Table of Contents

The schematic design process

2
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The following is a flowchart outlining the requirements and expected outcomes of the schematic design process.

Schematic design generally involves the preparation of design briefs and design sketches of the agreed development option. This in turn is used to set out the project scope sufficient to permit the preparation of a total estimated investment (TEI) cost plan C1, which will confirm the project budget for the approved scope of works.

The schematic design activity may also include the preparation and submission of town planning applications, if required.

Consultants

The Department of Health and Human Services may choose to extend the engagement of the consultancy team who undertook the feasibility study or advertise for consultants and select another consultancy team.

For this stage and the remainder of the project, the consultancy team, for ‘typical’ lump sum projects, will normally comprise:

- principal consultant (usually an architect)
- service engineer
- structural / civil engineer
- landscape architect
- building surveyor
- quantity surveyor (separate appointment).

For larger and / or complex projects a project manager and ESD consultant are also appointed.
Step 1: review feasibility study findings

The previously completed feasibility study should be reviewed and recommendations confirmed. This is particularly relevant if the following has occurred:

- there has been considerable delay between the completion of the feasibility study and commencement of the schematic design process
- there has been significant change to government policy
- there has been significant change in service needs / demographics
- there has been significant change in capital funds available.

Any major amendments to the approved feasibility study recommendation must be referred to by the PCG for endorsement and approved by the department, with reasons for any changes.

Where the purchase of a new site is involved, the schematic design process should not proceed until a contract of sale has been entered into with the vendor.

Other performance requirements also need to be confirmed in this stage such as ESD and energy targets, safety, security and infrastructure requirements and compliance matters.

Step 2: design brief and room data sheets

The consultant develops a preliminary design brief and room data sheets for the project. The design brief confirms the functional relationships and provides detailed information on departmental room requirements. This includes:

- work flow patterns and relationships between rooms within a department
- engineering requirements
- material finishes
special requirements, e.g. acoustic control, lead lining, colour.

The preliminary room data sheets provide detailed information on:

- equipment (built in and loose)
- fitments
- joinery
- engineering service outlets, e.g. power, communications, television, computer, medical gases.

In larger projects the PCG is required to specifically approve the design brief and room data sheets.

The consultant is to confirm with the Infrastructure Planning and Delivery (IPD) branch project manager if generic design briefs are available for the type of building under development.

**Step 3: schematic design**

Floor plans are developed in detail at a scale of 1:100, based on the feasibility study recommendations and any approved amendments.

Roof plans and elevations and sections (1:100) and the refinement of the site plan are developed. This step may entail the design options. In such cases a full evaluation of the investigation of options, to determine the best outcome, should be carried out. The selection of the preferred option should be undertaken on the basis of functionality and reliability value and life cycle cost assessments. The schematic design phase requires an assessment of site opportunities and constraints. A number of items are outlined in appendix C: checklist.

The schematic design shall be prepared in accordance with the planning and development guideline (PDG) and attention is to be made to meeting agency / health service performance requirements as well as departmental standards and benchmarks. It is expected that good asset management practices be included such as good passive design approach and ease of management for users and operators.

The following activities should be undertaken:

- preliminary site development plans of civil works including car parking, landscaping and stormwater drainage
- proposed structural systems including substructures and super structures
- preliminary site services layout
- proposed building engineering systems, including:
  - lighting and power
  - heating / cooling including life cycle cost analysis
  - hydraulics (hot water system, thermostatic mixing valves, sterilizers, sewer / septic / treatment plant)
  - communications (including nurse call systems, computers)
  - helipad and associated flight paths
  - fire services (including sprinkler systems, EWIS, hosereels)
  - medical gases
  - security
  - energy, water and waste management targets. *note – conserve water where possible and maximise use of associated water harvesting and water efficient devices.*

A survey of the site may be required to confirm contours, locations and levels of buildings, paving, easements and services, etc. A detailed dimensional survey of all existing buildings would be required where refurbishment or alterations are being undertaken.

A geotechnical survey (soil test) should be carried out during the schematic design process.

**Step 4: statutory requirements**

**Building regulations**

Preliminary comments on the design proposal should indicate conformance with regulations such as the Building Code of Australia and OHS Act as well as relevant Australian standards. Issues of non-conformity should be highlighted and a rectification strategy identified, such as seeking modification approval or amending design.

**Planning**

Planning requirements should be identified and where applicable a planning application lodged. The next phase of the project should not proceed until a planning permit has been issued.

**Operations and maintenance (OM)**

The consultant is to ensure that the facility manager responsible for OM has been consulted, and that their requirements are met in this and subsequent phases, to ensure that the project is robust and reflects good asset management practices.

**Step 5: cost estimate**

As part of the schematic design process, a cost plan C1 is to be prepared. This estimate is based on detailed elemental cost breakdowns and is
known as the limit of cost estimate and is to be a total estimated investment (TEI) including:

- demolition
- building works (with supporting sub-elemental costings)
- engineering works
- site / external works
- contingencies
- ESD and infrastructure upgrade allowance
- staging of works
- furniture and equipment
- fees
- cost escalation
- locality allowance
- special factors such as:
  - temporary accommodation
  - heritage
  - hazardous materials such as asbestos removal
- funding sources
- expenditure cash flow.

Once the TEI for a project is approved by the Department of Health and Human Services, and the Department of Treasury and Finance, any increase will require their subsequent approval.

The cost planning is to be prepared by a quantity surveyor who is engaged independently of the consultant team.

**Step 6: value management study**

For capital projects over $5 million a formal value management (VM) study must be conducted as part of the schematic design process (refer to guideline 4.2: value management). For major projects, a separate VM should be carried out for engineering infrastructure. However, the department may also request that a value management study be conducted for capital projects under $5 million. Examples of such projects may include amalgamation of services, significant recurrent cost implications, or change in government policy.

**Step 7: the report**

A schematic design report that demonstrates that a thorough analysis of design and engineering service systems has occurred and ensuring that the intent of the functional brief and project objectives are being met is to be prepared (refer to the consultant's checklist). It will incorporate a more detailed evaluation of the capital and recurrent costs to demonstrate that the most cost effective solution is being implemented. The report should also include analysis and recommendations relating to departmental operational issues, such as:

- patient / client records system
- communications
- energy systems including life cycle costs
- building services
- waste management
- emergency evaluation / fire protection
- storage and distribution (linen and goods)
- management information systems etc.

The report shall include an executive summary of outcomes of steps 1 to 6 and incorporate any drawings and comments relating to the drawings. Such comments should include:

- key recommendations
- brief summary of the process
- statement on operational issues
- identification, evaluation and recommendation of procurement method
- program based on preferred option procurement method
- confirmation of staging of construction works
- cost estimate (cost plan C1)
- preliminary cash flow (reflecting cost estimate and program)
- identification of any major changes from the approved feasibility study
- summary of outcomes from value management study.

Typical documentation required at the completion of this activity will also include the following:

- design brief and preliminary room data sheets
- site survey plan (if not already provided)
- site plan (1:500)
- traffic / circulation patterns (1:200)
- floor and roof plans (1:100)
- preliminary elevations and sections (1:100)
- proposed engineering systems including preliminary layouts of main services (plant, lines, pits, outlets)
- preliminary structural proposals and sections for facade, walls, floors and roof (1:100)
- bulk siteworks (1:200)
- statement on building regulations and authority requirements and potential modifications
- special requirements (e.g. security)
- proposed construction sequence and contractors construction zone (e.g. where project entails staged works or building will be occupied by agency)
- planning issues and application, if required
- a graphical representation of the proposal (this may be in the form of computer 3D modelling or perspective or a scaled model)
- capital and recurrent cost plans.

Report format requirements

The complete schematic design report format requirements are detailed in the consultant’s checklist, which is supplied in a word format and is to be included in the schematic design report.

Quality assurance

The report is to be reviewed and quality assurance checked by the project manager prior to submission. The document is to be completed, certified and signed by the principal consultant and endorsed and signed by the consultant project manager.

Step 8 - approval

At the completion of the schematic design the project control group endorses the schematic design report for approval by the department and inclusion of the project on the capital works program for new works status. The project still requires approval by the Department of Treasury and Finance.

As part of the approval process, the health service / agency will be required to sign a capital investment agreement with the department. This agreement will include scope of works, budget and funding sources (recurrent and capital).