

**STATEMENT OF EVIDENCE TO
THE PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS**

**CSIRO Collocation with Queensland
Government
on the
Ecosciences and Health & Food Sciences
Precincts**

Brisbane Queensland

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1.0 INTRODUCTION

1. The proposal presented in this submission to the Parliamentary Joint Committee on Public Works ("PWC") is for the construction of two new research complexes for six CSIRO Divisions including Entomology (CENTO), Food Sciences Australia (FSA), Land and Water (CLW), Marine and Atmospheric Research (CMAR), Mathematical and Information Sciences (CMIS), Sustainable Ecosystems (CSE), four National Research Flagships including Wealth from Oceans, Water for a Healthy Country, Food Futures and Climate Adaptation together with facilities for the education group CSIROSEC.
2. The proposed CSIRO facilities will be an integral part of the Knowledge Based Research and Business (KBRB) Project that will house approximately 1200 scientists from the Queensland State Government departments of Primary Industries and Fisheries, Natural Resources and Water and the Environmental Protection Agency with the CSIRO Divisions and National Research Flagships.
3. The KBRB proposes to have facilities in two locations in Brisbane. An Ecosciences Precinct at the Boggo Road Urban Village, Dutton Park will accommodate 754 State and approximately 260 CSIRO scientists and support staff, including visitors and students. A Health and Food Sciences Precinct on the Queensland Health Scientific Services (QHSS) Campus at Coopers Plains will accommodate 153 State and 37 CSIRO staff.
4. The proposed CSIRO facilities will replace existing substandard or outdated buildings as part of CSIRO's continuing program to provide high quality, modern facilities appropriate for conducting current and anticipated scientific research and development activities to meet Australia's National Research Priorities.
5. The unique opportunity to collocate with Queensland Government science agencies will generate significant strategic benefits through increased scientific interactions and project collaborations, along with savings from the sharing of equipment and other physical and human resources.
6. The total of 297 CSIRO research and support staff and visitors who will be accommodated in the CSIRO facilities are currently located at the Queensland Bioscience Precinct (QBP) with CSE, CSIRO Long Pocket Laboratories at Indooroopilly (CLW, CENTO + CSIROSEC), CSIRO Laboratories at Cannon Hill (FSA) and CSIRO Laboratories at Cleveland (CMAR).
7. The CSIRO facilities will comprise modern research laboratories, laboratory support areas, service and equipment rooms, management and administration offices, staff support areas, field operation support areas including sample processing areas, boat and field gear storage, workshops aquaculture tanks, glasshouse facilities and food manufacturing pilot plant – a majority of which will be shared amongst the participating CSIRO and State agencies.
8. The Ecosciences Precinct will also provide amenity and support facilities to be shared with the State. These facilities will include a cafe, reception, staff amenities, seminar and meeting rooms, centralised stores; wash up facilities and information technology support. CSIRO and State scientists will be co-located in laboratory and office space to optimise the potential for sharing of equipment and the exchange of ideas. This will provide economies in capital and operating costs as well as science synergies.
9. The complete proposal will include associated site and road works, official car parking, site engineering services and landscaping.

2.0 BACKGROUND

10. Science and technology and the application of knowledge underpin much of Australia's current and future prosperity. The infrastructure needs of the science and technology platform, however, are continually evolving. Firstly, facilities that were State-of-the-art 20 or 30 years ago are no longer adequate for current and particularly future needs. Secondly, the biophysical, economic, and social disciplines are increasingly realising their inter-dependence and are seeking to work more closely together. Thirdly, physically separate and competing agencies are appreciating the need to collocate and collaborate more closely in order to address pressure from Governments and the community for greater and more cost-effective returns from their investments in science and technology. Finally, it is becoming increasingly clear that the fastest progress in addressing major problems is made where a critical mass of scientists and technologists is assembled in one location.
11. This submission addresses all these issues as they apply to the work of six CSIRO Divisions and four National Research Flagships currently located in south-east Queensland by replacing old with new facilities at modest net cost.

3.0 OVERVIEW OF CSIRO

3.1 General

12. CSIRO is Australia's premier research organisation which delivers science and innovative solutions for industry, society and the environment. With an annual turnover of about \$900 million, it is one of the largest and most diverse scientific research organisations in the world.
13. Since its inception in 1926, CSIRO has played a vital role in shaping Australia and generating the nation's wealth. The organisation and its scientists have established an international reputation for excellence and achievement in basic and applied research. Its work contributes to the ongoing prosperity and sustainability of Australia's primary and secondary industries and to the creation of new technologies, products and techniques for the continuing development of our manufacturing and service-based industries
14. CSIRO's primary functions are:
 - to carry out scientific research for the purpose of assisting Australian industry, furthering the interests of the Australian community, contributing to the achievement of national objectives or the performance of national and international responsibilities;
 - to encourage or facilitate the application or utilisation of the results of scientific research; and
 - to carry out services and make available facilities, in relation to science.
15. CSIRO is also involved in over 740 international research activities, working with leading scientific organisations in more than 80 countries with partners and customers ranging from foreign governments to small companies, large multi-nationals, and international foundations.
16. CSIRO has a total staff of about 6500, approximately 55% of whom are research scientists. Collectively they provide expertise in almost every major scientific discipline allowing the organisation to draw on a large and diverse pool of individual skills to meet almost any scientific or technological challenge.
17. In order to fulfil its role, CSIRO consults and collaborates extensively with industry and maintains close and mutually beneficial relationships with universities and Research and Development (R&D) agencies of the various State governments.

3.2 Organisational Structure

18. CSIRO has been structured to respond to Australia's needs and to ensure that its research effort and scientific resources are focused on areas of national priority. Frequent and extensive interaction with government, industry, and the general community assist it in identifying and prioritising R&D opportunities.
19. CSIRO is organised into 17 Divisions ranging across the full science spectrum from Industrial Physics through Minerals and Energy Technology to Plant Industry to Marine and Atmospheric Research to Entomology. Two Divisions, Ensis and Food Science Australia, are joint ventures with other agencies. Food Science Australia (FSA), a joint venture between CSIRO and the Victorian Government is included within the proposed Health and Food Sciences Precinct.
20. CSIRO's Divisions are seen as the "homes" of the disciplinary capabilities and skills that are available for addressing major problems as required. The delivery of CSIRO's outcomes and impacts are, however, organised through Themes that focus on problems or issues of high national or scientific importance.
21. CSIRO is currently addressing approximately 100 themes, with Divisions each supplying staff with appropriate disciplines and skills.
22. A number of themes are focused on Australia's most significant challenges and opportunities are delivered as part of the National Flagship Program. The current National Research Flagships are Energy Transformed, Food Futures, Light Metals, Preventative Health, Water for a Healthy Country, Wealth from Oceans, Climate Adaptation, Niche Manufacturing and Minerals Down Under.
23. CSIRO is managed by an Executive Team led by the Chief Executive Officer that is responsible for the development and implementation of organisational strategy. The Chief Executive is a member of the 10-person CSIRO Board and is accountable to the Minister for Science, Education and Training for the organisation's performance.

4.0 THE PROPOSAL

4.1 Science Challenges – The Key Issues

24. The future of northern Australia, the Asia-Pacific region, and indeed the whole world is being reshaped by profound forces such as new enabling technologies, trade reform, natural resource quality and security, climate change and variability, biosecurity, poverty alleviation, and cultural and religious disharmony. Capitalising on systems thinking, innovation, the use of new technologies and the development of entrepreneurial capacity will allow CSIRO and its partners to meet these challenges and develop totally new industries, new employment opportunities and new capabilities for managing ecosystems and improving our health. These will increasingly shape the Australian economy and determine our future standard of living.
25. Dealing with these challenging forces and their interactions will require CSIRO to marshal all of its knowledge and skills and to create the environments where innovation can flourish. This proposal will assemble the critical mass of expertise required for the tasks shown below and house them in modern multi-use and shared facilities.
26. A number of key challenges that are already impacting on Australia's growth potential are emerging; they will be the main research thrusts for the Precincts outlined in this proposal. These can be classified into five broad areas – sustainable rural industries, healthy coastal and marine ecosystems, climate change and climate variability, biosecurity, and food and health. Aspects of all of these are prominent in the Australian Government's National Research Priorities.

- *Sustainable industries.* Agricultural and marine industries are faced with the ongoing challenge to achieve economic, ecological and social sustainability. National and international marketplaces are becoming increasingly competitive as consumers demand ever-safer products derived from sustainable production systems. Water security and water allocation issues are intensifying as the demand for environmental flows and alternative use of our river systems is recognised and addressed. In coastal regions, competition with urban communities for land and water resources is increasing rapidly. In the Great Barrier Reef region, the conflict between agricultural and marine and adjacent users of the resource base (tourism, conservation, fisheries) is intensifying. In the dryland cropping and pastoral regions, producers and governments are grappling with a wide range of other issues such as soil erosion, dryland salinity, tree clearing, land tenure, and the development of multiple use systems. Similarly, in the mining regions, industry and the community faced significant challenges in ensuring long-term environmental and social viability
 - *Health of Coastal and Marine Ecosystems.* The rapid growth of urban areas in southeast Queensland is pointing to the development of a “200 km city” from Noosa to the Tweed. This will increasingly bring a range of associated challenges such as burgeoning demand for water, energy and transport, adverse impacts on coastal and marine ecosystems, declining economies of traditional rural industries (e.g. the sugar, horticultural and fisheries industries), and a general deterioration of the quality of life for people living in the region.
 - *Climate Change and Climate variability.* It is becoming increasingly clear that climate change and climate variability will have serious impacts on virtually every facet of our lives. While the global and continental effects of climate change have been known for some time, its impacts on particular regions, industries, and ecosystems are only now beginning to be understood. As it is likely that the global community will take 50 years or more to effectively address the causes of climate change, a range of innovative responses and adaptations will have to be developed to cope with the expected changes and, where possible, to convert adversity into opportunity.
 - *Biosecurity.* Biosecurity has long been an important issue for the plant, animal and marine-based industries of northern Australia. Increasingly, invasive species have become a threat to biodiversity conservation and natural ecosystems as well. In the past the threats have been mainly from accidental introductions, or from introductions for use in one industry escaping to threaten another industry or ecosystem. More recently, however, the risks from deliberate introductions of harmful organisms have increased sharply. Dealing with these traditional and new threats will require much better tools for determining the introduction route, assessing the potential for damage, and prioritising the various threats. It will also require contingency plans for the high priority threats, involving more sophisticated responses, to be developed and tested.
 - *Food and Health.* There is an increasing demand from domestic and international consumers for higher standards of food safety, new high-quality and differentiated products (particularly from tropical plant and animal species), and new processes in the food and related human health arena. This will require a concerted and coordinated effort from the current R&D providers if the new opportunities (e.g. in the globally expanding functional foods and ingredients market) are to be capitalised on and the public health benefits achieved.
27. Currently, the science and technology capability in southeast Queensland to undertake the relevant R&D to address these daunting challenges is fragmented and operating with aged and inappropriate infrastructure. This proposal brings together the critical mass of expertise required and houses them in modern, safe, efficient, multi-use and shared facilities.

4.2 Need for the Facilities

28. The proposal has four main drivers:

- physical obsolescence, inadequacy and geographical separation of current research facilities;
 - scattered location of CSIRO and Queensland government agencies involved in closely related activities;
 - compliance with the Government's objectives to rationalise, consolidate and collocate with universities and other research agencies; and
 - continuation of CSIRO's strategy of rationalising and consolidating its research activities at major centres.
29. Facilities at three CSIRO Laboratories which would be vacated (Food Science Australia Laboratory at Cannon Hill, CSIRO's Long Pocket Laboratories at Indooroopilly and Marine Laboratory at Cleveland) are outdated, inefficient, near the end of their useful life, and located on valuable sites. Facilities at the fourth site (the QBP) where CSE is currently accommodated will be utilised by other CSIRO Divisions and sub-leased to Queensland Government agencies whose activities are complementary with the remaining CSIRO and University occupants of QBP.

4.3 Options Considered

30. In developing the KBRB Proposal consideration was given to four options:

Option A: Do Nothing.

31. The scientific research activities performed on the three existing sites of Indooroopilly, Cannon Hill and Cleveland have a necessity to be continued on a long term basis. However, all of the existing facilities are in the order of 40 years old and will require significant refurbishment and modification within 5-6 years to meet the basic scientific and safety requirements of the Organisation. Normal maintenance will not be sufficient to bring the facilities to an acceptable standard with the facilities at risk of becoming unsafe and redundant.
32. The sites are spread across the Brisbane metropolitan area and buildings are fragmented across the individual sites thereby precluding the opportunity to realise benefits from critical mass created through collocation of CSIRO Divisions and Collaborator organisations.

Option B: Remain in situ, Affect Major Refurbishments over 5-6 years.

33. The issue of ageing facilities identified in Option A would theoretically be addressed by a major refurbishment of the existing facilities at Indooroopilly, Cannon Hill and Cleveland. The refurbishment of existing buildings and site infrastructure on each site would need to incorporate significant modifications to existing buildings and construction of additional facilities to accommodate new research activities and staff currently housed in temporary transportable buildings. This would provide updated scientific facilities but the required functionality and benefits from collocation and consolidation would not be achieved through reuse of refurbished or converted existing buildings.
34. The Indooroopilly, Canon Hill and Cleveland sites have high underlying value which CSIRO cannot utilise while occupied. By remaining on the existing sites CSIRO will be required to invest substantial additional capital into less optimal older facilities in order to perform necessary science into the future. This option would also not support integrated collaboration with the Queensland State government or other research entities.

Option C: Consolidate on an existing CSIRO site.

35. This option is based on two assumptions, being (1) vacate and divest Cleveland and Cannon Hill sites and consolidate at Indooroopilly; and (2) leave CSE at the Queensland Bioscience Precinct at Queensland University, St Lucia.

36. While supporting consolidation of CSIRO's activities to a major site it does not provide for collocation of CSIRO's ecological research groups including CSE. It also does not provide for collocation with Queensland government scientific agencies who will relocate to the Ecosciences Precinct at Boggo Road as a major part of their planned consolidation of research groups currently dispersed through the Brisbane metropolitan area. This Queensland government consolidation includes relocation of the current Queensland research complex neighbouring the CSIRO Indooroopilly site. This will reduce the extent of ongoing and potential collaboration.
37. Consolidation of CSIRO sites at Indooroopilly would also preclude the benefits arising from Food Science Australia collocation with the Queensland State Food and Health agency at Coopers Plains.
38. This option would allow CSIRO to divest the Cannon Hill and Cleveland sites to fund some of the refurbishment and construction works that would be needed at Indooroopilly. However, the proceeds of sale would not be sufficient to cover all costs of consolidation and CSE would need to remain at QBP. The Indooroopilly site is the most valuable of the three sites and represents 60% of their combined land value. By not being able to realise the land value at Indooroopilly significantly reduces the available capital to fund any works.

Option D: Co-locate at Boggo Road and Coopers Plains Precincts – Preferred Option.

39. The option of collocating at Boggo Road and Coopers Plain precincts is the preferred option, as it allows CSIRO to move from its ageing, outdated and inefficient scientific facilities to a modern complex specifically designed and built to meet the ongoing scientific and collaboration needs of both CSIRO and the Queensland government.
40. The collocation achieves two critical objectives by (1) providing a vehicle to promote collaboration through partnering, collocation and sharing, consistent with CSIRO, Commonwealth and Queensland State policies; and (2) providing a critical mass to focus on science that underpins the continued development of the Australian economy.
41. The new facilities are further enhanced by being closely located to Universities, hospitals and other research entities in the Brisbane area and CSIRO's other research groups located at QBP.
42. By relocating to the Boggo Road and Coopers Plain sites, CSIRO is released from the need to upgrade and add to dispersed and close to obsolete facilities at Indooroopilly, Cannon Hill and Cleveland; can achieve long term capital and operating cost economies; and can release the land value from its three sites to substantially fund the project.
43. In choosing Option D, CSIRO achieves new world class facilities collocated with a critical mass of researchers on both precincts for the best return on investment. It rationalises the existing sites with their redundant facilities and releases significant metropolitan in-fill sites for private reuse and development, realising the full value of the properties. Rather than a compromised solution, that would be realised if the existing facilities were refurbished and/or converted, it allows CSIRO to develop (with the Queensland Government) a modern facility that will meet ongoing scientific requirements.

5.0 RESEARCH PARTNERS AND THEIR CAPABILITIES

44. The following CSIRO and State Government groups are those identified for collocation at the respective sites.

5.1 Ecosciences Precinct

CSIRO Sustainable Ecosystems (CSE)

45. CSE is concerned with the complex challenges of social, economic, and environmental sustainability in urban, regional, and rural Australia. The groups involved in this proposal are conducting R&D in support of sustainable regional development, the health of terrestrial

ecosystems, the design of future cities, and the sustainability of Australia's agricultural industries.

CSIRO Land and Water (CLW)

46. CLW creates options and solutions for more productive and sustainable use of Australia's land and water resources. While global and national water shortages demand innovative methods to increase water productivity, our rivers, estuaries and coastal environments also need attention as they are under increasing pressure from development and climate change. The group involved in this proposal are concerned with understanding how water allocation, irrigation practices and water recycling influence water use efficiency and quality; how to manage the health of aquatic ecosystems; and how to use remote sensing technology and spatial analysis to help us predict, evaluate and plan the use of our land and water resources.

CSIRO Entomology (CENTO)

47. CENTO is concerned with R&D into invertebrates and invasive species and their management to generate economic, social, and environmental benefits for all Australians. The groups involved in this proposal are particularly concerned with biosecurity preparedness, analysis of biosecurity risks, and the design of appropriate responses; understanding the science of invasion, particularly the invasion of undesirable plants; and the management of ecosystem services at the landscape scale.

CSIRO Marine and Atmospheric Research (CMAR)

48. Australia's large marine jurisdiction offers an enormous range of economic and recreational opportunities, while playing a major role in controlling climate. CMAR conduct R&D on these topics with the broader aim of advancing Australian climate, marine, and earth systems science. The groups involved in this proposal are particularly concerned with sustainable Australian fisheries and ecosystems, marine conservation and biodiversity management, and the Wealth from Oceans Marine National Flagship program.

CSIRO Mathematical and Information Sciences (CMIS)

49. CMIS is concerned with applying mathematics and statistics to answer important questions across the spectrum from medical research to environmental monitoring and industrial processing. The groups involved in this proposal are developing innovative statistical and mathematical methodologies for use by natural resource policy makers who are concerned with environmental stewardship.

CSIRO Science Education Centre (CSIROSEC)

50. CSIRO operates a collection of nine Science Education Centres around Australia which are designed to alert school students, their families and teachers to the contribution of CSIRO and other scientific research to our community; encourage students to take up careers in science, engineering and technology; and engage, enthuse and educate students, teachers and the wider community about science and its applications. The purpose-built facilities proposed at the Ecosciences precinct will enable CSIROSEC's Brisbane Centre to achieve these objectives for young Queenslanders within its catchment area.

51. The above Divisions have significant involvement in the fulfilment of the objectives of the CSIRO National Research Flagships.

Queensland Department of Primary Industries and Fisheries (DPI&F)

52. DPI&F will transfer to the Ecosciences Precinct its groups concerned with Animal Sciences, Fisheries and Aquaculture; Bio-pesticides; Entomology; Forest Technologies; Horticulture/Forestry Management; Innovative Forest Products; Integrated Parasite Management; Management Groups (Animal Sciences) Market Access; Plant Pathology; Profitable Beef and Sheep Systems; Profitable Dairy, Pork and Poultry; Supply Chain; and Sustainable Intensive Systems.

Queensland Department of Natural Resources and Water (DNR&W)

53. NRW will transfer to the Ecosciences Precinct its groups concerned with Biocontrol; Pest Management Research; RCT Water Quality and Monitoring; Resource Condition and Trend;

Resource Processes; Resource Processes – Sustainable Land Management; Resource Processes PMR; Sciences Chemistry Centre and Sustainable Land Management; Management Groups; Water Quality and Monitoring.

Queensland Environmental Protection Agency (EPA)

54. The EPA is concerned with environmental planning and research that helps improve the environment and lessens the effects of people, their industries and their activities. It deals with a wide range of environmental matters including protecting air, water and soil quality, managing waste, preventing or controlling pollution, managing the State's coastline, and promoting sustainable industries. EPA will transfer to the Ecosciences Precinct its groups concerned with Air Sciences; Water Science; and Wildlife Ecology.

Queensland Department of Mines and Energy (DM&E)

55. DME will transfer to the Ecosciences Precinct its Queensland Geological Survey group.

5.2 Health and Food Sciences Precinct

Food Science Australia (FSA)

56. This joint-venture between CSIRO and the Victorian government is concerned with finding innovative solutions for the food industry in Australia and overseas. It seeks to support the profitability and sustainability of the industry and the well-being of the community, and to be the industry's principal source of expertise, objective opinion and knowledge. The group involved in this proposal is particularly concerned with beneficial and harmful micro-organisms associated with foods, with the biochemistry of muscle foods (meats and seafoods), and with the development of new food products and sensing and manufacturing technologies (utilising its pilot plant).

Department of Primary Industries and Fisheries

57. DPI&F will transfer its Innovative Food Technology group from a laboratory in Hamilton to the Precinct. The interests of this group are closely aligned with those of the Food Science Australia, with which it will be collocated. Negotiations are underway for Queensland DPI&F to join FSA

58. DPI&F will also transfer groups concerned with Animal Biosecurity to the Coopers Plains Precinct, namely DPI&F Corporate Support; Profitable Dairy, Pork and Poultry Nutrition and Biochemistry; Biosecurity Management/Inspectors; Biosecurity (Animal Health Pathology); Biosecurity Science Laboratory; Natural Toxin and Chemical Residue Laboratory; and Beef Breeding Services Bacteriology (Biosecurity)

Queensland Health

59. Queensland Health's groups concerned with animal microbiology, virology, and organic and product chemistry are likely to be the most directly involved in the activities of the Health and Food Sciences Precinct.

6.0 RESEARCH BENEFITS FROM CSIRO PARTICIPATION IN THE PROPOSAL

60. The research benefits of CSIRO participating in the proposal are seen to be as follows:

61. *Capitalising on Enabling Technologies.* The collocation of various CSIRO groups with their Queensland government partners will present new opportunities to share enabling technologies to revolutionise our capacity to deal with previously intractable challenges. Examples include developments in:

- the capability and affordability of instrumentation for sensing the physical and chemical environment (either remotely by satellite or by a network of ground or marine-based sensors);
- robotic, sensor web and other information and communication technologies;
- computing power and data storage capacity;

- the transmission and processing of the vastly increased flow of data in real time;
 - extracting knowledge and increased understanding from the new data;
 - simulating the performance of entire ecosystems rather than individual components or species through advanced spatial capability; and
 - condensing the results for web-based transmission to decision makers.
62. *Working Together.* The collaboration imperative underpins the development of science generally and that encompassed by this proposal. The complexity of the many challenges requires that individuals, groups, disciplines, and entire organisations collaborate more closely in order to make progress. At the same time, working together addresses the expressed needs of governments, industry, and the wider community to maximise the effectiveness of, and the returns from, their investments in knowledge and innovation systems. Collaboration is recognised as a crucial contributor to these objectives. Successful collaboration between CSIRO and its partners will result in a more internationally competitive Queensland and Australia.
63. *Focusing Effort and Harnessing Synergies.* As a comparatively small player on the global economic stage, Australia must focus its R&D collectively to positively affect the most important economic issues for the nation. Collocation of CSIRO and its partners will act as a catalyst for greater integration of planning and investment activities amongst key research providers of knowledge services. The synergy, and cost efficiency opportunities that will be provided by the proposed collocation of CSIRO groups and Queensland Government agencies are highly significant. The proposal will bring together a wider range and greater number of such groups than any other recent Australian collocation initiative.
64. *Opening New Science Frontiers.* The combination of significant and diverse intellectual capital within the two proposed precincts is also likely to result in further development of new science frontiers that will underpin the economic, environmental, and social future of Australia.
65. Although it is difficult at this point in time to predict what these fields will be, the harnessing of new synergies between the players in order to develop new capabilities could, for example, result in:
- multi-modal capture and integration of data (e.g. numerical, text, audio, image, and video data) to extract new information and understanding of system performance;
 - multi-scale modelling to relate phenomena that occur over a hierarchy of interconnected systems; and
 - modelling and optimising of complex non-linear and dynamic systems in real-time to provide essential predictive capacity and management support at the landscape scale.
66. In supporting Australia's pursuit of long-term prosperity, CSIRO needs to capitalise on the impressive list of benefits offered by this exciting proposal.

7.0 COLLABORATION AND SYNERGY

67. There are three principal ways in which physical collocation and sharing of facilities fosters innovation, focuses effort, increases cost effectiveness, and harnesses synergies. The first is concerned with chance. For example, a chance meeting in the lunch room with a scientist from another agency or disciplinary area can lead to a new line of investigation of an intractable problem or new collaboration across a disciplinary boundary. The two Precincts in this proposal have been specifically designed to maximise the opportunities for such productive chance interactions to occur. Hence, space for intellectual exchange and social encounter will be provided around the primary circulation systems of the buildings. This will draw staff from their workplace communities into a more public domain where settings ranging from informal (interaction areas, library and café) to more formal (meeting and seminar rooms) will be available.

68. The second is concerned with proximity. It is a well known fact that interaction between scientists is much greater where the distance between their offices is just a walk along a corridor rather than a car trip across several suburbs. Despite the ready availability of electronic communication, face-to-face interaction is generally superior to other forms, particularly at the early stages of development of a new idea or approach when serendipity may occur. Proximity is also an issue in the design of the Precincts. Collocation of scientists undertaking similar research and having similar laboratory needs, regardless of their parent organisation, is clearly both architecturally efficient and conducive to fostering collaboration.
69. The third way is concerned with participation in cross-cutting mechanisms such as Co-operative Research Centres, networks, partnerships and groupings. While each of the organisations and agencies that are coming together to collocate and share the facilities outlined in this proposal has its own internal organisational structures, their scientists are already involved in a multitude of collaborative and unifying mechanisms both within- and particularly across-organisations and agencies. Examples of such mechanisms and networks include:
- Australian Collaborative Rangeland Information System;
 - Biosecurity Queensland;
 - Cooperative Research Centres for Future Farm Industries, e-Water, and Australian Weed Management;
 - National Collaborative Ecosystem Research Network;
 - Queensland Centre for New Foods;
 - Queensland Climate Change Centre of Excellence;
 - South-east Queensland Water Alliance;
 - Terrestrial Ecosystem Research Network; and
 - Water Resources Observation Network.
70. Working together or collaborating is therefore a core concept in the design of both Precincts. Inter-agency laboratory workgroups have been identified and subdivided into functional scientific clusters based on chemistry, biology, and microbiology laboratory types. These would collocate scientists who are undertaking similar research and who have compatible laboratory requirements into a generic laboratory unit in which sharing of space and equipment is optimised. The workgroups of inter-agency participants are the basic organising unit for the Precincts as follows:

<i>Ecosciences Precinct Work Groups</i>	<i>Participants</i>
Plant and Insect Production/ Biosecurity	CENTO, NRW, DPI+F
Marine and Estuarine	CMAR, CLW, CSE, CMIS, DPI+F, NRW
Terrestrial computer modelling	CSE, CLW, EPA, NRW
Terrestrial laboratory-based	DPI+F, NRW
<i>Health and Food Precinct Work Groups</i>	<i>Participants</i>
Animal Biosecurity	DPI+F, QHSS
Health and Food	FSA, DPI+F, QHSS

8.0 CONSULTATION

71. CSIRO and the Queensland Government have agreed, as part of the arrangements for the KBRB Project, that Project Services within the Queensland Department of Public Works will manage the consultation procedures for the project.
72. The authorities and Departments listed in Annexure C have been contacted and/or consulted by CSIRO and its consultants during the preparation of this submission.

9.0 SITE

9.1 Proposed Sites and Facilities

73. The proposed CSIRO facilities will be an integral part of the Ecosciences Precinct (at Boggo Road) and Health and Food Science Precinct (at Coopers Plains) that will be established in conjunction with Queensland Government Agencies (Department of Primary Industries and Fisheries, Department of Natural Resources and Water, Department of Mines and Energy, Environment Protection Agency and Queensland Health).
74. The proposed CSIRO facilities will replace existing, substandard or outdated buildings scattered across 3 CSIRO sites in southeast Queensland, as part of CSIRO's continuing program to provide high-quality, modern accommodation appropriate for conducting current and anticipated scientific research and development activities.
75. The overall proposal is part of a major collocation of scientific and technological capabilities of CSIRO and Queensland Government groups, currently dispersed across 10 sites. This will achieve economies of scale and critical mass to focus on science that underpins the continued development of the Australian and Queensland economies.
76. The proposed Ecosciences Precinct (at Boggo Road) and Health and Food Science Precinct (at Coopers Plains) will be constructed and owned by the Queensland Government. CSIRO's Capital contribution will secure a 99 year lease within the facility.

9.2 Precinct Descriptions

77. The Ecosciences Precinct is to be located on Lot 3 of the proposed Boggo Road Urban Village in Dutton Park, South Brisbane, a site being redeveloped by the Queensland Government to include a mixture of residential, retail, commercial, and community uses. The Urban Village is optimally placed for public transport access, being adjacent to Park Road Railway Station which will be an integrated bus/train facility. This station is at the juncture of the Cleveland and Robina lines and is a Busway stop on the Green Bridge link between the city and The University of Queensland. The Urban Village is strategically located near the University of Queensland and the Princess Alexandra Hospital which are developing as major centres of scientific research.
78. The Ecosciences Precinct will house a total of approximately 1000 scientific, technical and support staff including approximately 260 CSIRO staff focussed on environmental issues. It will provide offices, laboratories, specialist facilities (including collections, and greenhouses, insectaries, quarantine containment and aquaculture facilities) and support facilities for the field and laboratory-based activity (including sample, boat and field gear storage, and central shared support facilities).
79. The Health and Food Precinct at Coopers Plains is located on the existing 550 person campus of Queensland Health Scientific Services, which comprises laboratory and support service buildings primarily in forensic and health sciences. It is adjacent to the QEII Hospital and Griffith University and is well serviced by major arterial roads. The proposal will locate an additional 218 persons including approximately 37 from CSIRO, focused on Health and Food, and Animal Biosecurity issues on the Coopers Plains campus. It will provide offices, laboratories and specialist facilities including PC3 laboratories, large animal necropsy laboratories and a food manufacturing pilot plant.
80. Current facilities at the Coopers Plains site consist of a complex of 6 internally connected blocks ranging from single to three level occupancies. A separate Police Annex and Bone Bank are located to the eastern end of the site. The primary site entry is from the north off Kessels Road with a secondary entry off the southern residential Middle Street. The site rises over 20m from the western end to the southeast corner. A Brisbane City Council designated waterway occupies the northern edge of the site. The combined additional facilities proposed for this site include 13,000m² GFA of structures and with additional carparking on grade.

81. The proposed facilities at both Precincts will also include amenity and support facilities to be shared with the various Queensland Government agencies. These will include a café at the Ecosciences site, reception, staff amenities, board rooms, conference and meeting room facilities, and information technology support.

10.0 ENVIRONMENTAL AND HERITAGE MANAGEMENT

82. The Ecosciences Precinct, as part of the Boggo Road Urban Village, has been the subject of detailed environmental and heritage assessments as part of the State Government and Brisbane City Council planning approvals process. No impediments have been identified for this site.
83. The Health & Food Precinct has also required detailed environmental and heritage evaluations through the relevant authorities. No impediments were identified at this site.
84. Consultation will continue with all levels of Queensland State Government authorities including the Environmental Protection Agency, Queensland Health (Radiation Health) and the Brisbane City Council to ensure all issues of environmental management are properly evaluated and implemented.
85. Contractor/s will be required to implement Environmental Management Plans during the construction phase to manage waste, noise, airborne pollutants and dust, erosion and storm-water control.
86. Environmental Management Plans consistent with AS/NZS ISO 14001:1996 will be developed for the post-occupancy management of the facilities.
87. Specific environmental management actions to be implemented will include:
- appropriate tree planting and landscaping adjacent to the building;
 - filtering and control of all storm water run-off to prevent any potential pollutants from reaching the adjacent rivers and water courses;
 - sound attenuation and vibration isolation within the new facilities to maintain acceptable noise and vibration limits on the site;
 - the dilution and treatment of non toxic, isotopic and liquid waste prior to discharge to sewer;
 - collection of wastes such as flammable liquids, oils and toxic liquids at the point of use in waste containers. The containers will be collected for disposal by a licensed industrial waste collector;
 - storage of hazardous goods in accordance with respective codes and standards; and
 - evaluation of airborne exhaust discharges to avoid impact on the environment.
88. A formal application under the EPBC Act will be lodged with the Environment Minister.

11.0 FACILITY CONCEPT

89. The proposal recognises the diversity of science to be undertaken and proposes a best-practice approach to laboratory design in the provision of a range of flexible and adaptable spaces that will facilitate future changes in research focus, group configuration, instrumentation and technology. Laboratories will be open, flexible and generic in nature with support laboratory facilities provided to meet specific functional requirements. Spaces will only be enclosed and separated where contamination, containment, quality or performance expectations demand it.
90. In the project-based research environment, interaction is vital to provide the stimulus and cooperation necessary for effective collaboration. The design will offer a working environment

that functions as a whole, encouraging interaction and formal and informal communications between individuals and research teams.

91. Large areas of glass between laboratories and circulation corridors, interaction areas clustered around nodes of movement or activity, open and light stairways, and spaces for display all promote the feeling of belonging to a collegiate community and encourage regular interaction and exchange of ideas.

11.1 Ambience in the Working Environment

92. The majority of non-laboratory accommodation will be located on an external wall to offer natural light and outlook. Profiled ceilings rising to outside walls and glazed internal laboratory walls will allow outlook from deep within the interior of the floor and maximise natural light within the buildings.
93. Extensive sun shading to laboratories will exclude direct sunlight and moderate glare. Internally glazed partitions will be used to enhance the sense of openness of the laboratories. Offices clustered along the edge of each lab unit will give adjacency to laboratories whilst encouraging interaction amongst staff.

11.2 Flexibility, Adaptability and Durability

94. Laboratory units will offer flexibility, with modular benching and shelving provided to respond to the particular organisations or user group preferences. Service spines will be separated from furnishings to allow ease of re-configuration of benches or mobile equipment trolley location.
95. The laboratory unit has been structured to allow adaptability to accommodate various laboratory, support core and office configurations. Non-structural partitioning will allow ease of laboratory unit re-configuration. The design is approached as a series of clearly articulated structural, circulatory and servicing systems to accommodate future change.

12.0 TECHNICAL SOLUTION

12.1 General

96. The Ecosciences Precinct forms part of the Boggo Road Urban Village that is currently the subject of an Application for a Preliminary Approval of a Material Change of Use (MCU) for a Structure Plan and Development Permit for Reconfiguration of a Lot to the Brisbane City Council. The Ecosciences Precinct will comprise Lot 3 within the development. A Town Planning application is required to be lodged once the MCU is approved. This process is in accordance with the Queensland Government *"Integrated Planning Act 1997"*.
97. The State has commenced the process of designating the Queensland Health Scientific Services campus as "Community Infrastructure" under the Queensland Integrated Planning Act 1997. Community meetings have been held as part of this process.
98. The Ecosciences Precinct will comprise a new 9 level Laboratory Complex of 3 interlinked blocks with a total gross floor area of 51,200m² of which approximately 13,000m² GFA will comprise the following CSIRO components:
- laboratories for ecology, biology, microbiology and chemistry;
 - plant and insect science facilities including greenhouses, insectaries, head house support facilities and a QC3 level quarantine containment facility;
 - marine science facilities including boat storage, sample processing, freezers, dive store, aquaculture tanks and workshops;
 - field support facilities including workshops, field gear storage and 4WD parking facilities;

- office space for modelling based research, staff and administrative support;
 - shared staff support facilities include a library, seminar rooms, meeting rooms, interaction areas, bicycle store and showers, and ICT;
 - shared central support facilities including wash-up, media prep, stores and goods receipt; and
 - car parking for 50 CSIRO fleet vehicles inclusive of 4WD field vehicles.
99. Associated site works include pot plots, ponds and a host garden for plant rearing and research together with landscaping a 3 level car park, independent of the building and site works, together with service infrastructure upgrades, road works and landscaping.
100. The Health and Food Sciences Precinct facilities will comprise 3 blocks connected to the QHSS laboratories to optimise sharing of facilities and scientific collaboration. KBRB will benefit from the use of existing QHSS facilities including auditorium, seminar rooms, and café. KBRB will contribute to the upgrade of the existing QHSS facilities to enable capacity to support KBRB including central wash-up, library, and central goods receipt. External car parking will be provided for 30 CSIRO vehicles. CSIRO will occupy approximately 2700m² GFA within the new development.
- Block 10 comprises a 4 level laboratory building with:
 - laboratories for food product development, microbiology and chemistry;
 - sensory testing booths and kitchen; and
 - support facilities including stores, bicycles, shower and lockers.
 - Block 11 comprises a single level Food Manufacturing Pilot Plant with mezzanine plant. This will be operated as a managed shared facility with DPI+F.
 - Block 12 comprises a single level microbiology lab that has no CSIRO occupancy.
101. The building designs will maximise opportunities for collaboration and interaction between resident and visiting scientists and provide flexibility in the use of the space, whilst maintaining efficiency in area and operation. Where possible laboratories are generic facilities to maximise flexibility and encourage integration of research scientists from the participating organisations.

12.2 Design and Construction Standards

102. Design of the facilities will be consistent with the general design philosophy for all CSIRO research accommodation, i.e. long term flexibility (multiple use of space), adaptability (easy conversion of layout) and simplicity of maintenance (with easily accessible services).
103. All buildings, services and external infrastructure shall comply with all relevant town planning, Commonwealth and State building, health and safety regulations and Acts, the Building Code of Australia and all relevant Australian Standards.
104. All contracts on the project will comply with the National Code of Practice for the Construction Industry, 1997 and the associated Industry Guidelines as well as the Federal Safety Commissioner.

12.3 Site Planning

Ecosciences Precinct

105. The Precinct is densely occupied by the proposed building which addresses the Boggo Rd frontage with the ground level entry from the north–west corner also opening onto the pedestrian spine to the west. The 3 blocks orientate to the north for optimal solar orientation.

The 3 basement levels link the 3 blocks into an integrated whole. Space for a future block is provided at the southern end of the site

Health and Food Sciences Precinct

106. Site Planning has been driven by the optimal location of facilities for scientific collaboration between QHSS and KBRB. Block 10 is linked to Block 1 at ground level to provide connection to the campus point of entry and security. It is also linked at upper levels to Block 2 for direct sharing with QHSS chemistry groups and to access the QHSS shared facilities. Block 10 is opposite the entry to the campus and will be the most prominent building on the campus.
107. Block 11 as a semi-industrial building connects directly into Block 10 to facilitate ease of movement between the pilot plant and office and lab facilities.
108. Block 12 connects with the Block 8 virology labs to allow direct interface of the microbiology laboratories and containment facilities.

12.4 Building Design Concept

Ecosciences Precinct

109. The following key points outline the building design concept.
- The 3 blocks are separated by courtyards that are protected by an enclosing perforated screen. The screen filters light, reduces glare and suspends the thermal load at high level off the facades as a key sustainability initiative. This will allow clear glass to be used in offices to maintain a high degree of transparency between blocks.
 - A Main Street from which all of the office and lab neighbourhoods are addressed links the 3 blocks internally. The Main Street is the interactive hub with kitchen and informal meeting and seating facilities on 3 levels to encourage staff out of their work areas into a collaborative interface with their peers. The staff support shopfront activities of bookable meeting rooms, library and ICT are also on the main street.
 - The foyer collects the publicly accessible areas of Café, Seminar Rooms and CSIROSEC. Beyond the secure barrier are the central passenger lifts and open stairs connecting the lab/office levels.
 - The laboratories are located to the north and south with offices focussed towards the centre. Circulation can occur between all office areas without passing through a laboratory.
 - Organisation of the research space is thematically based with scientists from different organisations collocated to optimise exchange of ideas and the sharing of equipment.
 - Basement levels are connected to the research floors by the goods lifts allowing goods distribution without passing through office levels.
 - A single roof datum holds all the greenhouses to ensure an efficient and integrated operation.

Health and Food Sciences Precinct

110. The following key points outline the building design concept:
- Building blocks are arranged to optimise functional connectivity to QHSS labs and support facilities;
 - Labs orientate to the south for optimal solar performance;
 - Offices are accessed without passing through laboratory spaces; and
 - Interaction space is located at the juncture of QHSS and KBRB circulation systems to encourage engagement between the scientific communities.

12.5 Geotechnical Conditions

111. The Ecosciences Precinct site geotechnical information available for the precinct indicates that at foundation level the ground conditions will allow the use of high level strip and pad footings over much of the building footprint, with a need for bored piers in the southeast corner of the site.
112. The Health and Food Sciences Precinct geotechnical information indicates that rock levels underlying the site dip downwards in a north westerly direction which will allow the use of high level strip and pad footings towards the southeast corner of the site for Block 12 whilst piled foundations or pads on mass concrete footings are likely to be required for Block 10, the three level laboratory and office building located adjacent to existing QHSS Block 2.

12.6 Structure, Services and Environment

113. For more detailed data on Structure, Engineering and Services – refer ANNEXURE A

12.7 Engineering Services Strategy

114. Each Precinct will be independent in its provision of central energy with chiller plant cooling towers, substations and generators. Vertical risers served by an upper level air handling plant will be a constant relative to the flexibility of internal partitioning systems in all occupied areas.
115. Roof level plant will be restricted to extraction systems, smoke spill, and cooling towers. Extraction fans will be located internally with space provision for future fume cupboards.
116. The major air handling plant elements will be located on an upper plant room level with risers supplying air to, and exhausts from, the serviced levels. Location of the risers at end of the blocks and centrally around the goods lift cores maximises flexibility of the floor plate planning and ensures outlook across the floor plate.
117. The servicing approach will establish clear and accessible pathways for distribution, maintenance and modification/addition of services. Ring main distribution systems above corridors to laboratory floors will facilitate ease of access and adaptability.

12.8 Building Form and Character

118. *Ecosciences Precinct*: The building expression comprises 3 blocks enveloped by a veil of protective sun-screening and separated by cool and shaded courtyards. The expression will be uniquely sub-tropical, reinforcing the commitment to sustainability.
119. *Health and Food Science Precinct*. The KBRB buildings are consistent with the scale and form of the existing campus. The expression will be of a contemporary research institution utilising contemporary materials with extensive use of glass protected by sunshading.

12.9 Facades and Sun Screening

120. Laboratory facades will comprise an expressed concrete frame with infill glazed wall system. This will be overlaid with a sunshading system designed to suit the orientation of each facade to exclude direct sunlight as required by laboratory codes. Extensive glazing will allow light penetration deep within the floor plate whilst the extent of shading will optimise thermal performance. A walkway system or roof based abseiling rail will be integrated with the sun shading to allow external window cleaning.
121. Office facades will also be sun-shaded but not to the same exclusion criteria as the laboratories.

12.10 Material, Finish and Fitting Selection

122. Materials, finishes and fittings will be selected for their life cycle cost efficiency, durability and minimisation of maintenance.

123. A concrete or masonry base will be used for the base of each building with a lightweight metallic panel and glazing system above.

13.0 ECOLOGICALLY SUSTAINABLE DESIGN AND ENERGY

124. In considering the design efficiencies of this building the principles espoused in the “*Energy Efficiency In Government Operations (EEGO) Policy*” have been considered.
125. The Department of the Environment and Water Resources Australian Greenhouse Office’s “*PWC - Submission Review Form*” has been submitted to the Australian Greenhouse Office.

Ecosciences Precinct and Health and Food Sciences Precinct.

126. *Energy Conservation Initiatives and Concepts:* The building concept supports ecologically sustainable design, based on a combination of passive and active design strategies.
127. *Passive Design Initiatives:* Generally both precincts’ passive design initiatives will be coordinated to minimise the quantum of energy that the buildings absorb from the environment, and thereby minimise the utilisation of electricity in removing that energy.
128. Primary passive solutions will be encompassed in the building form and orientation.
129. The mainly east-west axes will minimise exposure to major solar exposure. Large shaded glazed wall areas to the north and south will optimise outlook and the use of natural daylight for lighting in lieu of artificial light sources.
130. Facade construction will observe principles of high thermal resistance through concrete mass, or by using insulated lighter weight construction materials with insulation of air spaces. The facade will be a reactive device providing not only solar control and high thermal resistance, but also a well sealed system to avoid any air infiltration, which can have adverse affects on maintaining containment pressurisation levels in laboratories.
131. In the Ecosciences proposal the iconic Queensland verandah concept has been extended in the use of a series of external “rooms” between the tall building blocks where a horizontal and vertical drape of perforated screen mesh is being considered to allow the passage of light whilst limiting the intensity of the sun’s rays. The screen will allow rain to penetrate into the courtyards to water the landscape.
132. *Active Design Initiatives:* The design of plant will be based on optimum efficiency, sized and stepped in size to closely match the thermal response characteristics of the building, thereby allowing plant to operate at its most efficient operational positions.

The range of active engineering devices proposed are extensive, and include:

- high efficiency central chiller plant;
- low velocity multi zone air handling systems;
- direct digital building management system with external monitoring and control;
- highly zoned plant to allow “switching off” of unoccupied spaces as well as localised temperature setback zones;
- rainwater tanks for the collection of roof water run off;
- energy efficient lighting systems;
- daylight compensation lighting control systems around the perimeter of the building to reduce the reliance on artificial lighting systems;
- variable speed drives of fluid handling plant, such as fume cupboards, cooling towers, etc;
- high efficiency gas hot water systems;

- inherent flexibility and adaptability of building systems including logical and accessible servicing strategies, will be balanced against the objective of minimising capital cost; and
- life cycle cost and flexibility cost benefit evaluations will be undertaken on detailed elements through the design process.

133. These initiatives and measures are consistent with a continuing commitment by the Queensland Government and CSIRO to reduce energy use through the adaptation of more efficient energy management practices in the design and operation of facilities.

134. The new facilities will incorporate initiatives to minimise the impact on the environment. Such initiative will include:

- selection of materials with low volatile organic compound emissions and those of a proven sustainable manufacture;
- selection of materials of consideration of their embodied energy;
- module selection of building materials to minimise wastage;
- incorporation of water saving devices on hydraulic fittings and fixtures to reduce water consumption; and
- collection of roof rainwater.

14.0 BARRIER FREE ACCESS

135. All buildings will be designed to ensure equitable access for all persons with disabilities to meet the requirements of the relevant Australian Standards and the Building Code of Australia.

136. The provisioning of ramps, gradients and lifts will allow barrier free access to all areas, both for public and staff. The facility will be well serviced with accessible amenities to each level, the use of hearing loops and visual identifications will further enhance compliance.

15.0 OCCUPATIONAL HEALTH AND SAFETY

137. CSIRO pursues an active Health, Safety and Environment policy within the workplace and this will be extended to include all new facilities. Compliance with the Federal Safety Commissioner will be adhered to in all construction work, utilising accredited contractors as well as the implementation of safe design.

16.0 CHILD CARE PROVISIONS

138. The Queensland Government supports establishment of a private sector childcare centre within the Boggo Road Urban Village.

139. No childcare facilities are located on the Queensland Health Scientific Services campus.

17.0 LOCAL IMPACT

140. The proposal has been publicly supported by the Queensland Premier. The Ecosciences Precinct is in the electorate of the Queensland Deputy Premier and Minister for Infrastructure.

141. Construction activity will generate some noise which will be limited by statutory requirement at various stages such as ground works where earthmoving plant will be involved.

142. Traffic movement effects adjacent both precincts will be minimised through limitation on public/staff vehicular access with a significant increase in road and rail public transport facilities, and in the case of the Ecosciences Precinct direct access to University of Queensland via the Eleanor Schonnell Bridge (a "Green Bridge" providing bus, pedestrian and bicycle access).

143. The proposed Complex will have a positive effect on the local economy as:
- During the construction period, construction and associated industries will benefit with up to 700 persons working on the project at any one time (up to 2000 over the life of the project);
 - Post-construction benefits will result from the research and development opportunities generated through collaborative and technology transfer initiatives within the precincts; and
 - Opportunities will be provided for student interaction with the adjacent Universities.

18.0 COST

144. The indicative cost, exclusive of GST, for the CSIRO component of this proposal is \$85 million at March 2007 prices, inclusive of escalation costs, contingencies, all professional fees and authorities' charges.

19.0 FUNDING

145. Funding will be derived from the sale of 3 CSIRO sites with the balance of funding coming from CSIRO capital funds.
146. It is intended to dispose of three CSIRO Brisbane sites, being Indooroopilly, Cleveland and Cannon Hill to contribute to the funding of the Ecosciences and Food Sciences Precincts.

20.0 PROJECT DELIVERY

147. A Managing Contractor (MC) is expected to be appointed during the Design Development phase of the project to provide Design and Construction Management services, design and buildability expertise to the Design Development phase of the project.
148. The Queensland Department of Public Works will manage the MC on behalf of the project. The MC is responsible for and carries the risk of delivering the project at an agreed sum.
149. As the MC will arrange commencement of early trade packages and calling of competitive tenders, construction is able to be programmed to run in parallel with latter stage design packages, taking advantage of shorter construction time and defraying its associated escalation costs.
150. Tenders will be required to comply with the National Code of Practice (a Commonwealth Act pertaining to procedures and practices in the Building Industry) along with being accredited with the Federal Safety Commissioner.

21.0 PROGRAMME

151. Subject to Parliamentary approval (following examination by the Public Works Committee) it is proposed that early works packages be implemented for the Ecosciences Precinct to allow site establishment works to commence early in 2008.
152. Completion of construction is expected in 2009 for the Health and Food Sciences Precinct and in 2010 for the Ecosciences Precinct

22.0 CONCLUSION

153. CSIRO believes that collocation with the State government by way of the proposed works as described in this submission is the most appropriate, timely and cost effective way to provide consolidated accommodation for CSIRO in Brisbane.
154. The design properly reflects the CSIRO functional brief and will cater for future changes in research activities and priorities. The accommodation will provide safe and comfortable working conditions for CSIRO Research personnel, students and collaborator personnel.

155. CSIRO's consolidation within the Ecosciences and Food Sciences Precincts will secure its future within Queensland and provide solid foundation for CSIRO's capability nationally.

ANNEXURE A – STRUCTURE & SERVICES

A.1 Structure

Ecosciences Precinct.

156. Structure for the typical floor framing comprises post tension band beams spanning across the North and South Blocks with slabs in the transverse direction spanning across a typical 6.6 metre column grid which accommodates two 3.3 metre laboratory planning modules. For the Central Block, the proposed floor framing system comprises reinforced or post-tensioned slabs in the office area spanning between post-tensioned band beams on an 8.4 metre grid. An in-situ reinforced concrete beam and slab floor framing system is proposed in the interaction areas as well as near lift and stair shafts.
157. Stairs, lift and mechanical riser walls provide the lateral stability of the building. The proposed structural system is relatively stiff to minimise vibration to sensitive analytical equipment.
158. Pour strips are proposed in the north/south direction to break the post tensioned sections of the floor slab into lengths suitable for individual pours and stressing; and to separate post tensioned zones from stiff structural elements. This approach will allow elastic shortening to occur before connecting the floor to the core walls, thus minimising the effects of shrinkage and temperature induced movements.
159. Penetration provisions near column supports are included in the design of band beams to provide flexibility for services running in the laboratory area.

Health and Food Sciences Precinct.

160. The ground level floors will be largely slab on ground. Suspended floors will typically be either reinforced concrete, or post tensioned concrete band beams and slabs, flat slabs or flat plates.
161. Lateral stability of buildings is provided by stairs, lift and mechanical riser walls. The proposed structural system is relatively stiff to minimise vibration to sensitive analytical equipment.

A.2 Stormwater Drainage

Ecosciences Precinct.

162. In accordance with best drainage and environmental control practice, it is proposed that downstream defenders be installed where stormwater run-off from a car park is captured, prior to discharging from the piped network.
163. Rainwater harvesting tanks are proposed on Basement Level 3 on the western side of the building.
164. All proposed piped networks have been designed to cater for a Q10 (ten year) event.

Health and Food Sciences Precinct.

165. The existing stormwater pipes located under the proposed Precinct Block 10 and Block 11 will be relocated piped under the proposed road alignment and into the main swale to the north.
166. All proposed piped networks have been designed to cater for a Q10 (ten year) event.
167. Proposed rainwater tanks are to be installed on the site for collection of roof water run-off from Blocks 2, 10, 11 and 12.
168. It is proposed that downstream defenders be installed where stormwater run-off from a car park is captured, prior to discharging from the piped network in order to preserve water quality.

A.3 Sewer

Ecosciences Precinct.

169. Sewer is provided to the boundary of the site with capacity for the KBRB development.

Health and Food Sciences Precinct.

170. The existing Queensland Bone Bank is serviced by a 225mm diameter sewer main and connects to the existing system to the east of Block 2. This network is then piped to an existing treatment plant located to the west of Block 6.

171. Relocation of the existing pipework under the proposed Block 10 and Block 11 is required as the sewer conflicts with the proposed building locations. The relocation will provide multiple points for future connections from Block 10 and Block 11.

A.4 Mechanical Services

Ecosciences Precinct.

172. The Mechanical Services scope will include:

- air conditioning for comfort conditions in laboratories, support spaces, offices, meeting rooms, seminar rooms and interaction spaces;
- general laboratory, laboratory support and office areas will utilise Variable Air Volume (VAV) systems;
- cold and Freezer rooms and associated refrigeration plant;
- central chilled water plant;
- exhaust ventilation of toilets, stores, plant spaces, workshops, fume cupboards, hoods and specific laboratory equipment, central wash-up facility, miscellaneous stores;
- laboratory exhausts from AQIS rated rooms;
- sterilising equipment including steam generation plant;
- laboratory gases systems, including compressed air and vacuum plant, natural gas, and other laboratory gas services;
- reverse osmosis water to the laboratory sinks and central wash-up;
- laboratory cooling water systems;
- building management system incorporating automatic controls for the mechanical services systems; and
- electrical works associated with the mechanical services systems.

Health and Food Sciences Precinct.

173. The Mechanical Services scope will include:

- air conditioning for comfort conditions in laboratories, support spaces, offices, meeting rooms and interaction spaces;
- general laboratory support and office areas will utilise VAV systems;
- air conditioning for specific conditions in controlled environment rooms, pilot plant areas and other specialised laboratory spaces;
- cold and freezer rooms and associated refrigeration plant;
- central chilled water plant;
- exhaust ventilation of toilets, stores, plant spaces, fume cupboards, hoods and specific laboratory equipment;

- laboratory exhausts from PC3 areas will include HEPA filtration in accordance with code requirements;
- sterilising equipment including steam generation plant;
- laboratory gases systems, including compressed air and vacuum plant, natural gas, and other laboratory gas services;
- reverse osmosis water to the Pilot Plant Areas;
- building management system incorporating automatic controls for the mechanical services systems; and
- electrical works associated with the mechanical services systems.

A.5 Electrical Services

Ecosciences Precinct.

174. The Electrical Services for the development will include the following:
- incoming HV Supply cabling from the Energex HV network;
 - indoor high voltage substations by Energex;
 - low voltage switch rooms;
 - standby diesel generator system;
 - low voltage main switchboards;
 - essential and non-essential sub-main distribution;
 - essential and non-essential distribution boards;
 - Uninterruptible Power Supply (UPS);
 - dedicated ICT Data Centre Uninterruptible Power Supply for critical equipment;
 - filtering and surge suppression;
 - final sub-circuits;
 - lighting;
 - specialist lighting in some research areas, security and the landscape;
 - emergency and exit lighting;
 - general power;
 - earthing;
 - lightning protection;
 - electromagnetic interface;
 - circuit referencing; and
 - interface with the building management system (BMS).

Health and Food Sciences Precinct.

175. The electrical services for the development will include the following:
- incoming HV Supply cabling from the QHSS Energex HV switch room;
 - QHSS HV system modifications;
 - high voltage incoming supply;
 - indoor high voltage substation;

- low voltage switch rooms;
- standby diesel generator system provision;
- low voltage main switchboards;
- essential, non-essential and UPS sub main distribution;
- essential, non-essential and UPS distribution boards;
- dedicated central uninterruptible power supplies (UPS);
- filtering and surge suppression;
- final sub-circuits;
- lighting;
- specialist lighting in some research areas;
- emergency and exit lighting;
- general power;
- earthing;
- lightning protection;
- electromagnetic interface;
- circuit referencing; and
- interface with the building management system (BMS).

A.6 Lift Services

Ecosciences Precinct

176. At the Ecosciences Precinct, the building configuration of two laboratory blocks, communicating with a central administration block is ideally planned to incorporate central passenger lifts at the pivot point of traffic flow and the provision of goods lifts within the laboratory blocks.

Health and Food Sciences Precinct.

177. The lift services solution for the Health and Food Sciences Precinct has been based on serving the low rise building Block 10 with a passenger lift and a goods lift to provide for the vertical transportation needs of the building occupants.

A.7 Hydraulic Services

Ecosciences Precinct & Health and Food Sciences Precinct.

178. The hydraulic services works will include:

- house drainage and sanitary plumbing;
- laboratory waste house drainage and laboratory waste sanitary plumbing;
- treatment of laboratory waste as required;
- downpipes both internal and external to the building;
- stormwater drainage from the base of downpipes to Civil trunk mains connection;
- cold water service reticulation including potable and non-potable water supplies; and
- hot water service including potable and non-potable reticulation and required heating plant.

179. At the Health and Food Sciences Precinct the treatment of PC3 laboratory waste will be undertaken in accordance with building standards and regulatory compliances.

A.8 Fire Services

Ecosciences Precinct.

180. The fire services for the redevelopment will include the following:
- fire services water supply to the site;
 - fire services pumps;
 - fire brigade booster facilities;
 - connection to site fire alarm monitoring system;
 - automatic fire sprinkler system;
 - fire detection system;
 - emergency warning and intercommunication system;
 - fire hydrant and hose reel system;
 - portable fire extinguishers; and
 - gaseous fire suppression system to specialist research facilities.

Health and Food Sciences Precinct.

181. The fire services for the redevelopment will include the following:
- fire services water reticulation modifications, demolition and diversions;
 - connection of new sub fire indicator panels to existing site fire alarm monitoring system;
 - fire detection system to new buildings 10, 11 and 12;
 - emergency warning and intercommunication system;
 - fire hydrant and hose reel system additions and modifications; and
 - portable fire extinguishers to new buildings 10, 11 and 12.

A.9 Communications and Security

Ecosciences Precinct & Health and Food Sciences Precinct.

182. The communications and security works for the Ecosciences Precinct at Boggo Road and the Health and Food Sciences Precinct at Coopers Plains are inclusive of the following services elements:
- communications cabling infrastructure;
 - wireless technologies;
 - paging and public address systems;
 - MATV systems;
 - electronic access control systems;
 - duress alarm systems;
 - CCTV surveillance systems;
 - intercommunications systems; and
 - audio visual systems for seminar and meeting rooms.

183. Design Principles: The design principles for the sites are based upon common infrastructure that can be utilised by all agencies and encouraging collaboration.
184. Electronic Security, Duress, Access Control:
- Electronic Security shall be provided throughout the facility for the purposes of:
 - staff safety;
 - preventing unauthorised access;
 - monitoring access;
 - incident recording;
 - prevention of damage to property; and
 - security of expensive or sensitive material.
 - Access Control: Electronic Proximity Card Readers and Electric Door Locking will be provided to staff only areas to prevent unauthorised access
 - Duress Alarms: Duress points will be provided at public/staff interface points and at locations where staff may be isolated and vulnerable.
 - The security systems to be provided for the Health and Food Sciences Precinct shall be of a type to match the existing facilities and allow integration of the buildings into the campus strategy for security services and management.

A.10 Roadworks and Carparking

Ecosciences Precinct.

185. Access to the site will be from East St. Swept path analyses have been carried out to verify that the proposed basement, loading dock, manoeuvring areas and access driveways are geometrically suitable for the various design vehicles.

Health and Food Sciences Precinct.

186. The proposed internal road and carpark configuration is designed to provide efficient vehicular circulation within the site whilst providing car park spaces on grade for staff.

A.11 Landscaping

Ecosciences Precinct.

187. The Ecosciences Precinct will sit within and relate to the plan for the adjacent areas which will contain landscape elements comprising a paved boulevard contiguous to the west of the Ecosciences Precinct and with streetscape and plantings proposed on the south east and north of the site.
188. Site Landscape: The site landscape comprises:
- landscape on structure (building courtyards);
 - general perimeter landscape; and
 - plantings of host and other plants for use by science research personnel with provision for storage of individual pots and ponds.

Health and Food Sciences Precinct.

189. The landscape component for the proposed development comprises:
- retention and protection of the existing forest and other vegetation;
 - revegetation of areas disturbed by the construction and the realigned road and new car parks;
 - transplantation of specified existing plants within the site to be redeveloped; and

- development of the landscape court between the new Building 10 and existing Building Block 2, together with the redevelopment of the planting to the front entrance of the facility.

A.12 Acoustic Considerations

Ecosciences Precinct.

190. The design of the building will ensure that the following conditions are achieved:
- environmental noise emissions from the building will be controlled to meet the noise criteria established in the site development application;
 - the building envelope will be designed to control noise intrusion from rain, traffic, and wind;
 - the internal partitions, floors, and ceilings, will be designed to control internal noise transfer from plant rooms to occupied spaces, and to achieve appropriate levels of speech privacy; and
 - the vibration isolation for mechanical and electrical plant will be designed to meet the vibration requirements of the electron microscope.

Health and Food Sciences Precinct.

191. The design of the building will ensure that the following conditions are achieved:
- environmental noise emissions from the building will be controlled to meet the noise criteria applicable to the site, which were established in accordance with Brisbane City Council requirements;
 - the building envelope will be designed to control noise intrusion from rain, traffic, and wind; and
 - the internal partitions, floors, and ceilings, will be designed to control internal noise transfer from plant rooms to occupied spaces, and to achieve appropriate levels of speech privacy.

ANNEXURE B - ASSOCIATED DRAWINGS

Region

Regional Location Plan (Sheet 1-29)

Ecosciences Precinct Drawings

Site Plan (Sheet 2-29)

Aerial View from Boggo Road (Sheet 3-29)

Basement 3 (Sheet 4-29)

Basement 2 (Sheet 5-29)

Basement 1 (Sheet 6-29)

Ground – Floor Plan (Sheet 7-29)

Level 1 – Floor Plan (Sheet 8-29)

Level 2 – Floor Plan (Sheet 9-29)

Level 3 – Floor Plan (Sheet 10-29)

Level 4 – Floor Plan (Sheet 11-29)

Level 5 – Floor Plan (Sheet 12-29)

Elevations – North, East (Sheet 13-29)

Elevations – South, West (Sheet 14-29)

Section C, Section D, (Sheet 15-29)

Section F, Section G, (Sheet 16-29)

South East Courtyard View (Sheet 17-29)

Perspective View from North-East (Sheet 18-29)

Health and Food Sciences Precinct Drawings

Site Plan (Sheet 19-29)

View from NE Corner of Site (Sheet 20-29)

Level 0 – Floor Plan (Sheet 21-29)

Level 1 – Floor Plan (Sheet 22-29)

Level 2 – Floor Plan (Sheet 23-29)

Level 3 – Floor Plan (Sheet 24-29)

Elevations – Block 10 - North, South, East, West (Sheet 25-29)

Sections – Block 10 - A, B, C (Sheet 26-29)

Elevations and Sections – Block 11 (Sheet 27-29)

View from NW Corner (Sheet 28-29)

Perspective from North East Corner of Site (Sheet 29-29)

ANNEXURE C - CONSULTATIONS

Commonwealth Government

Department of Agriculture, Fisheries and Forestry	The Secretary, Ms Joanna Hewitt
Department of Communications, Information Technology and the Arts	The Secretary, Ms Helen Williams
Department of Education Science and Training	The Secretary, Ms Lisa Paul
Department of Employment and Workplace Relations	The Secretary, Mr Peter Boxall
Department of Families, Community Services and Indigenous Affairs	The Secretary, Dr Jeff Harmer
Department of Foreign Affairs and Trade	The Secretary, Mr Michael L'Estrange
Department of Industry, Tourism and Resources	The Secretary, Mr Mark Peterson
Department of Environment and Water Resources	The Secretary, Mr David Borthwick
Department of Transport and Regional Development	The Secretary, Mr Michael Taylor
Department of Environment and Water Resources: Building Energy Efficiency and Sustainability Australian Greenhouse Office	The Director, Dr Tony Marker
Department of Health and Ageing Office of the Gene Technology Regulator (OGTR)	The Regulator, Dr Sue Meek
Department of Agriculture, Fisheries and Forestry Australian Quarantine and Inspection Service (AQIS)	The Deputy Secretary & Executive Director, Mr Steven Hunter

State and Local Government

Workplace Health and Safety Queensland Queensland Department of Health	The General Manager, Ms Judy Bertram Office of the Director-General, Ms Uschi Schreiber
Queensland Fire and Rescue Service	The Commissioner, Mr Lee Johnson
Queensland Transport	Office of the Director-General, Mr Bruce Wilson
Queensland Department of Public Works - Project Services	The General Manager, Mr Don Rivers

Federal, State and Local Members

LOCAL MEMBERS:

Brisbane City Council
Dutton Park Ward Office

Mr Campbell Newman, Lord Mayor
Cr Helen Abrahams

STATE MEMBERS:

Member for South Brisbane
Member for Cleveland
Member for Indooroopilly
Member for Bulimba

The Hon Anna Bligh, MP
Mr Phillip Weightman, MP
Mr Ronan Lee, MP
The Hon Patrick Purcell, MP

FEDERAL MEMBERS:

Member for Griffith
Member for Moreton
Member for Ryan
Member for Brisbane

Mr Kevin Rudd, MP
The Hon Gary Hardgrave, MP
Mr Michael Johnson, MP
The Hon Arch Bevis, MP

Universities

The University of Queensland

Office of the Vice-Chancellor, Professor John Hay

Queensland University of Technology

Vice Chancellor's Office, Professor Peter Coaldrake

Griffith University

Office of the Vice Chancellor, Professor Ian O'Connor

Other Organisations

Energex Ltd

The Chief Executive Officer

Telstra Corporation Ltd

The Chief Executive Officer

Queensland Master Builders Association

The Chief Executive Officer

CSIRO Division of Community Public Sector Union (CPSU)

The Regional Director, Mr Bill Marklew

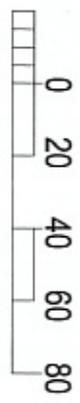
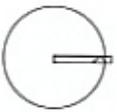
Various local resident groups for both the Ecosciences and Health & Food Precincts.



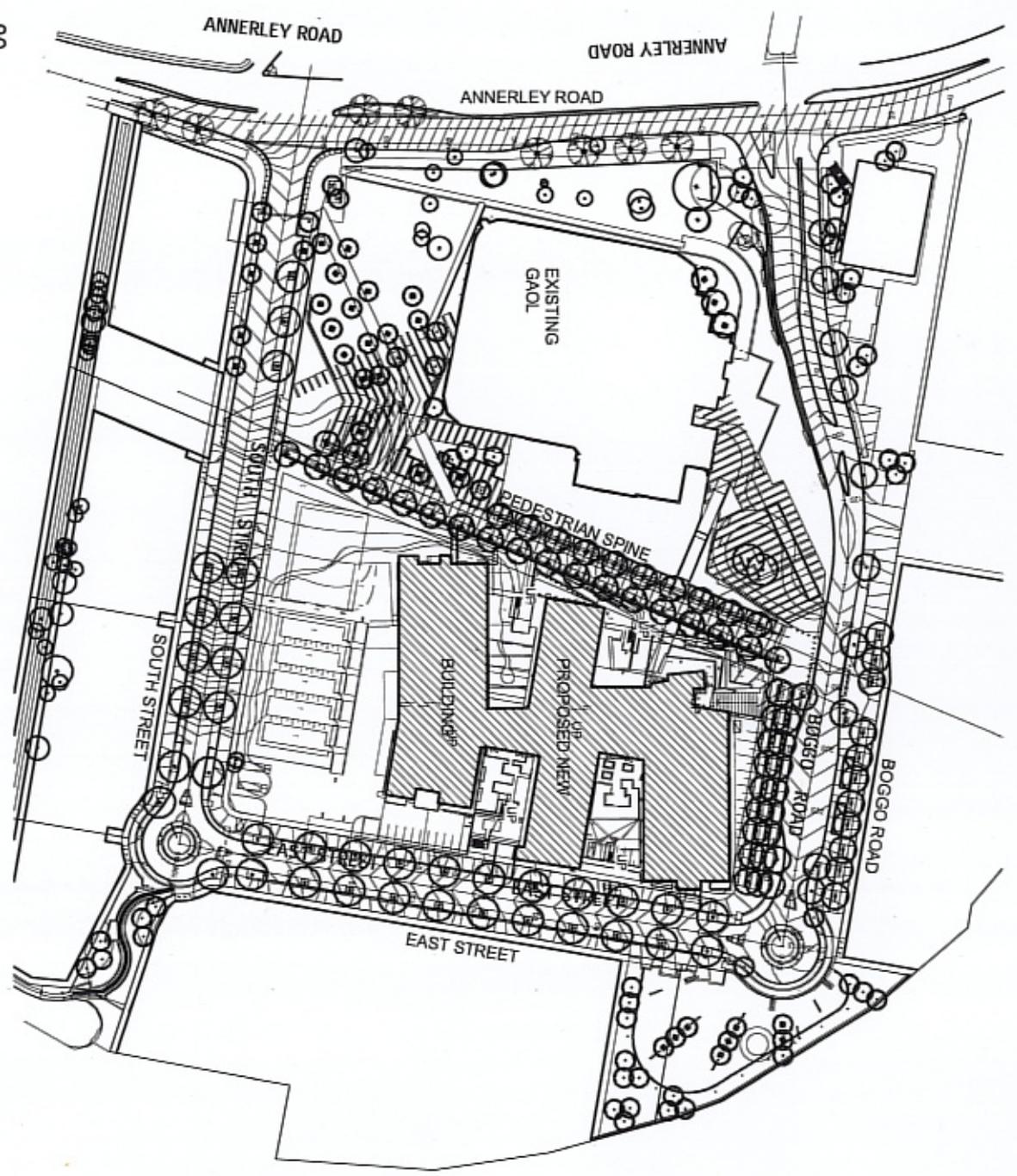
REGIONAL LOCATION PLAN

KBRB Ecoscience Precinct - BOGGGO RD





SITE PLAN

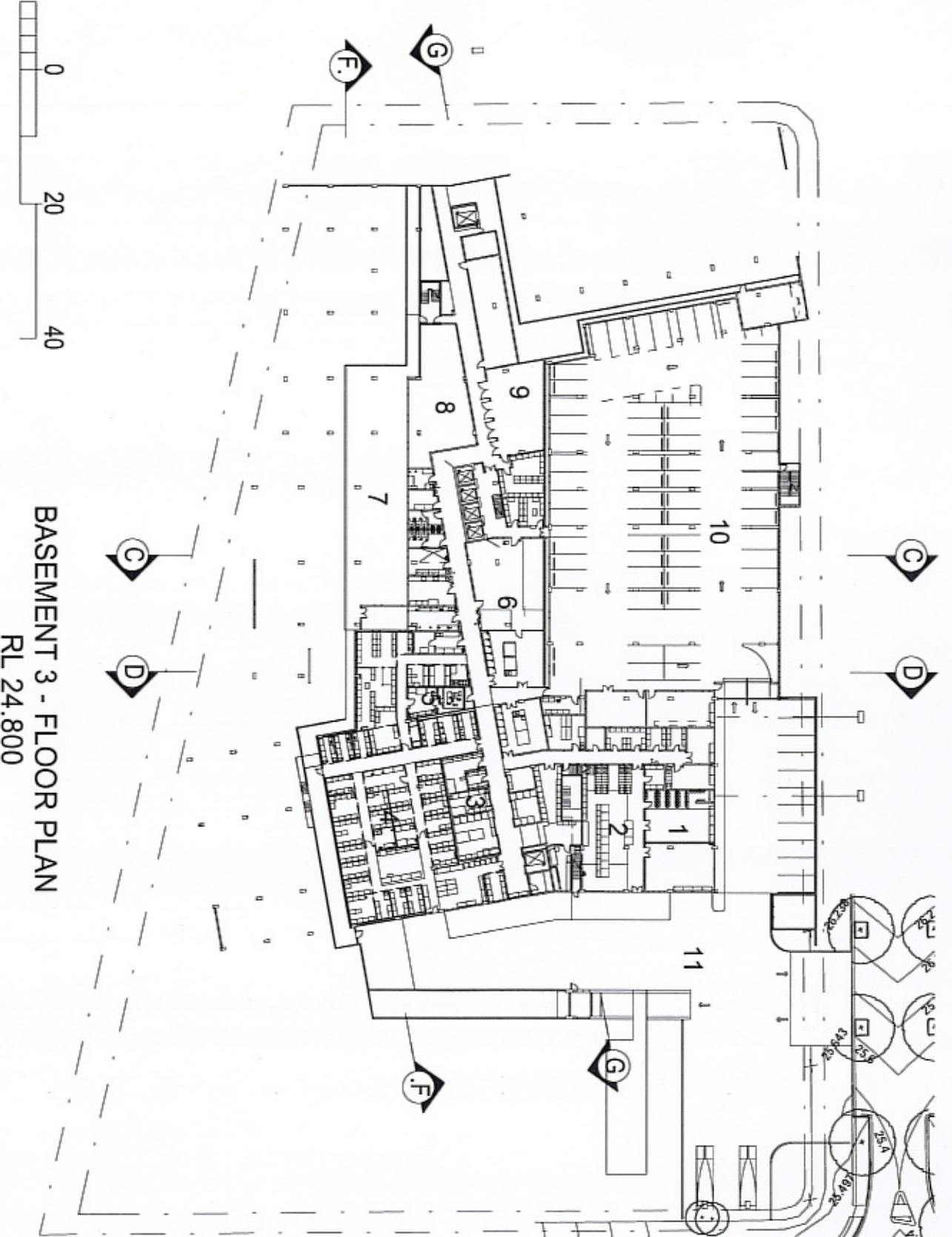




AERIAL VIEW FROM BOGGO ROAD

KBRB Ecosciences Precinct - BOGGO RD





BASEMENT 3 - FLOOR PLAN
RL 24.800

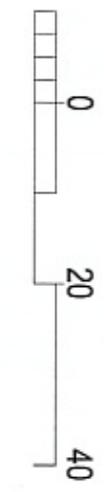
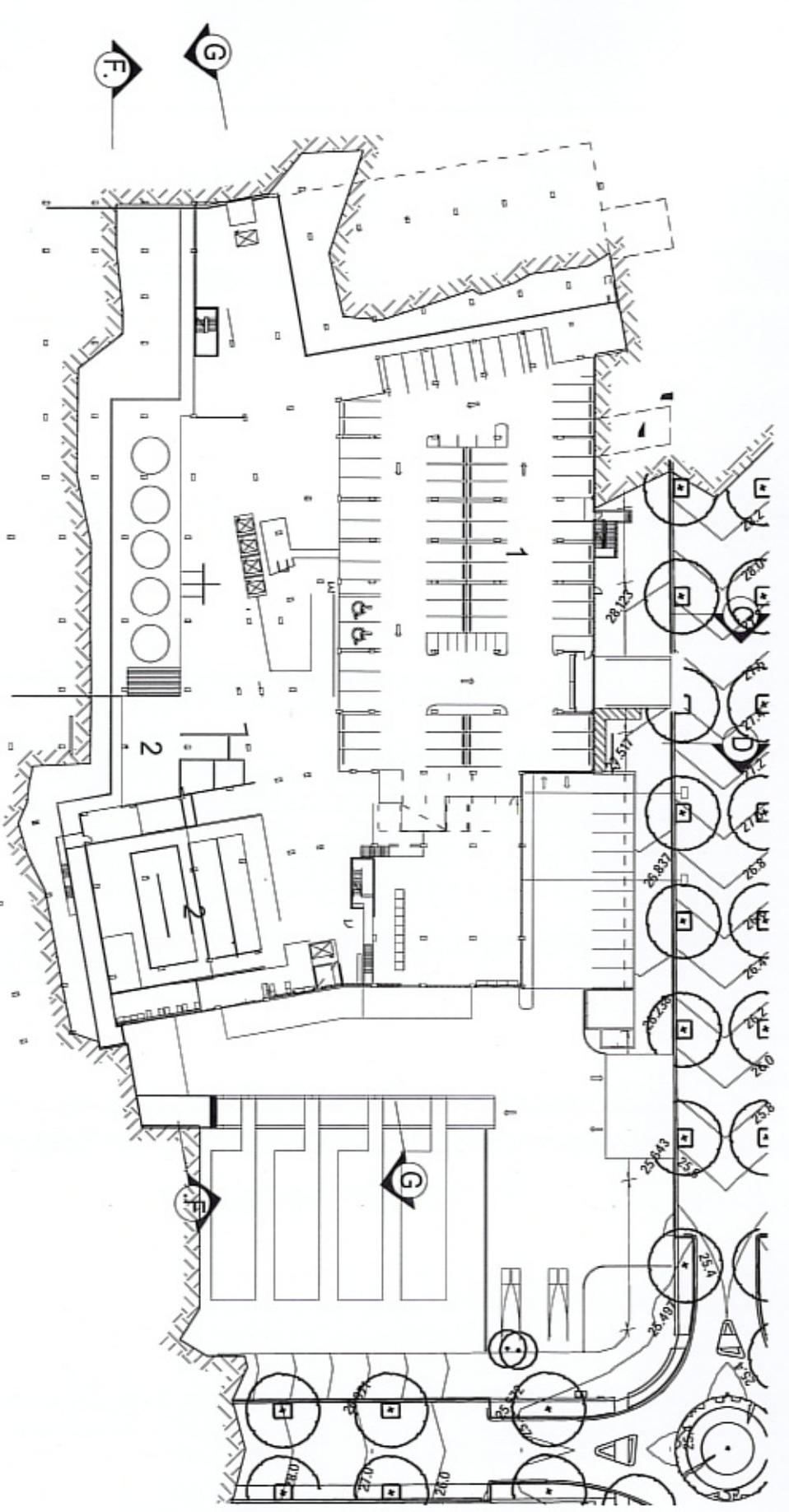
- LEGEND**
- 1. STORES
 - 2. GOODS RECEIPT
 - 3. HEADHOUSE
 - 4. INSECTARIES
 - 5. ELECTRON MICROSCOPE
 - 6. PLANT GROWTH CABINETS
 - 7. RAINWATER STORAGE TANKS
 - 8. AQUACULTURE PLANT
 - 9. ELECTRICAL PLANT
 - 10. CARPARK
 - 11. LOADING AREA



KBRB Ecosciences Precinct - BOGGO RD



Sheet 4-29



BASEMENT 2 - FLOOR PLAN
RL 27.500



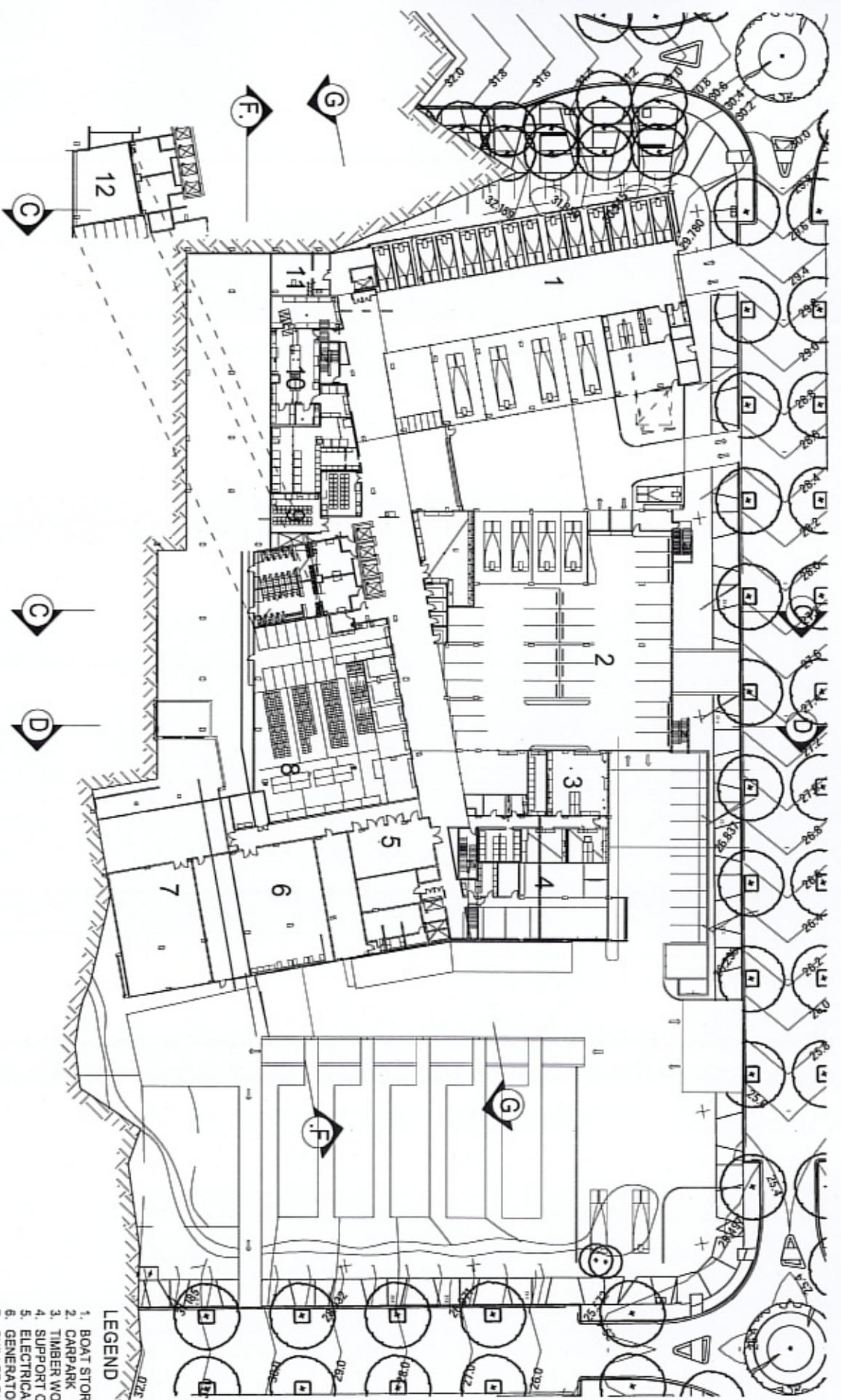
- LEGEND
- 1. CARPARK
 - 2. MECHANICAL PLANT TO PLATFORM ABOVE



KBRB Ecosciences Precinct - BOGGO RD

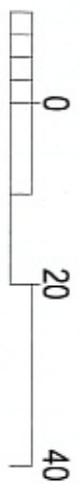


Sheet 5-29



BASEMENT 1 - FLOOR PLAN
 RL 30.200

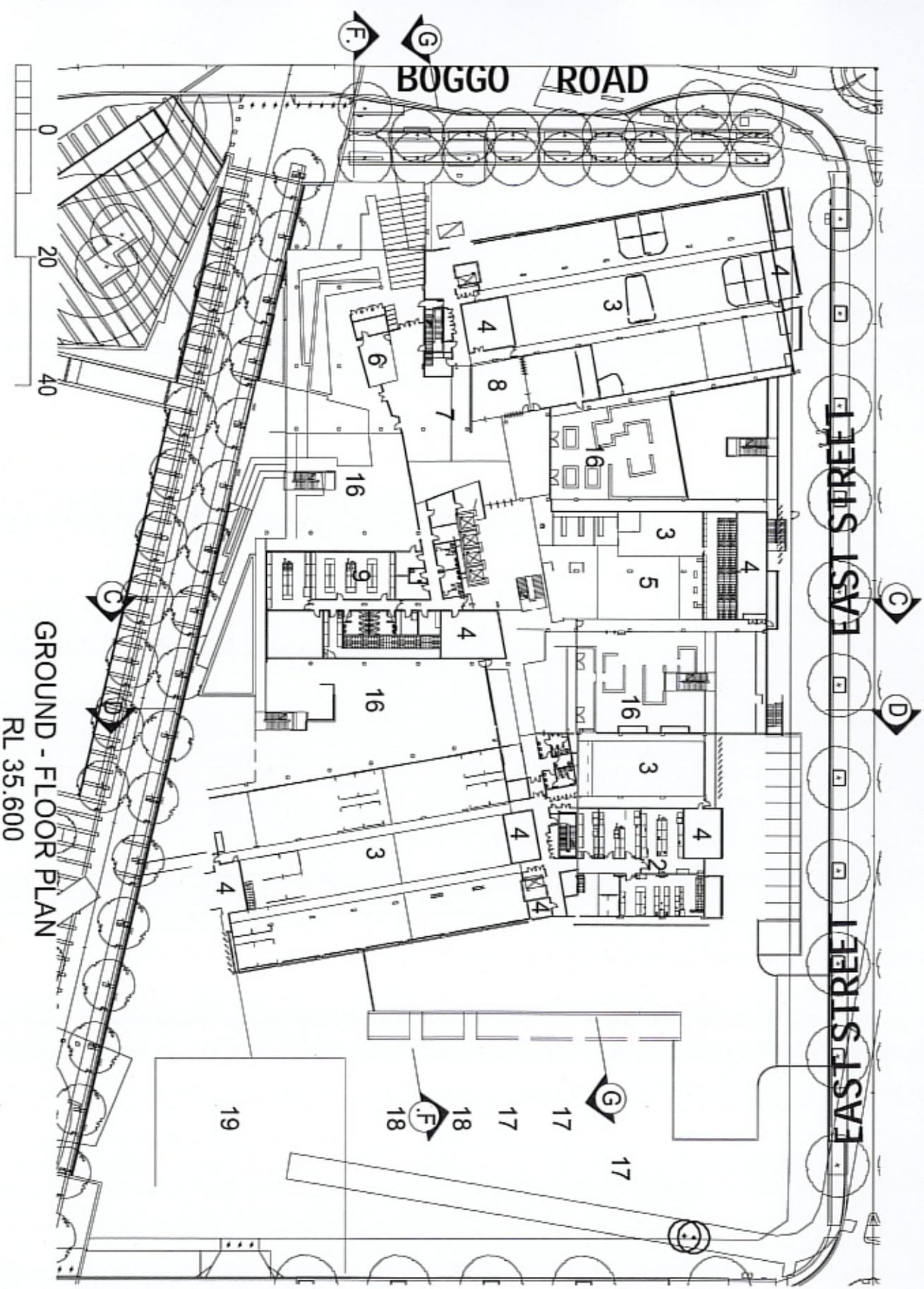
- LEGEND**
- 1. BOAT STORAGE
 - 2. CARPARK
 - 3. TIMBER WORKSHOP
 - 4. SUPPORT OFFICES
 - 5. ELECTRICAL PLANT
 - 6. GENERATORS
 - 7. CHILLER PLANT
 - 8. FIELD GEAR STORE
 - 9. AQUACULTURE TANKS
 - 10. MARINE PROCESSING
 - 11. DIVING STORE
 - 12. SERVICES PLANT ON MEZZANINE



KBRB Ecosciences Precinct - BOGGO RD



Sheet 6-29



GROUND - FLOOR PLAN
RL 35.600

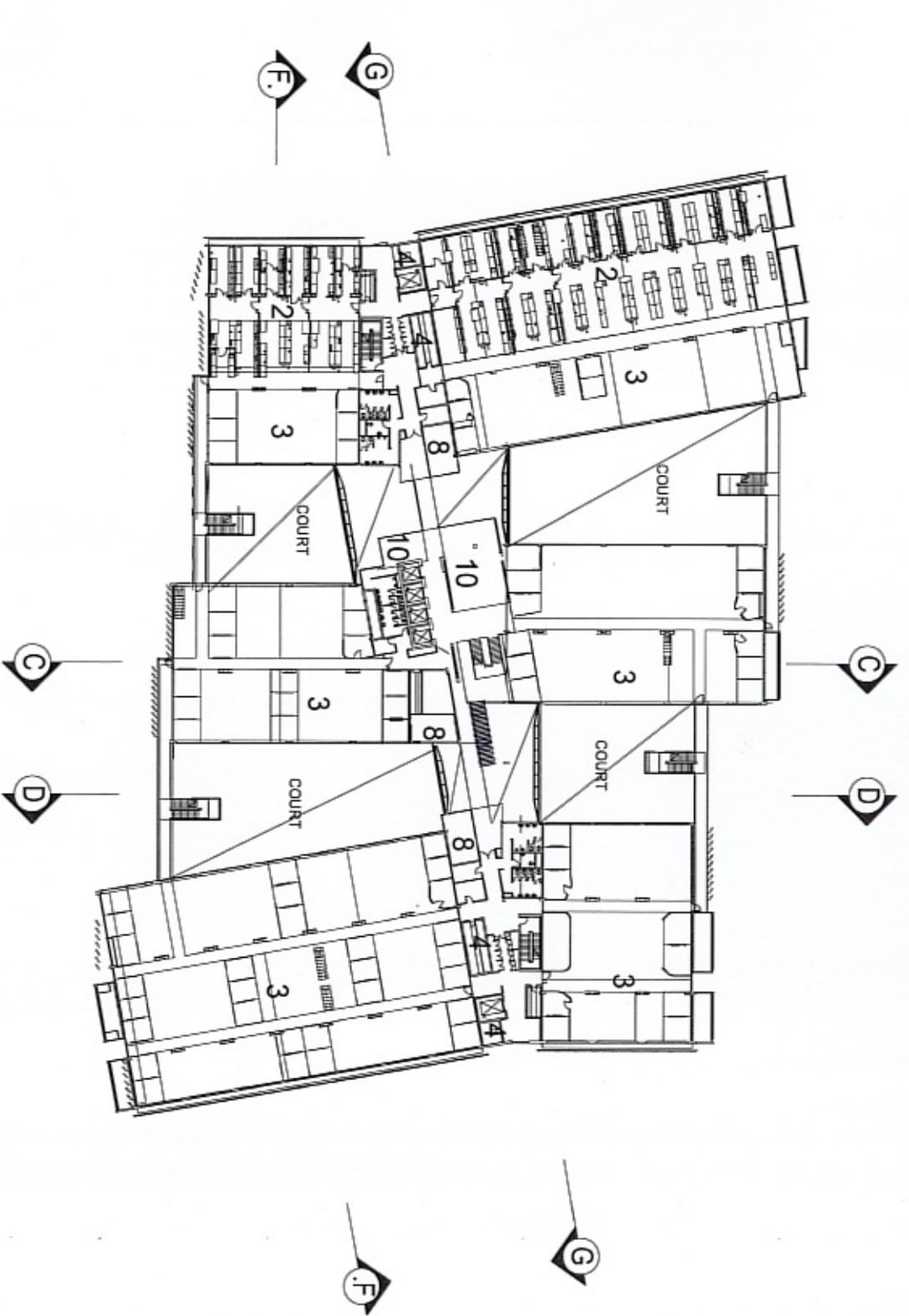
- LEGEND**
- 1. CENTRAL SUPPORT
 - 2. LAB
 - 3. OFFICE
 - 4. SERVICES
 - 5. LIBRARY
 - 6. CAFE
 - 7. FOYER
 - 8. SEMINAR
 - 9. CSIROSEC
 - 10. INTERACTION MEETING ROOM
 - 11. ICT
 - 12. WASH UP
 - 13. MEDIA PREPERATION
 - 14. LIBRARY STORE
 - 15. ARCHIVE
 - 16. COURTYARD
 - 17. POT PLOTS
 - 18. PONDS
 - 19. HOST GARDEN
 - 20. GLASS HOUSES
 - 21. SHADE HOUSE



KBRB Ecosciences Precinct - BOGGGO RD



Sheet 7-29



LEVEL 1 - FLOOR PLAN
RL 40.100

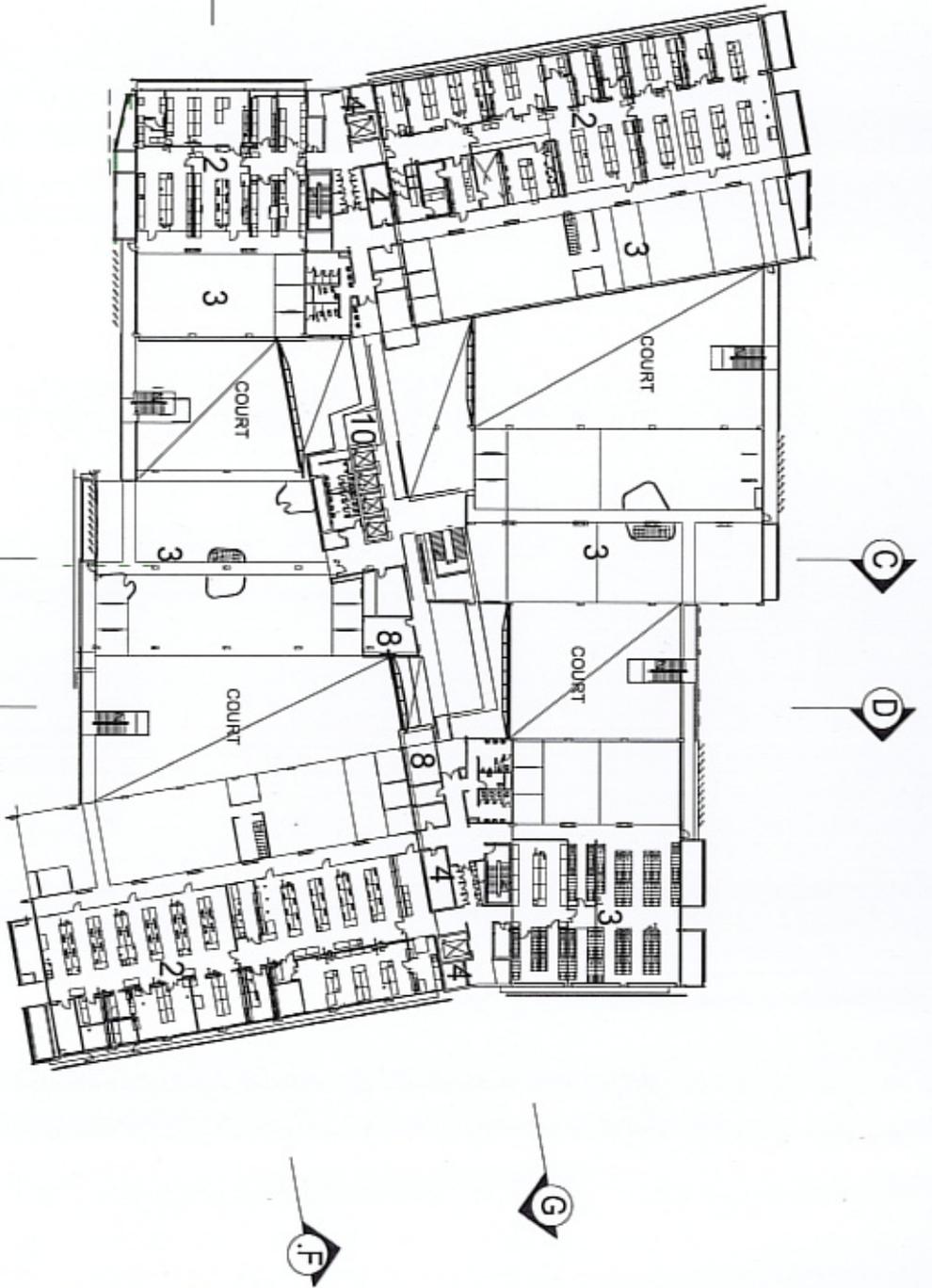


KBRB Ecosciences Precinct - BOGGO RD

LEGEND

1. CENTRAL SUPPORT
2. LAB
3. OFFICE
4. SERVICES
5. LIBRARY
6. CAFE
7. Foyer
8. SEMINAR
9. CSIROSEC
10. INTERACTION MEETING ROOM
11. ICT
12. WASH UP
13. MEDIA PREPERATION
14. LIBRARY STORE
15. ARCHIVE
16. COURTYARD
17. POTT PLOTS
18. PONDS
19. HOST GARDEN
20. GLASS HOUSES
21. SHADE HOUSE





LEVEL 2 - FLOOR PLAN
RL 44.600

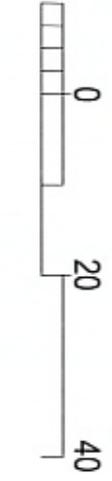
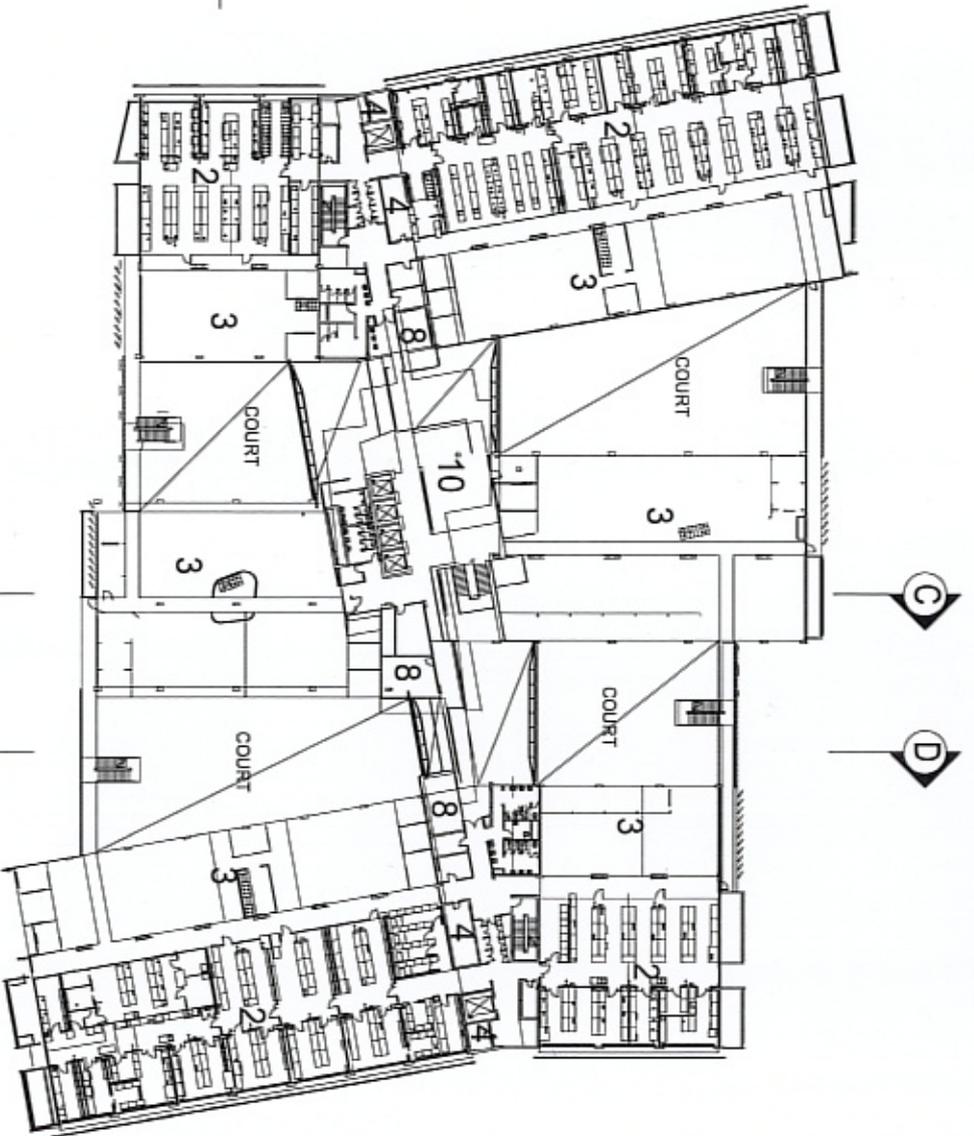
KBRB Ecosciences Precinct - BOGGO RD

- LEGEND**
- 1. CENTRAL SUPPORT
 - 2. LAB
 - 3. OFFICE
 - 4. SERVICES
 - 5. LIBRARY
 - 6. CAFE
 - 7. FOYER
 - 8. SEMINAR
 - 9. CSIROSEC
 - 10. INTERACTION MEETING ROOM
 - 11. ICT
 - 12. WASH UP
 - 13. MEDIA PREPERATION
 - 14. LIBRARY STORE
 - 15. ARCHIVE
 - 16. COURTYARD
 - 17. POT PLOTS
 - 18. PONDS
 - 19. HOST GARDEN
 - 20. GLASS HOUSES
 - 21. SHADE HOUSE



Sheet 9-29

HASSELL



LEVEL 3 - FLOOR PLAN
RL 49.100

KBRB Ecosciences Precinct - BOGGO RD

LEGEND

- 1. CENTRAL SUPPORT
- 2. LAB
- 3. OFFICE
- 4. SERVICES
- 5. LIBRARY
- 6. CAFE
- 7. FOYER
- 8. SEMINAR
- 9. CSIROSEC
- 10. INTERACTION MEETING ROOM
- 11. ICT
- 12. WASH UP
- 13. MEDIA PREPERATION
- 14. LIBRARY STORE
- 15. ARCHIVE
- 16. COURTYARD
- 17. POT PLOTS
- 18. PONDS
- 19. HOST GARDEN
- 20. GLASS HOUSES
- 21. SHADE HOUSE

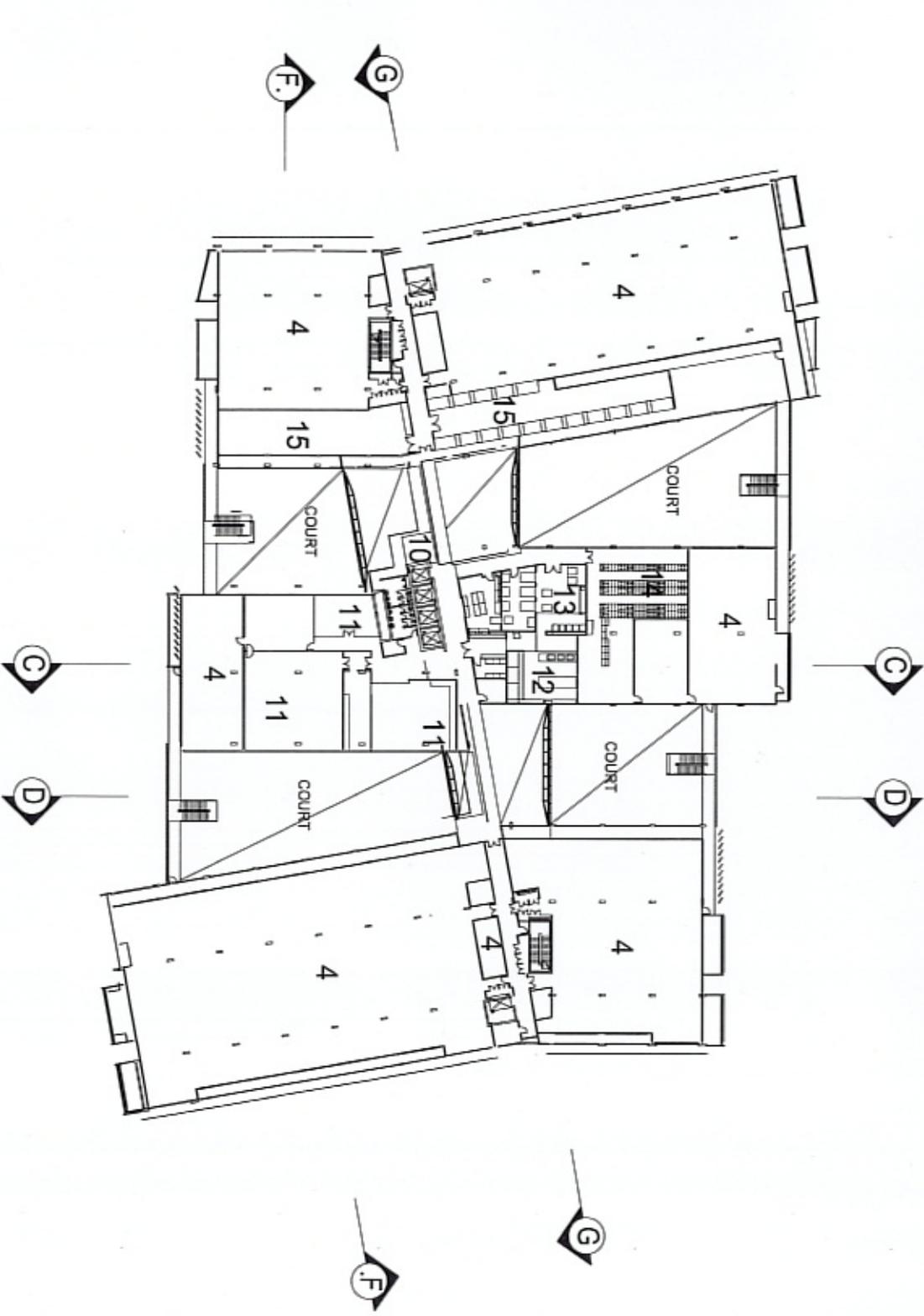


CSIRO

Sheet 10-29



Queensland
Government

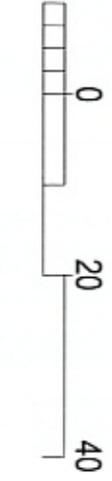
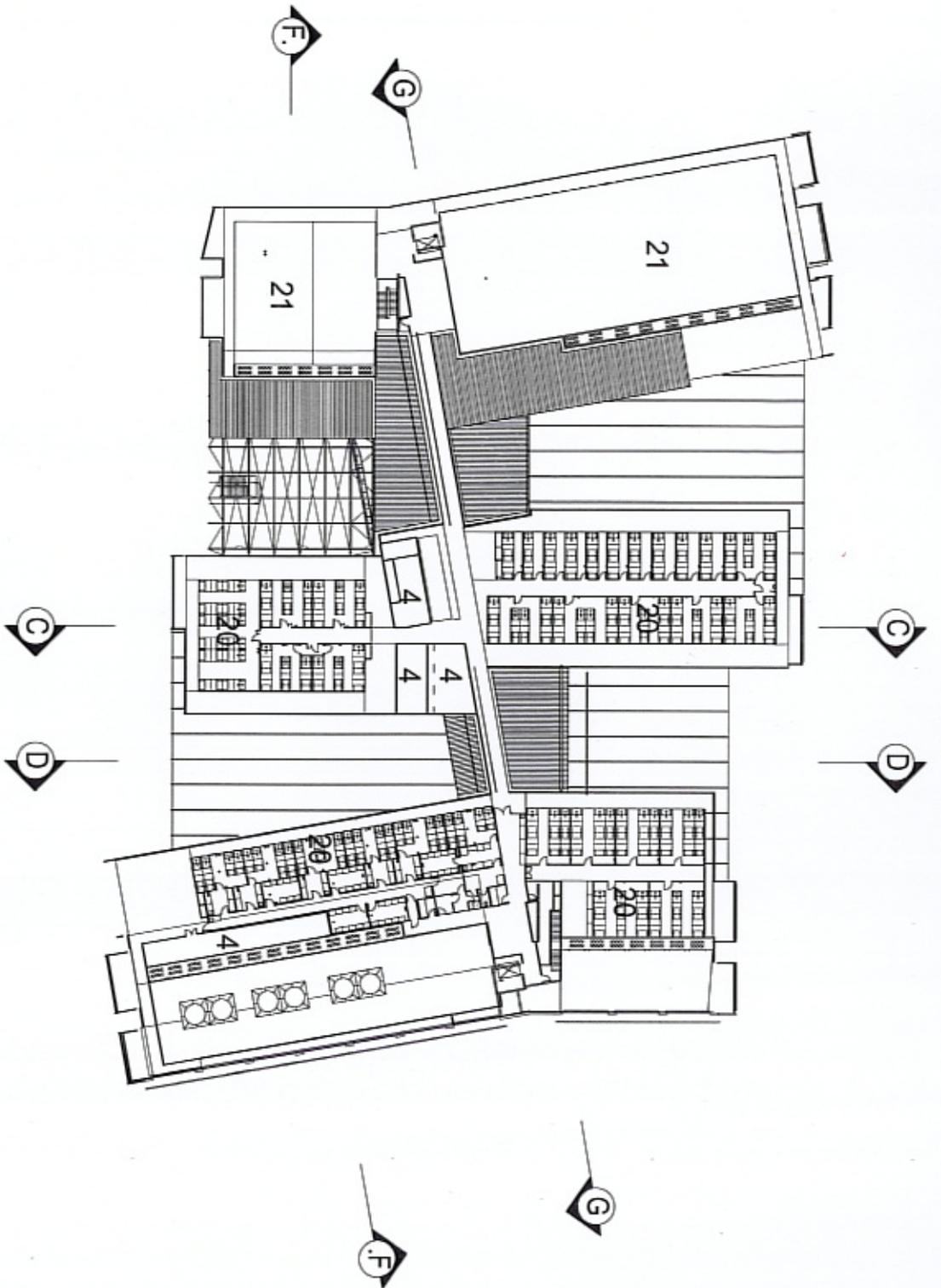


LEVEL 4 - FLOOR PLAN
RL 53.600

KBRB Ecosciences Precinct - BOGGO RD

- LEGEND**
- 1. CENTRAL SUPPORT
 - 2. LAB
 - 3. OFFICE
 - 4. SERVICES
 - 5. LIBRARY
 - 6. CAFE
 - 7. FOYER
 - 8. SEMINAR
 - 9. CSIROSEC
 - 10. INTERACTION MEETING ROOM
 - 11. ICT
 - 12. WASH UP
 - 13. MEDIA PREPERATION
 - 14. LIBRARY STORE
 - 15. ARCHIVE
 - 16. COURTYARD
 - 17. POT PLOTS
 - 18. PONDS
 - 19. HOST GARDEN
 - 20. GLASS HOUSES
 - 21. SHADE HOUSE





LEVEL 5 - FLOOR PLAN (ROOF)
RL 58.100

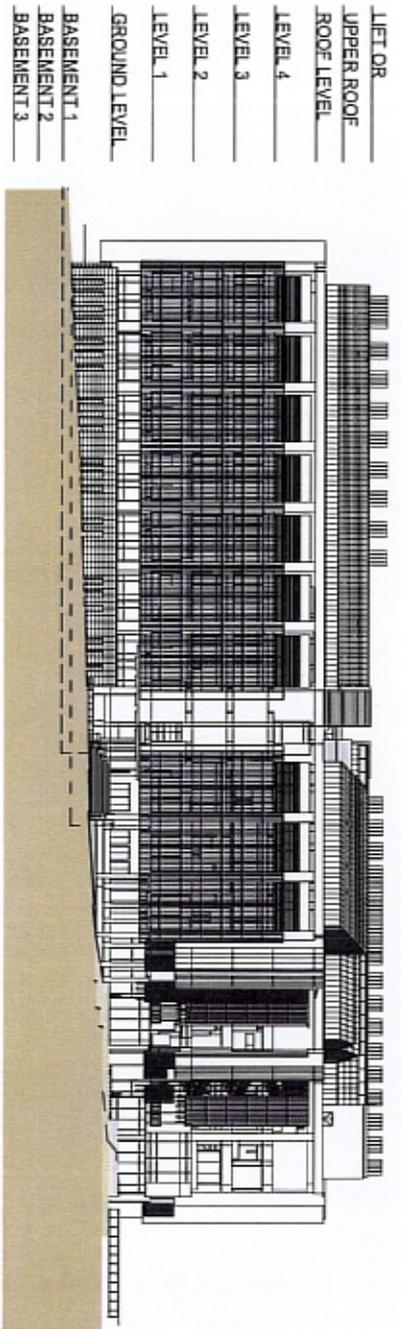
- LEGEND**
1. CENTRAL SUPPORT
 2. LAB
 3. OFFICE
 4. SERVICES
 5. LIBRARY
 6. CAFE
 7. FOYER
 8. SEMINAR
 9. CSIROSEC
 10. INTERACTION MEETING ROOM
 11. ICT
 12. WASH UP
 13. MEDIA PREPERATION
 14. LIBRARY STORE
 15. ARCHIVE
 16. COURTYARD
 17. POT PLOTS
 18. PONDS
 19. HOST GARDEN
 20. GLASS HOUSES
 21. SHADE HOUSE



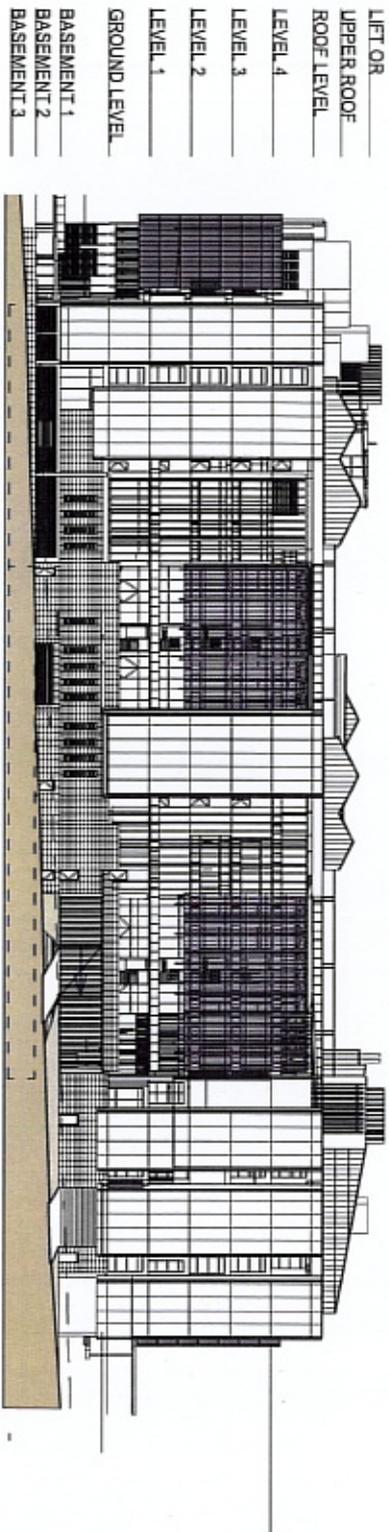
KBRB Ecosciences Precinct - BOGGO RD



Sheet 12-29

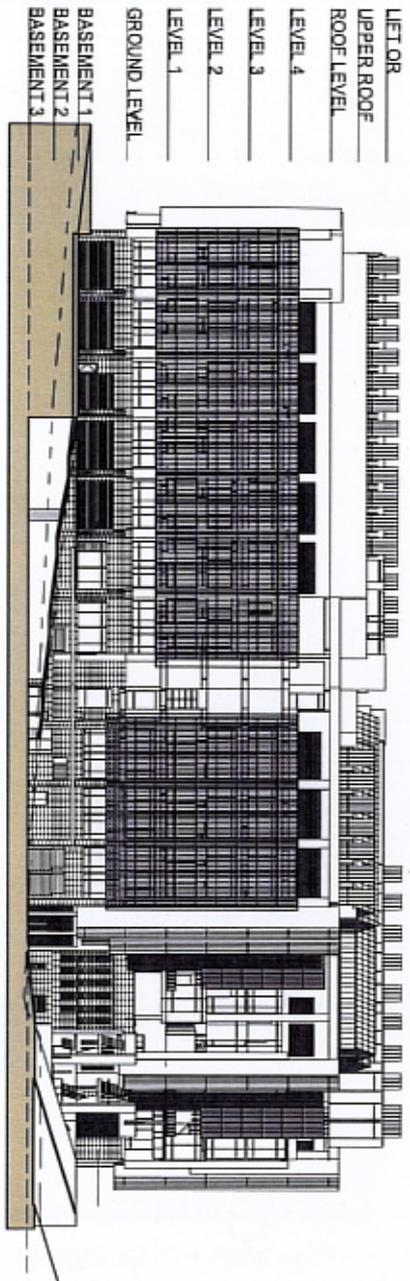


NORTH ELEVATION

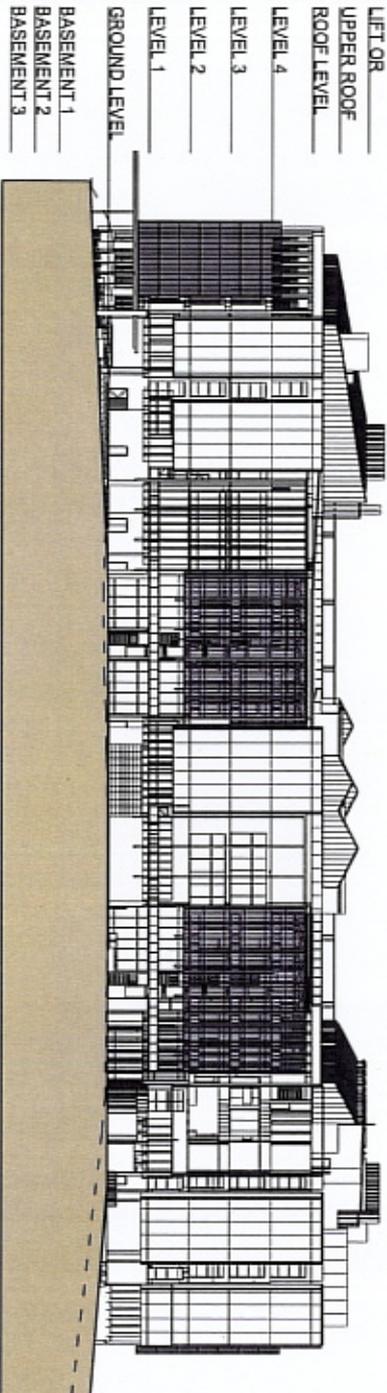


EAST ELEVATION



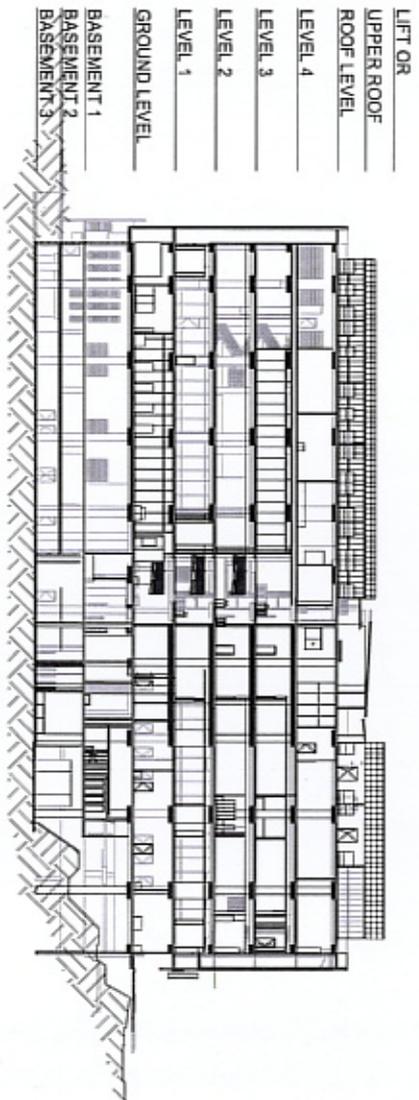


SOUTH ELEVATION

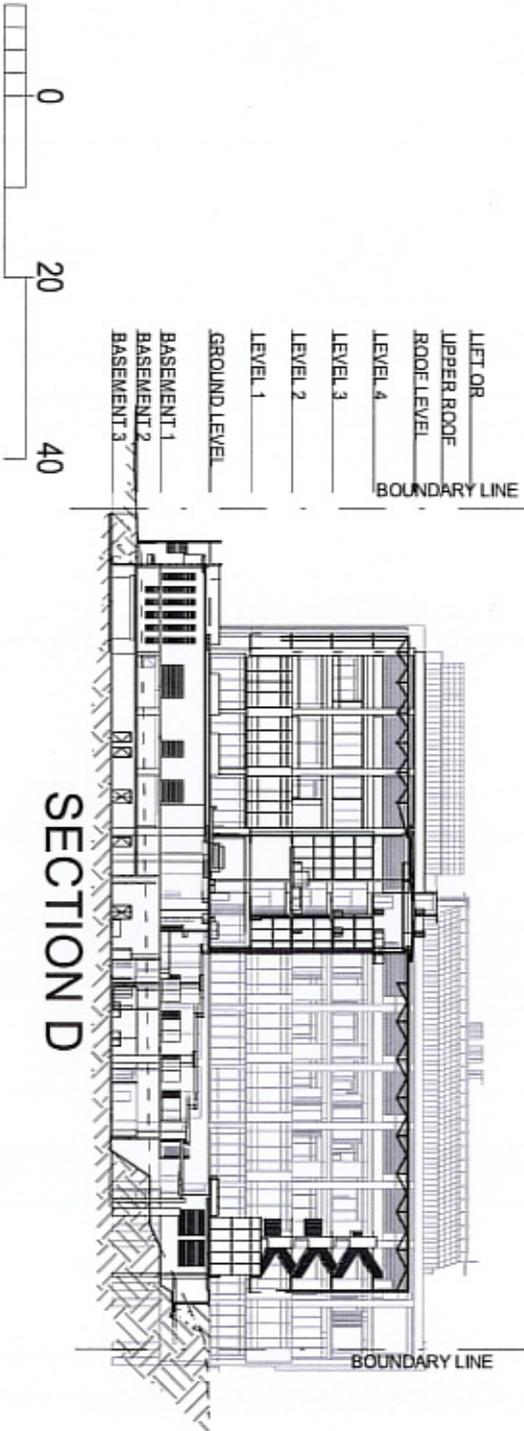


WEST ELEVATION

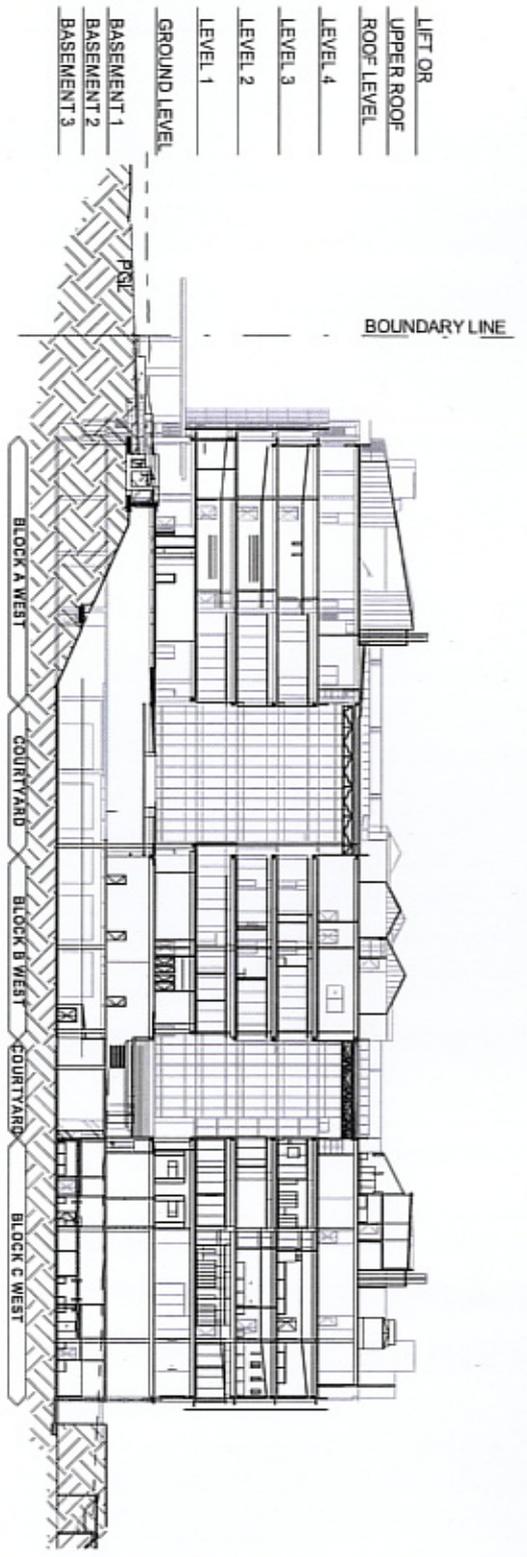




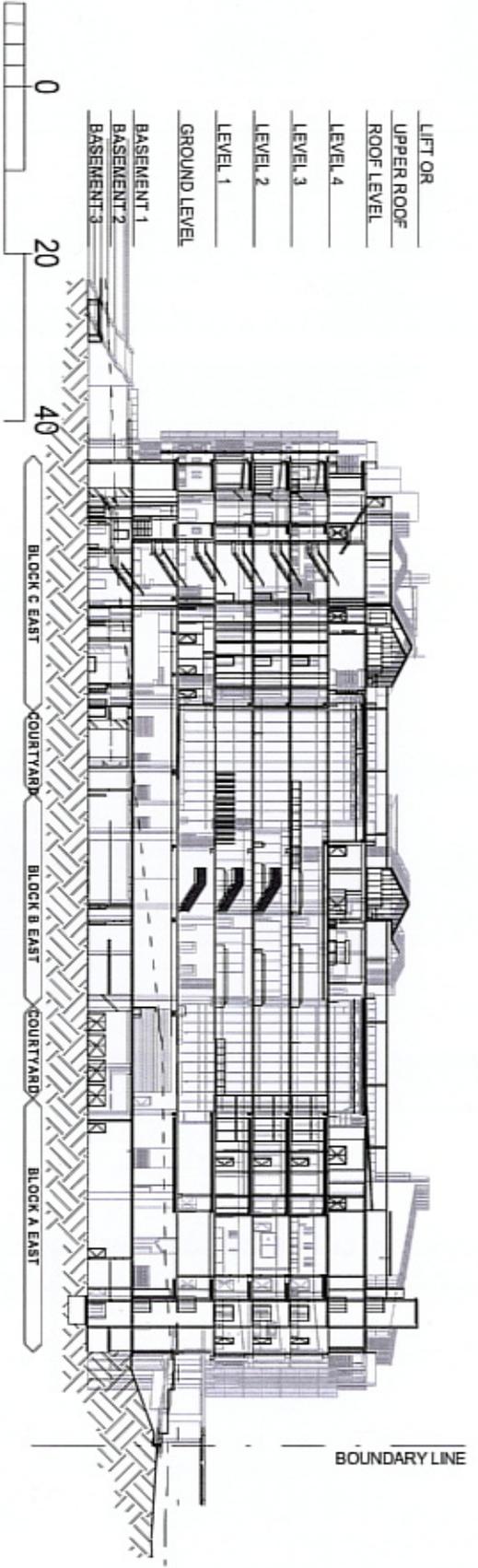
SECTION C



SECTION D



SECTION F

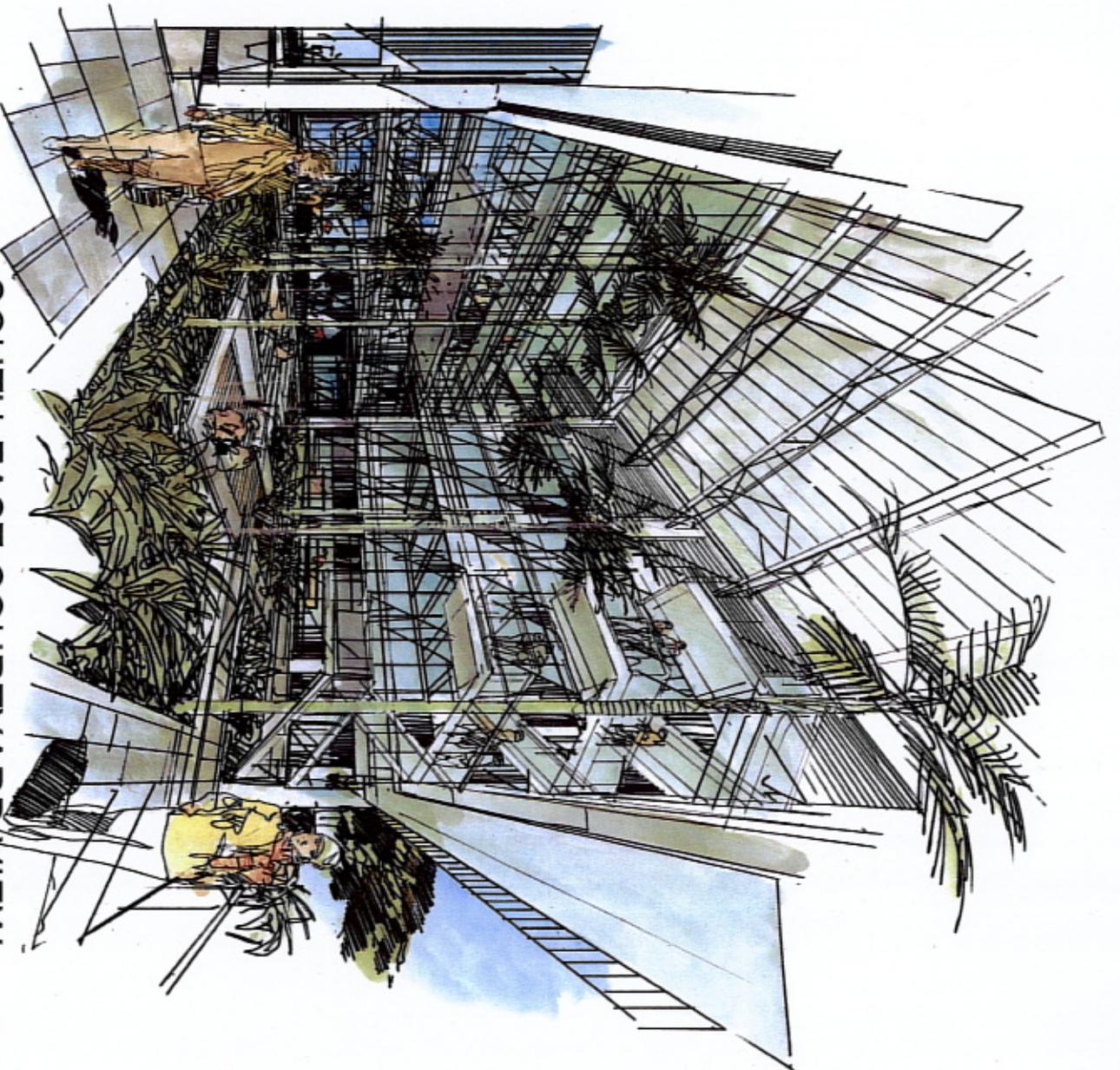


SECTION G



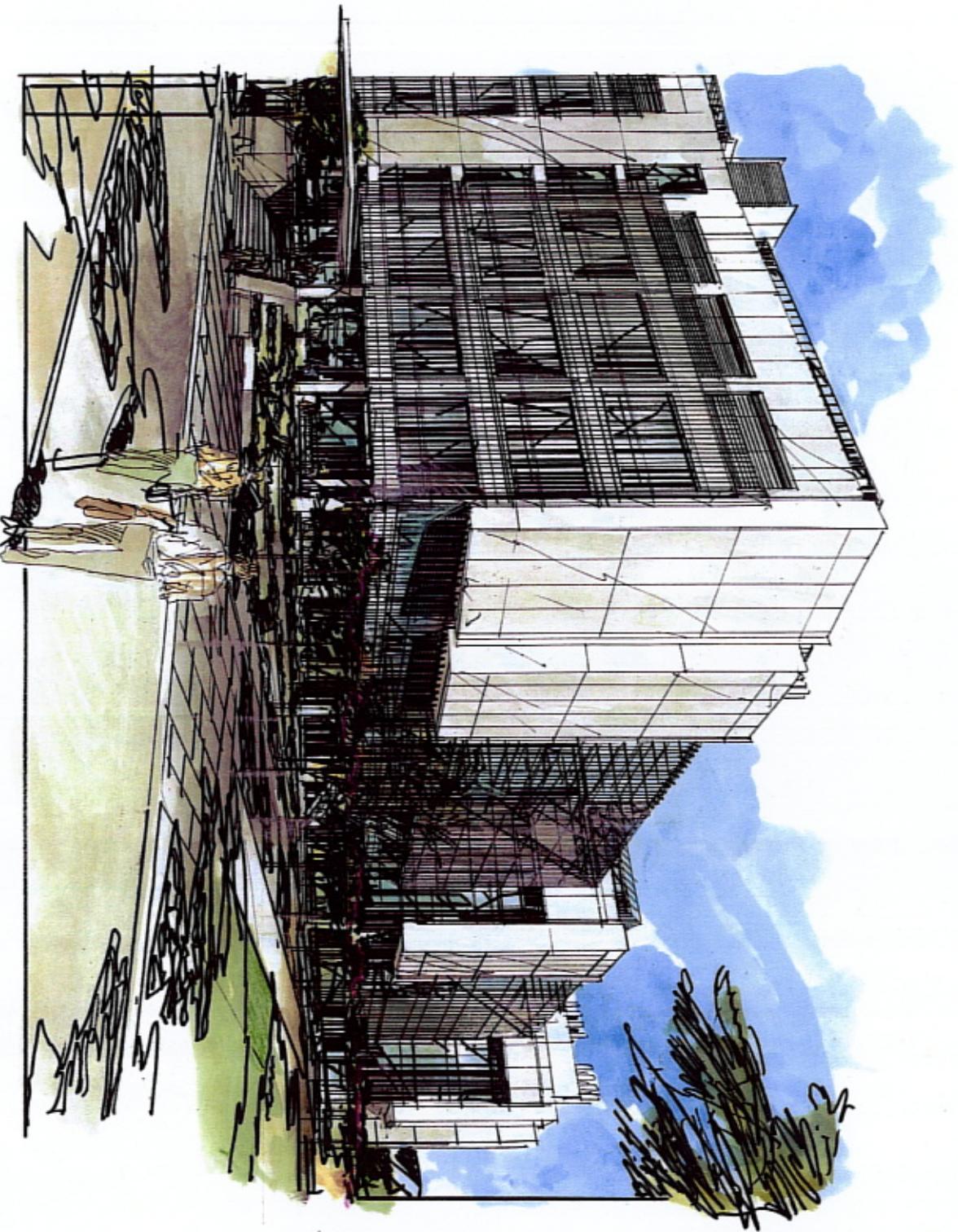
KBRB Ecosciences Precinct - BOGGO RD





SOUTH-EAST COURTYARD VIEW
KBRB Ecosciences Precinct - BOGGO RD

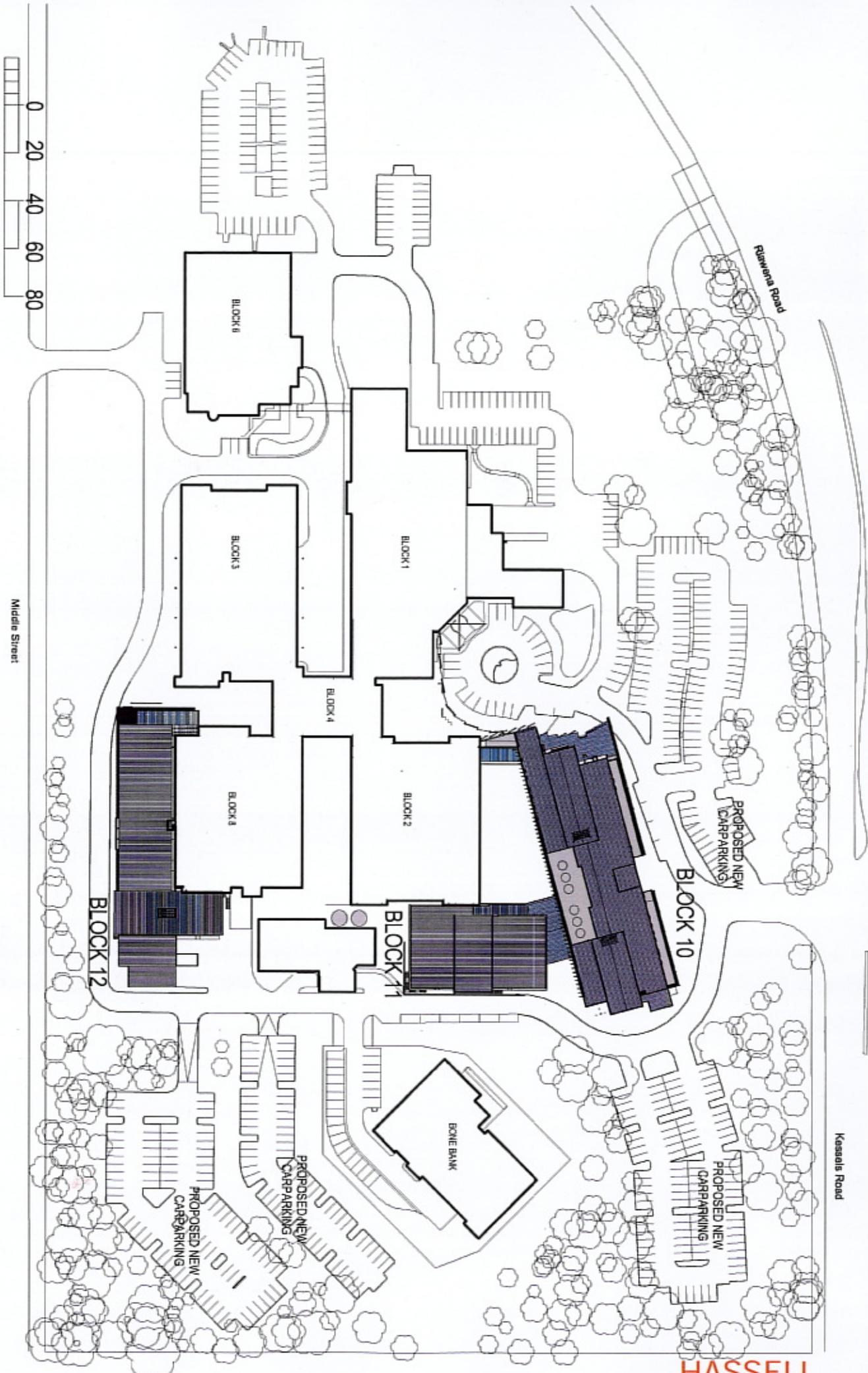




PERSPECTIVE VIEW FROM NORTH-EAST

KBRB Ecosciences Precinct - BOGGO RD





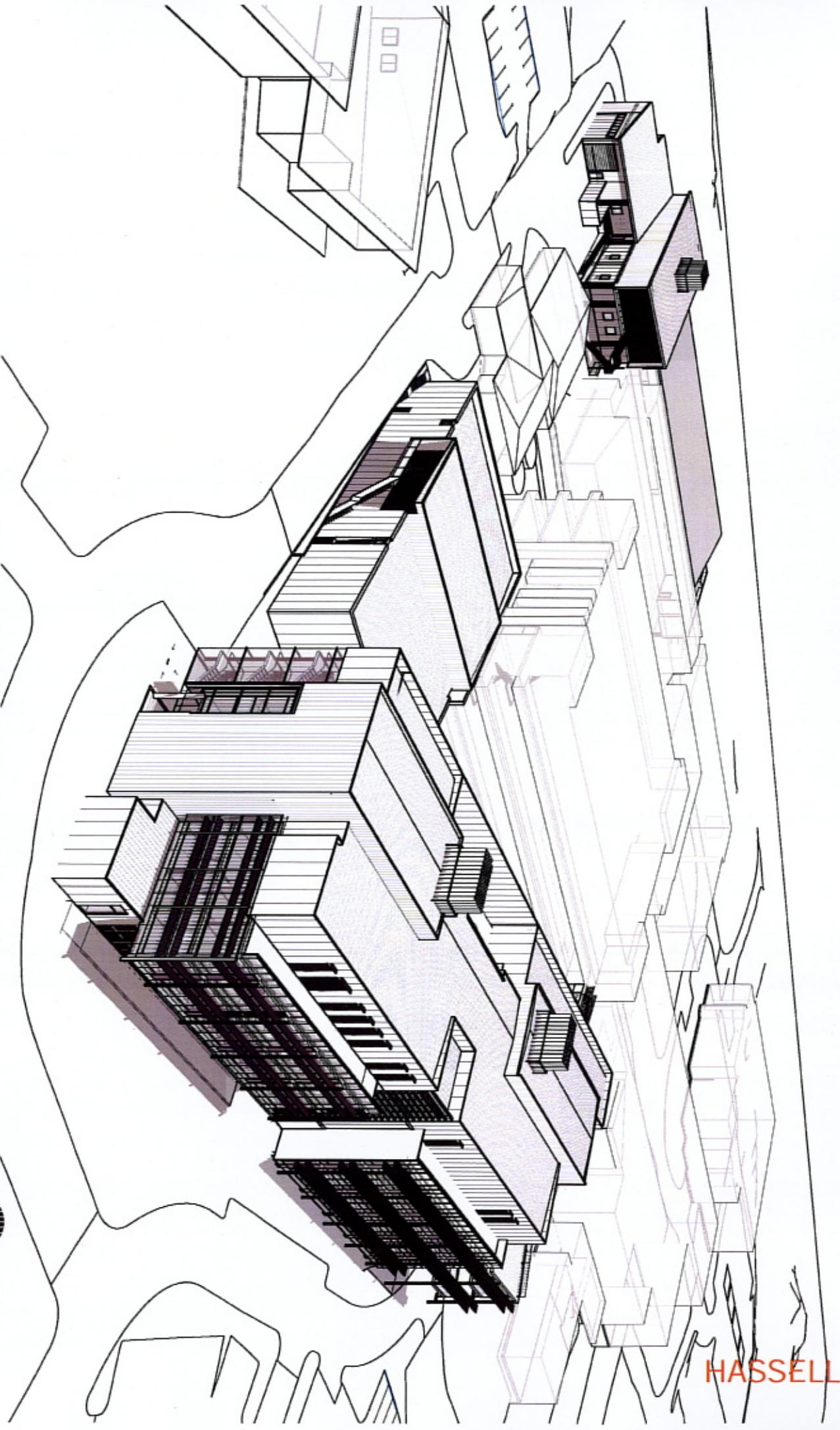
HASSELL



KBRB Health and Food Sciences Precinct Coopers Plains

SITE PLAN





HASSELL

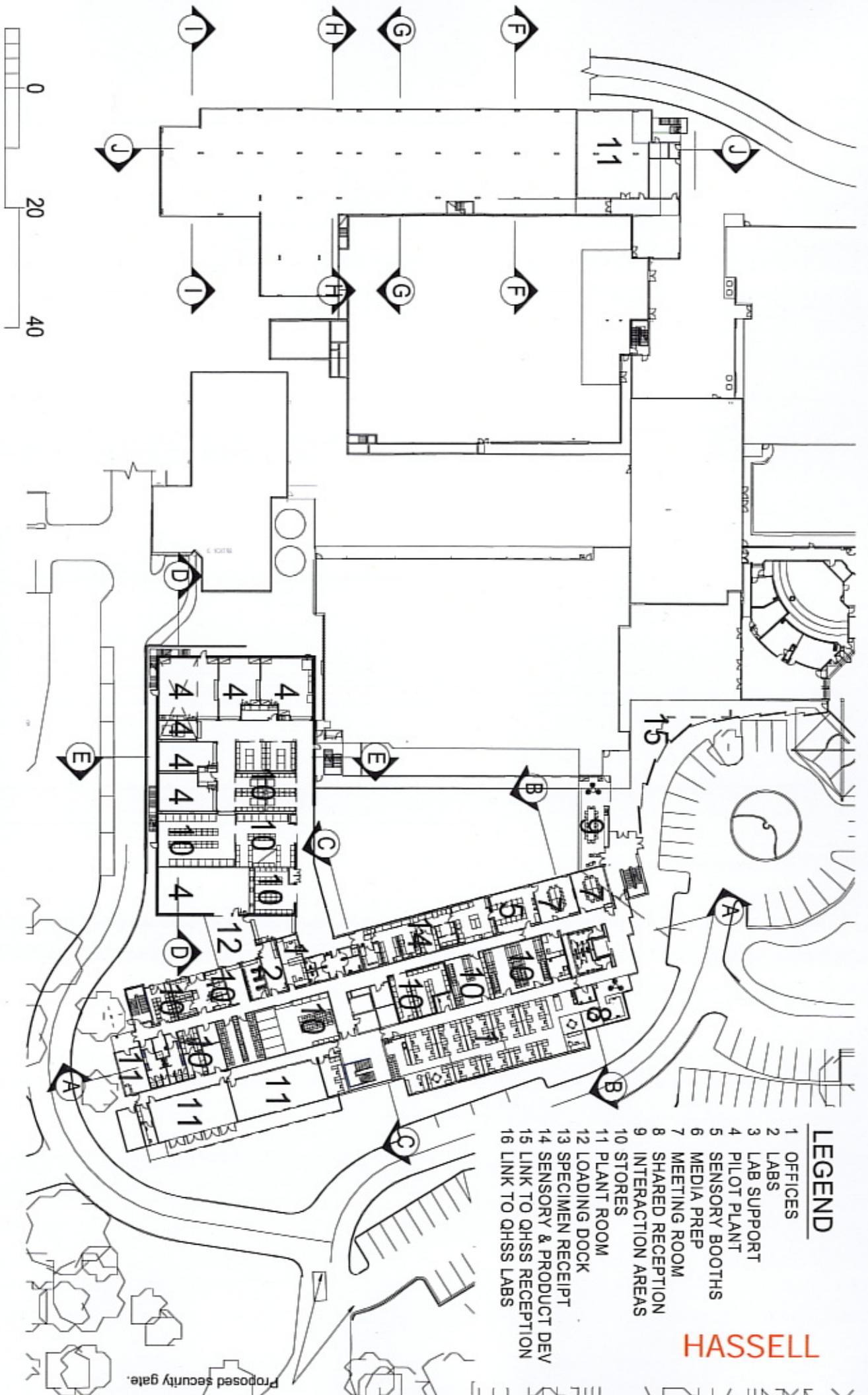
VIEW FROM NE CORNER OF SITE

KBRB Health and Food Sciences Precinct Coopers Plains



Sheet 20-29

- LEGEND**
- 1 OFFICES
 - 2 LABS
 - 3 LAB SUPPORT
 - 4 PILOT PLANT
 - 5 SENSORY BOOTHS
 - 6 MEDIA PREP
 - 7 MEETING ROOM
 - 8 SHARED RECEPTION
 - 9 INTERACTION AREAS
 - 10 STORES
 - 11 PLANT ROOM
 - 12 LOADING DOCK
 - 13 SPECIMEN RECEIPT
 - 14 SENSORY & PRODUCT DEV
 - 15 LINK TO QHSS RECEPTION
 - 16 LINK TO QHSS LABS



GROUND LEVEL - FLOOR PLAN

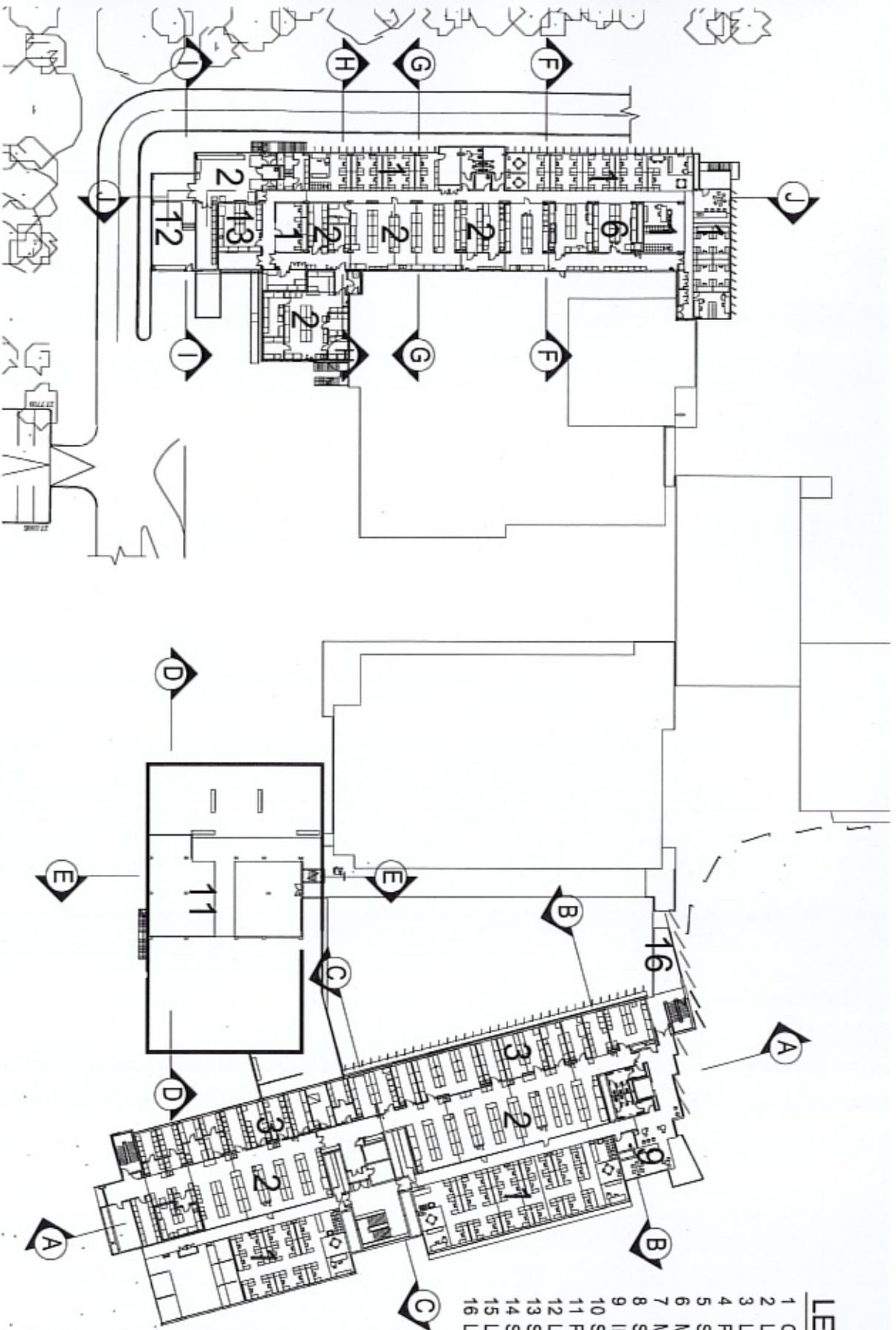
RL 24.010

KBRB Health and Food Sciences Precinct Coopers Plains



LEGEND

- 1 OFFICES
- 2 LABS
- 3 LAB SUPPORT
- 4 PILOT PLANT
- 5 SENSORY BOOTHS
- 6 MEDIA PREP
- 7 MEETING ROOM
- 8 SHARED RECEPTION
- 9 INTERACTION AREAS
- 10 STORES
- 11 PLANT ROOM
- 12 LOADING DOCK
- 13 SPECIMEN RECEIPT
- 14 SENSORY & PRODUCT DEV
- 15 LINK TO QHSS RECEPTION
- 16 LINK TO QHSS LABS



LEVEL 1 - FLOOR PLAN

RL 28.210



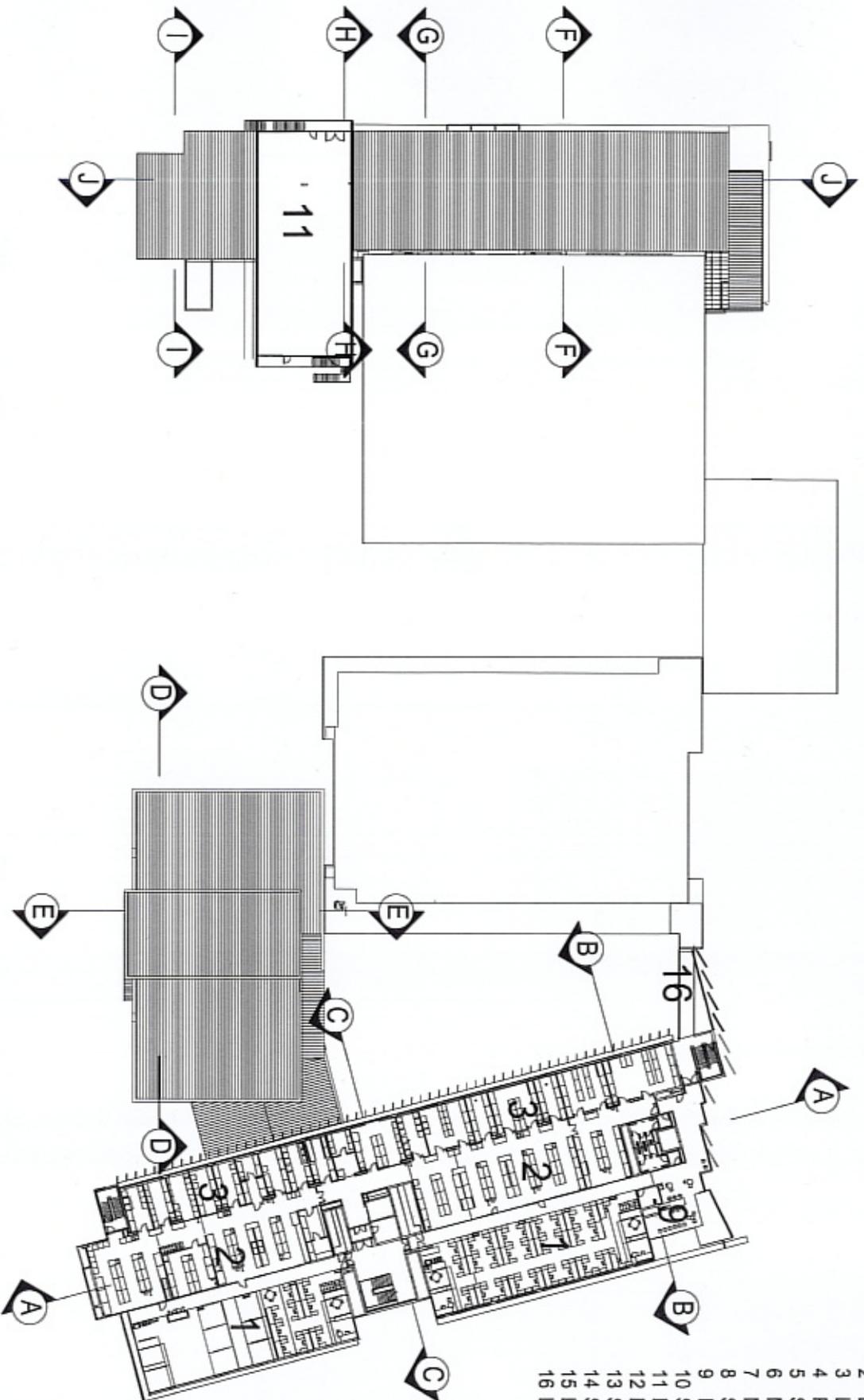
KBRB Health and Food Sciences Precinct Coopers Plains



Sheet 22-29

LEGEND

- 1 OFFICES
- 2 LABS
- 3 LAB SUPPORT
- 4 PILOT PLANT
- 5 SENSORY BOOTHS
- 6 MEDIA PREP
- 7 MEETING ROOM
- 8 SHARED RECEPTION
- 9 INTERACTION AREAS
- 10 STORES
- 11 PLANT ROOM
- 12 LOADING DOCK
- 13 SPECIMEN RECEIPT
- 14 SENSORY & PRODUCT DEV
- 15 LINK TO QHSS RECEPTION
- 16 LINK TO QHSS LABS



LEVEL 2 - FLOOR PLAN
RL 32.410

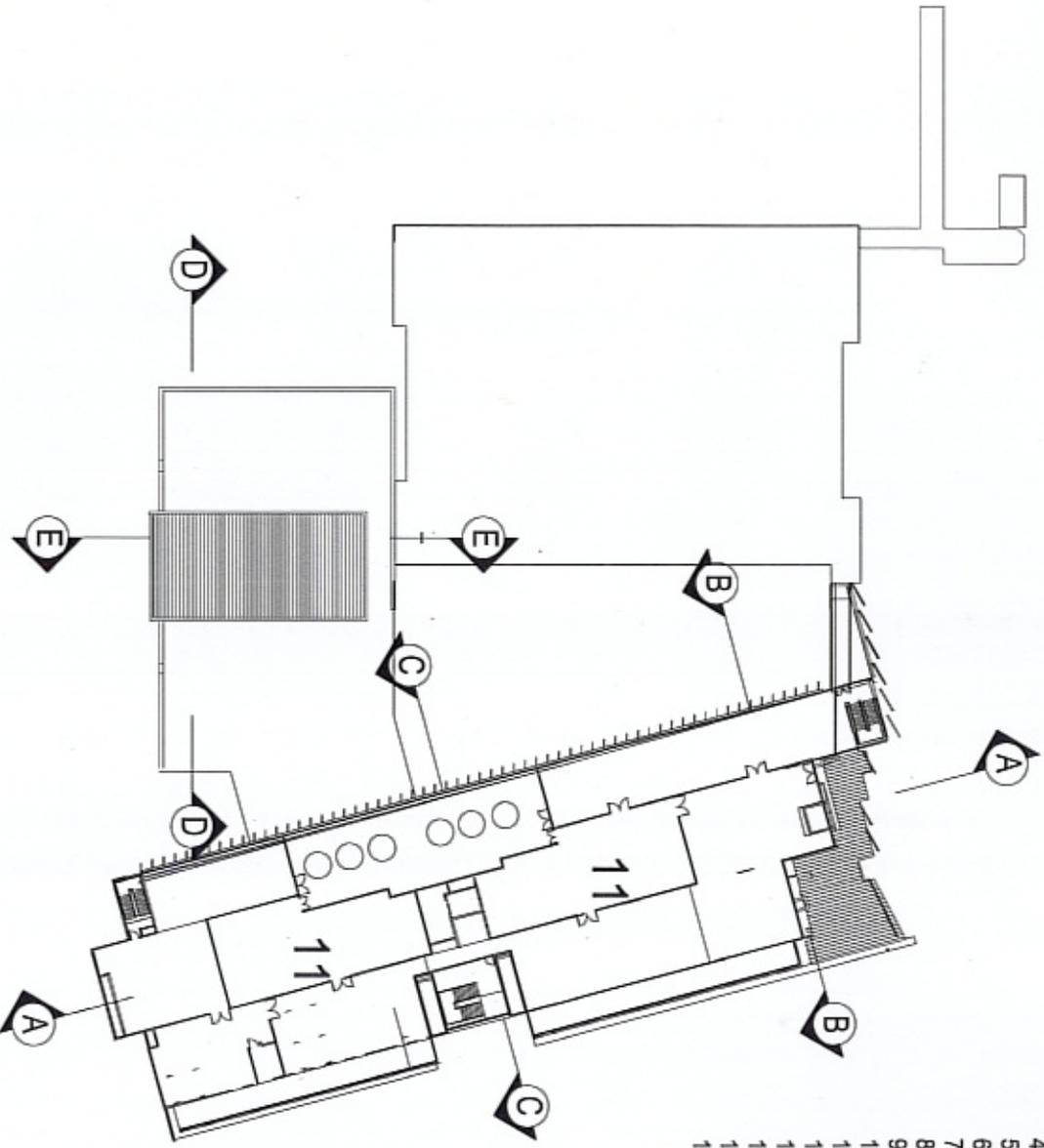
KBRB Health and Food Sciences Precinct Coopers Plains



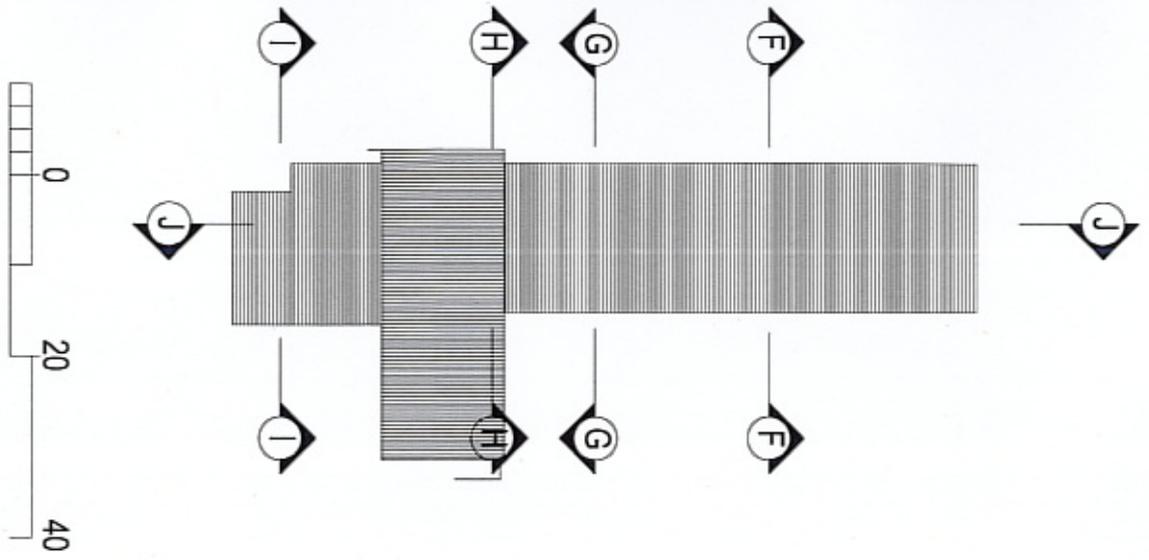
LEGEND

- 1 OFFICES
- 2 LABS
- 3 LAB SUPPORT
- 4 PILOT PLANT
- 5 SENSORY BOOTHS
- 6 MEDIA PREP
- 7 MEETING ROOM
- 8 SHARED RECEPTION
- 9 INTERACTION AREAS
- 10 STORES
- 11 PLANT ROOM
- 12 LOADING DOCK
- 13 SPECIMEN RECEIPT
- 14 SENSORY & PRODUCT DEV
- 15 LINK TO QHSS RECEPTION
- 16 LINK TO QHSS LABS

HASSELL



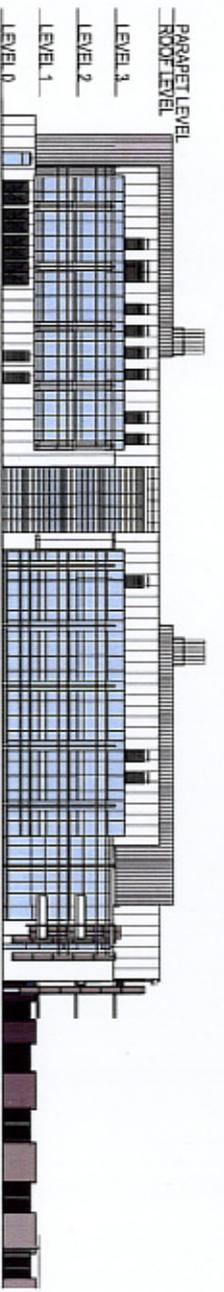
LEVEL 3 - FLOOR PLAN
RL 36.980



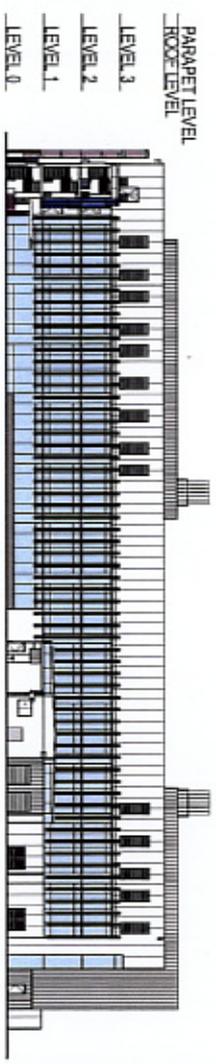
KBRB Health and Food Sciences Precinct Coopers Plains



Sheet 24-29



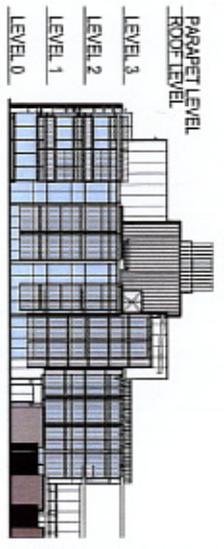
BLOCK 10 - NORTH ELEVATION



BLOCK 10 - SOUTH ELEVATION

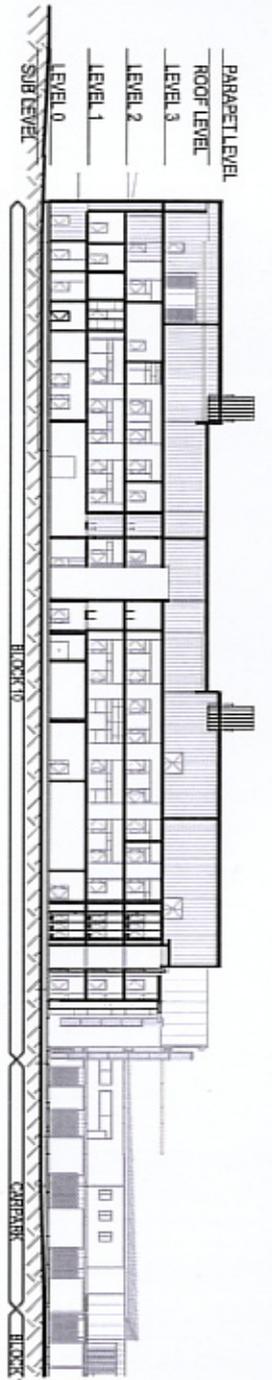


BLOCK 10 - EAST ELEVATION

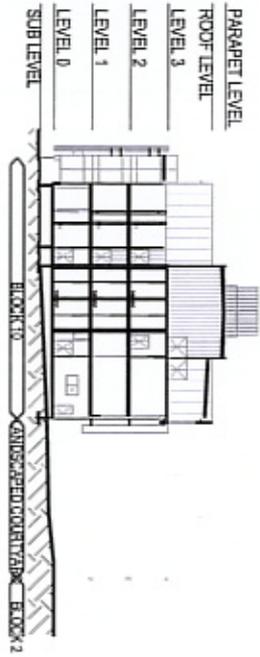


BLOCK 10 - WEST ELEVATION

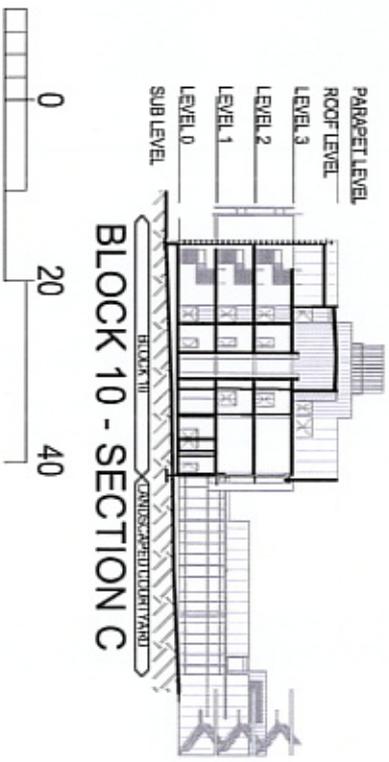




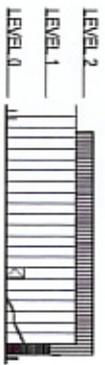
BLOCK 10 - SECTION A



BLOCK 10 - SECTION B



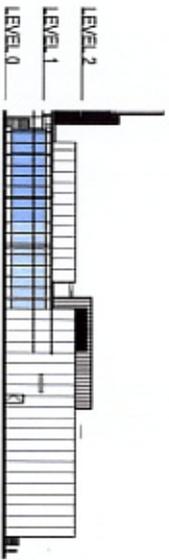
BLOCK 10 - SECTION C



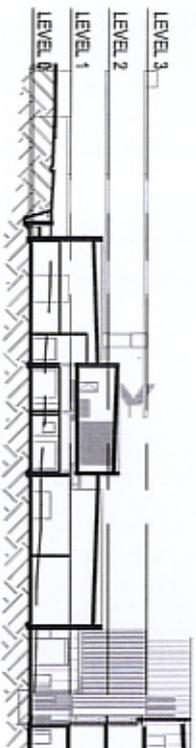
BLOCK 11 - SOUTH ELEVATION



BLOCK 11 - EAST ELEVATION



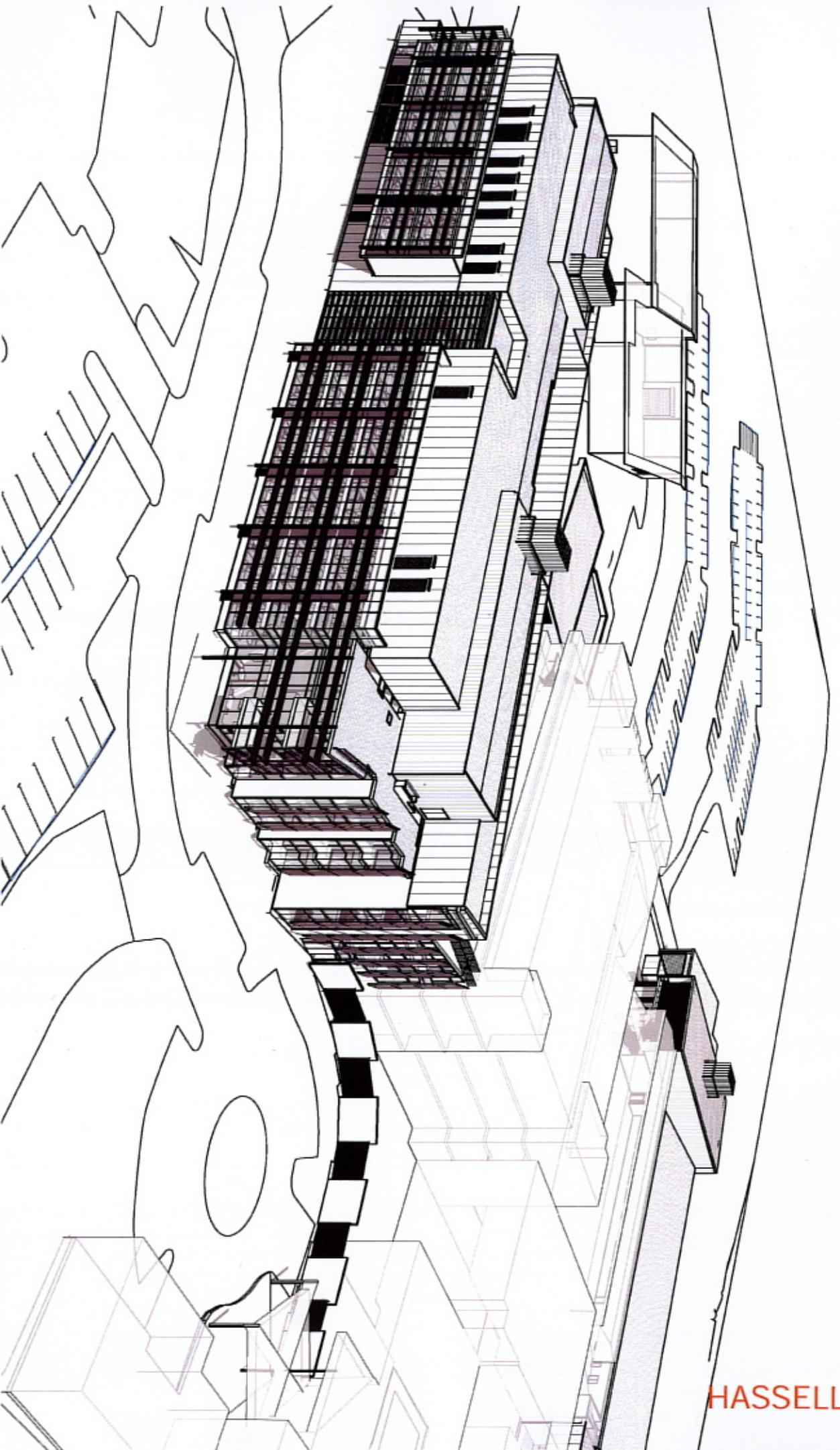
BLOCK 11 - WEST ELEVATION



BLOCK 11 - SECTION D



BLOCK 11 - SECTION E



HASSELL

VIEW FROM NW CORNER OF SITE

KBRB Health and Food Sciences Precinct



Sheet 28-29



PERSPECTIVE VIEW FROM NE CORNER OF SITE LOOKING TOWARDS BLOCK 10



KBRB Health and Food Sciences Precinct Coopers Plains



Sheet 29-29