HEALTH PLANNING AND DEVELOPMENT GUIDELINES

Masterplanning

Victorian Health and Human Services
BUILDING AUTHORITY

VICTORIA
State Government

Health planning and development guidelines

Masterplanning

To receive this publication in an accessible format email the Victorian Health and Human Services Building Authority <vhhsba@dhhs.vic.gov.au>

Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

Available at the Victorian Health and Human Services Building Authority website <vhhsba.vic.gov.au>

Contents

1 Introduction

1.1 Purpose of guideline

This guideline sets out the objectives of the Victorian Health and Human Services Building Authority (the 'Authority') in undertaking masterplanning of its current and proposed future service delivery sites, the process for undertaking masterplanning and the expected outcomes and outputs from a masterplanning study.

1.2 Purpose of masterplanning

Plan Melbourne projects that the population of Melbourne will grow from 4.5 million to almost 8 million—with Victoria's total population set to reach 10 million by 2051.

The Victorian government identifies the need to 'plan and invest wisely to cater to the needs of a more diverse and ageing population; break the link between congestion and growth; address housing affordability; mitigate and adapt to climate change; and ensure social and economic opportunities are accessible to all'.[1]

The Authority's role in planning for growth is to ensure that the health infrastructure required to meet the needs of the current and projected future population is in the right place, at the right time and is effective and sustainable. Masterplanning of existing healthcare precincts and sites or potential new sites is key to effective planning.

Masterplanning is a strategic asset management and planning activity. Its purpose is to:

- ensure that Victorian public sector accountable officers (department heads and the chief executive officer of funded agencies) manage assets in accordance with the Department of Treasury and Finance's *Asset Management Accountability Framework* [2]
- ensure that the Authority and funded agencies share a clear strategy that provides a framework for the management of services infrastructure and building assets on sites
- inform planning for potential future capital investment on sites in response to identified service delivery requirements or asset needs and in accordance with *Plan Melbourne* identified population growth areas in metropolitan Melbourne
- ensure that the maximum public value in terms of economic, social and environmental outcomes is created by government infrastructure projects and the public return on investments is increased in line with the Victorian government's Value Creation and Capture Framework [3]
- provide the Authority with the information it requires to manage and report on its asset base and identify statewide capital investment priorities.

For newly acquired sites, the masterplan will establish the fundamental organising principles that will ensure assets being planned and built now can expand, adapt or be replaced in the future, and identify how any potential, future expansion of service delivery on the site requiring new assets can occur in accordance with the site framework.

On existing sites, a rigorous masterplan provides a framework to address projected demand for clinical services and issues identified with current assets in the short, medium and longer term. It will also establish or re-establish site organisational principles that may have been lost or obscured by incremental development over time.

---

1 (The State of Victoria Department of Environment, Land, Water and Planning , 2017)

2 (State of Victoria Department of Treasury and Finance, February 2016)

3 (State of Victoria Department of Treasury and Finance, 2016)

A masterplan review is a strategic asset management and planning exercise undertaken within a short period of time since the completion of a full masterplan study (typically three years or less). The masterplan review:

- uses asset information collected from the previous masterplan study or augments it where information is not complete
- reviews existing staging and development options and/or develops new options, typically in response to a change in demand or priorities for service delivery or new funding or development opportunities that may have arisen.

Refer to Appendix A for an overview of where masterplanning sits within the Authority's overall asset management, planning and development framework.

Refer to Appendix B a definition of key terms related to masterplanning.

Further guidance on the department's asset management, planning and capital project delivery process is available at <https://vhhsba.vic.gov.au/>

Further information on the Department of Treasury and Finance *Asset Management Accountability Framework* is available at <https://www.dtf.vic.gov.au/infrastructure-investment/asset-management-accountability-framework>

Further information on the *Victorian Value Creation and Capture Framework* is available at <https://www.dpc.vic.gov.au/index.php/news-publications/value-creation-and-capture-framework>

1.3 Initiating a masterplan study

The department and the Authority will generally commit to undertake a masterplan study of a health service's site or sites once a Service plan has been completed and formally endorsed by the department executive and the health service Board. The service plan should align with government policy and the department's strategic service delivery priorities and reflect the department's area-based service planning. A high-level model of care for the delivery of those services should also be developed and agreed as this will impact on proposed campus organisation and clinical flows.

Undertaking a masterplan for a site does not imply an automatic commitment to develop a strategic business case as part of preparation of a budget bid for a capital works project. Where the masterplan has been identified by the department, the Authority and the health service as having the likelihood of resulting in the preparation of a strategic business case, a broader range of consultants may be engaged earlier, for example to assist with the development of more detailed capital cost information and commence the preparation of functional briefs for different clinical streams within the service plan and model of care.

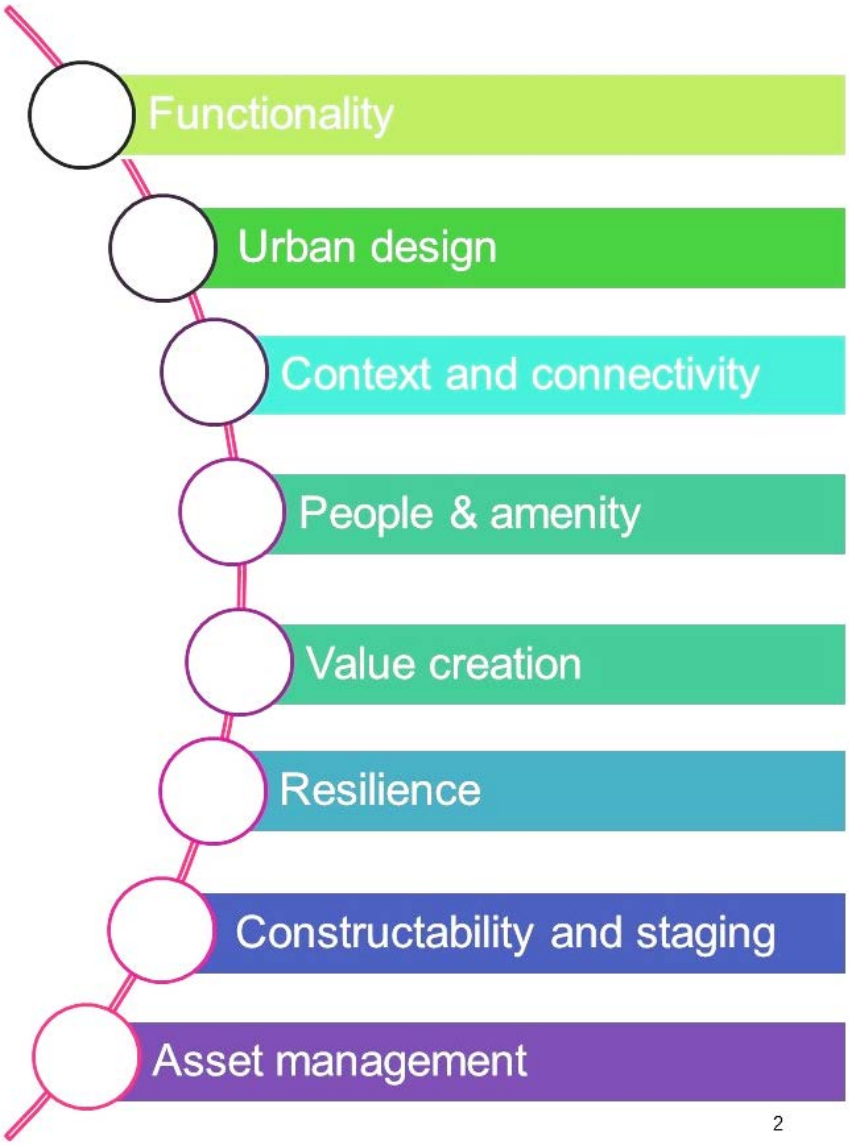
It is critical that all stakeholders engaged in the masterplan study have a clear understanding of the proposed scope of the study and the range of consultants who may be required to deliver the required outputs.

2 Masterplanning principles

Masterplanning in healthcare is underpinned by a set of key principles, including:

- functionality
- urban design
- context and connectivity
- people and amenity
- value creation
- resilience
- constructability and staging
- asset management.

Figure 1: Masterplanning principles



2.1 Functionality

In masterplanning, functionality refers to how well different activity or functional areas (for example, an emergency department, medical imaging unit) are positioned in relation to each other to support the delivery of safe, efficient, reliable and cost-effective health services.

2.1.1 Functional relationship priorities

At the commencement of masterplanning a new site, the project working group is to identify the ideal functional relationships the masterplan will seek to achieve. These proximal relationships are to be prioritised as either:

- 'High' - of critical importance for service delivery
- 'Medium' - desirable but issues can be accommodated through changed practice or processes
- 'Low' - no impact from a lack of proximity
- 'Avoided' - when co-location is undesirable.

For new sites, the development strategy should deliver the ideal relationships to the full extent possible. For existing sites, the masterplan should develop a strategy that will establish these functional relationships where they do not currently exist or have become compromised over time.

2.1.2 Long term expansion, renewal and replacement strategy

A need to increase service delivery capacity in the short term is often the most pressing need addressed in a masterplan exercise. However, this priority should be considered within the context of a longer term (25 to 50 year) strategy for expansion, renewal and replacement of planned or already existing assets on the site. It should identify means by which the long term use of the site can be ensured to achieve maximum value from prior investment on the site, particularly for larger, complex and intensively used sites. Examples for extending the useful life of buildings include planned change of use to less intensive or non-clinical activities, refurbishment of internal fit-out and upgrades to building services.

2.1.3 Zoning

The masterplan should identify development zones to guide future capital investment on the site. These zones are to have high-level defined uses depending on horizontal and vertical adjacencies they afford to other functional zones e.g. 'clinical' because of adjacency to imaging or theatres, or 'inpatient units' because of adjacency to other bed-based accommodation and their necessary support networks.

Establishment of these development zones will ensure that buildings added to the site in the future are positioned to achieve the functional adjacencies required for safe, efficient and cost-effective service delivery and do not compromise other planned or unplanned future works on the site.

2.2 Urban design

Urban design focuses on the design of the public realm, public spaces, streets, parks and paths and informs the design of infrastructure and buildings in as far as they affect the function and amenity of the public realm. Urban design plays a critical role in ensuring that shared space, that is space in the public realm is energised, distributed and able to be used equitably and that the needs of people are put first in any consideration of future development of the healthcare campus.

The Victorian State Government developed a suite of *Urban Design Guidelines for Victoria* [4] to support state agencies, local government and the urban development sector to deliver, functional and enjoyable places for people to live, work, and spend leisure time. The guidelines aim to create neighbourhoods that

[4] (The State of Victoria Department of Environment, Land, Water and Planning , 2017)

foster community interaction and make it easy for people of all ages and abilities to live healthy lifestyles and engage in regular physical activity. These places may be urban areas in metropolitan Melbourne and in regional cities and towns. The guidelines may be used to inform strategic investment in community infrastructure and public realm assets. The guidelines may also be used to develop area specific urban design policies and frameworks.

The guidelines address the following key elements of urban design:

- urban structure – the overall topography and land division pattern
- the movement network – the roads, streets, and paths
- public spaces – areas for public recreation
- public transport environs – the spaces and buildings around stations, bus and tram interchanges
- buildings – and their contribution to their setting
- objects in the public realm – facilities located in streets and public spaces.

Further information on the Urban Design Guidelines is available at <http://www.urban-design-guidelines.planning.vic.gov.au/>

Health service sites are places of civic importance, capable of making a positive contribution to the city, town or region in which they are located. The buildings, external spaces and landscapes of a health service site should have a recognisable identity that reflects something of its unique setting.

To achieve this, a health service masterplan should consider:

- urban morphology of its site
- volume and massing of existing and potential future buildings on the site
- historical, topographical, ecological, economic, socio-cultural, climatic and environmental characteristics of the site setting
- built form and character of the area
- interfaces of the site with the adjoining area
- scale, location and role of open spaces.

2.2.1 Appropriate to its context and neighbours

The masterplan should examine the context in which the facility is located or planned to be located. This includes examining adjoining uses to identify those that may conflict with or be supportive of the intended use of the site. Proposed site zoning should minimise any conflicting use and maximise the potential benefits or opportunities afforded by compatible adjoining uses. The impact of any future site development/expansion on adjoining uses should also be considered.

2.2.2 High quality external spaces

The masterplan should consider external spaces with the same rigour as built spaces. High-quality external spaces can provide significant benefits for minimal cost by providing:

- places for people to gather and socialise
- respite for patients, carers, visitors and staff
- views to nature and access to daylight to promote recovery for patients
- a balance between the amount of hard and soft surface on a site to reduce overall environmental impact
- external pedestrian movement routes are generous and provide clear, direct links between destinations, remove conflicting uses and complement the user experience.

2.2.3 Environmental opportunities

Masterplanning should consider environmental opportunities provided by the site including:

- opportunities to reduce energy and water consumption and the carbon footprint across the site
- using site area economically to minimise the loss of natural topography and vegetation; and
- positioning buildings on the site to allow for their logical expansion and to protect meaningful zones for the addition of other facilities that may be required in the future.

More information on the department's policies and processes regarding sustainability is provided in the department's *Guidelines for sustainability in health care capital works* [5] <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability>

2.2.4 Built form

Health service campuses tend to be comprised of an amalgam of buildings of different ages, form and style. The masterplan should enhance site cohesion and identity through the development of a framework strategy that demarcates functional zones, informs the massing and arrangement of future buildings on the site and establishes a hierarchical arrangement of circulation networks and external spaces. This development framework will enhance order and aid site legibility and wayfinding.

2.2.5 Healthy, active campus

The United Kingdom's Design Council defines healthy place making as 'tackling preventable disease by shaping the built environment so that healthy activities and experiences are integral to people's everyday lives'.[6]

The delivery of excellence in health care facilities, requires the process of design to be viewed as instrumental to influencing the user experiences, for staff, patients and visitors. The scope of this influence extends beyond the functional enclosure of the building to encompass the public environment of the campus. In the same way that the spatial arrangement of a hospital is planned for functional efficiency and expedient delivery of services, the context of a hospital should also be planned in alignment with a suite of best practice principles and standards aimed at delivering healthy public environs.

The concepts of 'healthy' and 'active' design are universally recognised as integral to good city planning, relevant to both buildings and place making. Creating healthy and active environments should be understood as an immediate and practical form of leveraging value capture and creation from public assets through social, environmental and economic benefits.
Various International guidelines identify strategies for delivering healthy environs, including:

- *Active Design Guidelines – Promoting physical activity and health in design*, NYC, 2010 (New York City, 2010) <https://centerforactivedesign.org/guidelines/
- *Active Design – planning for health and well-being through sport and physical activity*, Sports England, 2015 <http://www.sportengland.org/media/3426/spe003-active-design-published-october-2015-email-2.pdf>
- *Healthy Active by Design*, National Heart Foundation of Australia <http://www.healthyactivebydesign.com/>

The principles of healthy and active design should be evaluated as part of the master planning site analysis and the identification of opportunities and constraints. This should subsequently inform the development of a considered all of campus design approach.

5 (2010) *Guidelines for sustainability in health care capital works*, Department of Health, Victoria.

6 https://www.designcouncil.org.uk/what-we-do/built-environment/creating-healthy-places

Healthy Active by Design identifies the following key principles which should be embedded into the process:

- destinations – 'a diverse range of destinations and facilities provides a variety of focal points'
- movement networks – 'an accessible, connected network integrates walking, cycling and public transport routes, facilitates safe and convenient travel within neighbourhoods, and encourages use of destinations'
- public open space – 'provide a range of public open spaces that contribute to the recreational, physical and social needs of all members of the community'
- sense of place – 'developing and enhancing a sense of places and encourages physical engagement with these spaces'
- buildings – 'buildings designed to promote increased physical activity'
- healthy food – 'promote availability and accessibility to healthy food'.

2.3 Context and connectivity

2.3.1 Urban planning

Urban planning as a practice is concerned with 'shaping cities, towns and regions by managing development, infrastructure and services'.[7]

It involves the development of strategies that balance 'the built and natural environment, community needs, cultural significance, and economic sustainability' with the aim of improving the quality of life for users and creating vibrant communities.

The legal framework for planning in Victoria is governed by the *Planning and Environment Act* (1987)[8] with each municipality covered by a planning scheme that sets out the planning rules regulating the use, development and protection of land in that municipality. These include the state and local policies, zones, overlays and provisions about specific land uses that inform planning decisions.

Some sites may be subject to requirements of the Victorian Planning Authority, a State Government statutory authority responsible for working with 'councils and local communities, other government agencies, landowners and developers to plan for strategically important precincts in inner and middle ring Melbourne, the growth areas and regional cities.'[9]

The masterplan should investigate and respond to any requirements of the Victorian Planning Authority and the relevant local Planning Scheme to ensure that proposed future development is appropriate, relationships and/or linkages are developed between the health service campus, adjoining properties and users, including the broader township or city, its commercial and civic infrastructure including parklands and other amenities.

2.3.2 Safe access for pedestrians and vehicles

A key objective of masterplanning a site is to provide safe and convenient access for patients, visitors, staff, emergency vehicles and others. This is achieved by:

- locating entries to the site that consider local pedestrian, bicycle and traffic movement patterns, including public transport links
- separating the movement of pedestrians from the movement of vehicles on the site
- careful consideration of vehicle movement on the site that facilitates safe, convenient drop-off and pickup points and promotes efficient access to and exits from parking areas

[7] (Planning Institute Australia, 2018).

[8] (State Government of Victoria, 2017)

[9] **Invalid source specified.**

- providing emergency vehicles with unhindered, safe access to the emergency department at all times and locating ambulance vehicle bays so that patient privacy and dignity is protected and paramedics are able to go about their work unimpeded
- facilitating efficient site operations by considering access and movement on the site of logistic and delivery vehicles. On larger campuses the flow of service vehicles should avoid conflict with regular vehicle traffic wherever possible.

2.3.3 Pedestrian circulation

Masterplanning should provide a pedestrian circulation system that establishes a legible hierarchy of pedestrian routes relative to the functional layout of the facility. This pedestrian circulation system should:

- locate and treat public entrances to buildings so they are clearly visible on approach
- locate stairs and lifts so they are immediately visible from the primary circulation routes
- provide direct routes with as few turns as possible, with any changes in direction clearly marked
- provide landmarks and nodes that enable people to remember points along the journey, particularly where changes in direction are unavoidable
- accommodates further buildings that may be required to be added to the system in future
- protects the underlying circulation logic by avoiding the creation of land-locked functional areas that have no easily achievable strategy for future expansion if required
- separates the movement of members of the public from the back-of-house movement of patients, goods and services wherever possible to protect patient privacy and dignity. This separation may be achieved on the same floor level or by separating circulation streams on different building levels; and
- provides a safe, efficient working environment for staff
- reduces the potential risk of injury to staff, patients and visitors.

2.3.4 Wayfinding

Healthcare facilities can be complex, disorientating and stress inducing environments for patients, visitors and carers. The site masterplan should provide clear circulation and wayfinding that:

- supports efficient service delivery
- enables patients and visitors to find their way to where they need to be quickly and easily
- reduces the incidence of missed appointments due to patients becoming lost or confused
- reduces the amount of staff time spent assisting people with directions or finding their own way around rather than in actually providing health services.

Existing movement patterns on the site (horizontally and vertically) should be mapped, any wayfinding issues noted and any conflicts between public movement and back-of-house movement identified. The proposed wayfinding strategy should use a variety of techniques to guide people through the environment rather than simply rely on signage.

2.3.5 Carparking

The masterplan should address the provision of car parking for patients, staff and visitors. The size, location and massing of car parking should be informed by traffic engineering advice and must provide for ease of vehicular and pedestrian access to and from key entrance points of the health service facilities 24 hours a day.

2.4 People and amenity

Healthcare facilities have multiple users including patients, carers and visitors, clinical and nonclinical staff, students, emergency services personnel, regulatory representatives and providers of maintenance and other contract services. The masterplan should address these different and sometimes conflicting needs to provide a high level of amenity to all users of the facility.

2.4.1 Travel distances

The masterplan should minimise travel distances to:

- maximise the amount of time that staff spend in actual service delivery
- make it easier for those who are aged or infirm to negotiate the environment unaided
- assist in wayfinding.

Travel distances should be considered as the time taken to get from one point to another. For example, it may be faster to travel from a unit on one floor to another unit on a different floor by a direct lift connection than to try to co-locate all related activities on a single, contiguous floor plate.

The travel times required to achieve the prioritised functional relationships are set out in Table 1.

The average walking pace for an able bodied adult is 5kms/hour. It should be noted that many patients, carers and visitors attending the site will have a reduced walking pace due their age, infirmity or illness.

Table 1: Travel time to meet functional relationship priorities

Priority	Travel time
High	Less than 2 minutes
Medium	2 to 5 minutes
Low	Greater than 5 minutes
Avoided	Not applicable

2.4.2 Universal design

The concept of universal design is to simplify life for everyone by making the built environment more usable to as many users as possible at little to no additional costs.

‘Access’ and ‘accessibility’ has largely been seen as a process of fulfilling a set of measurable requirements (i.e. technical notes and specifications) as generally set out in legislative requirements such as the BCA and relevant standards . This has resulted in ‘accessible’ features being incorporated into a building which is otherwise designed by traditional methods.

These features in themselves consequently become a source of stigma and segregation, as they are associated with particular users. Universal design separates itself from ‘accessibility’ as it is based on social inclusion and not the measurement of accessible design features.

Universal design is applied holistically to a site/building without alternatives for differing groups. By applying a philosophy of universal design, especially where new site/ building are designed and constructed, many ‘access’ problems can be addressed successfully.

The masterplan should provide a site that can be readily and safely accessed by staff, patients and visitors either by car, public transport, bicycle or on foot.

The masterplan for the health service site or campus should be informed as far as possible by the principles of universal design (Refer Table 2).

Further information on universal design can be accessed from the Sport and Recreation Victoria website at <http://sport.vic.gov.au/our-work/participation/inclusive-sport-and-recreation/universal-design>

Table 2: Principles of universal design

No.	Principle	
1	**Equitable use**	The design is useful and marketable to people with diverse abilities.
2	**Flexibility in use**	The design accommodates a wide range of individual preferences and abilities.
3	**Simple and intuitive use**	Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
4	**Perceptible information**	The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5	**Tolerance for error**	The design minimizes hazards and the adverse consequences of accidental or unintended actions.
6	**Low physical effort**	The design can be used efficiently and comfortably and with a minimum of fatigue.
7	**Size and space for approach and use**	Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

2.4.3 Crime prevention through environmental design

The masterplan for a health service site/campus should support the development of an environment that is safe for all users and reduces the susceptibility of the environment to support criminal behaviour by adopting the following principles for crime prevention through environmental design (CPTED):

- natural access control—restricts criminal intrusion, particularly into areas that are not easily observable
- natural surveillance—keeps potential intruders under observation through the creation of environments where there is opportunity for people engaged in their normal activity to observe the space around them
- territorial reinforcement—clearly delineating between public, semi-public and private spaces or zones.

Further information on crime prevention through environmental design can be obtained from the Victoria Police website <http://www.police.vic.gov.au/content.asp?document_id=10444>

2.5 Value creation

The Victorian government seeks to deliver enhanced public value from its investment in infrastructure through its *Value Creation and Capture Framework*.[10] The Framework typically applies to:

- precinct projects that involve coordinated action across Government to support urban renewal or other development outcomes across a defined geographic precinct
- development of public land for public or private urban uses other than infrastructure e.g. development projects lead by Development Victoria and involving the development of land in partnership with the private sector, or the sale of public land conditional on the delivery of defined and agreed development outcomes
- capital investments including health and/or other government portfolio projects that are classified as high value construction projects (in excess of $100million) or assessed by government as having potential for significant value creation and/or value capture opportunities.[11]

The Authority requires that masterplanning of all sites and/or precincts be informed by the principles of value creation to ensure that the maximum benefit to the public from any potential public investment in infrastructure is achieved. While many of the benefits identified as realisable through the adoption of a value creation framework are already included and assessed under other masterplanning principles, the overall value creation potential of different masterplan options should be considered and assessed as an objective in its own right. A schedule of value creation concepts explored as part of the masterplan study, their alignment with the Framework, the extent and outcomes of any stakeholder consultation undertaken in relation to them to assess level of interest should be documented to inform any potential future business case preparation or feasibility studies.

The Framework identifies the following benefits as realisable through value creation:

- economic
- social
- environmental.

2.5.1 Economic benefits

Economic benefits that may be identified as achievable through the realisation of a masterplan option and the design and delivery of potential projects include:

- creating employment opportunities during construction and in operations
- the use and/or development of local skills and products
- the creation of the potential for commercial gains through the provision of space that is attractive to other related service providers or other commercial service providers.

2.5.2 Social benefits

Social benefits that may be achieved through the adoption of a value creation framework and joined up masterplanning for a healthcare site or precinct include:

- improved access to an integrated suite of services that promote the health and well-being of the community
- provision of access to facilities that may enhance social connectivity and cohesion
- enhanced public safety through planning of movement pathways around the site or precinct
- greater access to recreational or health promoting infrastructure such as planning for the inclusion of green spaces, connected bike paths etc.

[10] (State of Victoria Department of Treasury and Finance, 2016); p. 9

[11] (State of Victoria Department of Treasury and Finance, 2016); pp. 20-21

2.5.3 Environmental benefits

Environmental benefits identified by the Framework and which should be considered in masterplanning a site or precinct include:

- greening and enhancement of natural catchments in cities and towns
- increasing energy and/or water efficiency
- building sustainability
- adaptation to climate change
- decreased greenhouse gas emissions.[12]

Further information on the Victorian Government's Value Creation and Capture Framework can be found at <https://www.dpc.vic.gov.au/index.php/news-publications/value-creation-and-capture-framework>

2.6 Resilience

Health facilities are a vital civic and community resource. Governments are increasing their emphasis on the resilience of the healthcare system, including the facilities from which they are provided. Increasing the resilience of buildings and services infrastructure adds cost to building projects so the degree of resilience required for individual sites has to be considered within the overall healthcare system. Some sites may evacuate patients to another centre in the event of an emergency or disaster, while other critical sites may be required to remain operational and self-reliant for extended periods of time.

Masterplanning should assess the capacity of the facility to withstand various events (e.g. bushfire, floods, and severe weather) and devise strategies for redressing any shortfall in the required performance.

2.6.1 Standalone mode

The department's *Essential Engineering Services—Risk Management Guideline* identifies the performance standards required of the various sites within the state-wide service delivery system under circumstances of continued loss or unavailability of one or more essential engineering services from the usual source of supply.

As part of masterplanning, the role of the site within the overall system should be confirmed, the status of existing site engineering services infrastructure assessed and a strategy developed for achieving compliance with the required performance standard.

The department's guidance on required performance standards for sites can be obtained from <http://www.capital.health.vic.gov.au/Strateigc_asset_management/Asset_management/Essential_engineering_services/>

2.6.2 Bushfire

As Victoria is subject to seasonal bushfires that can pose a major threat to life and property, buildings in defined zones in Victoria have a regulatory requirement to be assessed for their level of resistance to bushfire attack. The department's policy extends the requirement to undertake an assessment of vulnerability to bushfire attack to all of its sites outside the metropolitan area. The masterplan should assess the layout of sites and the buildings on it against the standard applicable to its location and provide a strategy for addressing any shortfall in performance.

[12] (State of Victoria Department of Treasury and Finance, 2016); p.9

2.6.3 Flooding

Healthcare facilities can be impacted by different types of flooding, for example slow-moving riverine flooding that inundates sites and buildings for days or even weeks, rapid onset, fast moving floods that may provide little opportunity to implement protective measures, and flash flooding which typically occurs within minutes or hours following a period of intense rainfall and is fast moving and short-lived.

Masterplanning should assess the potential for flooding to impact on the site and its buildings. For new sites, a range of avoidance measures and protective measures can be implemented to address the determined risk. For an existing site, strategies should be identified for strengthening resistance to flooding e.g. raising the level at which critical engineering plant is installed, installing check valves on sewer systems to prevent sewage back flowing into buildings that might otherwise be flooded.[13] [14]

2.6.4 Drought

Victoria can also experience extended periods of drought. Masterplanning should consider opportunities for water capture, storage and use on site as well as opportunities for treatment and reuse of water used on the site. This should be undertaken in accordance with the department's guidelines on sustainability and water reuse in Victorian healthcare facilities.[15,16]

2.6.5 Extremes of temperature

Temperatures across Victoria can vary markedly with temperatures above forty degrees Celsius not uncommon during summer. During winter there may be periods of severe cold. Masterplanning should identify the local climatic conditions and seek to configure and orient buildings to avoid excessive solar heat gain in summer and create sheltered outdoor areas that can be comfortably accessed at different times of the year.

The careful location of external mechanical and electrical plant should also be considered to ensure it does not have to meet peak demand while also labouring under temperature extremes.

2.7 Constructability and staging

2.7.1 Constructability

The masterplan study should assess the constructability of all potential stages. This assessment should consider:

- the relative ease of gaining access to an identified future development zone or site to enable construction activities to be undertaken
- the operational issues that may arise from the development strategy, for example if proposed future expansion involves construction over or adjacent to critical operational areas.

The masterplan study should also assess the capacity of existing building structures to accommodate change of use, additional load and/or horizontal expansion.

13 Australian Building Codes Board (2012). *Construction of Buildings in Flood Hazard Areas*

14 Australian Building Codes Board (2012). '*Construction of Buildings in Flood Hazard Areas - Information Handbook*'

15 *Guidelines for sustainability in health care capital works* (2010) Victorian Government Department of Health

16 *Guidelines for water reuse and recycling in Victorian health care facilities-Non drinking applications* (2009) Victorian Government Department of Health

2.7.2 Staging and decanting impacts

The masterplan should provide a clear plan for potential future, staged, construction on the site to add new facilities or replace or renew existing buildings and site services infrastructure. This includes the size of the individual stages and their ability to be scaled up or down to take advantage of different size capital funding opportunities that may become available to the health service.

In developing the masterplan, the functional efficiency of the configured services at the end of each stage should be assessed to ensure that the health service can continue to deliver services safely and cost effectively should there be extended periods of time between receipt of one capital funding package and the next.

The masterplan should also seek to minimise the amount of decanting required. Double decants should be avoided if possible. Decanting is disruptive to service delivery and efficient site operations and is expensive in that it can involve a capital cost in refurbishing available space to accommodate a functional unit for a limited period of time. Decanting can also have a negative impact on staff morale and clinical safety. When the final end result of a masterplanning option requiring decanting provides a far superior outcome than options with minimal or no decanting, it may be determined that the cost and inconvenience of decanting is worth bearing for the better end result.

2.8 Asset management

2.8.1 Commercial opportunities and co-located partners

Masterplan options developed for a site or campus should consider opportunities for compatible commercial or private health service delivery that support or enhance service delivery from the site, increase amenity for site users and/or provide an income stream for the health service.

The masterplan should identify the best locations for any potential co-location opportunities and establish the limits of the site area that can be given over without impeding the capacity of the public health service to expand on the site or to replace or renew existing site infrastructure and buildings in the future.

2.8.2 Site consumption

The masterplan should consider the land value of the site that will be consumed by any proposed developments. This value should be protected by establishing the development density appropriate for the site to ensure that the available land area is used cost-effectively and sustainably. This may involve maximising vertical massing to provide more compact building footprints to maximise current and protect future site yield.

2.8.3 Reuse of existing assets

The provision of building and engineering services infrastructure on a health service delivery site over time represents a significant investment of public funds. This prior investment should be considered in developing a site masterplan to ensure that the maximum benefit is derived from that previous investment. This may include reusing and/or repurposing existing buildings that:

- are structurally sound
- are compliant or can cost effectively and readily be made compliant with current building codes
- are located so as not to have a negative impact on the achievement of a functional and operationally efficient site
- have floor plates and structural grids of a size and configuration that offers flexible accommodation
- provide floor to floor heights that can accommodate the planned uses.

2.8.4 Site services and infrastructure

Rigorous evaluation and planning of engineering services should be undertaken and integrated within the masterplan study. The objective is to ensure that site services and infrastructure not only meet current needs but are expandable and flexible so that future expansion on the site can be accommodated without requiring relocation of central plant or major reticulated services. The masterplan should ensure that engineering services are also be able to be delivered in affordable, discrete stages related to each proposed stage of building wherever possible.

2.8.5 Building adaptability

The masterplan should establish the development principles that will ensure all future buildings on the site are inherently flexible and long life. This includes ensuring proposed building developments are planned to deliver:

- construction grids that can accommodate multiple uses, particularly where multi-storey developments are planned, for example, for some proposals the column grid must accommodate car parking at basement level, imaging and emergency departments at ground level, operating theatres at podium level and bed-based services above
- clear floor plates with risers and fire stairs located on building perimeters wherever possible
- open ended planning in which the floor plate can be extended without compromising the underlying circulation system
- floor to floor heights that accommodate a variety of clinical uses.

3 Masterplanning process

Masterplanning requires a period of focussed engagement between the Department, the VHHSBA, the consultant team and the health service, typically over a period of 3 to 4 months. A standard approach to masterplanning is used to ensure high quality and consistent outcomes are achieved in a timely manner (Refer Figure 2).

3.1 Initiation of a masterplan study

A masterplan study for a health service or a site may be initiated for a number of reasons including:

- meeting obligations set out in the Department of Treasury and Finance *Asset management accountability framework*
- cyclical masterplanning of key, strategic, service delivery sites
- an asset need identified as a result of a service planning exercise, and/or
- the identification of significant issues related to services infrastructure and/or building asset condition.

Masterplanning of key, strategically significant health assets occurs on a recurring cycle. Strategically significant health assets are typically major metropolitan hospitals and non-metropolitan hospitals with a significant regional role. Masterplanning on a cyclic basis is intended to ensure critical health assets:

- are positioned to respond to major shifts in clinical service delivery
- are positioned to respond to anticipated or projected major population or demographic changes in their catchment area
- are sufficiently robust to be able to maintain safe service delivery
- have a clear plan to respond to projected changes in demand for services in the short, medium and long term
- have a coherent plan to address any asset and services infrastructure renewal and replacement issues in the short, medium and long term
- have a portfolio of required works scoped sufficiently to enable the health service to take advantage of any capital works funds that may become available from any source.

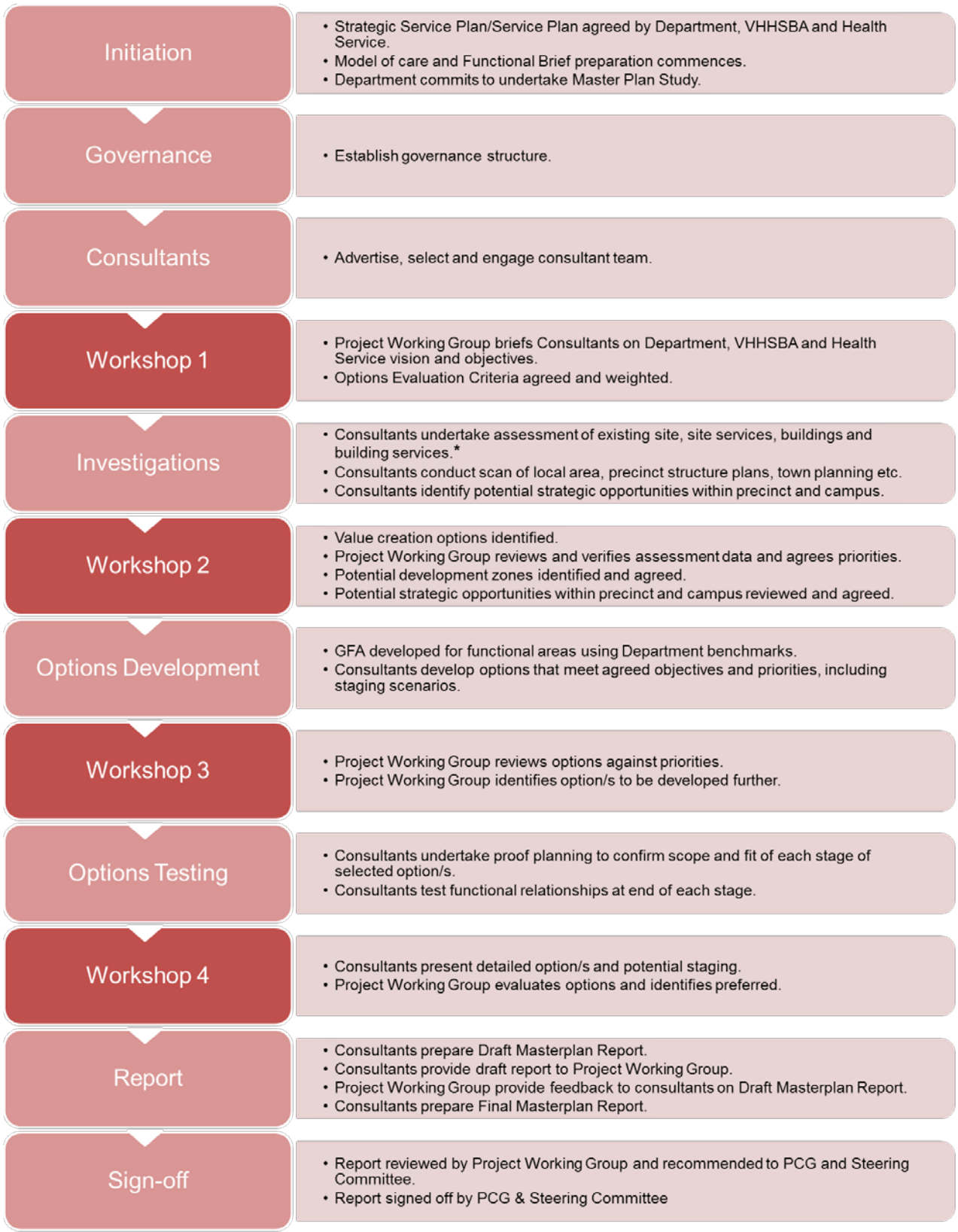
Masterplanning of other sites typically occurs less frequently than for the key, strategic service delivery sites. The frequency of masterplanning in these instances is generally informed by an identified change in service demand or issues related to the condition of existing assets used by the health service.

Masterplanning should not commence before the following activities have been undertaken:

- a service plan has been developed, agreed to and signed off by both the department and the health service executive. A possible exemption to this requirement is if a masterplan is required to address an urgent services infrastructure or building asset issue. The service plan identifies the projected demand for clinical services typically within a ten year timeframe and assists in prioritising works in the short to medium term while the masterplanning timeframe extends to twenty-five years or more
- a high level model of care document has been prepared by the health service, setting out the principles that will guide how services will be delivered. This will impact on patient flows, the distribution of functional areas and their position relative to each other.

Strategic masterplanning refers to a masterplanning exercise undertaken across more than one site operated by a health service. It should not commence until a strategic service plan has been developed, agreed to and signed off by the department and the health service. The strategic masterplan will address any asset issues related to any proposed realignment of service delivery between the health service's multiple campuses.

Figure 2: Masterplanning process



* The assessment of assets undertaken using the standard Asset Assessment Workbook will in future be undertaken routinely as part of ongoing asset management activities prior to the commencement of a masterplan study. During the transitional period, the asset assessment will continue to be undertaken as part of the masterplan study.

Victorian Health and Human Services BUILDING AUTHORITY

3.2 Site selection

Masterplanning is also initiated when the department identifies a need to acquire a new site from which to deliver services. The project working group should identify the required and/or desirable characteristics of the proposed new service delivery site and use this as the basis for evaluating the suitability of any potential new sites for the intended use.

The department may establish a site selection panel comprised of representatives of the Victorian Health and Human Services Building Authority, the Department of Health and Human Services region, relevant program areas and health service provider when it needs to acquire a site prior to the engagement of consultants.

Refer to Appendix C for the department's generic list of site selection criteria. An electronic version of the site selection checklist can be obtained from the Victorian Health and Human Services Building Authority.

3.2.1 Masterplan consultants

Masterplan consultants are engaged in accordance with all government and departmental standards and processes as set out in the *Health Planning and Development Guidelines* <https://vhhsba.vic.gov.au/practitioners-page>

The consultant brief for the masterplan exercise should set out the specific consultants required for the study, the consultancy structure in terms of required sub-consultants as well as the roles and responsibilities of each consultant.

3.2.2 Consultation with users

As the development of a site masterplan is a strategic planning exercise, consultants usually only consult with executive users such as the health service chief executive officer, heads of departments or clinical streams and operations managers. This ensures that the masterplan represents the department and the health service executives agreed strategic objectives for the site.

The working group may direct or authorise masterplan consultants to liaise with a broader range of users within a particular area if it is of particular significance to the masterplan work or there is a pre-existing commitment to a capital project in that area.

3.3 Workshop 1 - Masterplan briefing

On appointment of the masterplanning consultant team, a masterplan briefing workshop is held to enable the project working group to brief the consultants on:

- the masterplanning process to be followed
- aspirations of the masterplan study
- any issues specific to the site and the masterplan study
- the desired outcomes and required outputs from the study
- the evaluation criteria that will be used to evaluate masterplan options and identify a preferred option.

The masterplan briefing workshop (workshop #1) enables a shared vision to develop and ensures a clear understanding of the roles and responsibilities of all participants.

Refer to Appendix D for the standard masterplan options evaluation criteria.

An electronic copy of the evaluation spreadsheet is available from the Victorian Health and Human Services Building Authority.

3.4 Pre-design studies

The consultant team is to undertake a number of specific pre-design studies prior to the preparation of masterplanning options. These include:

- service plan analysis
- analysis of context
- assessment of existing assets.[17]

3.4.1 Service plan analysis

During this initial stage of masterplanning the clinical planner is to work closely with the health service to prioritise the clinical service delivery needs identified in the endorsed service plan and assist in the preparation of a model of care that:

- responds to national and departmental policies regarding improving clinical safety and efficiency
- reflects evidence-based clinical best practice
- ensures care delivery is patient focussed and in particular responds to the needs of aged persons
- supports the attraction and retention of a sustainable health workforce
- considers the integration of new and emerging technologies.

The clinical planner also translates the service plan into detailed schedules of accommodation based on the department's generic guidelines.

3.4.2 Analysis of context

The pre-design work includes a comprehensive analysis of:

- specific physical characteristics of the site
- interface of the site with its immediate context and the larger town/region
- opportunities and constraints afforded by any local and state-wide planning initiatives now and into the foreseeable future.

3.4.3 Assessment of existing assets

The department employs a standardised approach to the assessment of its physical assets as set out in its *Health Planning and Development Guidelines—Asset Assessment.* Consultants are to record the findings from their assessments in the associated *Asset Assessment Workbook.*

The assessment of existing assets requires the collection of key information concerning:

- existing site infrastructure
- existing buildings and their associated engineering services
- functional spaces contained within those buildings.

Consultants are provided with an electronic copy of the *Asset Assessment Workbook* for completion and return two electronic copies, one to the department and the other to the health service.

The data provided within the *Asset Assessment Workbook* is a key input to the development of a list of staged, potential, future capital works for the site being masterplanned. It also provides the health service with information it can use to plan future maintenance or minor works packages.

17 The assessment of assets undertaken using the standard Asset Assessment Workbook will in future be undertaken routinely as part of ongoing asset management activities prior to the commencement of a masterplan study. During the transitional period, the asset assessment will continue to be undertaken as part of the masterplan study.

3.5 Workshop 2 - Pre-design reports

The consultant team presents the results of its pre-design studies to the project working group at workshop 2. The working group will review the reports and then agree on the clustering of potential future development options that best respond to the identified clinical and asset needs in broad timeframes i.e. short term, medium term and long term.

3.6 Options development

Once the working group has confirmed a set of prioritised works that respond to service delivery and asset drivers, the consultant team develops strategies for addressing those priorities.

The number of potential options developed will vary according to the specifics of each site. The consultant team should only prepare options that address the clinical and asset priorities and other masterplan requirements agreed by the project working group.

The consultant team must ensure that any potential capital options developed e.g. proposed addition of new building stock or refurbishment of existing building stock, also identify any non-clinical support services, site infrastructure or building services work required to support that development option. This ensures that potential development options are fully scoped so that they can be accurately costed if a future capital bid is submitted.

3.7 Workshop 3 - Options presentation and analysis

At the third masterplan workshop the consultants present the project working group with the options developed to address the agreed list of service delivery and asset driven priorities in the short term, medium term and long term (25+ years).

As development on large, complex sites with multi-storey buildings can require multiple stages involving a combination of new construction, decanting and refurbishment of existing areas, the consultant team is to use its expertise to communicate options and their implications clearly to the working group. This will enable the working group to fully understand the intricacies of each option and make informed decisions.

By the end of workshop 3 the working group and consultant team will have reviewed the options presented, determined any options to be discarded and identified any weaknesses in the remaining option or options to be further investigated and addressed.

3.8 Workshop 4 - Identification of preferred option

At the fourth masterplanning workshop the consultant team is to present the final option or options to the project working group with all issues that were unresolved at the third workshop now addressed and the finer details of the option or options now tested and validated through proof planning and analysis of constructability and staging.

The working group evaluates the options against the agreed objectives and evaluation criteria to identify and agree a preferred option. The final evaluation may determine that some desirable aspects of a non-preferred option should be incorporated into the preferred option. It may also identify some aspects of the preferred option to be further investigated and refined, such as the size of individual stages, prior to formally endorsing the preferred option. On occasions, the working group may also elect to retain two options that each achieve the desired masterplan outcomes but in different ways. This will occur if flexibility to adapt to different investment opportunities is required.

3.9 Endorsement and signoff

The working group makes a recommendation to the project control group that they accept the preferred option. If the project control group is satisfied that the masterplan analysis has been rigorous and produced a viable option or options for the long term strategic future of the site, it will formally recommend the masterplan to the health service chief executive officer and the department executive.

Where a steering committee is in place, the project control group will recommend that the steering committee endorse the masterplan. If it is satisfied that the masterplan represents a robust strategic planning framework for the site, the steering committee will formally endorse the masterplan.

4 Masterplan report

On completion of the masterplan study the consultant team is to provide a draft masterplan report to the department and the health service. Consolidated comments and revisions are then communicated back to the consultant team.

Draft sections of the report may be prepared and distributed for review and comment prior to the completion of the masterplan study e.g. the report on the condition of existing assets.

4.1 Format

Two loose-bound copies of the final masterplan report are to be provided, one for the health service and one for the department. Three copies of the full report are to be provided in electronic format on CD or DVD, one for the health service and two for the department.

4.2 Contents

4.2.1 Executive summary

The executive summary of a masterplan report should contain a clear, concise summary of all factors related to the masterplan study. The summary should be sufficient to enable a reader who was not directly involved in the study to quickly gain a high level understanding of the rationale for the adopted strategy, the proposed staging and final masterplan built form. The executive summary should contain text and images that can form the basis for briefings to key stakeholders e.g. departmental executive, health service boards. The executive summary should briefly and clearly identify:

- location of the site that is the subject of the masterplan study
- details of the health service/agency that controls or will control the site once developed
- the role and function of the site within the local area, precinct, region and/or statewide service delivery system
- a summary of the agreed service plan including services currently delivered from the site and projected demand for services to be delivered from the site in the short to medium term (within the timeframe of the agreed service plan). This information is best presented in tabular form and should also identify the existing points of care (e.g. number of beds, operating theatres, emergency cubicles etc.) and the points of care determined to be required to meet the projected service demand.
- a summary of the outcomes of site investigations that have a direct bearing on the agreed masterplan strategy, for example:
  - environmental context: relevant precinct structure plans, other current or proposed developments in the local area, transport plans, town planning requirements and property information including zoning, overlays and easements

  - existing conditions: the condition, functional suitability, compliance and operational efficiency of existing buildings as well as the condition, capacity and compliance of existing site services infrastructure
- history of recent capital investment on the site (typically 10 years) funded from any source e.g. State budget or specific-purpose grants programs, Commonwealth, self-funded or other parties
- high resolution 3D computer generated images of the existing site, proposed stages and final built masterplan.

4.2.2 Role and function review

This section of the masterplan report should report on the health and human services documents that have been prepared, endorsed and used to inform the masterplan study and the endorsed option:

- the service plan, noting the time frame covered by the service plan projections
- the proposed model of care
- the functional brief.

This section should detail:

- the agreed role and function of the health service and the site that is the subject of the masterplan study within the statewide service delivery system, its region, catchment area and local area
- the type and quantum of services currently delivered from the site
- the current facility profile including the number of points of care (i.e. number of beds by type, emergency department cubicles, operating theatres etc.)
- the type and quantum of services proposed to be delivered from the site
- the facility profile identified as required to accommodate the type and quantum of services proposed to be delivered from the site; and
- the agreed priorities for responding to projected growth or changes in service delivery.

The impacts that the service plan changes and priorities, the proposed model of care and the functional brief have on site planning, the blocking and stacking of proposed facilities to deliver a particular set of functional adjacencies, and the proposed staging of works should be covered in this section.

4.2.3 Area allocation

The masterplan report should provide a schedule of the accommodation required to provide the agreed clinical services as well as all clinical support and non-clinical support areas. The schedule of accommodation should be provided at a room by room level for each functional area for a facility providing services of the agreed level of complexity and reference.

The schedule of accommodation should be provided in tabular form and compare the proposed areas against the areas proposed by the *Australasian Health Facility Guidelines*, any other area benchmarks including reference to other projects of a similar scale and complexity. Any variances from the *Australasian Health Facility Guidelines* should be highlighted and supporting evidence provided to justify the variance.

The Australasian Health Facility Guidelines are available from <https://www.healthfacilityguidelines.com.au/>

4.2.4 Site investigation

This section of the masterplan report should provide a detailed assessment of all regulatory, environmental and other factors related to the site that is the subject of the study. This includes:

- details of the property including all parcels that comprise the property as well as title and ownership information
- the zoning of the site and all town planning related issues including an assessment of potential impacts of relevant precinct structure plans, adjacent uses, planning overlays, easements, required setbacks, heritage listings etc.
- details of any authority requirements that impact on the site e.g. stormwater management
- the orientation of the site and of all structures on it including commentary on other features such as available views and predominant direction of winds throughout the year
- an analysis of the characteristics of the site including topography, site surveys, adjoining uses and defining characteristics
- any potential strategic opportunities identified and assessed within the precinct and/or campus.

4.2.5 Assessment of existing assets

This section of the report should contain a textual overview of the results of the *Asset Assessment Workbook* completed for the site. It should describe the age, materials, physical condition, functional suitability, operational efficiency and compliance of each building and its services. It should also describe the capacity, condition and compliance of each site-wide services infrastructure element. The fully completed *Asset Assessment Workbook* should be included in an appendix.

It should highlight any factors that pose a potential risk to safe, continuous service delivery or any requirement for upgrades and/or expansions to site-wide or building infrastructure works that would be potentially triggered by works on the site, either to achieve compliance or to accommodate expanded capacity.

4.2.6 Audit reports

This section of the masterplan report should identify and summarise the findings of any audit reports undertaken on the site, including any undertaken as part of the master plan study. Copies of the full reports should be included in the appendices. Reports referred to include hazardous materials assessments, site contamination assessments, essential engineering services assessment, heritage reports etc.

Any issues likely to have an operational, planning or cost impact on the site or current or future development on the site should be highlighted.

4.2.7 Options presentation and analysis

The full details of each option developed and assessed throughout the master plan study as well as the detailed evaluation schedule should be included in the appendices. For each option considered, this section should present an overview including:

- key stages and any dependencies (e.g. early works required, services infrastructure capacity increase required, compliance requirements triggered)
- the number of points of care it delivers
- the proposed development envelope provided.

The description of the options should include text, 3D graphics and tables, including the high level results of the evaluation and ranking of each option.

4.2.8 Endorsed option

This section of the report should provide a detailed description of the option or options that the evaluation process has identified as preferred. [18] It should provide a clear understanding of the full details of the preferred option including:

- the proposed sequencing of each stage and all sub-stages including any dependencies to other works required on the site e.g. any expansion or upgrades to site services infrastructure and non-clinical support services (e.g. kitchen, linen handling, supply, waste management) required to accommodate additional demand or meet regulatory or guideline standards; and any expansion or upgrades required to non-clinical support services
- the number of points of care and support services delivered by each stage and sub-stage of the option
- the proposed development envelope (scale and massing) of each stage and sub-stage as well as the proposed final built outcome for the site and its context. This should include reference to any known or potential future developments by others on, adjacent to or in the vicinity of the site and demonstrate the option in the context of any state and local government planning and development schemes, including any value creation and capture opportunities.

Consultants are to ensure the option is described and presented in a manner that enables it to be clearly understood by all readers. The information should be presented as a combination of text, 3D images and tables.

4.2.9 Cost plan A

While a cost plan may not be prepared for every master plan, the level of detail provided for the preferred option/s should be sufficient to enable a cost consultant to prepare an accurate cost plan A for each sub-stage, stage and the total site works if directed by the Authority.

This section of the report should contain a summary of cost plan A with clearly stated assumptions, inclusions and exclusions. The detailed cost plan A report should be included in the appendices.

4.2.10 Sustainability report

This section of the report should summarise the environmental opportunities provided by the site and the outcome of the sustainability workshop conducted by the project working group to agree the high level principles and strategy for incorporating sustainability on the site or sites. This may include initiatives linked to proposed future development stages as well as initiatives that may be commenced incrementally outside of funded capital developments.

The minutes of the sustainability workshop, including a description of all options considered and the agreed principles and priority actions should be included in the appendices.

4.2.11 Value management study/independent peer review

A value management/independent peer review exercise should be undertaken for masterplan studies to ensure that the proposal represents best value for money and has considered and captured all relevant issues and information. This is particularly important for major campuses but can also add significant value to master planning for even small campuses.

This review should be undertaken in a workshop format with the project working group with input from an independent expert master planner, services engineer and cost consultant. The focus of the workshop

18 On some occasions more than one masterplan option may be identified as viable for a site or health service in order to be able to accommodate different potential funding streams or strategic policy directions still in development.

should be on adding value to the planning rather than simply trying to identify potential savings at this early stage of strategic planning.

This section of the report should summarise the outcomes of the value management workshop and identify all value add items that have been identified through that process and incorporated into the master plan study. The minutes of the value management workshop including a list of all items raised via the independent peer review process and the reasons for the project working group either accepting or rejecting the proposed changes should be included in the appendices.

4.2.12 Action plan

This section of the report should identify the high level actions required including:

- presentation of the proposed master plan to a steering committee, Authority CEO, hospital CEO, health service board etc. for formal endorsement as the agreed development strategy for the campus
- gaps in information that may require further investigation.

A checklist identifying the required content of a masterplan report and the required electronic formats are set out in Appendix E.

4.3 Approvals

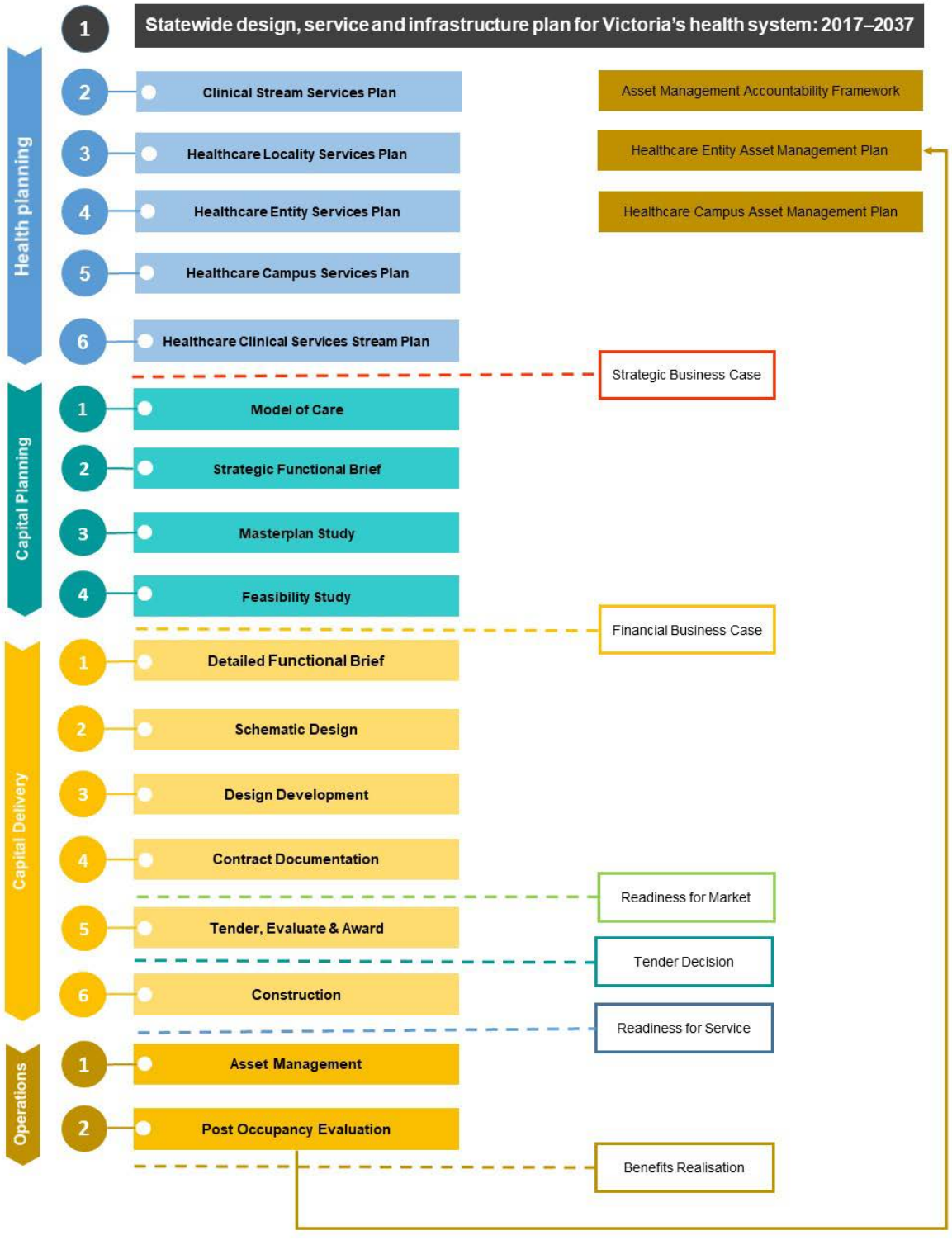
This section of the report should identify the steps undertaken to obtain formal endorsement of the master plan and whether formal endorsement/approval has been obtained from the relevant approval authorities e.g. health service steering committee, health service Board etc.

4.4 Implementation

The site masterplan provides the framework for any future development on that site. When a potential capital project is proposed for a site, the department and the health service will jointly review the proposal against the priorities identified for the site and the development zones identified as appropriate for that particular activity. In some circumstances a high level workshop to reconfirm the agreed strategy may be required although the risk of changing the direction of the long term strategy to achieve a short term gain must be carefully managed by the project working group.

5 APPENDICES

Appendix A: Asset management, service and capital planning and delivery process



Appendix B: Masterplanning – Key terms and definitions

Term	Definition
Accessibility	In masterplanning, accessibility is defined as the degree of ease with which the site and the services delivered from it can be reached by its intended users (including patients and their carers/visitors), the staff who will work there and others delivering goods and services to the site.
Asset assessment workbook	The Department of Health and Human Services' standardised tool for the collection and reporting of information on existing site services infrastructure, buildings, building services and internal fit-outs.
Asset management	Coordinated activities carried out by an organisation over the whole lifecycle of an asset to realise full value from assets in delivering their service delivery objectives.
Asset Management Accountability Framework (AMAF)	The Victorian Department of Treasury and Finance's framework for ensuring Victorian public sector accountable officers manage asset portfolios appropriately. It applies to non-current assets (physical and intangible), including information and communication technology (ICT) assets, controlled by government departments, agencies, corporations, authorities and other bodies that are captured by the Standing Directions of the Minister for Finance made under the *Financial Management Act 1994* (FMA).
Clinical health planner	A specialist with a relevant degree / qualification in a health related profession, experience in leading and managing clinical services and a comprehensive understanding of the complexities of health service delivery and undertaking of capital works projects in a clinical environment. During masterplanning, the role of the clinical health planner is to: • interpret and translate information provided by clinicians to the design team • challenge clinical groups to think beyond current practice to future trends in service delivery e.g. new models of care • interpret health service documentation and communicate the application of these documents to the planning process and • develop area schedules for health planning units using the department's hospital capital planning benchmarks and the department's *Design Guidelines for Hospitals and Day Procedure Centres.*
Constructability	In the context of a masterplan, constructability refers to the number and the sequencing of discrete stages of development and their likely impact upon continuing operations on the site.
Health facility planner	A senior health architect with expert knowledge of healthcare planning needs and significant experience in functional planning of healthcare campuses. The role of the health facility planner in the masterplan is to ensure that proposed planning options support safe, efficient service delivery and are cost effective to build, operate and maintain.

Term	Definition
Health service campus	A health service campus is comprised of the buildings, services infrastructure and grounds that make up the total facility. The campus may contain buildings from which the public health service provider delivers clinical and other support services, facilities that accommodate other compatible uses (e.g. a private provider of inpatient health services, medical imaging, café and other retail opportunities), facilities that may be owned by another entity such as a university and provide tertiary education and training, research facilities that may be owned by the public health service or another research entity and, in rural locations, may also accommodate other related health services such as an ambulance base or community health service.
Masterplan	A masterplan is a strategic asset management and planning document that provides a clear framework to guide management of services infrastructure and building assets on sites and informs planning for future capital investment on sites in response to identified service delivery requirements or asset needs.
Masterplan review	A masterplan review is a strategic asset management and planning exercise undertaken within a relatively short period of time from when a full masterplan study is completed, typically less than three (3) years. The review utilises asset information collected in the previous masterplan study to review options and/or develop new staging options, usually in response to changed service demand priorities or funding opportunities.
Masterplanner	A senior health planner, usually an architect who has acquired significant experience and expert knowledge in masterplanning health care campuses and in the design of a wide range of healthcare facility types. The role of the masterplanner is to identify potential options and develop the overall strategy to secure the long term future of the site.
Model of care	A model of care document is the outcome of a review of best practice evidence undertaken to deliver improved service delivery and clinical outcomes. In masterplanning, the model of care document describes the way that the health service intends to deliver clinical services for particular patient cohorts or clinical streams from first point of contact through to discharge from care. The model of care is implemented through change management strategies developed by the health service and may occur with or without a requirement for capital works.
Project working group	The project working group is responsible for day-to-day liaison and detailed input to the masterplan exercise. The working group is typically comprised of senior representatives from the department, the Authority and the executive user group from the health service.
Resilience	In relation to buildings, resilience refers to the capacity or ability 'of a system/community/society/defence to react to and recover from the damaging effect of realised hazards' [19]
Service plan	Service planning should be undertaken under the direction of the health service/agency and departmental personnel (regional and head office program division). The services plan identifies existing service needs as well as new, reconfigured or replacement services. The service plan may or may not identify a need for capital investment to meet growth or changed services.

19 Lawson, Nigel (2011) *SMARTeST – Glossary*, University of Manchester (p. 22)

Term	Definition
Strategic masterplan	Strategic masterplanning refers to a masterplanning exercise undertaken across more than one site operated by a health service. It should not commence until a strategic service plan has been developed and agreed to and signed off by the department and the health service. The strategic masterplan will address any asset issues related to any proposed realignment of service delivery between the health service's campuses.
Value capture	Value capture refers to government capturing a portion of the incremental economic value created by government investments, activities and policies. These actions may generate alternative revenue streams, assets or other financial value for Government which could assist in funding those investments and activities.[20]
Value creation	Value creation refers to delivering enhanced public value above and beyond what would ordinarily be achieved as a direct consequence of the government investment in infrastructure. These benefits may be economic social and/or environmental.[21]

20 (State of Victoria Department of Treasury and Finance, 2016); p.13.

[21] (State of Victoria Department of Treasury and Finance, 2016); p.9).

Appendix C: Site selection criteria

An electronic version of the site evaluation workbook is available from the Department of Health and Human Services planning and development guidelines website at <http://www.capital.health.vic.gov.au/> The workbook enables each of the criteria to be weighted for their relative importance to reflect the specific requirements of each development proposal.

Site features

Criteria	Description
Area	• Does the size of the site allow optimal functional relationships to be achieved, horizontally and vertically? • Does the size of the site enable an efficient building footprint and massing that minimises travel distances to be achieved? • Is the site large enough to allow for expansion to meet any unplanned future growth in demand for services? • Does the site enable co-location of complementary activities?
Topography	• Is the site relatively flat or are any changes in level manageable and able to be readily incorporated into an efficient site layout? • Is the site free of significant vegetation that may constrain utilisation of the site? • Is the site free of existing buildings that must be retained and which would impede achieving an efficient site layout? • Is the site subject to inundation, overland floodways or watercourses that would limit the usable area?
Shape	• Does the site have a relatively regular shape that can be fully used, e.g. free of odd shaped portions that cannot be easily incorporated into the planned facility? • Does the shape of the site enable good functional relationships to be established? • Does the shape of the site limit how facilities can be laid out e.g. a long narrow site that imposes a linear layout?
Availability of site infrastructure	• Does the site have good access to reticulated services (e.g. water, sewer, electricity, gas run past the property or are able to be brought to site relatively easily) or will significant costs be incurred in bringing them to the property? • Do local reticulated services have existing capacity to support the proposed use? • Will planned development on site be contingent on works being undertaken by utility providers to increase local capacity, posing a risk to project delivery timelines?

Accessibility for clients/patients, staff and support services

Criteria	Description
Site access	• Does the site have frontage to two streets/roads to enable separation of patient/visitor vehicle entry from emergency and heavy vehicle entry? • Does the site have frontages to two streets/roads to enable continued access to the site if one access point is blocked?
Traffic management	• Will potential vehicle entry and exit points for the site be able to be located so they are logical for the proposed usage as well as safe for vehicles entering or leaving the site (e.g. slip lanes for site entries, controlled by traffic signals)?
Access to local public transport	• Is the site well serviced by public transport to ensure access for users, staff and visitors (e.g. Train stations, bus and tram routes close by)?
Access to regional public transport	• In regional centres, is the facility located close to regional transport hubs to facilitate access for users, staff and visitors travelling from more remote locations?
Access to major arterial road	• Is the site located in close proximity to a major arterial road/s to facilitate access for users, staff and visitors accessing the site by private vehicle? • Is the site located in close proximity to a major arterial road/s to facilitate access for logistics (e.g. linen, food services, and supply)? • Is the site located in close proximity to a major arterial road to facilitate any required linkages with other services (e.g. transfer of patient, movement of staff between campuses)?
In identified service delivery area	• Is the site well located relative to the community it is intended to serve?
Community sensitivity	• Is the site located where it may be subject to community concerns regarding its intended use (e.g. over-concentration of services in one area)? • Is the site located where it may be subject to community concerns about its potential impact on the local area (e.g. increased traffic and heavy vehicle movements, 24 hour service delivery generating noise)?
Adjoining uses	• Are any adjoining uses likely to have a negative or perceived negative impact on the safe operation of the site (e.g. noise, odours, dust, emissions)? • Are any adjoining uses incompatible with the services intended to be delivered from the site?
Proximity to related health / community or other services	• Is the site located to provide good access for patients to other related community, health or other services they are expected to require and utilise?

Planning and property

Criteria	Description
Zoning	• Does the current zoning of the site allow for the proposed use or will rezoning be required? • Does the current zoning require a planning permit to construct a building or carry out works on the site, potentially adding risk and time to the development timelines?
Overlays	• Are there existing overlays on the site (e.g. environmental, landscape, heritage, built form, and land and site management issues) that may limit use of the site or potentially impact on project timelines/deliverables?
Particular Provisions	• Is the site affected by particular provisions in the planning scheme that may apply to particular uses or development (e.g. advertising signs, car parking or specified types of use) that may pose a risk to development timelines?
Property	• Is the property comprised of multiple parcels of land that have differing planning requirements which may pose a risk to development timelines?

Resilience

Criteria	Description
Resilience of the site to natural risks	• Is the proposed site potentially at risk from adverse natural events (e.g. in a zone subject to bushfires, overland flows, flooding)?
Resilience of the site to man-made risks	• Is the proposed site potentially at risk from adverse man-made events (e.g adjoining uses have an inherent operational risk, difficult to secure the site utilising the principles of crime prevention through environmental design, bounding roadways carry heavy vehicles at speed)?.

Acquisition

Criteria	Description
Ease of acquisition	• Is the site expected to be relatively easy to acquire (e.g. is the site on Crown Land, owned by a State Government department or entity, owned by a local authority or privately owned freehold land)?)
Vendors	• Does acquiring the site require negotiating with a single vendor or multiple vendors, adding risk to the timeline for development? • Has the vendor/vendors indicated the property is for sale?

Usage

Criteria	Description
Usage history	• Are previous uses of the site known and are any of those former uses associated with a high risk of potential contamination that will impact on cost and timelines for any planned development? • Have other developments undertaken in close proximity to the proposed site encountered latent conditions that have added cost and time to the development?

Appendix D: Masterplan options evaluation

1. Functionality

Criteria	Description
Functional relationship priorities	Fully accommodates the range of services proposed in the service plan and proposed massing achieves prioritised functional adjacencies.
Long term expansion, renewal and replacement strategy	Provides a strategy for longer term (25 to 50 years) expansion, replacement and renewal of services and facilities beyond current service plan projections.
Zoning	Identifies future development zones with defined high-level uses (e.g. acute IPU, ambulatory services) according to their functional adjacencies.

2. Urban design

Criteria	Description
Appropriate to its context and neighbours	Option responds to its broader context as well as adjoining uses, with zoning minimising any conflicting uses and maximising opportunities afforded by compatible adjoining uses.
High quality external spaces	High quality external spaces provided to meet needs of patients, staff and visitors for views to nature, access to daylight, places to socialise and seek respite, and achieve a balance of hard and soft surfaces on the site.
Environmental opportunities	Maximises environmental opportunities e.g. reduced energy and water consumption and carbon footprint, uses site area economically and positions buildings to retain future expansion capacity.
Built form	Provides framework strategy to enhance site cohesion by demarcating functional zones and inform massing and arrangement of future buildings on the site.
Healthy, active campus	Provides a diverse range of destinations, facilities and focal points; an accessible, connected network of pedestrian, bicycle and public transport routes supports safe and convenient movement within the neighbourhood that facilitates access to destinations; a range of public open spaces for recreational opportunities; a ‘sense of place’ that welcome users, buildings that promote physical activity; and accessible, healthy food options.

3. Context and connectivity

Criteria	Description
Urban planning	Responds to statewide and local authority planning strategies and establishes appropriate linkages between campus, immediate neighbours and broader context e.g. commercial and civic infrastructure including transport.
Safe access	Site entries consider local pedestrian, bicycle and traffic movement patterns; movement of pedestrians separated from vehicles; logistic vehicles separated from cars; appropriate drop-offs and pickup points provided; separate entry and unhindered access provided for emergency vehicles.
Circulation	Provides clear and logical campus wide circulation framework that is open ended and expandable; routes as direct and with as few turns as possible; landlocked functional areas avoided; and back of house movements separated from public movement.
Wayfinding	Public entries are logically located and clearly visible, stairs and lifts are visible on entry and landmarks are provided along routes.
Car parking	Adequate car parking provided for patients, staff and visitors and located for ease of vehicular and pedestrian access to and from key entrance points.

4. People and amenity

Criteria	Description
Travel distances	Travel distances minimised for patients, staff and visitors.
Universal design	Universal design ensures that environment and experience are innately accessible to as many people as possible, regardless of their age, level of ability, cultural background or any other differentiating factors that contribute to the diversity of our communities.
Crime prevention through environmental design	Supports natural access control, natural surveillance and establishes defined public, semi-public and private spaces to reduce opportunities for criminal behaviour.

5. Value creation

Criteria	Description
Economic benefits	Creates employment opportunities during constructions and when operational; enables the use of or development of local goods and services; and provides spaces attractive to other users that provide a potential commercial gains.
Social benefits	Improves access to an integrated suite of health and wellbeing promoting services provided by government departments and others; provides access to facilities that enhance social connectivity/cohesion; enhances public safety; and provides greater access to recreational or health promoting infrastructure.
Environmental benefits	Enhances and improves natural catchments; improves energy and/or water efficiency; improves building sustainability; enables adaptation to climate change; and reduces greenhouse gas emissions.

6. Resilience

Criteria	Description
Standalone mode	The masterplan option identifies the required performance standard of the facility in the event of loss or unavailability of one or more essential engineering services from the usual source of supply and provides a strategy for achieving the required standard.
Bushfire	The masterplan option assesses the potential risk to the facility from bushfire attack and incorporates any required mitigation strategies.
Flooding	The masterplan option assesses the potential risk to the facility from flooding and incorporates any required mitigation strategies.
Drought	The masterplan option assesses the potential risk to the facility from drought and incorporates any required mitigation strategies.
Extremes of temperature	The masterplan option assesses the potential risk to the facility from extremes of temperature and incorporates any required mitigation strategies.

7. Constructability and staging

Criteria	Description
Constructability	Identifies development zones that can realistically be accessed for future works stages and in which works can be undertaken safely and without major disruption to operations.
Staging and decanting impacts	Allows for separable works stages that can be scaled up or down, minimise decanting required and retain functional and safe operations at the end of each stage.

8. Building and asset management

Criteria	Description
Commercial opportunities and co-located partners	Provides opportunities for co-location, co-operative arrangements with compatible research, educational, commercial or private health service delivery to support or enhance service delivery from the site, increase amenity for site users and/or provide an income stream for the health service.
Site consumption	Massing uses valuable site area efficiently.
Reuse of existing assets	Existing building infrastructure and services reused where appropriate.
Site services and infrastructure	Includes a masterplan strategy for site services and infrastructure that is integrated with the overall site masterplan and maximises the return on prior investment.
Flexibility	Ensures all future buildings on the site are inherently flexible and long life to respond to changing demand, new practices and technologies.

Appendix E: Masterplan report - contents checklist

Contents	Template	Required File Type	Check
1. Executive Summary			
1.1 Location			
1.2 Health service			
1.3 Role and function			
1.4 Current services			
1.5 Future services - funded			
1.8 Service plan review			
1.6 Site investigation			
1.7 Recent capital investment			
1.8 Endorsed option and staging (3D)			
2. Role and function review			
2.1 Current service delivery			
2.2 Current facility profile			
2.3 Projected service demand			
2.4 Projected facility profile			
3. Area allocation			
4. Site investigation			
4.1 Titles/ownership			
4.2 Orientations			
4.3 Zoning / town planning			
4.4 Authority requirements			
4.5 Urban design			
4.6 Traffic study			
4.7 Soil conditions / contamination			
4.8 Topography / site survey		.DWG	
4.9 Adjoining developments			
5. Assessment of existing assets			
5.1 Site services infrastructure	Asset Assessment Workbook	MS Excel	
5.2 Buildings and building services	Asset Assessment Workbook	MS Excel	
5.3 Health planning units	Asset Assessment Workbook	MS Excel	
5.4 Audit reports (hazardous materials/fire/bal)			
6. Options presentation and analysis			
6.1 Evaluation criteria	Masterplan Options Evaluation Workbook		

Contents	Template	Required File Type	Check
6.2 Description of options	Masterplan Options Evaluation Workbook		
6.3 Evaluation and ranking of options	Masterplan Options Evaluation Workbook	MS Excel	
7. Endorsed option			
7.1 Performance against evaluation criteria			
7.2 Drawings			
Existing site plan (1:500)		.DWG	
Proposed site plan (1:500)		.DWG	
Proposed departmental areas		.DWG	
Indicative Site and building sections		.DWG	
Staging		.DWG	
8. Cost Plan A (if required)		MS Excel	
9. Sustainability report			
9.1 Sustainability targets and benchmarks			
9.2 Financial sssessment			
10. Value management study / independent review			
11. Action plan			

APPENDICES			
Appendix A – Service plan			
Appendix B – Workshop presentations			
Appendix C – Existing conditions			
Site plan		.DWG	
Site services layout		.DWG	
Departmental areas			
Existing floor plans		.DWG	
RCI physical condition			
RCI functional suitability			
RCI compliance			
RCI operational efficiency			
Weighted RCI			
Asset condition workbook		MS Excel	
Appendix D – Schedules of Accommodation		MS Excel	
Appendix E – Masterplan options			
Proposed site plan		.DWG	
Proposed departmental areas		.DWG	
Proposed staging (3D)		.DWG	
Appendix F – Endorsed masterplan option			
Proposed site plan		.DWG	

APPENDICES			
Proposed departmental areas		.DWG	
Proposed staging (3D)		.DWG	
Appendix G – Engineering services report			
Existing conditions		.DWG	
Options presentation			
Evaluation of options			
Endorsed option		.DWG	
Appendix H – Options evaluation workbook		MS Excel	
Appendix I – Traffic study			
Appendix J – Cost Plan A (If required)		MS Excel	

References

Ander, G. D. (2014). Daylighting. In N. I. Sciences, *Whole Building Design Guide.* Washington.

Australasian Health Infrastructure Alliance. (n.d.). *Australasian Health Facility Guidelines*. Retrieved from https://healthfacilityguidelines.com.au/

Australian Building and Construction Board. (2016). *National Construction Code.*

Lynch, K. (1960). *The Image of the City.* Massachusetts: MIT Press.

NC State University, College of Design. (2008). *Universal Design Principles*. Retrieved from The Center for Universal Design: Environments and Products for All People: https://www.ncsu.edu/www/ncsu/design/sod5/cud/about_ud/udprinciples.htm

New York City. (2010). *Active Design Guidelines - Promoting physical activity and health in design.*

Planning Institute Australia. (2018, March 22nd). *What is planning?* Retrieved from Planning Institute Australia: https://www.planning.org.au/becomeaplanner

Sports England. (2015). *Active Design - planning for health and well-being through sport and physical activity.*

State Government of Victoria. (2017, December 15th). *Planning and Environment Act 1987.*

State of Victoria Department of Treasury and Finance. (2016). *Victoria's Value Creation and Capture Framework: Maximising social, economic and environmental value from infrastructure investment.* Melbourne: Victorian Government.

State of Victoria Department of Treasury and Finance. (February 2016). *Asset Management Accountability Framework.* Melbourne.

The State of Victoria Department of Environment, Land, Water and Planning . (2017). *Plan Melbourne - 2017-2050.*

The State of Victoria Department of Environment, Land, Water and Planning . (2017). *Urban design guidelines for Victoria.* Melbourne: State of Victoria.

Victorian Department of Health and Human Services. (2016, August 12th). *Overview of Universal Design*. Retrieved from Sport and Recreation Victoria: http://sport.vic.gov.au/design-for-everyone-guide/overview-of-universal-design