regional Development Australia Gold Coast, the Department of State Development, Infrastructure, Local Government and Planning, City of Gold Coast and the Gold Coast Health and Knowledge Precinct.

The purpose of the study was to define the Gold Coast's current biomedical capability; project future growth and identify key actions culminating in a 10-year action plan that can be delivered to support this growth. The *Gold Coast Biomedical Industry Capability Guide* was subsequently developed to showcase the City's current capability and opportunities for future investment.

The study was developed using a framework of four pillars:



The people that make the sector possible



The places that enable and catalyse the sector





The partnerships that make the sector operate and grow

Policy

The policies and programs that enable the sector to prosper

The results of research and stakeholder engagement with key partners have led to the formulation of a vision, guiding the growth of the Gold Coast's biomedical sector for the next decade.

# Vision:

The Gold Coast is Australia's leading regional biomedical citv

# 3.0 METHODOLOGY

The intention of this study was to define the current context of the biomedical sector on the Gold Coast and project the possible growth over the next ten years. To achieve this, an assessment of the current strengths and constraints has been conducted, which enabled the identification of a series of interventions that could occur to maximise the future opportunity.

Whilst this study seeks to define the sector within the boundaries of the Gold Coast Local Government Area, the sector will only flourish through partnerships within and outside the City and this is taken into consideration also.

To inform the study the following activities have occurred:

- Documentation review;
- Global benchmark analysis;
- Stakeholder engagement;
- Economic analysis;
- Supply chain analysis;
- Opportunities mapping; and
- Strategic planning.



# 4.0 **BIOMEDICAL SECTOR OVERVIEW**

# 4.1 Current Context

#### **Global Context**

The global biomedical sector is growing rapidly and is aligned to global population growth, a rising middle class, consumer expectations and continued technological advancement. The updated MTPConnect Sector Competitiveness Plan (post COVID-19)<sup>1</sup> identifies healthy ageing, sovereign capability and precision and value-based health care as new megatrends. These complement ongoing trends associated with digital innovation, chronic disease and developing markets.

The global biomedical sector is valued at US\$2.83T<sup>2</sup> and is expected to continue growing rapidly.

#### **Australian Context**

The Australian biomedical sector is a dynamic and rapidly growing industry that plays a crucial role in advancing healthcare, medical research, and innovation. It consists of pharmaceutical companies, biotechnology firms, medical device manufacturers, research institutions, healthcare providers, and government agencies.

The Australian government provides support for biomedical research and development through funding agencies such as the National Health and Medical Research Council (NHMRC) and the Medical Research Future Fund (MRFF). These agencies offer grants to researchers and organisations working on healthcare-related projects.

Australia is a highly sought after location for clinical trials due to its high-quality healthcare system, skilled workforce, and regulatory environment. The regulatory framework of the Therapeutic Goods Administration (TGA) is also highly regarded and is responsible for regulating therapeutic goods, ensuring safety, quality, and efficacy.





MTPConnect Sector Competitiveness Plan - megatrends

#### **Queensland Context**

Queensland has a world-class biomedical ecosystem consisting of cutting-edge biomedical companies and research institutions, established and emerging health precincts, world-class universities and a highly-skilled workforce.

Queensland is home to a cluster of agile, innovative and entrepreneurial biomedical businesses. Its pre-clinical and early-phase clinical trial capabilities are underpinned by sophisticated academic health translation research infrastructure. Queensland is in an ideal position to continue to attract international companies and to build sovereign capability in areas such as the development, manufacture and delivery of vaccines. This is evidenced by the newly established \$280m Sanofi Translational Science Hub, with sites on the Gold Coast and in Brisbane, a partnership between Sanofi, Griffith University, University of Queensland and the Queensland State Government.

#### **Gold Coast Context**

Since 2000, the Gold Coast biomedical sector has continued to evolve to the significant capability currently available. Investment in the sector continues to grow with over \$5B invested in the Gold Coast Health and Knowledge Precinct (GCHKP), Asia-Pacific's emerging health and knowledge hub. This is reflective of the strong private and whole-of government investment across the Gold Coast.

The GCHKP hosts a range of public and private hospitals, clinical trial units, universities, biomedical organisations and startup organisations driving the sector's local growth. The Gold Coast University Hospital is one of Australia's largest teaching hospitals, with the busiest emergency department in the country, providing comprehensive tertiary care and more than 750 beds (72 additional by 2024). It was named in Newsweek's 2023 World's Best Smart Hospitals - 218 in the world and seventh in Australia.

The Gold Coast hosted the 2018 Commonwealth Games and will host events for the 2032 Olympic and Paralympic Games. Events like these grow the profile of the region and in the lead up to 2032, the opportunity to engage in trade and investment activities should be recognised.

The City's population is forecast to grow from nearly 700,000 to one million people in the next two decades, fueled by domestic and international migration.



Existing Gold Coast Biomedical Capability

#### **Relevant Global Benchmarks**

Three global benchmarks were reviewed to identify Gold Coast opportunities, interventions and investment that could inform the way forward for the Gold Coast. These three benchmarks were Boston (USA), San Diego (USA) and Melbourne (Australia). All have strong biomedical sectors that have achieved their success in different ways.

#### **Boston, USA**

Boston, particularly the area known as the "Biotech Hub" or "Biotech Alley," is one of the global leaders in the biomedical sector. The city is home to several prestigious universities and research institutions, such as Harvard University, MIT, and the Dana-Farber Cancer Institute. Boston has a high concentration of biomedical companies, pharmaceutical firms, medical device manufacturers, and healthcare research facilities.

#### San Diego, USA

San Diego is known for its thriving biomedical sector, often referred to as "Biotech Beach." The region has a concentration of world-class research institutions, biotech companies, and a strong focus on life sciences. The University of California, San Diego (UCSD), and the Salk Institute for Biological Studies are prominent research institutions in the area. San Diego benefits from a favorable climate, a well-educated workforce, and collaboration between academia, industry, and the government.

#### Melbourne, Australia

Melbourne has a well established biomedical sector and is a major player in the Asia-Pacific region. The city has a strong emphasis on medical research, with institutions like the Walter and Eliza Hall Institute of Medical Research and the Murdoch Children's Research Institute. The region benefits from a supportive government, a skilled workforce, and collaborations between academia, industry, and healthcare organisations.

Each of these cities has its unique strengths and areas of expertise within the biomedical sector and there are opportunities for Gold Coast consideration as described in the table at right.

Benchmark City	Implications for the Gold Coast	
Boston, USA	<ul> <li>Significant talent base due to multiple education institutions</li> <li>Strategic clustering of organisations</li> <li>Prominent health institutions</li> <li>Focus on partnering talent and Industry</li> <li>Globally recognised biomedical companies</li> <li>Significant life sciences employment ratio in broader economy</li> </ul>	
San Diego, USA	<ul> <li>Co-located research institutions</li> <li>Relatively new sector ecosystem (1950's)</li> <li>Lifestyle and amenity</li> <li>Innovation focus</li> <li>Supportive ecosystem (legal, accounting etc)</li> <li>Early champions for the region</li> <li>Supportive planning legislation</li> <li>Advocacy group "Biocom California"</li> </ul>	
Melbourne, Australia	<ul> <li>Significant government funding support</li> <li>Large independent medical research institutions</li> <li>Clustered health and research</li> <li>Innovation hubs - workstations and laboratories - Melbourne Connect &amp; Bio Innovation Lab</li> </ul>	

# 4.2 Environmental, Social and Governance (ESG)

#### Trends

ESG is an important consideration for the biomedical sector. The sector has traditionally focused on social outcomes as it seeks to deliver improved health outcomes, however environmental and governance issues are increasingly informing decision making<sup>3.</sup>

This is leading to increased efforts to reduce carbon emissions, improve waste management, source ethically and enable health care access for all. From a governance perspective there is a continued push for transparency, data privacy and to ensure regulatory compliance<sup>4</sup>.

The adoption of ESG opportunities includes adoption of telemedicine and digital health, embracing diversity (in the workplace and service delivery), impact investing in aligned organisations and implementing circular economy practices<sup>3</sup>.

The need to incorporate improved ESG practices into businesses is being driven by investors, regulators, markets and supply chains, employee, policy and political expectations<sup>56</sup>.

#### **Opportunities**

As an emerging sector, the corporate and community expectation that ESG be incorporated into biomedical sector practice is an opportunity for the Gold Coast. An emerging sector is more agile and able to incorporate best practice technologies and operations into its approach than larger, legacy institutions and cultures.

Incorporating ESG into all aspects of the biomedical supply chain and messaging for the Gold Coast biomedical sector should be considered. Specific opportunities include:

- Supply chain transparency and localisation where possible;
- Reduced single use products, circular economy and waste reduction;
- ESG Key Performance Indicator's and reporting;
- Universal health coverage (access to medical technologies);
- Workforce diversity;
- Trust and goodwill in delivering beneficial treatments; and
- Reduction in animal involvement in preclinical research.

3https://www.pwc.com/us/en/industries/health-industries/library/esg-health-industry.html 4https://www2.deloitte.com/us/en/pages/audit/articles/esg-survey/life-sciences-healthcare-companies-sustainability-reporting.html 5https://www.ey.com/en\_us/life-sciences/how-esg-measures-give-medtechs-a-competitive-edge 6https://www.aon.com/insights/articles/2022/industry-focus-esg-risks-opportunities-can-vary



# 4.3 Value Chain

The development of this study has identified five key stages in the biomedical sector value chain prior to mass distribution to pharmacies, hospitals, clinics and ultimately patients and aligns with research conducted by the Australian Department of Health<sup>7</sup>.



#### Regulatory Approval and Manufacture

Note. The above details the traditional value chain however it is important to note that the time frame for this process for medical devices, software and digital technologies can have lower regulatory requirements and subsequently shorter timeframes along the value chain.

# 4.3 Value Chain

Whilst the value chain for the biomedical sector can be described, it is important to define the Gold Coast's value chain capability. Furthermore, where gaps exist, it is important to define the value or relevance of strategically building on strengths or developing capability where there are gaps. The following table identifies and describes the biomedical sector stages, details the current Gold Coast context and identifies the implications for this study.

VALUE CHAIN STAGE	DESCRIPTION	GOLD COAST CONTEXT	IMPLICATIONS FOR THIS STUDY
Early Research	Basic exploratory research in the laboratory to identify a potential new therapeutic agent or target.	Significant Gold Coast capability with many organisations of different scales having developed capacity over two decades. Examples include Institute for Glycomics, Menzies Health Institute Queensland and Bond University.	Early research is a strength of the Gold Coast biomedical sector. Efforts should continue to support and grow this capability.
Preclinical development	Testing in the laboratory and in animals to further understand efficacy, toxicity, and properties relevant to its use.	Growing capability on the Gold Coast especially for device testing.	Efforts to grow preclinical development should occur and be focused on innovation, including for example innovation in preclinical assay development and service provision to move away from traditional animal testing.
Early clinical development	Testing through the clinical trial process, including Phase I, and Phase IIa (pilot).	Growing capability on the Gold Coast.	Efforts to grow early clinical development (specifically phase I capability) should continue.
Late clinical development	Testing through Phase IIb (Randomised Double blinded placebo controlled) and Phase III clinical trials. Regulatory approval.	Significant (and quickly growing) Gold Coast capability with many organisations of different scales having developed capacity over two decades. Examples include the GCUH Clinical Trial Unit, Griffith Clinical Trials Unit and Tasman Oncology Research.	Late clinical development is a strength of the Gold Coast biomedical sector. Efforts should continue to support and grow this capability.
Production	Scaling up, including manufacture, marketing and sales, and post marketing surveillance (Phase IV).	Growing capability on the Gold Coast.	Efforts to grow production should occur to optimise vertical integration opportunities and be integrated into the national network and outsource where appropriate.



# Value Chain Strengths







# Growing Capability

Preclinical development





Early clinical development



Production

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# 4.4 Study Framework

Research, review of relevant policy settings and stakeholder engagement confirmed the development of the study be aligned to four pillars - people, place, partnership and policy.





#### The places that enable and catalyse the sector

- Health institutions and associated infrastructure
- Commercial office space
- Research institutions
- Universities
- Innovation and incubation hubs
- Infrastructure roads, digital, airports, rail etc

Place

Placemaking



#### The partnerships that make the sector operate and grow

- Organisational partnerships
- Contractual agreements
- Formal networks
- Peak bodies
- Personal connections
- Interstate connections
- International connections
- Translation
- Exports / Imports





#### The policies and programs that enable the sector to prosper

- Local Government policy
- State Government policy
- Federal Government policy
- Peak body policy
- Funding streams
- Tax incentives
- Sector profile and marketing
- Regulatory environment



# 4.5 People

The following describes the "people" requirements for a thriving biomedical sector - the factors for success.

The biomedical sector requires a diverse and skilled workforce to support research, development and manufacturing. The workforce in this sector typically includes researchers, scientists, clinicians, technicians, engineers, regulatory affairs professionals, healthcare practitioners, manufacturers and various support staff. The following workforce and skills requirements drive the biomedical sector and can be considered in the Gold Coast context:

#### Education and Training<sup>8</sup>

- Enhanced and expanding educational programs at universities, TAFE institutions, and other training centers to produce a skilled workforce.
- Specialised training programs tailored to the needs of the biomedical sector to ensure that graduates have the specific skills and knowledge required. <u>Collaboration and Partnerships<sup>8</sup></u>
- Collaboration between universities, research institutions, government bodies, and industry to align educational programs with industry needs.
- Partnerships between academic institutions and biomedical companies to provide internships, work placements, and research opportunities for students.

#### Champion attraction

- Strategic champion attraction programs to drive the city's biomedical sector (a multi-organization/government approach ie. City/State/Universities)
- Identifying good globally recognized champions to assist with establishing and transforming the Gold Coast biomedical industry.

#### Research and Innovation<sup>10</sup>

- Research and development to drive innovation and create a demand for highly skilled professionals in the biomedical field.
- Securing grants and incentives to encourage research and development activities that support the growth of the biomedical sector.

#### Public-Private Partnerships<sup>9</sup>

- Partnerships between the government and private sector to jointly invest in workforce development initiatives, infrastructure, and research projects.
- Leveraging private sector expertise and resources to support training programs and initiatives that enhance workforce capabilities.

#### Industry Engagement<sup>8</sup>

- Active participation of industry representatives in educational institutions to provide insights into current industry trends, skill requirements, and practical applications.
- Advisory boards comprising industry professionals to guide educational programs and curricula, ensuring alignment with industry needs.

#### Skills Recognition and Migration<sup>9</sup>

• Acknowledging the opportunity for the migration of qualified professionals and understanding current government policy. <u>Continuous Professional Development</u>?

• Encourage ongoing professional development and upskilling of the existing workforce through workshops, seminars, and training programs to keep them updated with the latest advancements in the field.

#### Diversity and Inclusion<sup>9</sup>

• Promote diversity and inclusion within the biomedical sector to harness a wide range of perspectives, talents, and experiences, ultimately enhancing innovation and problem-solving capabilities.

8https://www.pwc.com.au/health/health-matters/workforce-healthcare.html 9https://www.health.gov.au/resources/publications/national-medical-workforce-strategy-2021-2031?language=en 10MTPConnect. (2021). MTPCOnnect REDI Initiative Skills Gap Analysis Third Report. mtpconnect.org.au 11https://www.mtpconnect.org.au/images/MTPC\_Workplace\_Skills\_Report.pdf

# National Biomedical Sector Skills gaps<sup>8, 9</sup>

- Shortage of Good Manufacturing Practice (GMP) - trained staff for advanced manufacturing
- Lack of process design expertise
- Lack of a commercialisation competency/framework/resource for SMEs
- Lack of in-silico (computational) skills for drug and vaccine development
- Supply chain planning
- Regulatory process
- Big data handling and analysis
- MTP project managers
- Trained bioinformaticians in genomics

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# **Gold Coast Context - People**

# The people that make the sector possible

#### **Strengths**

- Growing population
- Attractive location
- Strong education facilities
- World class researchers and clinicians

#### **Opportunities**

- To upskill, attract and retain the following roles and skills:
  - Commercialisation
  - Data scientists
  - Clinical Trial nurses and coordinators
  - Clinical trial doctors
  - Medical monitors
  - Account Managers, Product Managers and Commercial Managers who have a biomedical background
  - Al and machine learning skills
  - Class 3 medical device expertise
  - Good Manufacturing Practice (GMP)
  - Technical laboratory training

#### **Action Plan**

- Strategic research champion attraction
- Dedicated training and curriculum
- Sponsored PHD's
- Work Integrated Learning
- Talent attraction and retention program



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# 4.6 Place

#### The following describes the "place" requirements for a thriving biomedical sector - the factors for success.

Supporting and growing the biomedical sector requires a robust and specialised network of infrastructure that can facilitate research, development, manufacturing, and dissemination of biomedical products and services. This is summarised below:

Research and Development (R&D) Centers<sup>12</sup>

- State-of-the-art laboratories equipped with advanced technologies for conducting research in areas such as drug discovery, medical device development, genomics, and biotechnology. Hospitals<sup>12</sup>
- Hospitals play a crucial role in the biomedical sector by providing clinical services, conducting medical research, and training healthcare professionals.
- Innovation Incubators<sup>12</sup>
- Facilities that provide startups and early-stage companies with resources, mentorship, and networking opportunities to accelerate their growth and development of biomedical technologies. <u>Clinical Trial Units<sup>13, 14</sup></u>
- Dedicated spaces for conducting clinical trials and studies to evaluate the safety and efficacy of new drugs, therapies, and medical devices. Manufacturing Facilities<sup>13, 14</sup>
- Advanced manufacturing plants equipped to produce pharmaceuticals, medical devices, diagnostics, and biotechnology products at scale, ensuring quality and compliance with regulatory standards. <u>Precincts<sup>13, 15</sup></u>
- Integrated precincts that host a cluster of biotech companies, research institutions, and related service providers to foster collaboration, knowledge sharing, and innovation. <u>Medical Imaging Centers<sup>12</sup></u>
- Specialised facilities housing advanced imaging equipment (e.g., MRI, CT scanners) for research and diagnostics purposes.
   <u>Biomedical Informatics and Data Centers<sup>12</sup></u>
- Infrastructure to store, analyse, and manage vast amounts of biomedical data, including electronic health records, genomics data, and clinical trial information. <u>Universities<sup>12</sup></u>
- Academic institutions and training centers that offer specialised courses and programs in biomedical sciences, bioinformatics, healthcare management, and related fields. <u>Regulatory Compliance and Quality Control Facilities<sup>18</sup></u>
- Centers responsible for ensuring compliance with regulatory standards (e.g., TGA, FDA) and maintaining high-quality standards in the biomedical sector. Biomedical Waste Management Facilities<sup>16</sup>
- Facilities to handle and dispose of biomedical waste generated during research, manufacturing, and healthcare activities in an environmentally safe and compliant manner. Biobanks and Tissue Repositories<sup>17</sup>
- Storage facilities for biological specimens, tissues, and genetic materials essential for research, drug development, and understanding diseases.

Testing Laboratories<sup>17</sup>

• Laboratories specialising in clinical diagnostics, pathology, molecular biology, and other medical testing to support healthcare and research needs.

<sup>13</sup>https://www.statedevelopment.qld.gov.au/\_\_data/assets/pdf\_file/0031/73984/biomedical-10-year-roadmap-and-action-plan-october-2022.pdf

<sup>14</sup>https://www.mtpconnect.org.au/images/2022\_MTPConnect\_SectorCompetitivenessPlan.pdf

<sup>15</sup>https://advance.qld.gov.au/sites/default/files/precincts-and-places-strategy.pdf 16https://www.csiro.au/en/research/health-medical/biomedical

<sup>16</sup>https://www.csiro.au/en/research/health-medical/biol 17https://biomedical-sciences.ug.edu.au/facilities

<sup>18</sup>https://www.tga.gov.au/safety/product-testing-and-investigations/tga-laboratories

# **Gold Coast Context - Place**

# The places that enable and catalyse the sector

#### **Strengths**

- Gold Coast Health and Knowledge Precinct
- Strong health institutions and universities
- Access to two major international airports
- Multiple clinical trials sites
- Innovation incubators
- Amenity and lifestyle
- City owned high speed fibre network

#### **Opportunities**

- Office space, dedicated hospital beds and laboratory space for growth
- Shared laboratory facilities
- Industrial land to support manufacturing that is well located and attractive to the market
- Advanced manufacturing/3D modelling and production facility
- Medical and surgical training facilities expansion

#### **Action Plan**

- Advanced manufacturing precinct in or in close proximity to the GCHKP
- Strategic facility expansion clinical trials, office space
- Increased bed capacity for clinical trial delivery
- GCHKP place making and precinct activation
- More dedicated incubator labs
- Investment into physical and digital infrastructure



# 4.7 Partnership

The following describes the "partnership" requirements for a thriving biomedical sector - the factors for success.

Partnerships play a crucial role in supporting and growing the biomedical sector by fostering collaboration, pooling resources, and leveraging expertise as detailed below.

#### Research Collaboration<sup>19</sup>

• Partnerships between research institutions, universities, and pharmaceutical companies can accelerate the pace of biomedical research. Collaboration allows researchers to combine their expertise and resources to tackle complex challenges.

#### Funding and Investment<sup>20</sup>

• Public-private partnerships and venture capital collaborations provide funding for biotech startups and research projects.

#### Clinical Trials and Drug Development<sup>21</sup>

• Collaboration between pharmaceutical companies, research institutions, and regulatory bodies is essential for conducting clinical trials and bringing new drugs to market.

#### Intellectual property<sup>22</sup>

- Partnerships between universities and industry can facilitate the transfer of innovative technologies and intellectual property from academia to the private sector. This helps commercialise research discoveries. Data Sharing and Analysis
- Collaborations that involve sharing and analyzing vast datasets, such as genomics and patient records, can lead to significant advancements in personalised medicine and drug discovery.

#### Shared facilities

• Biomedical partnerships can share expensive infrastructure and facilities, reducing costs and increasing accessibility.

#### Integrated work learning

• Partnerships between academic institutions and industry can help train the next generation of biomedical professionals by providing access to real-world experiences and expertise.

19https://www.statedevelopment.qld.gov.au/industry/critical-industry-support/biomedical 20https://healthtranslationqld.org.au/about-us/our-strategy 21https://www.australianclinicaltrials.gov.au/ 22NHMRC Research Translation Strategy 2022-2025, NHMRC



stryker

# Gold Coast Context -Partnership

RE

# The partnerships that make the sector operate and grow

#### Strengths

- Hospital and University relationships
- Gold Coast Health and Knowledge Precinct
- Proximity to Brisbane
- Clinical trials capability
- Three tiers of government sector support

#### **Opportunities**

- Increased venture capital, research grants and philanthropic funding
- Gold Coast Biomedical "front door"
- A city wide industry development strategy

#### **Action Plan**

- A whole of city advocacy, attraction and development strategy
- Formal networking and knowledge sharing
- Industry capability web based capacity guide
- Stronger regulatory partnerships
- GCHKP Office capability expansion



# 4.8 Policy

The following describes the "policy" requirements for the Gold Coast.

Biomedical sector policy for the three levels of government and peak bodies provide direction on regulation, sector development, skills and workforce, funding and commercialisation. The biomedical policy framework for Australia, Queensland and the Gold Coast is strong as described below. It is also important to note that all three levels of government offer investment incentives.

#### Australia

- <u>Regulation of Medicines and Medical Devices</u> The Therapeutic Goods Administration (TGA) is the Australian regulatory authority responsible for the regulation of therapeutic goods, including medicines and medical devices. It ensures that these products meet high-quality standards and are safe and effective.
- <u>Clinical Trials</u> Australia has well-established regulations and guidelines for conducting clinical trials. The National Health and Medical Research Council (NHMRC) provides ethical guidelines for human research and clinical trials.
- <u>Biomedical Research Funding</u> The Australian government, through agencies like the National Health and Medical Research Council (NHMRC) and the Australian Research Council (ARC), provides funding for biomedical research projects and initiatives.
- <u>Sector Development</u> MTP Connect, the independent, not-for-profit organisation developed to drive connectivity, innovation, productivity and competitiveness in Australia's medical technology, biotechnology and pharmaceuticals sector regularly reviews and updates the *Medical Technology, Biotechnology and Pharmaceuticals* Sector Competitiveness Plan.
- Tax incentive The Research and Development Tax Incentive (R&DTI) offers a tax offset for companies conducting eligible R&D activities.

#### Queensland

- Sector Development the Queensland Government's Biomedical 10-Year Roadmap and Action Plan provides clear direction regarding how to grow, support and attract biomedical enterprises to the State.
- <u>Commercialisation</u> Health Translation Queensland defines the required approach to improved translation outcomes in the Roadmap for Strengthening Health Research and Translation in Queensland
- <u>Biomedical Investment</u> Queensland Treasury Invested in Queensland program prioritises investment support through two investment schemes, the Strategic Investment Scheme and the Investment Support Scheme. Companies such as Aspen Medical Manufacturing and Stryker have benefited from these schemes. In addition, the Queensland Biomedical Business Attraction Program is a key initiative of the Queensland Biomedical 10-Year Roadmap and Action Plan. It is designed to attract interstate and international biomedical industry to access Queensland's biomedical capabilities.
- <u>Regional planning policy</u> The South East Queensland regional plan also known as ShapingSEQ, is the Queensland Government's plan to shape South East Queensland's future growth.
- <u>Precinct Strategy</u> The Queensland Innovation Precincts and Places Strategy A Place to Innovate is Queensland's ten-year strategy to release the potential from the state's innovation precincts and places.

#### **Gold Coast**

- Sector Development City of Gold Coast clearly articulates the economic development strategy for the City in the Economic Strategy 2022-2027.
- Precinct Development The GCHKP Strategic Plan 2022-27 defines the approach for continuing to attract investment to the GCHKP.
- <u>Investment attraction</u> The City of Gold Coast has an investment and business attraction program to support continued growth and new investment in the city. Incentives include cash rebates, operating expenditure reimbursement, funding for each job created and non-financial assistance packages.
- Land use planning The Gold Coast Planning Scheme guides the city's growth and development.



# Gold Coast Opportunities -Policy

# The policies and programs that enable the sector to prosper

#### Strengths

- Whole of government support for the sector
- Three tiers of government offering investment incentives
- Commonwealth and State peak bodies

#### **Opportunities**

- Clearly define the Gold Coast's contribution to the State and Federal government priorities
- Detail the role of the Gold Coast biomedical sector in relation to the rest of the Country
- Development of a Gold Coast biomedical reference group

#### **Action Plan**

- Gold Coast-wide biomedical policy setting
- · Clean, anonymised health data pilot
- Cultivating engagement with key stakeholders to secure strategic and sophisticated investment
- Pilot place based economic development

# Stage 2 - Study Outcomes

# 5.0 STAKEHOLDER ENGAGEMENT

5.1 How we engaged



# 5.2 Who we spoke to:

#### Institutions

- Gold Coast University Hospital
- Gold Coast Private Hospital
- Griffith University
  - Institute for Glycomics
  - Menzies Health Institute
  - Griffith Enterprise
- Bond University
- Southern Cross University
- Department of State Development, Local Government, Infrastructure & Planning
- Life Sciences Queensland
- Health Translation Queensland
- MTPConnect

#### **Research & Clinical Trials**

- Griffith University Clinical Trial Unit
- Gold Coast University Hospital Clinical Trial Unit
- Tasman Oncology Research
- Gold Coast Private Hospital Clinical Trial Unit

#### Sector Supporting Organisations

- COHORT Innovation Space
- Economic Development Queensland
- GCHKP Office
- Lumina Gold Coast
- My Medical Department
- Tampe Consulting
- The Gild Group
- Niecon

#### **Biomedical Organisations**

- BioAz
- BiomeCentric
- Bivacor
- DatarWe
- IntelliHQ
- Maverick Bio
- Materialise
- NeuTex & Phillips
- Nucleus Network
- Ontic Ortho
- Probiotics Australia
- Prorenata Biotech
- Research Institute for Future Health
- Sanofi
- The Skin Centre





# 5.3 What we heard

#### General

- The growth of the sector over the last two decades has been significant;
- The Gold Coast has significant capability; and
- Strategic and sophisticated investment pathways continues to grow

#### People

- Opportunity to build commercialisation knowledge and experience; and
- Talented and high-profile researchers attract other talent and research funding.

#### Place

- The Gold Coast Health and Knowledge Precinct is at a competitive advantage for reasons that include:
  - Leading university hospital co-located with university;
  - Private and public hospital in close proximity;
  - Incubator hubs;
  - Globally leading clinicians and researchers; and
  - Strongly curated leasing and built form.
- We have a thriving whole of city ecosystem
- There is opportunity to provide more land supply for manufacturing; and
- The availability of building space (offices, laboratories, bed space) is constraining organisations from natural expansion.

#### Partnership

- As organisations scale from start ups to innovative SMEs, there is the opportunity to provide more business support; and
- Demand for clinical trials significantly exceeds the Gold Coast's trial capacity.

#### Policy

- There is an opportunity to support Gold Coast technologies for longer through greater emphasis on start-ups, balanced with investment directly with domestic and international companies;
- Victoria and New South Wales remain the benchmarks with significant biomedical capability which is demonstrated in the stronger shares of competitive research funding; and
- There are ESG opportunities for the biomedical sector such as preclinical innovation, individual and community health and wellness, ethical and transparent supply chains, circular economy/resource recovery, trial recruitment diversity and more diversity in organisational leadership.

The Gold Coast biomedical sector has grown rapidly over the last two decades

#### The Gold Coast Health and Knowledge Precinct provides real competitive advantage for the Gold Coast

The clinical trials sector is strong and growing rapidly







# 6.0 ECONOMIC IMPACT ASSESSMENT

#### **Economic Impact Assessment Summary**

The Gold Coast Biomedical sector is rapidly emerging, highly valuable and a vital component of the future of the Gold Coast economy. It is central to State, Federal and City of Gold Coast strategies to diversify and growth the economy. The key features are:

- Employment growth from 2016 to 2021 was estimated to be double the rate for the total Gold Coast economy;
- The industry has high value jobs mainly in education, research and development, health, manufacturing and distribution and is expected to increase to double in the next decade;
- Expected future annual employment growth of 7%, more than double the rate of annual growth expected for total Gold Coast employment;
- Expected future annual economic growth of 7%, which is double the rate of growth that is expected for the total Gold Coast economy;
- The current level of employment has a direct value-add effect of nearly \$300m annually to the Gold Coast economy, and a total effect of \$592m annually;
- In the next decade, the direct and flow-on impacts are also expected to double; and
- Direct capital investment of \$270m in buildings (excluding fit out and equipment) has been invested to reach the current industry status and a further \$380m is expected in the next decade.



Sector currently directly contributes \$300M annually and a total annual effect of \$592M - expected to double in next decade

# 6.1 Methodology

The intention of this study was to define the current context of the biomedical sector on the Gold Coast and project the possible growth over the next ten years. To achieve this, an assessment of the current strengths and constraints has been conducted, which enabled the identification of a series of interventions that could occur to maximise the future opportunity.

Whilst this study seeks to define the sector within the boundaries of the Gold Coast Local Government Area, the sector will only flourish through partnerships within and outside the City and this is taken into consideration also.

To inform the study the following activities have occurred:

- Documentation review;
- Global benchmark analysis;
- Stakeholder engagement;
- Economic analysis;
- Supply chain analysis;
- Opportunities mapping; and
- Strategic planning.

#### Objective

A key objective of this study was to measure the sector now and to forecast future employment and economic growth.

#### Scope

Geographically, this study focuses on the City of Gold Coast local government area. Because of the need to develop a definition of the biomedical industry that is applicable at the local government or regional level, the methodology would be applicable to other studies at the sub state level.

#### **Economic impact**

The estimation of direct employment levels was the primary objective of the study with a secondary objective to estimate the direct past and future value of construction. Economic flow-on benefits to the Gold Coast economy result from the application of the direct employment and the construction to house the economic activities as determined by standard Economic Impact Models for the Gold Coast.



# 6.1 Methodology

#### Definition

For the purpose of this study, the Gold Coast biomedical industry is defined as including related fields of study or business activity such as research, education, clinical trials, start-ups, emerging industries, SME's and multinational biomedical companies.

From an economic modelling perspective, it was considered desirable that the definition of the sector aligned as closely as possible with that used by partner organisations, the Queensland Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) and the MTPConnect studies.

However, the methodologies and definitions used by DSDILGP and MTPConnect while useful at the national and state level, relied on data that was not available at the sub state level, that is for local government areas. Both DSDILGP and MTPConnect relied on ABS ANZSIC data and used ANZSIC industry classes for some components of building the total employment estimates for Australia and for Queensland, but other sources were used for the balance and again there were differences between the approach of DSDILGP and MTPConnect.

The other matter relating to definition is that the sector is rapidly evolving and additional elements are being included, for example the MTPConnect definition was recently expanded to include Digital Health including health wearables.

Where the DSDILGP and MTPConnect rely on ABS ANZSIC industry sectors, the same industry sectors, at the Level 4 classification, are used in the definition in this study. To fill the gaps that were filled by external sources by DSDILGP and MTPConnect, such as research funding or other state-wide studies, the following sources were used:

- A detailed interview with all major known biomedical operations (Universities, businesses, hospitals, etc.) that asked about current employment, percent of employment involved in the biomedical sector and expectations of future employment in 3, 5 and 10 years;
- An online survey of other businesses with biomedical operations; and
- A close assessment of other industry classes where it is known that biomedical services are undertaken directly but are not the prime purpose of the activity (such as pathology services) or businesses that provide services to the biomedical sector, but the proportion of the services to the biomedical sector is very small (such as business and legal and professional services).



# 6.2 Economic Impact

#### Background

The development of the biomedical sector in the Gold Coast has experienced remarkable growth and is an emerging component in the economic base of the city.

Growth of the biomedical sector represents a core activity that meets the broader economic objectives of National, State, Regional and Local economic development and diversification strategies. It brings together the key strategies for increased exports, increased highly paid jobs, increased national medical self-reliance and better health outcomes. It integrates with education, health, business and professional services and manufacturing. It builds on Australia's competitive advantage in key aspects of the biomedical supply chain. It also provides a significant contribution to the wealth and diversification of the Gold Coast economy.

The economic contribution is assessed against:

#### **Direct Employment**

- The current level of employment in the biomedical sector as defined in this study;
- Employment growth from 2016 to 2021 in the level 4 ANZSIC classes in which biomedical is embedded;
- The share of biomedical sector employment of the total Gold Coast City employment, compared with Queensland and national shares; an
- Expectations of biomedical sector employment 10 years into the future.

#### **Direct Construction value**

- The value of building and construction undertaken to reach the current level of employment and economic activity; and
- The value of building and construction required to reach the expected future level of employment and economic activity.

#### Employment

#### Recent growth

From 2016 to 2021, employment in the industries in which the biomedical sector is embedded grew significantly faster than total Gold Coast employment. These industries grew at an average annual rate of growth nearly double that for all Gold Coast industries, at 5.4%, compared with 3.1%.

#### Average annual employment growth Biomedical and All industries, Gold Coast City, 2016 to 2021 (%)



Source: ABS Census 2016, 2021. Definitions in this report.

#### **Employment Continued:**

#### Current

It is estimated, based on the methodology outlined previously, that there were 1,800 persons employed in the biomedical sector. This represents 0.5% of 2023 Gold Coast employment which is comparable to estimates at the State and National level.

The employment is focused in the Tertiary Education, Manufacturing, Health, Wholesale and Professional and Business Services sectors of the economy. The level of penetration of the biomedical sector in Level 4 ANZSIC sub classes varies from 100% in those sub classes included in the MPTConnect and DSDILGP definitions to less than 1% in some sub classes that provide Business and Professional Services to the biomedical sector.

Employment in the biomedical sector responds to both meeting the needs of the local population and also in attracting external funds with a view to export opportunities. These drivers exist to some degree in all sub sectors.

#### Future

All major participants in the biomedical sector (excluding those in Manufacturing and Wholesaling), were interviewed and asked to provide estimates of employment 3, 5 and 10 years into the future.

Respondents were able to provide estimates for up to 5 years into the future, but as the biomedical sector is changing and growing rapidly, 10-year expectations were challenging for some respondents. Notwithstanding the different periods, average annual rates of expected growth were calculated for the 10 year period.

The unconstrained expectations were for an average annual rate of employment growth of 11%, which compares with the expected employment annual growth for Gold Coast over the next 10 years of about 2%<sup>23</sup>. However, many of the respondents acknowledged that employment growth was dependent on constraints of capital and building space.

Taking into account the unconstrained expectations, possible capital and building space constraints, the mix of population serving and export activities and the growth trajectory for the biomedical sector, it is considered likely that average annual rates of employment growth of about 7% would not be unreasonable over the next decade. This compares with an expected annual average growth of total Gold Coast employment of 2% over the same period.

#### Expected average annual employment growth Biomedical

and All industries, Gold Coast City, 2023-2033 (%)



Source: Gold Coast City Plan

#### **Direct Construction Value**

#### Historical

Historical investment in biomedical facilities is not available. However, an approximation can be made of the past investment required to build the facilities to house the current estimated employment of 1800, based on:

- The industry composition of the employment
- Guides to the space occupied by workers in the respective industry components, such as m<sup>2</sup> per worker
- Guides to the construction cost per m<sup>2</sup> based on industry cost guides.

The costs exclude fit out and equipment which in hospitals and laboratories are often extremely high. All costs are in 2023 dollar values. It is estimated that the historical investment in buildings alone is of the order of \$270m. It is emphasised that this excludes fit out and equipment that is very specific to the uses and is often very expensive.

#### **Expected future construction**

On the basis that employment is expected to double, but that the composition is likely to change to reflect an increased proportion of economic activity in Tertiary Education, Health and Professional Services reflecting both long term trends in these sectors and the expected future trajectory of biomedical services, the overall weighted average construction cost per m<sup>2</sup> would more than double. On the basis of the assumptions in the study it is expected that to house the additional employment expected in the next decade, an additional investment of \$381m will have been required - excluding fit out and equipment.



#### Future flow-on economic benefits to Gold Coast

Future employment and future investment in building and construction will generate direct and flowon economic activity in the Gold Coast and the broader economy. The REMPLAN economic impact model has been used, applied to the 2022 update of the Gold Coast module.

#### **Employment increase**

The direct change of a doubling of jobs in the next decade and the change in composition is expected to deliver the following for the Gold Coast:

- Direct output to increase by \$618m and total output by \$1,204m;
- Direct jobs increase of 1,800 and the total jobs increase of 3,600; and
- Direct value-add to increase by \$298m with a total effect taking into account supply chain and consumption effects of \$591m.

#### **Construction required**

The direct change of an increase of \$381m in construction activity on the sector (excluding fit out and equipment) in the next decade and the change in the economic purposes for the construction activity is expected to deliver the following for the Gold Coast:

- Direct output to increase by \$625m and total output by \$1,496m;
- Direct jobs increase of 717 and the total jobs increase of 2,978; and
- Direct value-add to increase by \$145m with a total effect taking into account supply chain and consumption effects of \$494m.

There would be additional benefits to the broader Queensland and Australian economies as typically about three quarters of the economic flow-on benefits are retained within the Gold Coast and the remainder in the broader economy.

Construction investment of \$270M



- expected to more than double in next decade



Future employment growth expected at 7%, compared with 2% for the total economy

# Stage 3 - Action Plan



# 7.0 MOVING FORWARD

# 7.1 People

#### Current

The workforce required to support and deliver the biomedical sector is highly trained and specialised. As advances continue to rapidly occur, the specialisation and niche skills required grows, as does competition from other sectors for skilled staff. There is also competition from other regions and other countries for people with specialist skills and in some cases, work such as data science can be conducted remotely, meaning that people can work anywhere.

The skills shortage felt by most sectors on the Gold Coast is also experienced within the biomedical sector. Key gaps in attracting staff relate to experienced clinical trial practitioners, people with biomedical commercialisation experience and medical practitioners.

#### Future

Given the forecasted growth of the sector, attraction and retention of staff will continue to be a priority. Whilst noting the attraction of working on the Gold Coast, it is generally expected that it will be difficult to access the following skill sets: commercialisation skills; Data Scientists; Clinical Trial Nurses and Coordinators; Clinical Trial Doctors; Medical Monitors; Account Managers, Product Managers and Commercial Managers who have a biomedical background; AI and Machine Learning Specialists and people with Class 3 medical device and GMP manufacturing expertise.

Themes	Outcomes	Actions
People	<ul> <li>Consolidation of research and industry engagement highlights the following outcomes the action plan should see to achieve within the 10-year time frame:</li> <li>We are recognised as a world-leader in specialist fields of biomedicine due to our research champions and critical mass of research professionals.</li> <li>We develop the next generation of global leaders in biomedicine through education, training and industry engagement.</li> </ul>	<ul> <li>To achieve these outcomes the following actions should be taken:</li> <li>Establish a multi-party (University, State and Local Government, Industry) strategic investment strategy to recruit the world's best talent (research champions) in specific fields of identified research growth opportunity for the Gold Coast.</li> <li>Work Integrated Learning - paid involvement of students in biomedical organisations to fulfill staff requirements and develop real world skills for the student. This has the added benefits of organisational specific training and providing a pathway for students to enter the workforce. This is a model being employed by a number of Gold Coast biomedical organisations currently.</li> <li>Industry Sponsored PHD's - the Federal Government has initiated the National Industry PhD Program. The Program will support PhD candidates to undertake industry-focused research projects and develop the knowledge and skills to better translate university research into commercialisation outcomes and should be foundational in supporting PHD talent on the Gold Coast.</li> <li>Specific curriculum - support the development and delivery of university and TAFE biomedical courses related to clinical trials, research and commercialisation. Gold Coast hospital researchers are currently working with local universities to do this.</li> </ul>



# 7.2 Place

#### Current

The last two decades have delivered significant infrastructure to enable and catalyse the Gold Coast biomedical sector. This includes the facilities within the Gold Coast Health and Knowledge Precinct, Gold Coast Light Rail/high speed fibre network and the Gold Coast airport extension. These have formed the building blocks for the sector to thrive, however this review has highlighted the additional elements now required to be delivered in the future.

#### Future

Facilities and access to capital are consistently identified as the largest constraints to progress. These two elements go hand in hand, as facilities (bed space, offices, laboratories, transport infrastructure, communications infrastructure) are large investments for both government and the private sector. They also take a long time to transition from an idea to physical built form. However, it is clear that unless strategic investment is made in facilities and the places that will grow the Gold Coast biomedical sector, the ambitions of Industry as relayed in this report will prove to be challenging.

Key facility requirements include the need to enable expansions of organisations with strong track records; the provision of clinician office space; shared laboratory space for start-ups and emerging organisations; increasing opportunity for incubating innovation and unleashing opportunity for a range of sectors by investing in facilities like ADaPT.

Themes	Outcomes	Actions
Place	<ul> <li>Consolidation of research and industry engagement highlights the following outcomes the action plan should see to achieve within the 10 year time frame:</li> <li>We have unrestricted growth opportunities in identified areas of industry and research strength due to our world class facilities.</li> <li>Our facilities are accessible and tailored to meet the evolving growth and development requirements of emerging SME's</li> <li>We have facilities that complement other precincts in Queensland and across Australia.</li> </ul>	<ul> <li>To achieve these outcomes the following actions should be taken:</li> <li>Robust multi-party strategy and continued focus and investment in physical and digital infrastructure in identified areas of industry and research strength.</li> <li>Expansion of biomedical research facilities to enable continued attraction of highly-skilled personnel, build capacity in identified areas of research opportunity and to accelerate technology pipeline development.</li> <li>Prototype device capability to support biomedical and advanced manufacturing (examples include the Advanced Design and Prototyping Technologies Institute facility).</li> <li>Biomedical Manufacturing Hub - strategic land allocation or appropriate planning controls to enable manufacturing and prototyping (Good Manufacturing Processes) to be in proximity to research and commercial teams. Explore the potential for biomedical uses to be classified appropriately to foster growth under the Parklands Priority Development Area and Gold Coast Planning Scheme. This includes reviewing precincts to ensure the land use planning matches the needs of the industry.</li> <li>Shared infrastructure - development of laboratory (PCR, cell culture, bacteria culturing) and manufacturing space that can be leased by small and emerging organisations to reduce barriers to entry.</li> </ul>

# 7.3 Partnership

#### Current

Over the last decade the Gold Coast has actively sought to build relationships that would grow the biomedical sector and attract investment. This is best demonstrated by the continued growth of the clinical trials sector with trial numbers and staff growing faster than anticipated and sponsors having more trials than the City can service.

Whilst the network of people on the Gold Coast have strong relationships there is an opportunity to continue to formalise processes aimed to foster collaboration. Aside from the GCHKP brand there is an opportunity for a more city-wide marketing approach which reflects the city's capability and ambition. Access to capital is an issue for organisations of all sizes.

#### Future

Concerted efforts to drive ongoing Gold Coast and South East Queensland collaboration would be beneficial. This would also drive a "Team Gold Coast" approach to assist key stakeholders in understanding the whole of Gold Coast offering and opportunity.

The investment attraction efforts to grow locally and attract significant capability is must continue. During the window of this action plan, considerable effort should continue in attracting globally recognised –investors and projects to the GCHKP and the City generally.

Further work is required to understand how more sophisticated and strategic funding can be sourced for the Gold Coast.

Themes	Outcomes	Actions
Partnership	<ul> <li>Consolidation of research and industry engagement highlights the following outcomes the action plan should see to achieve within the 10-year time frame:</li> <li>We are a preferred location for world-leading biotechnology and pharmaceutical companies, and biomedical service providers as we become a leading biomedical hub in Australia.</li> <li>Through fostering collaboration, we aim to amplify our collective impact, contributing to the growth of the sector and earning global recognition.</li> <li>The citywide economic strategy highlights the value of the biomedical sector as a key industry.</li> </ul>	<ul> <li>To achieve these outcomes the following actions should be taken:</li> <li>Multi-organisational and multi-level Government strategy to attract the next major players from around the world to deliver a truly unique biomedical hub within a world-best lifestyle environment.</li> <li>A whole of city biomedical industry development, advocacy and investment attraction strategy.</li> <li>Increasing capability workshops and events designed to foster networking opportunities.</li> <li>Expansion of the GCHKP Capability - There are many elements that go into company location decision making - the simpler and best presented this can be the more investment will occur. The existing facilitation &amp; concierge process should be expanded to include not just investment attraction but also ongoing project support, stakeholder connection etc.</li> <li>Build the City's profile - a lot has been invested in the sector and it is a story worth telling. Efforts to host key industry conferences, events and forums like AusBiotech on the Gold Coast should be a priority.</li> <li>Catalyst organisations - the City has the building blocks in place to attract large, high-profile organisations which will drive cluster growth, attract other organisations and build reputation. This should be a priority for all levels of government.</li> <li>Strengthen the network - formalise an approach to building stakeholder networks.</li> </ul>

# 7.4 Policy

#### Current

There is a strong and relatively aligned policy framework from all levels of Government. As the Gold Coast is classified as a regional city it has access to funding opportunities relevant to this classification. Unlike other sectors in the City such as education, tourism, events and culture, the Gold Coast biomedical sector does not have a representative entity.

#### Future

The Gold Coast's role in the State and National ecosystem, is to define and share its own narrative. This could take the form of a dedicated approach to the sector which covers the entire Gold Coast - not just the GCHKP. The GCHKP may benefit from the development of precinct wide standardised agreements (legal, commercial, lease etc.) which further streamlines processes for companies seeking to invest in the Gold Coast and the GCHKP. Consideration could be given to a city-wide reference group.

Innovative SMEs in the biomedical sector are actively developing new technologies, but they face competition from imported products. There is a growing imperative to ensure that Australia establishes and sustains sovereign capabilities capable of withstanding global events while bolstering the nation's biomedical export economy. For emerging SMEs, offering economic incentives that support their growth could be a game-changer in attracting, retaining, and ultimately ensuring the success of these companies. Economic incentives and initiatives should continue to be developed to expand at all levels of government to address the specific needs of this sector. While it's not recommended to directly emulate economic zones established outside of Australia, there's merit in exploring a variety of multi-level government initiatives and incentives as a pilot program on the Gold Coast. This approach could pave the way for innovative solutions tailored to the unique requirements of the Gold Coast's biomedical industry.

The provision, management and presentation of health data is an issue for all health systems. Artificial intelligence, predictive modelling and machine learning present enormous opportunities for health outcomes in the future. A health system with a reputation for "clean" data continues to be attractive to many organisations seeking a trial site.

Themes	Outcomes	Actions
Policy	<ul> <li>Consolidation of research and industry engagement highlights the following outcomes the action plan should see to achieve within the 10-year time frame:</li> <li>The Gold Coast has a strategic approach to developing the biomedical sector on the Gold Coast through pursuit of identified key areas of industry growth and research opportunity.</li> <li>The Gold Coast strategically positions people of standing and influence to grow the sector locally, nationally and internationally.</li> </ul>	<ul> <li>To achieve these outcomes the following actions should be taken:</li> <li>Establish a City-wide industry and research opportunity strategy to position the Gold Coast as a global leader in specialist areas of biomedicine.</li> <li>Gold Coast Biomedical Strategy - consider integrating the efforts of the <i>GCHKP Strategic Plan 2022-27</i> and the <i>Economy Strategy 2022-2027</i> to consolidate the City's approach to the biomedical sector. This would include the defined approach to advocacy for the local government area.</li> <li>Research funding - Targeted Commonwealth Research Funding government relations to build the City's reputation in Canberra with the Federal Government.</li> <li>Define the advocacy approach to support the growth of the Gold Coast biomedical sector</li> <li>Health Data Pilot Project - Dedicated approach to health data through a Queensland Health pilot project which could inform other health districts.</li> <li>Precinct wide standardised agreements - one-stop-shop for all agreements in the precinct to smooth the investor pathway.</li> <li>Define specific support pathways designed to facilitate the growth of exports and the development of robust supply chains</li> <li>Development of a Gold Coast biomedical reference group</li> <li>Cultivating strategic relationships to enhance the City's standing with the Federal Government and secure increased allocations for research funding.</li> <li>Exploring the possibility of initiating a pilot project for place based economic development, offering incentives to support innovation and enhance sovereign capability growth</li> </ul>



# 8.0 ACTION PLAN

The Action Plan provides a summary of the outcomes for the Gold Coast Emerging Biomedical Industry Study. It includes a vision, outcomes and a suite of actions to bring the vision to realisation. Responsibility for delivery will include government, agencies, education providers, universities and industry.

VISION	The Gold Coast is Australia's leading regional biomedical city			
PILLARS	ACTIONS	OUTCOMES		
People	<ul> <li>Strategic attraction and retention of local and global research champions</li> <li>Develop a collaborative investment strategy involving multiple parties, including government, industry and universities with the aim of attracting the worlds best talent (research champions) in specific fields of identified research growth opportunity for the Gold Coast</li> <li>Build critical mass in targeted areas of research opportunity through sector specific curriculum, Work Integrated Learning and Industry PhD's</li> <li>Industry sponsored PhD's programs are adopted to retain and attract talent</li> </ul>	<ul> <li>Recognition as a world-leader in specialist fields of biomedicine through a targeted research champion attention strategy to build focused critical mass.</li> <li>The next generation of global leaders of biomedicine through education, training and industry engagement</li> </ul>		
Place	<ul> <li>Develop a robust multi-party strategy and continue investing in physical and digital infrastructure in identified areas of industry and research strength</li> <li>Expansion of biomedical research facilities to enable continued attraction of highly-skilled personnel, build capacity in identified areas of research opportunity and to accelerate technology pipeline development</li> <li>Implement incubator laboratories (such as Jlabs/CSL) and shared infrastructure to foster startups and drive innovation</li> <li>Facilitate prototype device capability to support biomedical and advanced manufacturing (examples include the Advanced Design and Prototyping Technologies Institute facility)</li> <li>Enable a co-located clean manufacturing location adjacent to the GCHKP</li> <li>Deliver nationally significant medical and surgical training facilities (virtual and in-person) to catalyse a specialised industry cluster</li> <li>Deliver a multi-organizational and multi-level government strategy to attract the next major players from around the world to deliver a truly unique biomedical industry development, advocacy and investment attraction strategy</li> <li>Increasing capability workshops and events designed to foster networking opportunities</li> <li>Industry specific web-based capability guide of Gold Coast biomedical resources/companies</li> <li>Attract and host international and national biotech conferences</li> <li>Develop advanced and strategic funding alternatives for the biomedical sector.</li> </ul>	<ul> <li>Unrestricted growth opportunities in identified areas of industry and research strength through world class facilities</li> <li>Our facilities are accessible and tailored to meet the evolving growth and development requirements of emerging SME's</li> <li>We have the infrastructure (built form and digital) required to accelerate the continued growth of the sector</li> <li>Our facilities complement those of other precincts in Queensland and throughout Australia</li> <li>We are a preferred location for world-leading biotechnology and pharmaceutical companies, and biomedical service providers as we become a leading biomedical hub in Australia</li> <li>Through fostering collaboration, we aim to amplify our collective impact, contributing to the growth of the sector and earning global recognition.</li> <li>The citywide economic strategy highlights the value of the biomedical sector as a key inductor.</li> </ul>		
Policy	<ul> <li>Develop advanced and strategic funding alternatives for the biomedical sector</li> <li>Investigate the potential for more strategic TGA engagement</li> <li>Expansion of the GCHKP Office capability - facilitation, project support and concierge service</li> <li>Establish a City-wide industry and research opportunity strategy to position the Gold Coast as a global leader in specialist areas of biomedicine</li> <li>Define the advocacy approach to support the growth of the Gold Coast biomedical sector</li> <li>Provide a detailed overview of specific support pathways designed to facilitate the growth of exports and the development of robust supply chains</li> <li>Development of a Gold Coast biomedical reference group</li> <li>Cultivating strategic relationships to enhance the City's standing with the Federal Government and secure increased allocations for research funding</li> <li>Exploring the possibility of initiating a pilot project for place based economic development, offering incentives to support innovation and enhance sovereign capability growth</li> <li>Dedicated approach to providing anonymised, clean data for predictive analysis (Health Data Pilot Project)</li> </ul>	<ul> <li>as a key industry</li> <li>The Gold Coast has a strategic approach to developing the biomedical sector through pursuit of identified key areas of industry growth and research opportunities supported by a robust investment strategy</li> <li>The Gold Coast strategically positions people of standing and influence to grow the sector locally, nationally and internationally</li> </ul>		
	GCHKP wide standardised agreements	42		

# **Roundtable Photos**











