Wetland Design Manual Part B: Design Acceptance Process

Manual

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VICTORIA State Government

Melbourne Water makes a vital contribution to the famous Melbourne lifestyle through the supply of high-quality water, reliable sewerage services, integrated drainage and flood management services and by enhancing our waterways and land for greater community use.

Melbourne Water
Enhancing Life and Liveability

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1. Introduction

Melbourne Water is the ultimate client for almost all constructed wetlands in the growth areas of Melbourne. Once constructed, these wetlands become either the responsibility of Melbourne Water or the local Council (<60 hectare) to own and maintain.

Designers must ensure they meet the design process requirements of Melbourne Water, and Council, in the same way they meet the requirements of the Developer for the subdivision/development adjacent to the wetland. Wetland designers therefore play a pivotal role in ensuring that the wetland design interfaces with the surrounding development and environment to the satisfaction of all parties.

Melbourne Water has a design acceptance process that the designer must follow for the delivery of wetlands. The process has a series of steps, which are detailed in this part of the manual, and are specific to wetland designs.

Under Melbourne Water's Quality Management System (ISO 9001 QMS), developers, engineering consultants and contractors have defined roles and responsibilities with respect to the delivery of Melbourne Water assets. Further information about this can be found on the Building and Works pages of Melbourne Water's website.

The following flow charts (**Figure 1** Planning and design acceptance process and **Figure 2** overview and steps of design acceptance process) outline the interactions between the design approach undertaken by the designer, and the steps of the design acceptance process. The design acceptance process steps and the information required by Melbourne Water at each acceptance milestone or hold-point are detailed in this part of the manual. The wetland designer is required to work through key design stages: concept, functional and detailed, and should also be heavily involved during the construction and establishment of the asset.

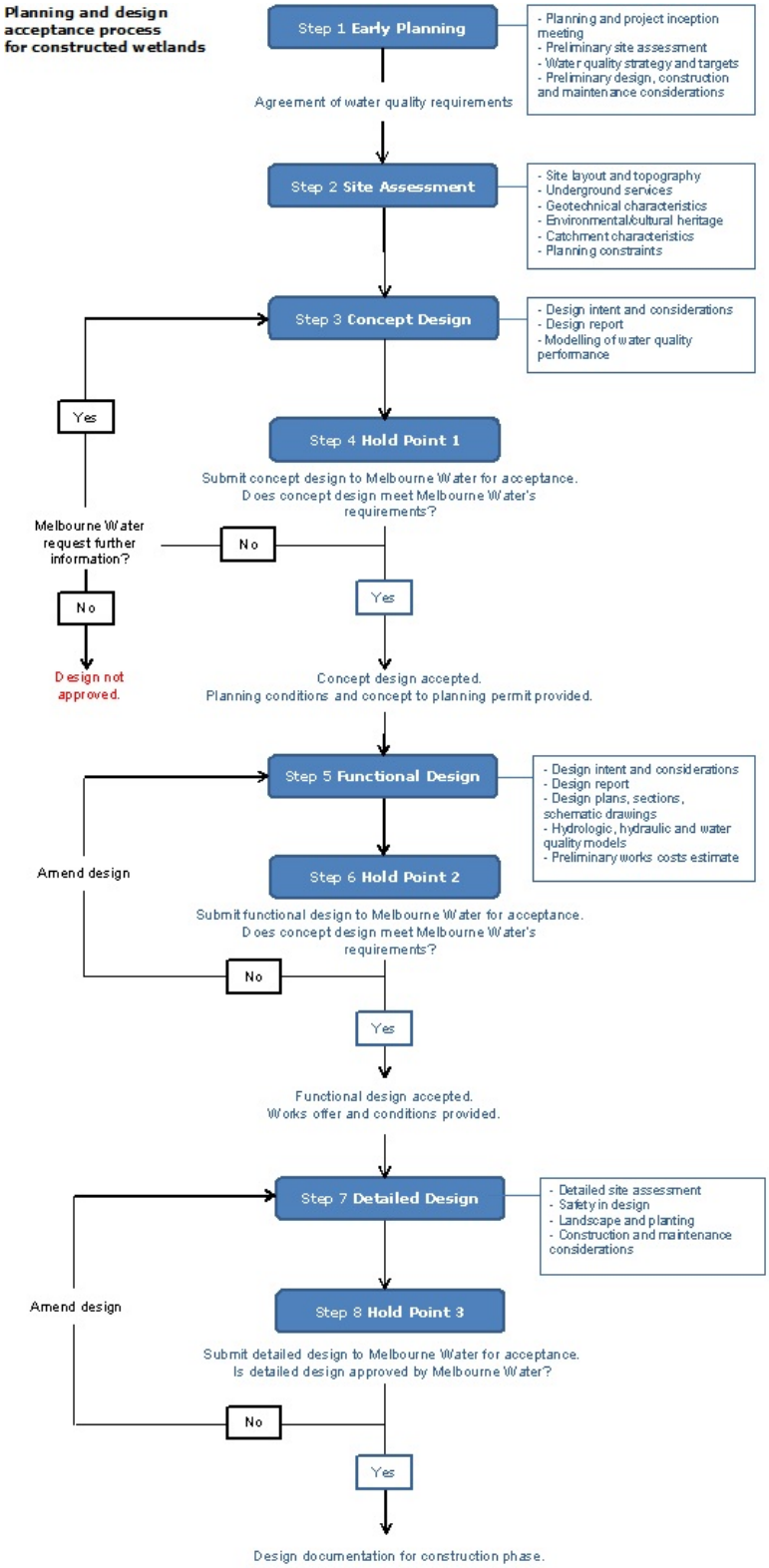


Figure 1: Planning and design acceptance process

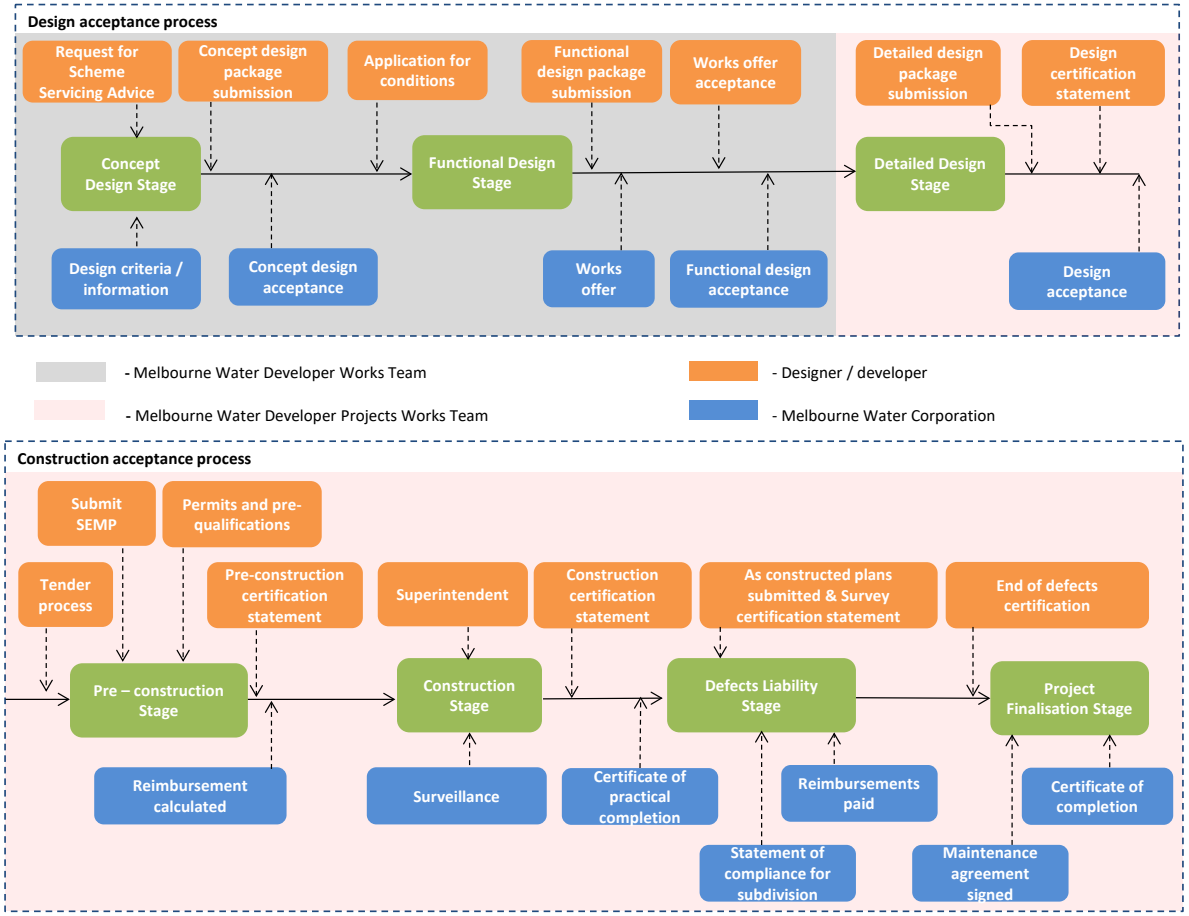


Figure 2: Overview and steps of design acceptance process

The following forms are key administrative parts of the design acceptance process under Melbourne Water's Quality Assurance program for developer constructed assets, including wetlands:

- Request for Scheme Servicing Advice
- Deemed to Comply Checklist – concept; functional; and detailed
- Application for Conditions
- Design certification statement
- Preconstruction Certification Statement
- Construction Certification Statement
- As-Constructed Certification Statement
- End of Defects Liability Period Certification Statement

1.1 Design acceptance approaches for submitting proposals to Melbourne Water

Melbourne Water has adopted two review/acceptance approaches for submitting wetland design proposals to Melbourne Water rather than attempting to define one set that applies to all situations. The two options are:

1. Deemed to comply approach
2. Alternative approach

After consultation with the development industry it is clear that developers and wetland designers want a clear understanding of Melbourne Water's requirements for wetlands and request a prescriptive set of design criteria. It was decided that a Deemed to Comply design acceptance approach, with a prescriptive set of design criteria, would be most beneficial and useful for the industry to use (see below for more information and **Part A2** for design conditions). Melbourne Water also acknowledges that not all wetlands and development sites are the same and it is difficult to have one set of prescriptive design criteria to suit all types and topography - so an alternative design acceptance approach is available for designers, which allows developers and wetland designers to submit designs that do not entirely achieve all the design criteria but still achieves the required core outcomes (see below for more information and **Part A3** for design considerations and guidance).

1.1.1 Deemed to Comply approach

The Deemed to Comply approach requires designers to demonstrate compliance with a prescriptive set of design criteria (see **Part A2**). Deemed to Comply wetland designs have an estimated review (not acceptance) timeframe of a maximum of 4 weeks. Providing designers demonstrate compliance with the design criteria they will have a high level of confidence that their designs will be accepted by Melbourne Water. The Deemed to Comply design criteria are included in the design checklists, provided on the Building and Works website.

1.1.2 Alternative approach

The Alternative approach provides designers with the option of submitting an approach that differs from the Deemed to Comply prescriptive approach (outlined in **Part A2**), but still delivers the required core outcomes for wetlands outlined in **Part A1**. **Part A3** provides a set of key design considerations and minimum standards when considering an appropriate wetland design and when the alternative design approach is sought. If any of the Deemed to Comply criteria are not complied with, the design will be considered an Alternative approach.

The designer is responsible for providing Melbourne Water with evidence that the Alternative approach achieves equivalent or better performance than the Deemed to Comply approach for the four core outcomes stated in Part A1 of this manual.

The review timeframe for Alternative approach designs will be longer than Deemed to Comply designs with a review timeframe of a maximum of 8 weeks. Designers should be aware that there is no certainty that their design will be accepted by Melbourne Water. This provides the opportunity for developers and their designers with tight time constraints and/or those that are risk adverse to pursue the Deemed to Comply approach.

The review process for the Alternative approach will be the same as the Deemed to Comply approach, with a concept, functional and detailed design package required for each stage of the process. This ensures a transparent and consistent process for internal and external stakeholders. When an Alternative approach design is submitted, Melbourne Water's review

involves input from various internal departments and expertise in wetland design and operation, including hydrology, hydraulics, ecology, constructability and maintenance.

For unusual design applications, or where internal resources are not available, Melbourne Water may choose to seek expert opinion from independent peer reviewers about whether the information submitted demonstrates that Melbourne Water's core outcomes and design objectives will be achieved.

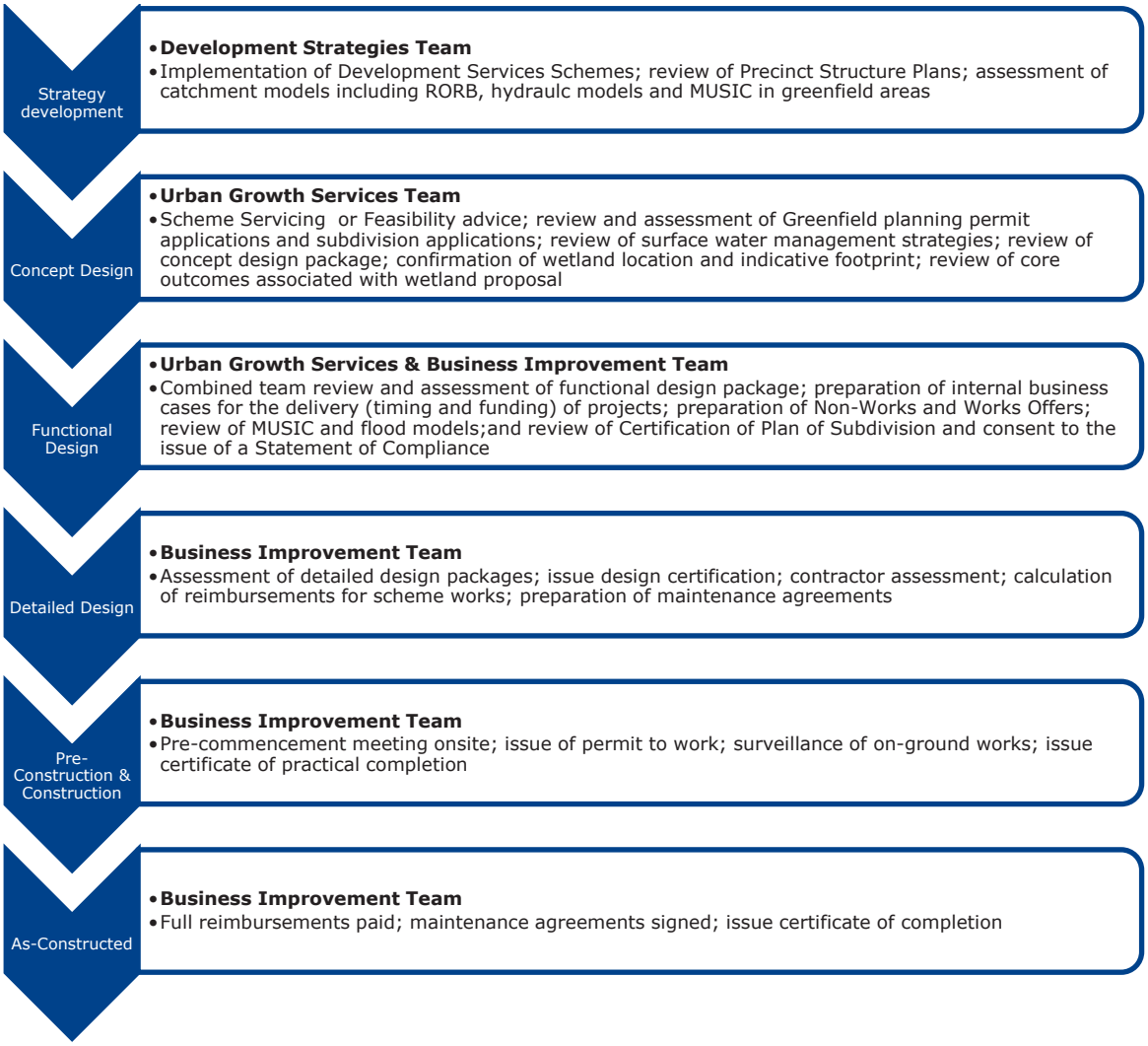
Note: The cost associated with this will be borne by the developer not Melbourne Water.

1.2 Working with Melbourne Water

Melbourne Water's Development Planning team, within the Waterways and Land Group, is the principle point of contact for all customers undertaking land development within areas that are covered by a Development Services Scheme or for projects where a Melbourne Water wetland is proposed.

To find out if your development is located within a Development Services Scheme, and for more information on working with Melbourne Water, please visit Melbourne Water's Building and Works website.

The following diagram represents the structure of the Development Planning team as it relates to the planning and delivery of key assets in Development Services Schemes, such as wetlands.



1.3 Concept design stage

The concept design stage provides a chance to consider the opportunities and constraints of the subject site in relation to wetland design and construction, and to understand Melbourne Water's requirements and aspirations for the wetland that any design must address.

Before design work commences, the criteria and core outcomes for the design should be determined. Melbourne Water will provide broad design objectives and criteria for the wetland to inform the concept design. The wetland must be designed to achieve the required core outcomes for wetlands, including:

- Effective pollutant removal and flow management
- Community Safety
- Maintenance and operational staff safety
- Cost effective asset management

The land developer and the local government authority may also have design specifications for the wetland and surrounding open space. The designer is tasked with the job of preparing a

concept that meets each of these combined design objectives. Discussions with Council regarding any open space requirements should occur concurrently with the concept design stage for the wetland.

In summary, the concept design phase in this manual is concerned with the process of synthesising and identifying various options that could potentially meet the design objectives for the wetland. It does not just determine the location of the wetland but how the wetland will be incorporated into the landscape design and marry with the other design considerations associated with a development. A Development Services Scheme is a catchment masterplan and does not provide the necessary information required for a concept design of a wetland. It is at the functional design stage where these options and ideas are tested to determine their feasibility and arrive at an end product, being the preferred design scenario. This underlines the importance of iteration during the evolution of the concept and functional design as different options are explored and refined.

Refer to **Part C** for more information on technical design, construction and establishment information to assist with the stage.

Important note: It is NOT recommended to combine both the concept and functional design stage in the design acceptance process as this will often lead to problems and longer time delays, and there is no certainty that this will speed-up the design acceptance process.

1.3.1 Concept design steps

The concept design stage consists of six steps (see Figure 2).

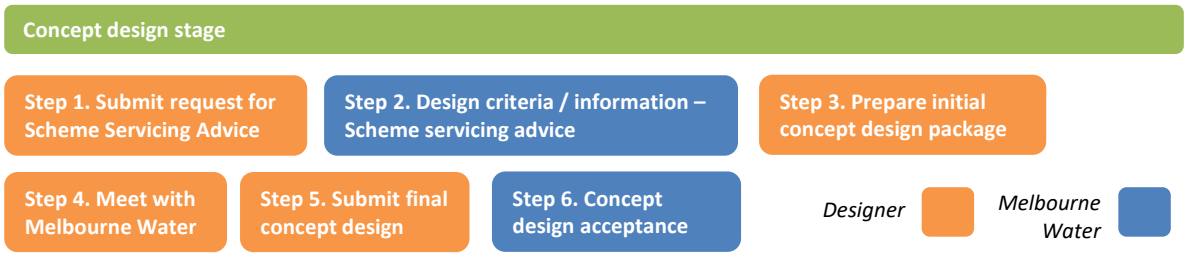


Figure 2 Concept design stage steps

1.3.2 Step 1 – Submit request for Scheme Servicing Advice

The consultant must submit the relevant form to Melbourne Water requesting Scheme Servicing Advice. The form should include the following information:

- A catchment plan clearly defining the property boundaries
- An overall estate plan (if available)
- Any baseline due diligence reports and topographical survey information

It should be noted that this is not an application for Conditions (i.e. the Works Offer), but a request for Scheme Servicing Advice.

Scheme Predevelopment Advice/Feasibility website

1.3.3 Step 2 – Design criteria / information – Scheme Servicing Advice

Melbourne Water will provide the designer with advice regarding the wetland objectives and intent. This advice includes highlighting component size requirements, open space and

waterway corridor requirements (if applicable), design flows, relevant plans and strategies, Development Services Scheme infrastructure (such as indicative sizes of pipelines and outfall locations) and any available background studies (flora, fauna, cultural heritage, etc.). It can also provide information on the initial developer contribution that is payable to Melbourne Water and the expected estimated costs for reimbursable works if the wetland is required as part of a Development Services Scheme.

Important note: a Development Services Scheme is a catchment masterplan and only has limited information regarding the subject site, topography, asset size and location. A MUSIC model that has been set up for the Development Services Scheme can be provided to the consultant if required. The consultant is responsible for checking the model includes a suitable representation of the catchment and proposed treatment train.

1.3.4 Step 3 – Prepare initial concept design package

A **concept design package** must be submitted to Melbourne Water's Urban Growth Services Team. The purpose of the **concept design package** is to demonstrate that the wetland site is appropriate and that the draft plan of subdivision provides adequate space for the wetland footprint. If the concept design package is incomplete or not submitted to Melbourne Water's satisfaction, then the application may not be assessed until all relevant information is provided.

The initial concept design package is prepared by the wetland designer, in close consultation with the design team, which should include a landscape architect.

The **concept design package** must contain:

1. A **statement and checklist** listing any aspects of the package that do not conform with the "Deemed to Comply" requirements outlined in this manual (**Part A2**) and justification as to how the proposed alternative approach achieves equivalent or better than the deemed to comply approach, in relation to:
    a. pollutant reductions and flow management
    b. safety outcomes
    c. maintenance
    d. sustainability/robustness (i.e. ≥ 25 year life)
2. A **Concept Design Report** that:
    a. Identifies the developer and development location
    b. Describes the overall stormwater management strategy (including all treatment systems) for the site, including whether treatment systems will be:
        i. integrated within retarding ponds and/or
        ii. form part of a stormwater harvesting system
    c. Identifies how gross pollutants in the catchment will be managed
    d. Identifies whether wetlands are intended to be ephemeral or contain a permanent pool of water
    e. Summarises MUSIC modelling (or alternative method or models), including:
        i. version of MUSIC

ii. meteorological data used

iii. catchment areas with impervious percentage

iv. any routing used

v. treatment node parameters

vi. any modelling parameters that are not in accordance with Melbourne Water's MUSIC Modelling Guidelines

vii. pollutant removal results

f. A summary of site characteristics and constraints, including:

i. results from a site Flora and Fauna survey, including identification of any species of significance listed under the *Flora and Fauna Guarantee Act* and *Environmental Protection and Biodiversity Conservation Act* (the full Flora and Fauna survey must be included as an appendix to the report)

ii. applicable geology and soils at the site

iii. whether the wetland is likely to be inundated by flows from a catchment other than the one it is treating (e.g. overflow from adjacent waterway) and, if so, how often this inundation is likely to occur

iv. If applicable, results from a Cultural Heritage Management Plan that is relevant to the wetland footprint (the full Cultural Heritage report must be included as an appendix to the report)

v. information on existing or proposed services or assets

g. Is technically reviewed and undersigned by the wetland designer

3. A copy of the MUSIC model

4. A plan showing catchment boundaries for each treatment system and location of receiving waterways

5. A draft Plan of Subdivision and draft Development Plan for the development site. The Plan of Subdivision must show the boundary of the reserve the wetland will sit within. The Development Plan must show the whole development area including subdivision stages and all reserves

6. A plan showing the location and indicative footprint of all existing and planned treatment systems, waterways (constructed and/or natural) and retarding ponds that will be located within and/or service the land shown on the draft Plan of Subdivision

7. A plan of each proposed wetland showing indicative footprint (allowing for batter slopes of sediment pond, high flow bypass, macrophyte zone, maintenance access routes, location of any pipe connections and sediment dewatering areas. The plan must show these items overlaid on site survey and constraints (with labelled contours) or a recent aerial photograph. The plan must show:

a. flow direction, inlet and outlet locations

b. the boundary of the reserve that the wetland will sit within; note that the reserve boundary should be at least 20% larger than the maximum extent of all parts of the wetland footprint, as above, to accommodate any changes to the footprint during later design phases. This plan must show existing waterways and/or pipe networks within or adjacent to the reserve

c. details on which assets the developer is proposing will be transferred to Melbourne Water and who the proposed owner/operator is for other adjacent assets
d. the location of sediment pond inlet(s) and high flow bypass and macrophyte zone outlets
e. the alignment of existing or proposed services determined from a desktop study (e.g. sewer, gas, mains water underground electrical cables and overhead power lines)
f. the levels (m AHD) of land surrounding the wetland
g. the slope of the batters between TED and the site boundary
h. the location of any existing vegetation that is to be retained
i. the location of any cultural/historical features to be retained
j. the boundary of any planning overlays
k. any existing or proposed community facilities adjacent to the wetland location (e.g. playgrounds, buildings and/or walking paths)

8. An indicative long section for each wetland showing:
   a. existing surface level (top of batter slope above TED)
   b. NWL (m AHD)
   c. TED
   d. the base of permanent pool
   e. planting zones
   f. invert of inlet pipe/channel(s)
   g. invert of outlet pipe and how this relates to the receiving waterway/drain
   h. weir crest levels
9. An indicative cross section showing batter slopes

Please see Appendix 1 of section A2 for the **concept design plan examples.**

The concept design package is to be submitted in the following file formats (Table 1).

Table 1 Accepted file formats for the concept design packages

Item	Format
Statement & Checklist	PDF
Report	PDF
Plans and sections	PDF or JPEG

1.3.5 Step 4 – Meet with Melbourne Water

The wetland designer and consultant project team should meet with Melbourne Water and the other relevant stakeholders and approval authorities to discuss the initial concept design. The aim of this step is to seek feedback that the concept is generally to the satisfaction of Melbourne Water and the other stakeholders, and to give direction to the designer to ensure

they are on the right track for approval of the asset. Information associated with the concept design should be submitted to Melbourne Water at least one week prior to this meeting.

1.3.6 Step 5 – Submit final concept design

Collate the feedback from Melbourne Water, relevant stakeholders and approval authorities, and incorporate this into an iteration of the concept design. If any changes to the concept are required, the designer will need to re-submit an updated concept design package for further review/comment to check that the iteration correlates with the feedback provided. This submission should:

- Highlight any conflicts that arose from undertaking the iteration in attempting to address all parties' comments.
- Highlight any significant changes from the original concept that may not otherwise be obvious to the reviewers.

Finalise the concept design as per the feedback from this Step, then update the concept design package for submission to Melbourne Water for formal acceptance. The final concept design package should include the following to be accepted:

- Concept Design Report
- Concept Design Deemed to Comply Checklist
- MUSIC model (or alternative model or method if used)
- Concept Plan
- Draft Plan of Subdivision and/or draft Development Plan

1.3.7 Step 6 – Concept design acceptance

Melbourne Water is to provide confirmation of concept design comments/acceptance within **10 working days** of receipt of the *complete* package, if the acceptance approach is the **Deemed to Comply approach** or within **30 working days** if the acceptance approach is the **Alternative approach**.

- If the package is incomplete or not to Melbourne Water's satisfaction, there is no guarantee that the above review timeframes will be met.
- Melbourne Water does not accept any liability for delays caused by incomplete or inaccurate information submitted for review.

Melbourne Water's concept design acceptance will take the form of an 'in-principle acceptance subject to', with the 'subject to' being further feasibility analysis that needs to be undertaken through the functional design phase.

At the end of the concept design phase, the three key parameters that should generally have been agreed upon (subject to functional design) are:

1. The core design outcomes
2. The indicative wetland footprint
3. The general location of the wetland

There is an understanding, at this stage, between Melbourne Water and the land developer that nothing is 'locked-in' and that some changes to size and location of the wetland, and

possibly some of the objectives, may need to be made according to the results of the analysis undertaken during the functional design.

Further to completing a concept design to Melbourne Water's satisfaction, and to help inform a planning permit application, a land developer and their consultant team should consider working with Melbourne Water to arrive at a concept and functional design that meets Melbourne Water's requirements before seeking Melbourne Water's consent to a Planning Permit and Certification of a Plan of Subdivision.

A **concept design** is a great communication tool that will assist in explaining the intent of the design response to Melbourne Water, Councils and other interested parties. Melbourne Water's Development Planning Team will not accept a functional design package for a wetland until they have reviewed and accepted the concept design package.

1.4 Functional design stage

Melbourne Water defines a functional design as:

- Demonstrating the optimal solution to achieve our core design outcomes and criteria for that asset (see **Part A1** and **Part A2**);
- Providing confidence that the asset, if constructed according to the design, will function according to our requirements;
- Confirming the physical area (accounting for all requirements) needed to accommodate the asset within the landscape of the proposed development;
- Being prepared in conjunction with rigorous analysis performed using available modelling software and calculation methods relevant to the type of asset being designed; and
- Enabling a preliminary construction cost-estimate for the asset to be prepared.

Refer to **Part C** for more information on technical design, construction and establishment information to assist with the stage.

Important Note: For wetlands that are subject to land reimbursements from Melbourne Water, functional designs are a critical part of determining the land area required for these assets as part of the land reimbursement process. Please refer to Melbourne Water's land development policy on reimbursements.

1.4.1 Functional design steps

The functional design phase consists of seven steps (see Figure 3).

Figure 3 Steps in the functional design phase

1.4.2 Step 1 – Prepare and submit functional design package

A **functional design package** must be submitted to Melbourne Water's Urban Growth Services Team. The purpose of the functional design package is to demonstrate that the wetland configuration enables the required pollutant reductions to be achieved, whilst maintaining safety requirements and providing cost effective maintenance solutions. The functional design package is prepared by the consultant for the project. The package must contain:

1. A **statement and checklist** listing any aspects of the package that do not conform with the "Deemed to Comply" requirements outlined in this manual (**Part A2**) and justification for how the proposed alternative approach achieves equivalent or better than the deemed to comply approach, in relation to:

a. pollutant reductions and flow management
b. safety outcomes
c. maintenance
d. sustainability/robustness (i.e. ≥ 25 year life).

2. A **functional design report** that describes:
   a. The overall operation of the system, including any changes to assumptions made during the concept design phase
   b. A summary of any consultation with other approval authorities (e.g. Council)
   c. The design flow rates, and the method and assumptions used to estimate them
   d. The peak water levels above wetland and in surrounding reserve for 5, 10 and 100 year ARI events, and the method and assumptions used to estimate them
   e. how gross pollutants will be managed
   f. the inlet function
   g. The calculations used to size the sediment pond/s
   h. The calculations used to size the high flow bypass channel
   i. The calculations used to size the connection between the sediment pond and macrophyte zone
   j. The calculations used to size the connection between the sediment pond and high flow bypass (i.e. sediment pond overflow outlet)
   k. The calculations used to size the macrophyte zone extended detention controlled outlet
   l. The calculations used to size the macrophyte zone overflow outlet
   m. The maximum flow velocities through sediment pond and macrophyte zone
   n. The plant species and densities that will be used in each zone
   o. A description of how sediment ponds can be dewatered during maintenance (without dewatering macrophyte zone)
   p. The calculations used to size the sediment dewatering area
   q. A summary of findings of geotechnical testing (full geotechnical report to be included as an appendix to the functional design report). This summary must address:
      i. Whether maximum groundwater level is within 0.5 m of the wetland base
      ii. Dispersiveness of soils
      iii. Whether wetland earthworks involve contaminated material and, if so, the required soil management approach and costs
      iv. Suitability of site soils to form an impervious wetland liner, for wetlands with a permanent pool
      v. The likely infiltration rate from base of wetland, for ephemeral wetlands
   r. The peak 5, 10 and 100 year water levels in the sediment pond and macrophyte zone
   s. A description of the updated MUSIC model (or alternative method or models), including matching:

i. the inlet pond volume in MUSIC to the sediment pond volume shown on plans (excluding the sediment accumulation volume)

ii. the permanent pool volume to the proposed bathymetry (using the user defined stage-storage relationship)

iii. the high flow bypass configuration to the design

iv. the extended detention controlled outlet configuration to the design (using the user defined stage-storage relationship)

t. An inundation frequency analysis of water levels in the macrophyte zone

u. The 90th percentile residence time in the macrophyte zone

v. A report from MUSIC auditor tool including the wet spells analysis

w. A table showing percentage of macrophyte zone (at NWL) that is in the following depth zones:

i. 100 to 150 mm below NWL

ii. 150 to 350 mm below NWL

iii. Greater than 350 mm below NWL

x. How the surrounding environment will be protected during construction (e.g. protection of significant existing vegetation and preventing contaminated runoff leaving the site).

3. Scale plan(s) showing proposed surface levels (in m AHD) within the wetland and in the surrounding area (e.g. produced from earthworks model). The plan(s) must show lines indicating TED, NWL, the edge of each planting zone, maintenance access tracks, sediment dewatering areas, any existing or proposed services within the wetland reserve and locations of any edges that do not contain safety benches and will therefore be fenced. Note that the presence, alignment and estimate depth of any underground services must be based on physical site proving (unobtrusive testing using a detector is acceptable).
4. Plan showing maintenance responsibility boundaries (i.e. which parts Melbourne Water will be responsible for maintaining and which parts will be maintained by others – Council. See the Building and Works website for more information).
5. Letters from other parties agreeing to be responsible for maintaining areas of assets adjacent to the wetland.
6. Indicative long section of sediment pond(s) and macrophyte zone(s) showing planting zones, topsoil, liner, peak 5, 10 and 100 year ARI water level and the location and depth of any underground services.
7. Indicative long section of the high flow bypass.
8. Schematic dimensioned drawings with levels to "m AHD" of:
   a. Inlet to sediment pond
   b. Connection between the sediment pond and macrophyte zone
   c. Connection between the sediment pond and high flow bypass
   d. Sediment pond maintenance draw down outlet
   e. Twin chamber outfall pit containing a side winding penstock and gate valve

f. Macrophyte zone overflow outlet

g. Connection of wetland outlet(s) to downstream drain/waterway including the peak 1 year ARI water level in the downstream drain/waterway and the maximum high tide level (accounting for anticipated sea level rise)

9. Geo-referenced GIS (MapInfo) layers showing catchment boundary for each sediment pond
10. Landscape concept plans for surrounding areas
11. Works cost estimate with clearly itemised items to be funded by Melbourne Water.
12. Copy of supporting hydrologic, hydraulic and water quality models (e.g. MUSIC, RORB and HEC-RAS)

Please see Appendix 2 of section A2 for **functional design plan examples** for more information.

File formats and supplementary information on the required elements of the functional design package are presented in Table 2:

Table 2 Accepted file formats for the functional design packages

Item	Format
Statement and checklist	PDF
Report	PDF
Plans, sections, schematic drawings	PDF
Letters	PDF
Catchment boundary	Geo-referenced MapInfo layers
Modelling files	MUSIC, RORB and/or HEC-RAS files

1.4.3 Step 2 – Application for Conditions

The Developer must submit the following items to Melbourne Water:

- A completed Melbourne Water Application for Conditions via our Building and Works website; and
- All plans and information specified on the Application for Conditions form.

The date of the application is the date upon which all required plans and information have been received by Melbourne Water (i.e. not necessarily the date on the application form). All applicable fees, charges or contributions are based on the rates current at this date. It is therefore in the Developer's best interest to ensure a complete and correct application is submitted.

Subsequent to the Application for Conditions being made, if there are changes to the Plan of Subdivision that affect the extent of works and/or contributions payable, the Developer must submit a new application. A new application is not required for minor Plan of Subdivision changes such as minor easement creations or relocations.

All fees, charges, contributions and conditions for a new application would be those current at the new application date.

1.4.4 Step 3 – Meet with Melbourne Water

The designer and consultant project team must meet with Melbourne Water and the other relevant stakeholders and approval authorities to discuss the functional design. The aim of this step is to confirm that the functional design is generally in accordance with the expectations of Melbourne Water and the stakeholders, and to give direction to the designer so that they continue on the right track. Information associated with the functional design should be submitted to Melbourne Water at least one week prior to this meeting.

1.4.5 Step 4 – Submit final functional design package

The wetland designer must collate all relevant information and feedback from Melbourne Water, relevant stakeholders and approval authorities, and incorporate this into a final functional design package.

If any changes are required, you'll need to re-submit the functional design package for further review/comment to check that your iteration correlates with the feedback provided. This submission should:

- Highlight any conflicts that arose from attempting to address all interested parties' comments; and
- Highlight any significant changes from previous design submissions that may not otherwise be obvious to the reviewers.

The final functional design package should include the following to be accepted:

- Functional Design Report
- Functional Design Deemed to Comply Checklist
- Updated or revised MUSIC model including wet spells analysis (or alternative model or method if used)
- Modelling files (RORB, HEC-RAS, TUFLOW etc.)
- Functional Design Plans, sections, schematic drawings
- Letters from other authorities, landowners agreeing to ownership, maintenance, works and/or downstream landowners

1.4.6 Step 5 – Functional design acceptance

Melbourne Water is to provide functional design comments/acceptance within **20 working days** of receipt of the *complete* package if the acceptance approach is the **Deemed to Comply approach** or within **30 working days** if the acceptance approach is the **Alternative approach**.

- If the functional design package is incomplete or not Melbourne Water's satisfaction, there is no guarantee that the above review timeframes will be met.
- Melbourne Water does not accept liability for delays caused by incomplete or inaccurate information submitted for our review.

1.4.7 Step 6 – Works offer

Once Melbourne Water has received the Developer's 'Application for Conditions' form and the functional design package, Melbourne Water will prepare a business case for internal management approval and forward an Offer of Conditions of Agreement (the Works Offer) to the Developer. The Works Offer sets out conditions under which waterway, flood protection and drainage services will be provided to the development. The Works Offer will include details of any special conditions and financial arrangements relating to the delivery of scheme infrastructure and the adjacent development.

Melbourne Water will respond to the Works Offer application within **60 calendar days** from the date of application. The timeframe may be extended beyond 60 calendar days where insufficient information is submitted (to enable proper assessment of the application) or where Melbourne Water requires additional information from the Developer/consultant during the application review process.

The written Works Offer will:

- identify significant environmental issues that need to be considered in the design or the need for further survey work to be undertaken;
- identify significant cultural issues that need to be considered in the design, or the need for further survey work to be undertaken;
- include details about how the reimbursement will be determined;
- include details on the defects liability period; and
- include comments about the design plans (including maintenance comments) from our Developer Works Team.

1.4.8 Step 7 – Works offer acceptance

The Developer is considered by Melbourne Water to have accepted the Works Offer when the following items have been lodged with Melbourne Water to its satisfaction before the Offer expiry date (which is three months from the date of issue-the letter date):

- The final functional design package and functional design acceptance;
- A completed Melbourne Water Offer of Acceptance Form signed by the Developer and the Consultant; and
- Any other required information and statements for Quality Assurance purposes.

If the acceptance does not meet Melbourne Water's requirements, the Developer will be notified by Melbourne Water within **5 working days** of receiving the acceptance. Any changes or additional information needed to satisfy Melbourne Water must be lodged before the Works Offer expiry date.

If a Works Offer is not accepted within three months of the date of issue, then the Works Offer will expire. After this point, a new Application for Conditions will have to be made by the Developer. The maximum **60 calendar day timeframe** will apply from the new application date.

Important note: If you choose to commence work before accepting the Works Offer or without a Works Offer, you accept to carry the risks associated with:

1. Lack of clarity on the basis for reimbursement
2. Impact on flora, fauna and cultural heritage issues
3. Land disturbance and environmental pollution
4. Community related issues
5. An asset that is not transferrable over to an Authority
6. Retrofitting costs to meet Melbourne Water's standards

1.5 Detailed design stage

A detailed design package must be submitted to Melbourne Water's Business Improvement team. The aim of the detailed design stage is to confirm the way the wetland will be constructed, established and maintained. Key steps in this stage are gaining final design acceptance from Melbourne Water and the lodgement of design certification paperwork to Melbourne Water, including the addition of set-out information to the drawing set.

Refer to **Part C** for more information on technical design, construction and establishment information to assist with the stage.

1.6 Detailed design steps

The detailed design stage consists of four steps (see Figure 4):

Figure 4 Steps in the detailed design phase

1.6.1 Step 1 – Prepare detailed design package

The detailed design package is prepared by the designer. Tasks carried out to prepare all of the information required as part of the package include to:

- Incorporate comments from the previous Stage in the design acceptance process;
- Prepare detailed design drawings suitable for public tender;
- Finalise the maintenance plan, schedule and budget;
- Finalise the cost estimate and submit tenders.

Important note: Consultation with Melbourne Waters Urban Growth Services team will be required for any design changes that may be proposed/required during the preparation and review of the detailed design if those changes are considered likely to have an impact on the function of the wetland.

File formats and supplementary information on the elements of the detailed design package are presented below:

Table 3 Accepted file formats for the detailed design package

Item	Format
Statement & Checklist	PDF
Reports	PDF
Models	MUSIC, RORB, HEC-RAS files
Plans	PDF and DWG

Item	Format
Specifications	PDF

1.6.2 Step 2 – Submit detailed design package

A **detailed design package** must be submitted to Melbourne Water's Business Improvement team. The aim of the detailed design stage is to document the design for construction. Key steps in this stage are gaining final design acceptance from Melbourne Water and the lodgement of design certification paperwork to Melbourne Water. The detailed design package must include:

1. A **statement and checklist** listing any aspects of the package that do not conform with the "Deemed to Comply" requirements outlined in this manual, and justification for how the proposed alternative approach achieves equivalent or better than the deemed to comply approach, in relation to:
    a. pollutant reductions and flow management
    b. safety outcomes
    c. maintenance costs
    d. sustainability/robustness (i.e. ≥ 25 year life).
2. An **updated design report** with a summary of any design changes that have been made since the functional design was accepted by Melbourne Water. In addition to the items that must be included in the functional design package design report, the final design report must include calculations and assumptions used to specify all scour protection and energy dissipation works.
3. Copies of final hydrologic, hydraulic and water quality models
4. Civil and landscape construction drawings covering all aspects of the wetland and showing all the required items listed in the functional design package, plus:
    a. Scour protection
    b. Method for identifying base of sediment pond
    c. Material for maintenance access tracks
    d. Topsoil properties
    e. Dimensions and details for all hydraulic structures including pits, pipes, headwalls and weirs
    f. Details of any fencing and signage
5. Civil and landscape specifications in accordance with AS 2124, with the sections that relate to the wetland highlighted.
6. Contact details for the Superintendent for the construction contract and an outline of their relevant qualifications and experience (including records of Green Card training).
7. An asset operation plan and maintenance agreement.
8. Details of establishment/maintenance to be undertaken in the first 24 months following construction (i.e. before the asset is transferred to Melbourne Water).
9. Written approval from service authorities for any service alterations/relocations.

10. A summary of requirements of any Cultural Heritage Management Plan that relate to the wetland construction.
11. A draft site environmental management plan.

Melbourne Water will review and provide comment on the detail design. Some amendments may be required prior to lodgement of design certification.

Please see Appendix 3 f Section A2 for **detailed design example plans**.

1.6.3 Step 3 – Prepare the design certification statement

Once the design has been amended, as per comments from Step 2, and the designer is confident that their design is acceptable, the Developer must submit The Design Certification Statement to Melbourne Water.

1.6.4 Step 4 – Detailed design acceptance

Melbourne Water will provide confirmation of detailed design comments/acceptance within **10 working days** of receipt of the *completed* package.

- If the detailed design package is incomplete or not to Melbourne Water's satisfaction, there is no guarantee that this **10 working days** review timeframe will be met.
- Melbourne Water does not accept liability for delays caused by incomplete or inaccurate information submitted for our review.

The final detailed design package should include the following to be accepted:

- Detailed Design Report
- Detailed Design Deemed to Comply Checklist
- Final modelling files (MUSIC, RORB, HEC-RAS, TUFLOW etc)
- Detailed Design Plans, sections, schematic drawings, including civil and landscape construction drawings
- Draft Site Environmental Management Plan
- Asset Operational Plan and Maintenance Agreement
- Consultant's Design Certification Statement
- Letters from other authorities, landowners agreeing to ownership, maintenance, works and/or downstream landowners

1.7 Pre-construction stage

The objective of the pre-construction phase is to ensure that all stakeholders associated with the project are aware of their responsibilities, and that the contractor has all of the information relevant to the construction works. The pre-construction stage incorporates the tender process and the lodgement of pre-construction certification paperwork to Melbourne Water.

Refer to **Part C** for more information on technical design, construction and establishment information to assist with the stage.

1.7.1 Pre-construction steps

The pre-construction stage consists of six steps (Figure 5):

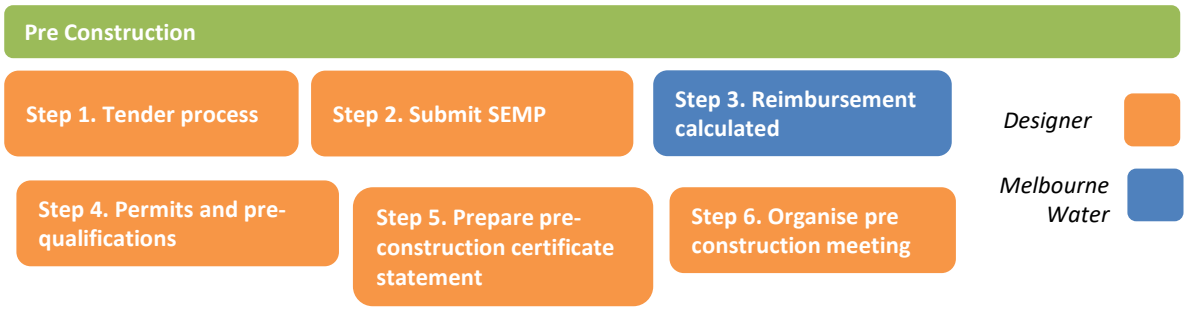


Figure 5 Steps in the pre-construction phase

1.7.2 Step 1 – Tender process

The tender interview process should include design related questions so that the contractor's understanding of the project can be determined. It is recommended that the process include a site walk where the designer can communicate the design intent to the contractor and the field staff. The tender review process is to be conducted by the Developer or their representative. Melbourne Water is not generally involved in the tender review process. Refer to Melbourne Water's Building and Works website for further information. **Note:** for tenders expected to be >$450k please follow the tendering process (Tenders Vic) (Tendering of Works)

When preparing the schedule of quantities that will form the basis of the tender documents, the developer's consultant is to itemise those components of the works that Melbourne Water is to pay for. This will allow for a prompt and accurate assessment of the value of Melbourne Water's reimbursement for the works.

1.7.3 Step 2 – Prepare and submit Site Environmental Management Plan

The contractor, in consultation with the consultant, must prepare and submit the Site Environmental Management Plan (SEMP) to Melbourne Water, for our records.

1.7.4 Step 3 – Reimbursement calculated

The actual reimbursement amount will be calculated and Melbourne Water will advise the Developer of the proposed reimbursement.

An owner who is required to build Melbourne Water assets in conjunction with the development is reimbursed an amount towards the cost of the works by Melbourne Water.

Refer to Melbourne Water's land development policies on reimbursements for further information.

1.7.5 Step 4 – Permits and pre-qualifications

Before works commence, the contactor is to obtain all permits and complete all pre-qualification processes:

- The contractor must obtain a Permit to Work for any projects that involve connections to an existing Melbourne Water pipeline or outlets to a waterway. The Permit to Work will be issued by the Project Surveillance Office at the Pre-commencement meeting. The contractor must have completed a Permit recipient training course in order to obtain a Permit to Work.
- While civil works are being carried out, the contractor must have someone on site that has obtained a Melbourne Water green card (i.e. attended the Site Environmental Awareness Training course)

1.7.6 Step 5 – Prepare pre-construction certification statement

Before commencing construction, the Developer must submit the following documents to Melbourne Water:

- The Pre-Construction Certificate List in the Construction Specifications section of Melbourne Water's website in accordance with Commencement of Works.
- Evidence that insurance requirements set out in the Insurance Conditions section of Melbourne Water's website have been complied with.

Melbourne Water must have at least **two working weeks'** notice of intention to start construction by submission of a Pre-Construction Certification Statement and Checklist.

Important Note: You must give Melbourne Water at least **two working days'** notice from the start date if construction is going to be delayed. Melbourne Water also needs to know your new start date at least two working days before you begin.

1.7.7 Step 6 – Organise a pre-construction meeting

Once you have completed all the necessary pre-construction activities, you must organise a project pre-construction meeting with Melbourne Water to review your plan.

By this stage you should have:

lodged your pre-construction certification checklist and statement;
lodged your site environmental management plan;
had your reimbursement calculated;
selected a contractor; and
paid or lodged the necessary bonds if there is no reimbursement associated with the works

Important note: Consultation with the Melbourne Water Project Officer in the Business Improvement Team will be required for any design changes during construction that are considered likely to have an impact on the function of the wetland. Works must match the accepted design, unless Melbourne Water provides permission for any changes. If the contractor's works do not match the design or meet Melbourne Water's construction standards, the principal/developer may be asked to rectify them at their own cost.

View our construction of works website for guidelines and details on construction.

During construction, Melbourne Water's Business Improvement Team will:

visit your site to make sure the work complies with our standards;
monitor your Site Environmental Management Plan, and amend the plan where necessary; and
undertake water quality testing of some sites plus if necessary require modifications to the Site Environmental Management Plan and/or provide liaison and cooperation with the Environmental Protection Authority on serious pollution matters.

If unforeseen issues occur during construction that impact on and/or require a variation to the accepted design, it may be necessary to resubmit the new design to Melbourne Water for formal review and acceptance.

Important note: Make the most of Melbourne Water's expertise when our staff are on site. For more complex or unfamiliar work, you should consider building a small sample section of work and have it assessed by your Project Surveillance Officer. You can then proceed based on an agreement solution and favourable review.

1.8 As-constructed and establishment stage

Documentation of what has been constructed is a crucial part in demonstrating that the construction process has met the intent of the design, that Melbourne Water's objectives for the wetland have been met, and that our desired outcomes are likely to be realised over time as the wetland is established.

Refer to **Part C** for more information on technical design, construction and establishment information to assist with the stage.

1.8.1 As-constructed steps

The as-constructed phase consists of seven steps (see Figure 6):

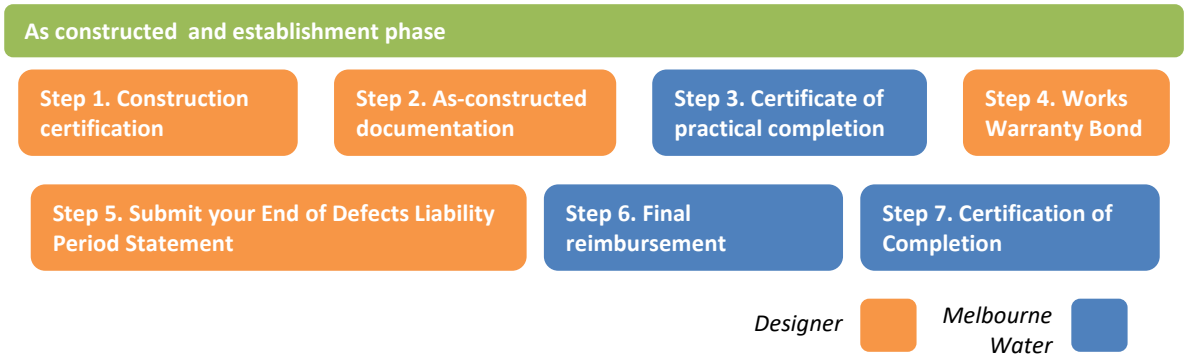


Figure 6 Steps in the as-constructed and establishment phase

1.8.2 Step 1 – Construction certification

At the end of construction, the designer must submit a Construction Certification Statement. Melbourne Water will consider the Works as completed when they have reviewed and accepted the Construction Certification Statement.

Check that you are ready to lodge your Construction Certification Statement by using our Construction Certification Checklist. See Melbourne Water's construction website for more details.

Be sure to review all conditions in the Works Offer before submitting the Construction Certification Statement.

If the works are not completed to Melbourne Water's satisfaction by the due date , which is eighteen (18) months from the date of the issue of the Works Offer:

The agreement may be terminated at the discretion of Melbourne Water;
The developer must pay any reasonable additional costs incurred by Melbourne Water.

If the Agreement terminates, money paid by the Developer under the Agreement will be forfeited or refunded at the discretion of Melbourne Water. Melbourne Water will deduct any reasonable costs incurred, before determining any refund amount.

Melbourne Water will not accept the Construction Certification Statement if there is reason to believe there are discrepancies between the condition of the works as certified and as-constructed. As-constructed feature surveys should be undertaken and/or thoroughly reviewed by the consultant/developer to validate the construction/design process.

1.8.3 Step 2 – As-constructed documentation

Use the As-constructed Survey Certification Checklist to check that the plans you are submitting contain all the necessary detail.

When the documentation is ready, submit the 'as-constructed' plans and complete the following forms:

- As-constructed Survey Certification Checklist

  Submission of digital data

1.8.4 Step 3 – Certificate of Practical Completion

Following receipt of the Construction Certification Statement and supporting information, and providing there are no discrepancies between the condition of the works as certified and as constructed, Melbourne Water will:

issue you the Certificate of Practical Completion;
provide you with a Letter of Release for the subdivision (if one has been requested); and
pay the reimbursement, less the amount held until the defects liability period finishes.

1.8.5 Step 4 – Submit your End of Defects Liability Period Statement

The defects liability period starts on the date of the Certificate of Practical Completion. The Developer must submit an End of Defects Liability Period Certification Statement at the end of the defects liability period.

The defects liability period differs depending on the asset. The following periods apply and take effect from when the Certificate of Practical Completion is issued:

pipes and structures – three months
earthwork and rockwork – 12 months
plantings – 3 month establishment period and two years maintenance period

The Developer's nominated representative must certify that all works still comply with the Construction Certification Statement and that the construction of the development's roads and other services is complete.

Use the End of Defects Liability Period Certification Checklist to make sure that all the necessary steps are completed, and then submit the End of Defects Liability Period Certification Statement.

End of Defects Liability Period Certification Checklist
End of Defects liability Period Certification Statement

Once Melbourne Water has accepted your End of Defects Liability Period Certification Statement and a Works Warranty Bond has been lodged, Melbourne Water will organise for the remainder of the reimbursement to be paid and provide a Certificate of Completion.

Melbourne Water will not accept the End of Defects Liability Period Certification Statement if it has reason to believe that there are discrepancies between the condition of the Works as certified and as existing.

1.8.6 Step 6 – Final reimbursement

Melbourne Water reimburses for works after the issue of a Certificate of Practical Completion and a Certificate of Completion as per the schedule outlined in Melbourne Water's Land Development Manual website:

- Reimbursements – Land Development Manual

1.8.7 Step 7 – Certificate of Completion

A Certificate of Completion will be issued by Melbourne Water when all the requirements of the agreement have been satisfied. The requirements (if applicable), include:

The Certificate of Practical Completion issued by Melbourne Water
All contributions have been paid
All other money required by Melbourne Water has been paid
Downstream outfall works have been certified complete or the Developer has made alternative arrangements which are acceptable to Melbourne Water
A copy of the amended plan of subdivision, certified by the council and indicating the easements and/or reserves required to cover all Works, has been received by Melbourne Water
Any other information, notices or documents required by Melbourne Water have been provided
The defects liability period has ended to the satisfaction of Melbourne Water
A maintenance agreement is in place (if required).

Important note: Complete the works to Melbourne Water standards and submit the required documentation to obtain a Certificate of Practical Completion, Letter of Release (if required) and any outstanding reimbursements.

2. References

Document title
Quality Management System
Building and Works website
Scheme Predevelopment Advice/Feasibility website
MUSIC Modelling Guidelines
Application for Conditions
Design Certification Statement
Maintenance Agreement

3. Document History

Date	Reviewed/ Actioned By	Version	Action
December 2020	Senior Asset Manager	2	Template and links updated