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| Constructed wetland design assessment checklist |
| This list has been developed by Melbourne Water for use by Councils in assessing capital works and developer constructed wetlands. Developers designing wetlands that will be handed over to Melbourne Water for operation and maintenance must use the Constructed wetlands design manual. |
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| **Wetland location:** |    |
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| **Catchment area (ha)** |    |
| **Wetland area (m2)** |    |
| **Minor flood (m3/s)** |    |
| **Major flood (m3/s)**  |    |

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| **Design stage**  | **Treatment Modelling** | **Y/N** |
| Concept | Treatment performance meets best practice objectives based on MUSIC modelling. |   |
|   | The meteorological data in the MUSIC model must be:* based on at least 10 years of historical records
* recorded at six minutes intervals
* sourced from a pluviographic station as close as possible to the wetland site or based on a Melbourne Water recommended reference gauge
* have a mean annual rainfall depth similar to the long term rainfall depth at the rainfall station closest to the wetland site
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| **Design stage** | **Inlet zone** | **Y/N** |
| Concept | Inlet pipe or structure sufficient for maximum design flow (Q5 or Q100)? |   |
| Concept | Sediment basin sized to capture 95% of coarse particles ≥ 125 µm diameter for the Q3 month AND provide adequate sediment storage volume to store between three to five years sediment.  |   |
| Concept | The sediment accumulation zone is assumed to be 500 mm below normal water level (NWL). |   |
| Detailed | Scour protection provided at inlet? |   |
| Functional | Configuration of inlet zone (aspect, depth and flows) allows settling of particles >125 µm? |   |

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| **Design stage** | **Inlet zone (continued)** | **Y/N** |
| Functional | Bypass weir incorporated into inlet zone? |   |
| Functional | Bypass weir and channel sufficient to convey flows between Q3 month to maximum inlet flow? |   |
| Functional | Bypass weir crest at macrophyte zone top of extended detention (TED) level? |   |
| Detailed | Bypass channel has sufficient scour protection? |   |
| Detailed | Structure from inlet zone to macrophyte zone enables energy dissipation/flow distribution? |   |
| Detailed | Structure from inlet zone to macrophyte zone enables isolation of the macrophyte zone for maintenance? |   |
| Detailed | Inlet zone permanent pool level above macrophyte zone permanent pool level?  |   |
| Detailed | All parts of the base of the inlet zone sediment basin are accessible:* Within seven metres of a designated hard stand area for excavation vehicles (“edge cleaned”) OR
* Via a maintenance access ramp into the base of the sediment pond
 |   |
| Detailed | Public access to inlet zone prevented through vegetation or other means? |   |
| Detailed | If the wetland’s catchment includes ≥ 1 ha of commercial and/or industrial land, are appropriately sized gross pollutant traps located between any commercial or industrial land use and the wetland? Gross pollutant removal closer to the source via distributed treatments is preferred over a GPT located immediately upstream of a wetland. |   |
| **Design stage** | **Aquatic plant (macrophyte) zone** | **Y/N** |
| Functional | The macrophyte zone extended detention depth is ≤ 350 mm? |   |
| Functional | At least 80% of the area of the macrophyte zone at NWL is ≤ 350 mm deep to support shallow and deep marsh vegetation. The wetland bathymetry should provide approximately equal amounts of shallow marsh (≤ 150 mm deep) and deep marsh (150 mm to 350 mm deep). |   |
| Detailed | The macrophyte zone contains a minimum 80% cover of emergent macrophytes calculated at NWL comprising of shallow and deep marsh zones. Open water areas (maximum 20% of the wetland area calculated at NWL) include submerged vegetation. |   |
| Detailed | Vegetation bands perpendicular to flow path? |   |
| Detailed | Vegetation bands of near uniform depth? |   |

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| **Design stage** | **Aquatic plant (macrophyte) zone (continued)** | **Y/N** |
| Detailed | Sequencing of vegetation bands provides continuous gradient to open water zones? |   |
| Detailed | Vegetation appropriate to selected band? |   |
| Detailed | Aspect ratio provides hydraulic efficiency >0.5? |   |
| Detailed | Velocities from inlet zone <0.05 m/s or scouring protection provided? |   |
| Detailed | Batter slopes from accessible edges shallow enough to allow egress? |   |
| Detailed | Maintenance access provided into areas of the macrophyte zone (especially open water zones)? |   |
| Detailed | Public access to macrophyte zones restricted where appropriate? |   |
| Detailed | Safety audit of publicly accessible areas undertaken? |   |
| Detailed | Freeboard provided above extended detention depth? |   |
| **Design stage** | **Outlet structures** | **Y/N** |
| Functional | Riser outlet provided in macrophyte zone? |   |
| Functional | Outlet structure designed to allow adjustment of water level? |  |
| Detailed | Orifice configuration allows for a linear storage-discharge relationship for full range of the extended detention depth? |   |
| Detailed | Riser diameter sufficient to convey Q1 flows when operating as a 'glory hole' spillway? |   |
| Detailed | Maintenance drain provided? |   |
| Detailed | Discharge pipe from has sufficient capacity to convey the maintenance drain flows or Q1 flows (whichever is higher)? |   |
| Detailed | Protection against clogging of orifice provided on outlet structure? |   |