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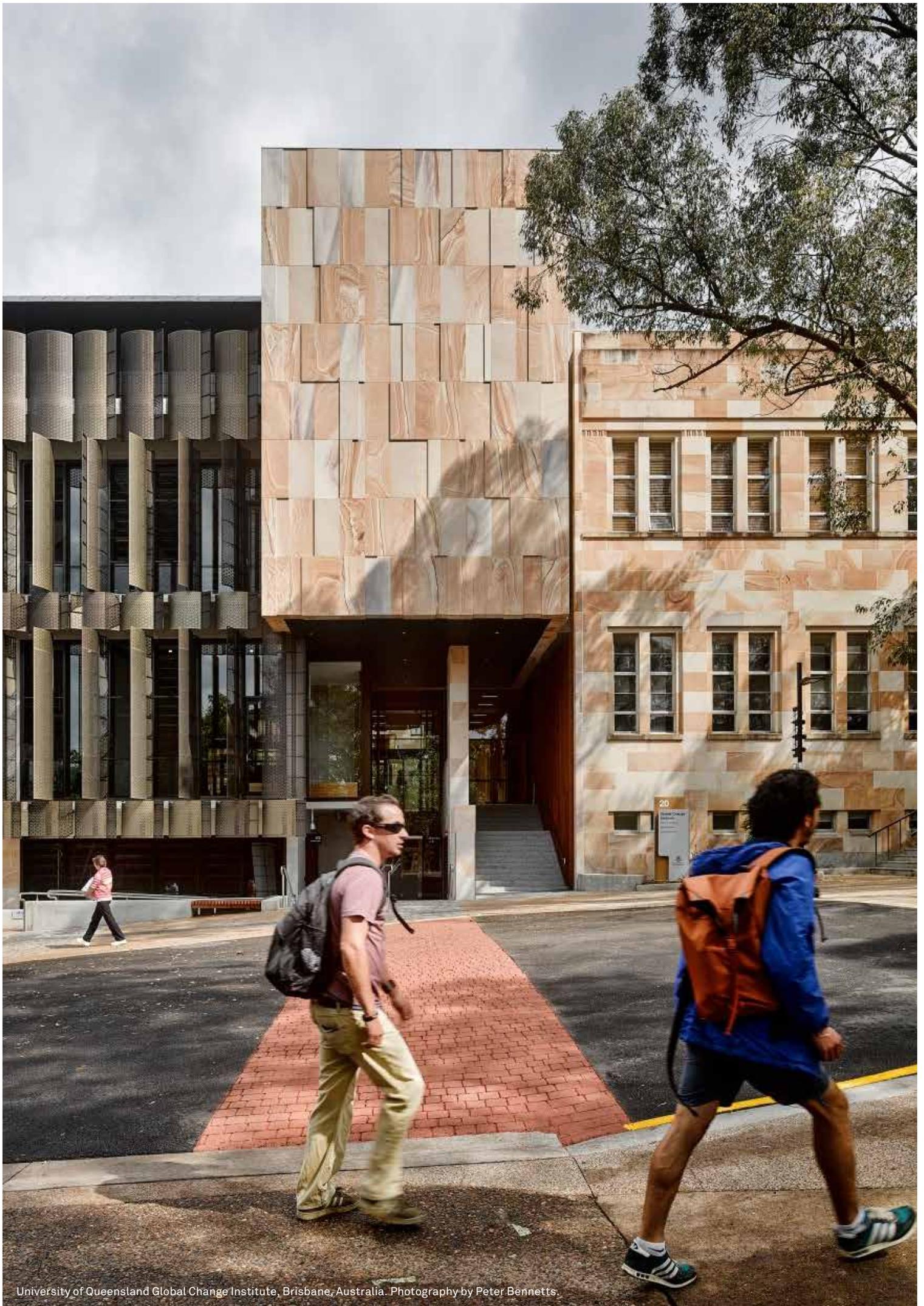
AUSTRALIAN GROUP
OF 8 UNIVERSITIES

Master planning review summary

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HASSELL

University of Queensland Global Change Institute, Brisbane, Australia. Photography by Peter Bennetts.

Contents

University of Queensland Advanced Engineering Building, Brisbane, Australia. Photography by Peter Bennetts.

01 Executive summary

In 2011, the University of Queensland and HASSELL undertook to define the brief for a new master plan for the St Lucia Campus and other land holdings within the suburbs of Brisbane.

This project prompted a number of questions for HASSELL about university master planning more generally in Australia:
_ How are universities safeguarding the development of their campuses?
_ What are the drivers of change in the higher education sector generally, and what implications do they have for physical spaces and infrastructure on campus?
_ What are the prevalent themes in the current master plans, and how might these affect the next iteration of master plans for Australian universities?

As part of the master planning project, and to explore these questions, HASSELL reviewed the current master plans of the Group of 8 Universities:
_ Australian National University
_ Monash University
_ University of Adelaide
_ University of Melbourne
_ University of New South Wales
_ University of Sydney
_ University of Queensland
_ University of Western Australia

The review focused on three areas:
_ The process of developing a master plan
_ The master plan as a product
_ The implementation

Publically available master plans were reviewed and each university was given the opportunity to respond to a structured interview. Importantly the research also considered the drivers of change affecting the universities and the spatial, social, financial and environmental implications.

The drivers of change

Four major recurrent drivers of change in higher education and research in the 21st century have been identified in the reviewed master plans, some of which are explicitly expressed in the documents, and others merely implied. The manifestation of these drivers of change will be not only physical, but conceptual and organisational as well. These drivers are discussed in more depth in Chapter 5.
_ Curriculum and research models
_ Technology
_ Student population growth and demography
_ Environmental sustainability

Themes

The drivers of change set the scene for an exploration of the ideal campus. Accommodating growth in student numbers while maintaining quality space and academic achievement is the primary concern of all the master plans. This gives rise to a number of overlapping themes that recur in various guises throughout the master plans, in strategic goals, objectives, planning principles, and actions. These are:
_ Transport
_ Pedestrian movement and way finding
_ Student services and centres (hubs)
_ Teaching and research space growth
_ Pedagogy changes
_ Co-location and clustering
_ Place making
_ Precinct planning
_ Enhancement of the campus experience
_ Student housing needs
_ Outdoor learning and open space
_ Heritage
_ University as part of the city

Lessons

Each of the master plans reviewed demonstrates important lessons for the next iteration of master plans for Australian universities. The critical lessons that can be applied across the master plans relate to two fundamental groups of questions:

1. **What is the purpose of the document?**

_ Is it a statutory planning tool, an urban design framework, or a design development document?
_ How does the university campus relate to its local area and its role in regional development and planning frameworks?

2. **Does it address specific urban and architectural design elements?**

_ Has there been specialist design input from consultants?
_ Was there an independent design review panel involved?
_ Is there a framework for the three dimensional form and experiential quality of the campus?

02 Introduction

Review of Australian university campus master plans

In 2011, the University of Queensland undertook to define the brief for a new master plan for the St Lucia Campus and other land holdings.

As part of that project, HASSELL conducted a review of master plans from the members of the Group of 8 Universities in order to identify and understand the trends in higher education campus planning generally. This review was completed in 2012.

Master plans from the following universities were reviewed:
_ Australian National University
_ Monash University
_ University of Adelaide
_ University of Melbourne
_ University of New South Wales
_ University of Sydney
_ University of Queensland
_ University of Western Australia

All of these universities have undertaken a master planning exercise, on various scales, over the past five years. Most have an implementation time frame of 10-20 years, and were conducted as a consultative process by internal staff or a planning or architectural consultant team, guided by the senior management of the university.

The review focuses on three areas: the process of developing a master plan; the master plan; and the implementation of the plan. These align with the three stages of the master planning process, as defined by 'Design Council CABE': Prepare, Design, Implement (Chapter 3 – Best Practice Master Planning).

This research also seeks to understand the drivers of change affecting universities, and the spatial, social, financial, and environmental implications.

Methodology

HASSELL gratefully acknowledges the assistance and contributions of staff from:
_ Monash University
_ University of Adelaide
_ University of Melbourne
_ University of New South Wales
_ University of Queensland

University representatives from respective facilities departments provided master plans for review and participated in a questionnaire via telephone interview or email. Publically available master plan documents for the University of Sydney, Australian National University and the University of Western Australia were also reviewed by HASSELL.

This report summarises the content of the master plans, analyses the general themes and specific objectives, and provides recommendations to achieve best practice campus master plans in the future.

The University of Melbourne Burnley Living Roofs, Australia.
Photography by Peter Bennetts.

03 Best practice master planning

A master plan may be defined as 'a description (both written and visual) of the potential of a place'.

Master planning processes are evolving, particularly in respect to our understanding of low carbon, healthy communities, the global economy, and extreme weather. While regional characteristics vary, the approach to master planning communities and cities has developed into a consistent framework that may be applied universally. This is further supported by independent evaluations through best practice design review.

Design Council CABE has provided a design review service for projects of significance in the United Kingdom over the last 12 years. It has become one of the leading providers of design review processes and is respected internationally. As a component of their work they have also published their best practices and lessons learnt.

This outline of best practice master plans draws from two CABE publications, Creating Successful Masterplans, A Guide for Clients (2008) which deals with design review process, focusing on important client roles and responsibilities; and Design Reviewed – Masterplans, which presents case studies of projects seen by CABE's Design Review Committee. These publications also inform the HASSELL recommendations at the conclusion of this document.

Note: In 2011 CABE (Commission for Architecture and the Built Environment) became a not-for-profit entity under Royal Charter and was renamed 'Design Council CABE'.

Definition of a master plan

Built environment 'master plans', deal with major change in a defined physical area. These plans set out proposals for buildings, spaces, movement and land use in three dimensions and match these aspirations with an implementation strategy.

A master plan therefore may be defined as 'a description (both visual and written) of the potential of a place'. It sets down the different layers of physical change and is able to assimilate the aspirations of key stakeholders in the community. The outcome is usually a set of policies and approaches for interventions in the physical environment, with a clear mechanism for delivery.

What makes a successful master plan?

A successful master plan should be:
_ **Visionary:** raising aspirations and provide for consensus building and implementation
_ **Deliverable:** Taking into account likely implementation and delivery routes
_ **Fully integrated** into the land use planning system, while allowing new uses and market opportunities to explore the full development potential of a site
_ **Flexible**, providing the basis for negotiation and dispute resolution
_ The result of a **participatory process,** allowing stakeholders to express their needs and priorities
_ Equally **applicable** to rethinking the role, function and form of existing neighbourhoods as to creating new neighbourhoods

(Source: Urban Task Force, Towards an Urban Renaissance, ODPM 1999, cited in Design Council CABE, Creating Successful Masterplans)

03 Best practice master planning

The master planning process

The three broad stages of the master planning process overlap – Prepare, Design, and Implement, and each stage produces one of the three key components of a master plan – the Strategic Framework, the Spatial Master Plan and the Implementation Plan.

Prepare

During the prepare stage, work is conducted to understand the context and set the strategic framework for the master plan. This will establish baseline information relating to the physical, social, economic and political context. Aspirations and objectives must be set and the scope of work for the spatial master plan established. The strategic framework contains a statement of aims and objectives for physical regeneration of a site and may consider a wider area than the spatial master plan. It is based on analysis of data and is the major output of the 'prepare' stage, functioning as the brief for the spatial master plan.

Design

During the design stage, a master planning team evolve the spatial master plan through a process of thorough analysis, consultations, testing and refinement. On completion there is a three-dimensional plan, which presents aspirations for development of buildings, public spaces, streets and landscape, but which stops short of designing buildings. It is expressed in diagrams, land use plans, models and explanatory images as well as in words. It should be supported by data gathered in the preparation stage and relate directly to the implementation strategy.

A spatial master plan is a sophisticated model which:
_ Defines the street, square and open space connections of a neighbourhood
_ Defines the height, bulk and massing of buildings
_ Sets out suggested relationships between buildings and public spaces
_ Proposes activities and uses which will take place in the area
_ Identifies movement patterns on foot, bicycle, car, public transport, and service vehicles
_ Sets out the basis for the provision of utilities and other infrastructural elements
_ Relates the physical form of the site to social, economic and cultural contexts
_ Takes account of the needs of people living and working in the area and demonstrates how neighbourhoods can integrate with local communities, built and natural environments

Implement

It is essential to the success of the master plan that the process of implementation is considered from the start. There is, therefore, significant overlap between this phase and earlier stages. The social, commercial, political and economic realities must be borne in mind constantly and refined as the plan is developed. Once the spatial master plan starts to emerge, an implementation plan should address all aspects of delivery: programme, risk, funding and procurement. Master planning clients also need to have the means to facilitate and review implementation to ensure that the aspirations of the plan are met. This is the strategy to turn the vision and plans into reality. The master plan is not complete without considering and testing how the proposals will be implemented.

Master plans should not be seen as rigid blueprints. Rather they set the context within which individual projects come forward. Success will ultimately depend on the delivery of great design at a more detailed level. Therefore there will be much for clients to do beyond the master planning stage.

04 The review criteria

While noting that quantitative assessment of any spatial master plan is not possible due to the individual circumstances of each university, Design Council CABE identify a series of questions that allows comparison of the content of master plans. These questions form the basis of the comparative matrix.

The HASSELL review ascertains whether the elements derived from questions from the Design Council CABE document are referenced explicitly in the universities' master plan documents. The exercise does not endeavour to judge the quality of information or level of detail for each master plan design.

None of the master plans reviewed stand out as either deficient or outstanding. Rather, the review demonstrates that the issues are taken into consideration in some way for most of the categories in most of the plans. The omissions demonstrate the peculiarities of location, history, and strategic focus generally.

The elements that are not covered as comprehensively as others include:
_ Economic goals of the universities are not discussed in the majority of the master plans
_ Difficult infrastructure issues are not addressed in many of the plans
_ Size, hours of use and maintenance responsibilities of open spaces are not addressed by several of the plans
_ The likely sizes, shapes and uses of buildings are not identified by some of the plans, which underlines the strategic, flexible nature of the documents
_ The impact on the campus and surrounding areas of likely volumes of traffic are not addressed in half of the plans

The criteria on which the review was based were:

Master plan process
_ Stakeholders
_ Workshops
_ Engagement
_ Design review

Strategic analysis
_ University strategic plan
_ National, state and local policy drivers
_ Emerging trends and influences
_ State and local planning framework

Strategic positioning
_ Strategic drivers
_ Overarching vision
_ Objectives and principles
_ Urban design framework

Site analysis
_ Local context - catalysts
_ Pedestrian and cyclist movement
_ Local transport
_ Topography
_ Public realm and open space
_ Sport and leisure
_ Heritage
_ Built form
_ Land use and activity
_ Economic
_ Community and social
_ Residential
_ Ecology and biodiversity
_ Hydrology
_ Geology
_ Infrastructure and services
_ Challenges and opportunities
_ Urban design analysis
_ Building performance

Design strategies
_ Campus movement framework (pedestrian, bike and car)
_ Streets
_ Public realm and open space
_ Sport and leisure
_ Heritage
_ Architectural vision
_ Built form
_ Land use structure
_ Economic
_ Community and social
_ Residential

System strategies
_ Deliveries and servicing
_ Car parking
_ Electircal, telecommunications and gas reticulation
_ Central energy
_ Environmental quality
_ Sewer, water and stormwater reticulation
_ Integrated water cycle
_ Ecology and biodiversity

Implement
_ Governance
_ Financial
_ Place delivery and management
_ Review and amendment
_ Catalyst projects

While unique to location, the eight master plans reviewed are similar in many ways. Most of the universities have referred to the three essential components of best practice master planning – the Strategic Framework, The Spatial Master Plan and the Implementation Plan, whether the master plan itself has the elements within it, or the elements are contained in separate documents. There are, however, no plans that contain the full spectrum in the recommended detail.

Each endeavours to outline a strategic vision driven by changes in the university and often beyond, followed by themes and actions that support that vision. Some documents do this in a brief and general way; others elaborate at length. This is also true of the spatial plan, where the amount of detail varies significantly.

Few of the plans attempt to define particular style guides to building or landscape elements. They are, to varying degrees, more conceptual frameworks that also identify particular built and non built actions. Implementation strategies are given much less weight than the other components.

The defined purpose of the master plan has a large bearing on the content. Some have been prepared to fit into local area planning processes and others to inform future development outside statutory planning processes.

Those that acknowledge and interact with local area planning processes are subject to more numerous and complex relationships, but potentially have a greater opportunity to integrate with their surroundings.

In lieu of a master plan that addresses these links, strong and productive relationships with local and state government bodies are required to be developed in other ways to ensure that the vision of the university is not overridden overtly, or undermined.

The drivers of change

Four major recurrent drivers of change in higher education and research have been identified in the reviewed master plans, some of which are explicitly expressed in the document, and others merely implied.

1. Curriculum and research models

Some universities in Australia have recently, or are currently, moving to a curriculum structure that is based on a general undergraduate degree, with specialisation in a post graduate qualification. This model and other approaches are increasing the number of post graduate students on campus, and changing the nature of pedagogies. A greater emphasis on research with industry partners and inter-discipline clusters is changing the way faculties are structured and the methods of teaching. There is a growing emphasis on the need for flexibility in organisation and built form.

2. Technology

Increasing use of technology in teaching and learning is leading to new typologies for buildings and technology infrastructure, exerting pressure on heritage and older building stock. Online learning has heightened the importance of extra curricula activities to enliven the campus and emphasised the need to make the site welcoming and vibrant.

3. Student population growth and demography

Significant growth in overall student numbers, as well as changes in the student mix (increased proportions of international and post graduate students) are having a significant effect on the nature of campus services – administrative, transport, retail, sports and recreation, and student and key worker housing.

4. Environmental sustainability

The increasing awareness of staff and students about environmental issues relating to energy, water and waste is driving change in both behaviour and building on campuses across Australia. Sustainability is, in many cases, a fundamental principle in the master plan of a campus, and is supported in Environmental Management Plans and Systems, and the high environmental ratings in many buildings recently built or currently under construction in campuses across Australia. While climate change mitigation (through energy use reductions) is addressed in all of the plans to varying degrees, climate change adaptation is not discussed at all in some plans, and minimally in others. This is a major oversight because the implications of climate change, such as increased incidence of heavy rain and flooding, drought conditions, heat waves, water restrictions, incidence of tropical disease, and biodiversity changes and loss are potentially significant to buildings, grounds and infrastructure services. Adaptation of buildings and grounds to changing circumstances should form part of any risk and opportunity analysis that is undertaken for the campus.

Themes

A number of overlapping themes recur in various guises throughout the master plans, in strategic goals, objectives, planning principles and actions.

Transport
Growth in student numbers has highlighted the need for readily accessible public transport connections to the university campuses. Some of the larger city campuses are already well served by public transport but acknowledge that further growth will put pressure on these systems. There are also intensifying private vehicle use and parking pressures on many campuses and their localities. However, many of the universities are actively working to reduce on site vehicle access and parking in an effort to enhance the pedestrian experience on site. Cycling is promoted generally in the plans as an affordable option for students, as well as increasing the proportion of sustainable transport mode use for students and staff. Many of the plans include options for new or enhanced bicycle paths, and couple this with increasing pedestrian priority.

Pedestrian movement and way finding
Way finding for pedestrians on site is a significant theme throughout the plans. A number of the universities address the issue of legibility on campus also, with entrances or arrival points a particular focus.

Student services and centres (hubs)
In attempting to maximise information exchange (formal and informal) between the students and with the university, a common strategy in the master plans is the use of student hubs, where services, informal learning and social interaction are intermingled, in both internal and external open spaces. There are general references to, but only limited discussion of, the presence of retail and other services on campus. The changing mix of students may affect the types of services available, including specialised graduate student and research hubs and childcare facilities.

Teaching and research space growth
As the primary reasons for the universities' presence in the community, provisions for teaching and research are fundamental to the plans. The maintenance of the quality of research output is commonly cited in the visions because it is vital to the enhancement of the teaching and learning that occurs, as well as contributing to the wider community. The changing nature of research to more trans-disciplinary and applied methods is also referenced repeatedly in the plans.

Pedagogy changes
There is an increasing emphasis on generalised learning before specialisation in some of the universities, and of cross disciplinary interaction in the dynamic environment of research, where funding priorities can change quickly. Online learning is also growing in popularity.

Co-location and clustering
The clustering of related but separate disciplines, schools and industry partners allows for flexibility in collaboration and fosters information exchange. Co-location also supports the trend in curriculum models of undergraduate degrees where students are encouraged to learn outside of their immediate discipline.

University of Queensland Business School, Brisbane, Australia. Imagery by HASSELL.

University of Adelaide Learning Hub, Australia. Photography by Sam Noonan.

05 HASSELL analysis

Place making
The emerging concepts of place making are ideally suited to the university environment, where diverse groups of students and staff undertake a range of activities in a defined site. Universities are increasingly aware of the potential for community participation, landscape, open space and urban form generally to contribute to an overarching sense of place that will attract students and staff.

Precinct planning
Many of the campus plans divide the campus into precincts to which variations of the themes below are applied. A precinct approach allows the application of place making principles on a smaller scale, clustering of disciplines, and the encouragement of particular patterns of movement. It can also enable a zoned approach to infrastructure services, including distributed energy and water systems, and zero net water and energy use from the grid.

Enhancement of the campus experience
This can be interpreted as a combination of many of the themes above. The motivating force for this theme appears to be gaining competitive edge to attract and retain students and staff.

Student housing needs
This is an acute problem for some of the inner city universities, where housing affordability is forcing students further away from campus. It also reflects substantial growth in student numbers, and in particular, international students.

Diversity in housing choice due to the increase in post graduate students is also raised as an issue by some universities. The projected student accommodation requirements range from housing 10 per cent of students on campus for Monash University up to 65 per cent for Australian National University.

Outdoor learning and open space
Open space is increasingly valued as the density of cities increases, providing environmental and health benefits, as well as the provision of general amenity and views. Some universities identify the increasing practice of outdoor learning as a determinant of outdoor space requirements, in addition to increased opportunities for activities, place making and way finding.

The importance of biodiversity is also referenced in some of the plans, reflecting the existing open, natural settings of the larger, less urbanised campuses.

Heritage
Heritage is a dominant theme in the plans of some of the older universities, where the campuses are rich in historically and aesthetically significant buildings and landscapes. The issues of retrofit capacity, fit for purpose buildings, technological obsolescence and maintenance budgets must all be managed in the context of the drivers of change identified earlier.

University as part of the city
Most of the plans refer to the relevance of the campus to its surrounding urban context. The issues of public transport, road networks, and surrounding landholders and stakeholders are addressed in various ways. Local and state government planning policies provide supplementary (and sometimes contradictory) visions and links. A variation on this theme is the university as a city, with references to 24 hour campus, libraries, retail services, community use of facilities, and external stakeholder participation on site.

HASSELL recommends the following actions to ensure that any university master planning exercise maximises the opportunities to develop an outstanding campus environment.

The first two recommendations relate to the overall master planning process. The remaining recommendations deal with the three stages within the process:
_ Prepare
_ Design
_ Implement

Overall master planning process

1. **Refer to 'Design Council CABE' Creating Successful Masterplans (2008)**

This document comprehensively details what constitutes a good master plan, and provides an invaluable step by step guide that can be used to generate the process as well as the product.

2. **Develop a suite of unified documents that address each of the three components (Strategic framework, Spatial master plan, and Implementation plan)**

Some of the universities have specifically identified the need to make the campus master plan more of a conceptual framework of urban design principles relating to the strategic vision of the university than a prescriptive spatial plan, although there are elements of this in all of their plans.

While there is an identifiable trend toward an urban design framework model for university master plans, best practice guidelines indicate a significant level of detail is required to ensure a successful master plan.

Design Council CABE note that a master plan will only be effectively implemented when it is supported by financial, economic and social policy documents and delivery mechanisms. These two approaches can be reconciled by formulating a series of documents of varying detail and intent, as demonstrated in the series of documents produced for the Monash University master plans.

In this way, for example, changes to funding can be accommodated in the Implementation Plan and changes to development sites or heritage listings can be updated in the Spatial Master Plan without requiring the entire master plan to be rewritten.

06 HASSELL
recommendations

Prepare

The strategic framework
The strategic framework provides the needs, objectives and the parameters on which to base the spatial plan. Vision and analysis are the crucial components for this stage of the master planning process for without a vision and a thorough understanding of the site and its context, a master plan is likely to lose direction.

3. **Determine the purpose of the master plan**

The determination of the purpose of the document is the critical first step in developing a robust master plan. The master plans reviewed do not operate in isolation, and whether anticipated or not, the documents reviewed have been used for a variety of purposes. In order to avoid confusion, the purpose of the document (as distinct from the vision for the campus) needs to be carefully considered.

4. **Conduct a thorough local and state government planning document review and alignment**

Consultation with local and state government and alignment with their planning documents was evident in all of the plans. The location of the university campus affects how the master plan interacts with surrounding sites: the more densely populated and centralised the location, the greater the interaction tends to be between adjoining land owners, local and state government.

For example, one University experienced significant challenges in determining a development approvals process due to local and state government regulations and the inclusion of the site in a government declared activity centre.

This reflects a wider trend in urban planning to promote activity centres as the preferred development zones (for example, Melbourne 2030, Metropolitan Plan for Sydney 2036 etc.) in order to encourage high densities, affordable housing and vibrant mixed use zones.

On a micro level, the pursuit of student hubs is also reflective of this practice, where diverse activities in high traffic areas are encouraged in order to facilitate information exchange, social interaction and efficiencies of scale for services provision.

5. **Conduct an exhaustive site context analysis**

Design occurs at a range of scales: regional, city, suburb, precinct, sub precinct and site specific; any site analysis should reflect the range of potential implications and opportunities that this presents. This should include streetscapes, integration with external public realm, transport connections, views, pedestrian and bike paths, bike and car parking on and off site, traffic management, heritage, open space, biodiversity, activity centres, solar access, space capacity review and projections, and safety.

For example, most of the plans discuss the importance of bicycle circulation on site, but only one identifies where bike parking is situated on site. Another contains exhaustive site analysis and explanations of planning and urban design principles to support the campus vision.

6. **Explore the possibilities of an integrated design approach, including transport, adjoining land holders and pedestrian precincts.**

It is essential to consider areas beyond the site boundaries because poor connections may limit the success of the plan, whatever the quality of the final designs. Fundamental infrastructure changes may be required that allow for vital integration with the surrounding areas.

An integrated design approach necessitates the thorough investigation of opportunities with third party stakeholders in the very early stages of planning. Given the increasing emphasis on industry based research partnerships, co-location of faculties and the universities' presence in wider community planning frameworks, many opportunities exist for partnerships that maximise the benefits of urban design principles that are prevalent in local and state government planning frameworks, particularly at the edges of campus.

Design

The spatial master plan

The level of detail to which a master plan is developed will depend on the way it will be used in the development process. However, there are a number of ways of dealing with design within and outside of the master plan, including:

_ Design briefs, which may apply to specific areas or precincts in the plan

_ Design guidelines that may include a palette of materials (this is used in some of the reviewed documents)

_ Design advisory panel (see recommendation 8)

_ The selected use of design competitions, which are already used in many Australian university campuses

_ A panel of selected designers that work together on an ongoing basis to design the campus

7. Involve the staff, students and wider community in the detailed design process

A successful consultation and community engagement process will establish and reconcile values and conflicting objectives, and should be planned from the very early stages. Elements that are fixed and not open for debate must be made clear from the beginning.

Some of the universities involved in this review specifically limited community engagement because of a desire to pursue the development of overarching visions that relate to the strategic goals of the University, and to avoid raising the expectations, and ire, of the community. Design Council CABE identifies the importance of using appropriate methods at the appropriate time, depending on the audience. It is also important and practical to involve the wider community in the detailed design phase because the physical manifestation of the goals of the university are what the wider community encounter and are familiar with.

8. Conduct independent design review in early development as well as later stages

Few of the master plan processes have noted the inclusion of a design review process. Independent design review is well established as a method for continual improvement through a process of planning, design and review.

When applied objectively design review can improve the design by testing the quality of the scheme, identifying opportunities for improvement and providing objective advice. It can result in the provision of consistent design, align designs with internal and external policy objectives, and promote big picture community benefits.

It can also provide transparency and rigour to development and engage the community and other stakeholders.

9. Develop a whole of campus services infrastructure plan

An interesting omission throughout all of the documents, given the emphasis on sustainability is discussion of, or planning for, whole of campus services infrastructure (shared energy, water etc).

There are references to energy and water conservation and harvesting, but generally these are in the context of individual buildings, not on a precinct scale.

This is disappointing given the unique situation university campuses have as significant landholders on consolidated sites. These concepts may be discussed in supporting documents, but ideally should form part of the campus master plan.

10. Develop comprehensive two and three dimensional representation of ideas for advocacy

A number of the universities identified the value of the master plan document in advocacy to third parties, in addition to providing clarity of purpose for the university itself. The more graphic the presentation of ideas, the easier it is for those outside the design profession to understand the concepts, although care must be taken to ensure expectations for particular built forms are managed.

Three dimensional explorations, such as building envelope studies or aerial view perspective sketches enable the iterative process of holistic design that considers shadowing, height and setback ratios, solar access and urban form more broadly than a purely geographic spatial information style of plan.

11. Evaluate vulnerabilities in campus design

The exploration of possibilities for the campus is incomplete without a rigorous examination of existing and potential vulnerabilities.

With some campuses aiming for 24 hour activity, there is a distinct lack of reference to the principles of Crime Prevention Through Environmental Design in the reviewed master plans – safety is mentioned briefly in some of the plans, and explored in detail in only one of the documents.

Vulnerabilities in campus planning and infrastructure to climate change, peak oil and a low carbon economy should also be explored and applied to the whole of campus services infrastructure plan. (See recommendation 9)

Implement

Implementation plan
A comprehensive implementation strategy is the final piece in the master plan jigsaw. It should identify a timetable, funding sources, partners, delivery agency, marketing, maintenance strategies and a risk analysis.

This is the element most lacking in the master plans reviewed, and will undermine the effectiveness of some of the plans, if it has not completely undone them already.

12. Identify priority actions and set time lines

An implementation plan without a timeline creates ambiguity in priorities and is easily deferred. A project priority list and implementation schedule can be aligned with the capital plan, and provides the link between plan and reality.

13. Include the capital plan

Interestingly, there appears to be a greater emphasis in linking the university master planning documents with the strategic intent or visions than there is to linking with the capital plans.

This creates somewhat of a void at the implementation phase of the master plan, and while all of the documents refer or allude to capital funding plans, the links are not always explicitly expressed. While the agency charged with producing the campus master plan may not necessarily control the finances required for implementation, a direct alignment of the master plan and the capital plan is required.

Unfortunately many universities identified that while the student experience is transforming, the financial models of procurement of projects are not changing markedly. There is a wariness to the involvement of third parties in projects on site as these appear to undermine the university visions and master plans, although it is clearly acknowledged that working with external stakeholders is critical if funding opportunities are to be secured, and urban design principles realised.

14. Set clear processes for governance and approvals

The processes of design and approval of development approvals are ideally set out in the master plan document for reasons of transparency.

Governance procedures are addressed in a variety of ways in the plans reviewed, often quite minimally; some give an account of committees and responsible agents, others have a greater emphasis on local and state government processes that the university must work through.

An alternate approach was taken in one master plan by developing a sophisticated internal planning scheme that is largely based on land use activity. While this plan discusses many themes similar to all the other plans, the approvals process is the dominant feature.

15. Outline a review process

Flexibility is critical for long term planning. While many universities envisaged a long term master plan of up to 20 years, some have become redundant after just a few years. Flexibility in the spatial master plan and the implementation plan will allow the vision, or strategic master plan to withstand changes in drivers, funding, themes and other unforeseeable circumstances.

Annual reviews within a five year document lifespan have been identified by some universities as the optimum time frame because growth and other projections become unreliable after that time.

07 Master plans reviewed

Australian National University

_ANU Campus Master Plan 2030
_Exposure Draft December 2010 (GHD)

Monash University

_The Plan 11: Executive Summary Monash Coulfield Master Plan 2011
_The Plan 11: Executive Summary Monash Clayton Master Plan 2011
_The Plan 11: Monash Clayton Master Plan 2011 - Presentation to the City of Monash (MGS Architects, ASPECT, Urbis et al)
_Questionnaire completed by Bradley Williamson, Facilities and Services

University of Adelaide

_Roseworthy Campus Masterplan, June 2011
_North Terrace Campus Masterplan, October 2010 (University documents)
_Interview conducted with Harald Baulis, Strategy and Space Planning

University of Melbourne

_The University of Melbourne Parkville Master Plan 2008 (Daryl Jackson Architects)
_Interview conducted with Chris White, Property and Campus Services

University of New South Wales

_Campus 2020 UNSW Kensington Campus Development Control Plan 2007
_Lower and Western Campus Plannng Review and Urban Design Framework (University documents)
_Interview conducted with David Goodwin, Facilities Management

University of Queensland

_St Lucia Campus Site Development Plan 2006, Revised 2010 (University document)

University of Sydney

_Campus 2020 Master Plan: Building the Future University (Cox Richardson and DEGW, 2007)

University of Western Australia

_Crawley Campus Planning Review 2010 (University document)

University of Western Australia University Hall, Perth, Australia. Photography by Douglas Mark Black.

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