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1 BUILT FORM

The Greater Curtin Master Plan, in particular Part C – Delivering the Vision, addresses the following building elements. Designers are requested to address these issues in projects delivered to Curtin University.

1.1 THE URBAN PURPOSE

To retain and extend a competitive advantage as a modern, relevant university Curtin University must continue to evolve. Today, the trajectory is to extend a traditional offer by developing into a new, multidimensional place, leveraging the University’s resources and creating a new urban heart for Bentley and its community.

The Academic Heart houses the Curtin University student hub, providing high quality transformative educational experiences, engaging in research and creative practice, and contributing to building a sustainable and prosperous community. It integrates the multiple dimensions of the institution and its surrounding context, from its unique history and culture to its strategic vision for its physical assets, operational needs, and changing pedagogies and technologies.

To facilitate the delivery of these fundamental elements, development should follow a place-led approach where people and their needs are front and centre in project planning, delivery and ongoing management and operation. A strong understanding and demonstration of who will use the place, and their specific requirements, should form the fundamental baseline for all University development at both a precinct- and lot-specific level.

1.2 ACADEMIC HEART PLANNING FRAMEWORK

The planning framework for the Academic Heart of Greater Curtin advances and applies the vision and six guiding principles of Greater Curtin – the campus-wide master plan.

The Academic Heart Design Guidelines encapsulate the planning principles to be pursued for projects undertaken on the core campus areas and designers should pay due attention to the principles espoused in that guideline.

The structuring elements of the planning framework define its primary, organisational and spatial urban systems.

They are critical to the coordinated, efficient, and sustainable development and operation of the University, and establish frameworks within which finer grain design and development opportunities will be shaped.

The planning framework for the Academic Heart of Greater Curtin has three key structuring elements:

- COMPACT CAMPUS
- A CONNECTED COMMUNITY
- DISTINCTLY CURTIN.
1.3 **URBAN MORPHOLOGY**

Greater Curtin will be characterised by a strong, distinct and legible urban form. Urban morphology addresses the approach taken to the location, arrangement and massing of built form. This has been influenced and shaped by:

- consideration of the key design elements of the original campus architecture and its structure
- the desire to transform the campus into a highly urban place
- the opportunity to carefully utilise the undulation and articulation of height to create rhythm and drama
- the opportunity to utilise built form massing to enhance legibility at both a city wide and individual building scale.

*Greater Curtin Master Plan Part C – Delivering the Vision* provides detailed information (from Page 20) on the elements of urban morphology.

1.4 **CHARACTER AND IDENTITY**

The realisation of the Greater Curtin Master Plan will see a traditional university campus evolve and grow into a vibrant, mixed, urban centre, introducing a greater variety of activities and land uses. Through the delivery of the master plan the accommodation for these new uses and activities will complement Curtin’s established identity and elevate its character to create a new, enhanced Greater Curtin.

Character and Identity explores and provides direction for:

- the definition of neighbourhoods and their character
- architectural language; its geometry, tectonics and materiality
- the language of the landscape and public realm.

*Greater Curtin Master Plan Part C – Delivering the Vision* provides detailed information (from Page 24) on the elements of character and identity, including:

- Built Form Geometry and Articulation
- Use of Materials.

1.5 **DETAILING AND FINISHES**

Good construction detailing is essential. A well-detailed and well-constructed building reduces the recurrent costs of maintenance and disruption to academic programming.

*Greater Curtin Master Plan Part C – Delivering the Vision* provides detailed information (from Page 27) on the elements of detailing and finishes.

1.6 **ELEMENT APPLICATION**

*Greater Curtin Master Plan Part C – Delivering the Vision* Appendix A provides detailed information on the primary constructional elements of built form at Greater Curtin.
CONCRETE SHADE ELEMENTS

Shade element and climate modifiers integrated into the building fabric add visual character and are low in maintenance.

CONCRETE ENTRANCES

Some early buildings are designed with prominent entry statements. The Architecture building (B201) is an obvious example. The John Curtin Gallery (B200A) also has a clearly identifiable entry. Centralised space allocation results in students moving to various buildings and clearly identifiable buildings with a clear main entry are a practical benefit.

CONCRETE STRUCTURAL ELEMENTS

The clear expression of a building’s structure is a common feature to Curtin’s architecture. Other structural elements such as lintels, beams, spandrels, etc. are also expressed in concrete to add visual detail and a semiotic logic to the architecture.

CONCRETE EXPRESSIVE VOLUMES

The Campus architecture has some interesting spatial experiences and the form of some buildings boldly express functions. Curtin Theatre has a large concrete volume poised over the brick base (on the eastern side) and a concrete colonnade on the western side. There are some lecture theatres defined by its profile and the Robinson Library features vertical shafts for stairs and lifts. There are several examples of textured finishes to concrete that adds foreground character to walls and elements. There is ample opportunity for varied surface finishes in this material.

CONCRETE ARTWORK

The plastic nature of concrete is well-suited to the integration of artworks into the building fabric. There are many contemporary techniques and innovations applicable to the imaginative casting or treatment of concrete.

CONCRETE ARCADES

A very characteristic element of the original campus is the use of covered walkways and arcades constructed in concrete. These structures are very practical in protecting pedestrians and shading the building, while adding a visual rhythm to the façade composition and a human scale to the buildings.

BRICK INFILL PANELS

Brick panels are commonly used as infill panels between structural elements, structural frames, and between windows.

BRICK EXPRESSIVE VOLUMES

Some buildings such as the Library, the John Curtin Centre, and the New Technologies Building utilise brick as the dominant material to express the form and volume of the
building. The New Technologies Building (B314) uses two tones of red brick the bands to add a graphic character to the form. Individual windows are set into the brick walls to emphasise the solidity and singular nature of the form.

**BRICK LANDSCAPE**

Brickwork and concrete are used in long stretches either as screen walls, retaining walls and garden walls. Bricks and concrete are also used for paving and other landscape elements such as steps and ramps, and various enclosures for plant and equipment. Using similar materials for buildings and hard landscape has the benefit of uniting buildings to their surrounds.
2 BUILDING FABRIC

The design and construction of the building envelope and partitioning is fundamental to the architectural form of the building, its life-cycle functional performance and cost and has a direct correlation with the environmental design. The primary elements are the roof and walls and each has similar performance criteria to which the built form must respond, albeit usually very different materials and character. It is expected that all buildings on campus will respond to the following requirements:

- waterproofness
- capture/discharge of stormwater
- design for penetrations in the fabric that create a breakdown in the primary functional characteristics, being waterproofness, solar heat penetration, acoustic loss
- allowance for the roof to flex in response to dynamic point loads of personnel activity
- allowance for solar movement
- structural soundness, allowing for movement of different material types while retaining structural integrity
- allowance for weathering without it being detrimental to the integrity of the structure or its aesthetic architectural character
- to be in a form that responds to the desirable architectural character sought
- provision for the building to be extended or modified over time to maintain contemporary functionality
- response to fundamental health and safety characteristics required for both construction and maintenance
- response to fire prevention and event management requirements.

The design of the building fabric and the associated selection of materials and finishes shall satisfy the following criteria:

- fitness for purpose
- flexibility and adaptability
- durability and robustness
- accessibility
- life-cycle cost
- safety
- sustainability objectives
- comfort and acoustic performance.
2.1 EXTERNAL FABRIC

2.1.1 WALLS

- The design and construction of walls should meet its structural, load bearing, wind, thermal, acoustic and waterproofness capacity.
- The selected material should achieve its aesthetic objectives, should be durable, no colour fade, maintenance free and should have a 100 year life.
- The wall should provide for the constructability of the window and door and services penetrations to a manner to maintain waterproofness to all such elements.
- Natural light penetration into the internal work spaces is fundamental, as is internal vistas to external buildings, people-active spaces and landscaped areas.

2.1.2 ROOFING

- Design and construction of roofs shall satisfy essential requirements to keep out the weather and effectively drain away stormwater. Complex roof forms which result in higher probability of roof leakage are to be avoided where practicable.
- Internal gutters (or box gutters) are not to be used without prior approval by the Responsible Officer. Gutters must have relief to the outside of the building envelope for overload/overflow.
- Membrane roofing/tanking/etc. not to be used without prior approval by the Responsible Officer.
- The whole of the roof including roof, gutters, flashings, fixings and the like shall be durable and not subject to deterioration by breakdown of the base material due to corrosion, solar damage, expansion and contractions and physical damage by maintenance foot traffic.
- The design should consider the practicalities of regular maintenance, cleaning of the roof, gutters, downpipes, overflows.
- The design should provide for designated walk routes over the roof to service plant and equipment, stacks, penetrations; without damaging the roof.
- Design and location of all penetrations should be to minimise risk of leaks, maintenance and damage to the roof.
- Reliance on an exposed butt joint mastic seal should be avoided. Better to use an over-flashing or lap.
- Designed to relevant Code for wind load, fire, acoustic and thermal performance capacity.
- It is expected that the roof should be waterproof and durable for a minimum of 30 years, and preferably 50 years.
- The roof structure should facilitate a roof replacement at the end of its functional life.
2.2 INTERNAL FABRIC

The internal building fabric has quite different characteristics to which the architect and the builder must respond. The internal fabric and associated services routes should allow for regular modifications of walls, ceilings, doorways and services to enable the internal functionality to respond to contemporary spatial needs, without being cost-prohibitive. This is fundamental to sustainable design and extending the life of the building, thus reducing life-cycle cost.

2.2.1 INTERNAL WALLS, PARTITIONS AND FINISHES

All internal walls should be designed and built to have the capacity to be removed or altered without interfering with the overall integrity of the structure. The primary characteristics of internal spaces are:

- Contemporary work spaces have a high dependency on computers and thus the internal spaces need to respond to requirements of screen-based work activity.
- Cellular enclosed spaces have given way to collaborative work spaces, with breakout spaces as part of the overall open office.
- Natural light has to be carefully managed, while retaining vistas to the external areas.
- Wall and floor finishes are of material and colour that provide the feeling of being comfortable, happy, non-threatening and conducive to thinking and concentration.
- The acoustic characteristics are to reflect the functional requirements of the learning/study/work places.
- The internal walls and screens should create spaces that are uncluttered, able to be kept tidy, and be able to be personalised.
- High quality air and light should not be compromised by walls and screens.

2.2.2 FLOOR AND FLOOR FINISHES

The primary characteristics of floors are:

- demonstrated structural capabilities, particularly the live and dead loads of the functional purpose of the building. Such design should enable the functional use of the space to change over time.
- provision for reticulation of electrical and data services
- acoustic characteristics to minimise transference of impact noise to the space below
- level and capable accepting any floor finish.

The floor finishes range from the soft resilient to hard impervious materials, but all have the primary characteristics of:

- able to be cleaned and kept looking, feeling, smelling ‘fresh and new’ without emitting toxic vapour
should respond to universal access requirements
able to meet the functional needs of the space, which may include being watertight, chemical resistant, having high quality acoustic values, being hard wearing,
and includes:
- carpet - commercial grade, tiles etc.
- vinyl – to meet testing requirements, including slip resistance, anti-static
- ceramic tiles
- concrete finish.

2.2.3 FLOOR PENETRATIONS

Primarily floor penetration requirements respond to building services demands. Their location, as far as practical, should provide for futureproofing. They should enable a seamless floor finish without trip or wear points, and provide for maintenance accessibility where required, while meeting fire stopping requirements and providing structural engineer verification of existing reinforcement configurations and making good.

2.2.4 CEILINGS AND CEILING FINISHES

The primary characteristics of ceilings are sound structural capabilities of both the support grid structure and the stable integrity of either removable panels or fixed ceiling so that the ceiling retains its level, shape and safety.

The design and construction of suspended ceilings should enable regular removal and replacement of panels for routine inspection/maintenance of in-ceiling services, without any undue damage or degradation of the panels, the grid, lighting boxes or other services.

Ceiling design should:
- enable the functional use of the space to change over time
- provide for reticulation and maintenance of electrical and mechanical services
- utilise the acoustic and insulation characteristics of the ceiling material
- use a standard grid/panel dimension so replacement panels are always readily available
- use factory prefinished panels wherever possible.

In other instances the ceiling material may need to respond to specific functional environment requirements, necessitating hard impervious materials and be:
- able to be cleaned
- able to meet the functional needs of the space, which may include being watertight, chemical resistant, have high quality acoustic values, etc.
2.2.5  **DOORS, WINDOWS AND OPENINGS**

All apertures through the building fabric, be they external or internal, shall be fit for purpose, taking into account the following factors:

- universal access
- comfort factors including thermal, air quality, light and noise issues
- security requirements.

Specific requirements and issues are addressed in the following reference documents:

- *Universal Design Guidelines – Built Form*
- 000341 PDG Comfort Factor Guidelines
- 000327 PDG Security Infrastructure Design Guidelines.

2.2.6  **FURNITURE, FITTINGS AND EQUIPMENT**

Designers should refer to 000342 PDG Furniture, Fittings and Equipment Guidelines for information on this aspect of building fabric.
3 PUBLIC ART

INTENT

Public art is an integral part of great urban places and built forms. It has the capability to enrich our day-to-day experiences as well as stimulate and educate. The inclusion of public art is important to Curtin University as it can enhance the practical function of spaces, enhance architecture and contribute to a sense of place.

Public art will develop a stimulating and creative urban environment through the integration of public art with artworks to be used as opportunities for provocation and education, in particular providing a platform to profile heritage, Indigenous culture and technological infrastructure innovations.

POLICY

- 0.5% of the total construction budget for all buildings up to a maximum sum of $250,000 is to be allocated to public art for projects of greater than $5 million Total Project Cost.
- The 0.5% will include any associated consultancy work but exclude any associated builders’ work.
- It is at the absolute discretion of the University as to how the budget is used and incorporated into the project.
- The artwork should wherever practical be incorporated into the built form and its surrounds.

In addition, each key urban ‘gateway’ should showcase a significant and innovative artistic, landscape or architectural feature to deliver a memorable impression. Opportunities should explore the development of:

- significant sculptural art work commissions
- iconic stands of pine trees
- signature architectural form, scale and height
- lighting installations and other potential more ephemeral works.
4 REFERENCES

4.1 CONTACTS

The requirements for the design of new and refurbished buildings will be project-specific and will need to accommodate current Curtin University built form objectives. Designers should ensure that they establish early communications with all the relevant project stakeholders and obtain briefings on the desired outcomes.

For design review of significant identified projects, the Responsible Officer will engage the following stakeholders to establish the design review process:

- Director, Capital Projects
- Director, Planning
- Properties, Facilities & Development — relevant Portfolio Manager.

4.2 RECENT EXAMPLES

Recent projects to provide exemplars will be identified by the Responsible Officer. Recently completed projects that exemplify the University’s objective to deliver excellent Built Form and Fabric outcomes include:

- B105 Library Entry and Bookmark Café — Taylor Robinson, Architects
  An example of interior redevelopment and refurbishment that meets the University’s objectives contemporary, integrated and accessible projects.

- B501 Redevelopment for Faculty of Humanities — John Flower, Architects
  An example of total facility redevelopment that meets the University’s objectives of contemporary, integrated and improved student and staff outcomes.

- B304 Research Facility for Faculty of Science and Engineering — STH Architects
  An example of a new facility that meets the University’s objectives through application of scale and proportion, colour and materials to create an accessible, contemporary building.

4.3 RELATED DOCUMENTS

Greater Curtin Master Plan Part A
Greater Curtin Master Plan Part B
Greater Curtin Master Plan Part C
Academic Heart Development Guidelines
Universal Design Guidelines – Built Form
000342 PDG Furniture, Fixtures and Equipment Guidelines
000325 PDG Green Star – Communities Design Guidelines
000341 PDG Health & Wellbeing Guidelines
000327 PDG Security Infrastructure Design Guidelines.