Engineering Subdivision Check Sheets & Processes

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Engineering Submissions Format

Early Bulk Earth Works/Sewer Works Plans

* Upload in Objective Connect Share folder: maximum two stages per submission
  + Filled in [submission form](https://www.wyndham.vic.gov.au/media/3010)
  + Copy of **latest endorsed subdivision permit plan**
  + Geotechnical Inspection and Testing Consultant’s Contact Information
  + Source of Proposed Fill Material
  + Naming Convention: Estate name Stage XXX – Bulk Earth Works/Sewer Plans

Functional Layout Plans

* Upload in Objective Connect Share folder: maximum two stages per submission, follow the **naming convention** as below
  + Estate name Stage XXX - Completed [submission form](https://www.wyndham.vic.gov.au/media/3011)
  + Estate name Stage XXX - Functional layout plans, bound to a single coloured PDF document
  + Estate name Stage XXX - Approved Storm Water Management Strategy
  + Estate name Stage XXX - Approved Traffic Report
  + Estate name Stage XXX - Copy of **latest endorsed subdivision permit plan**
  + Estate name Stage XXX - Copy of **latest endorsed staging plan**
* Lodge plan of subdivision for certification

Detailed Engineering Drawings

* Submit hard copy drawings
* Upload (separately) in Objective Connect Share folder; follow the **naming convention** as below @ only one stage per submission
* Estate name Stage XXX - Completed [submission form](https://www.wyndham.vic.gov.au/media/3012)
* Estate name Stage XXX - Combined road and drainage drawings (coloured single document)
* Estate name Stage XXX - Water main reticulation plans (single document)
* Estate name Stage XXX - Sewer main reticulation plans (single document)
* Estate name Stage XXX - Drainage computations and catchment plans (single document)
* Estate name Stage XXX - Approved Functional Layout Plans
* Estate name Stage XXX - Geotechnical Report and Pavement Design
* Estate name Stage XXX - Copy of **latest endorsed permit plan**
* Estate name Stage XXX - Copy of **latest endorsed staging plan**
* Estate name Stage XXX - Approved Storm Water Management Strategy

Resubmissions & Amendments to Approved Drawings

* Refer SDW/FLP number
* Cover letter with description of amendments
* Revision clouds
* Updated title block with description of revision and version of the drawing

Check Sheet for Bulk Earthworks/Sewer Works Plan Review

* Layout plan showing lot levels (existing & proposed)
* Drainage easement not desirable hence, lot falling towards the road is ideal
* Cross-section of the interface between
* abutting property
* service easement
* existing road
* railway corridor
* waterway
* conservation area
* Provide cut-off drain if existing contour is falling towards the proposed fill site
* Minimum of 300mm cover above subgrade level should be maintained as subgrade should not be exposed

Check Sheet for Functional Layout Plan Review

Functional Layout Plans must comply with:

1. Endorsed Subdivision Layout

* Road layout
* Stage boundaries & lot orientation
* Road reserve widths & cross sections if any
* Shared paths, bike lanes, off road bike paths
* All notations

1. Permit Conditions

* Responsible Authority conditions
* Vicroads conditions & approvals
* Melbourne Water conditions
* PTV conditions
* Conditions to be satisfied prior to issue of compliance of specific stages

1. Storm Water Management Strategy (SWMS)

* Melbourne Water approval
* Council approval
* Melbourne Water Scheme Drains
* Treatment facility

1. Precinct Structure Plan (PSP)

* Road cross sections including retaining walls if any
* Relevant requirements, conditions & guidelines
* Trunk services for utilities
* Any specific offsets: grassland, conservation area, rail interface, quarry zone

1. Engineering Design & Construction Manual (EDCM)

* Service offsets
* Guidelines for off road bicycle paths at intersections

1. Development Contributions Plan (DCP)

* Ultimate footprint of road reserves, intersections
* Cross section elements

1. Intersections

* Vicroads approved
  + Functional Layout Plans for signalised intersections: interim and ultimate as applicable. Footprint to achieve ultimate layout
  + Functional Layout Plans for all intersections with arterial roads/major roads
  + Functional Layout Plans as nominated elsewhere in the permit
* Minimum kerb return radii 8.0m
* Pram crossings & footpaths
  + Pram crossings in both directions at any intersection
  + Pram crossings must be aligned along the direction of the footpath
  + Tactile Ground Surface Indicators (TGSI) at all pram crossings
  + Pram crossings must remain dry in storm events
  + Efficient connections to parks, active open space, schools, town centre, community facilities, drainage reserves, shared path networks
  + Footpath link to bus stops from both sides of the road including 2.4m x 1.5m (minimum) pedestrian refuge in splitter islands
  + Footpaths against lot boundary; offset footpaths not acceptable
  + Footpath on both sides of all roads including those abutting reserves, creeks/waterways unless specified otherwise
* Turning template (in colour), according to *Austroads Design Vehicles and Turning Templates Guide* for
  + 10.5m Service trucks at all intersections
  + 19.5m Semi-trailers in connector road and above
  + Service truck at roundabouts without mounting the apron
  + Ultra low floor buses on bus capable roads
  + Access and egress from parking bays in extended driveways
  + Speed curve radii at roundabouts

1. Road layout with street names, lot areas, lot numbers & road reserve width

* Local Area Traffic Management (LATM) devices
  + At every 200m of straight stretch of all local roads
  + Between 200 - 400m spacing in connector streets
* Reverse priority treatment not acceptable
* Court bowls
  + Minimum 10.5m radii is the only acceptable treatment from figure 005 of EDCM
  + Intended parking bays @ back of kerb
  + ‘No parking on bin collection days’ signage
* Written consent from adjacent property owner to construct temporary turning area
* Works external to the subdivision including both interim and ultimate access arrangements
* Provision of notional on street parking for all lots at the rate of one car space per dwelling
* Preliminary location of reserves for electrical kiosks

1. Bike lanes/off road bike paths: PSP, EDCM, Endorsed subdivision permit plan
2. Topography and existing features, including contours for the subject land
3. Road cross section

* Local roads: EDCM standard kerbs: 600mm wide
* Minimum carriage way width:
  + Service road/one way road: 5.5m face to face
  + Loop road: 6.5m face to face
    - At bends: 7.3m face to face
* Lane ways
  + One side loaded: minimum 7m road reserve width with 5.5m pavement width
  + Both sides loaded: minimum 9m road reserve width with 5.5m pavement width
* Other elements according to relevant PSP and EDCM
* Retaining walls in waterways/conservation reserves/drainage reserves must be part of engineering drawings and included in road cross sections

1. Location of existing infrastructure, utility mains, power poles
2. Lots

* Crossover
  + One per lot
  + Double crossover when one lot frontage is ≤12.5m
* One on street parking per lot within 20m of lot frontage
* House drain connection, into the drainage system in roads
* Minimum clearances as in EDCM standard drawings
* Garbage bin pads: 2m x 1m per lot for extended driveways
* Retaining walls if required, provide within the lot, not in road reserve

1. Reserves

* Drainage connection & all utility services: refer permit conditions
* No substations in open space
* No service easements in reserves and open spaces
* Fencing for lots abutting reserves, Regional Rail interface, open spaces and tree reserves

1. Drainage

* Proposed minor drainage network
* Proposed major drainage system including outfall drains, wetlands and/or waterways
* Overland flow paths (100 year ARI) to indicate how excess runoff will be safely conveyed to its destination
* Free flowing outlet for each stage
* Treatment facility as in approved SWMS
* External catchments contributing to the flows
* Arterial roads not to be flooded up to 100 year storm events
* If stormwater discharge from drainage or overland flow is directed to adjacent lots, formal agreement to the effect with the adjacent property owner
* Legal point of discharge for all allotments
* Drainage in rear easements not desirable.
* Pits at both ends of tangent points

Check sheet for Engineering Drawings: General

1. General items
   * Locality plan/Melways
   * PSM
   * Drawing legend
   * Fill over 200mm depth: Level 1 supervision reports according to AS:3798
   * Existing trees must be retained
2. Layout

* Road layout, lot boundaries, lot numbers, splays, easement location and widths conforming with approved FLP
* Chainages including intersection points and tangent points
* Road cross section match with the approved FLP
* Footpaths/shared path as in approved FLP
* Retaining walls
* Temporary turning bowls at the end of roads
* Landscaping treatments: consult Council Landscape Subdivisions Unit for
  + Nature strips less than 1m width: extended driveways, intended parking bays, court bowls
  + Street network around Town Centres
* Pram crossings with tactile pavers
* Q100 water levels of developed flows in creeks/waterways/water quality assets
* Existing: dams, depressions, trees, utility services, power poles
* Conduits to all allotments

1. House drains

* One per lot to the road drainage
* Not under drive ways or parking bays
* 0.75m offset from crossover
* Pits not in crossovers, parking bays, pram crossings or other trafficable areas
* No house drain connection to kerb & channel

1. Large lots: super lots, reserves, schools, future commercial lots

* Drainage connection of sufficient size
* All utility service connections

1. Cross over

* No drainage pits/manholes/service pits
* Achieve clearances with other services/infrastructure as in EDCM standard drawing
* Driveways/laneways trafficked by service trucks to be industrial standard

1. Signage & line marking: provide as separate sheet
2. Temporary end of road works treatment
3. Intersections: design as highpoints for drainage
4. Reserves

* Industrial standard crossover with removable bollards, for all reserves: Refer Wyndham City Council Standard Drawings
* Fence to abutting lots
* No services through reserves and no easements
* Drainage & all utility service connections

1. Water reticulation plans

* Hydrant spacing @ 200m
* Serviceability of rear of lots within 120m from nearest hydrant
* Minimum class 3 backfill

1. Sewer reticulation plans

* Minimum class 3 backfill within road reserves
* Comply with SD6-10 in joint easement trenches

1. Public lighting

* Standard poles and lanterns
* Design category of lighting (P or V)
* LEDs
* VLED at LATMs
* Public Lighting poles at the departure side of roundabouts
* Public Lighting poles offsets from crossovers & parking bays(1m), property boundaries (6m)
* Spacing to suit the road reserve width and mounting height
* Lights along the same side of any road through multiple stages
* One light within an intersection
* Public Lighting for paper roads (4m roads), laneways

Engineering Drawings: Roads, Pavement & Drainage

1. Longitudinal section

* EDCM

1. Cross section

* PSP, approved FLP, EDCM
* Retaining walls
* Shared paths in creeks/water ways/drainage reserve/conservation area abutting roads
* Q100 water level plot for roads abutting creeks/water ways/ water quality assets

1. Roundabouts & Intersections

* Signage & line marking
* Off road bike path crossings
* Contours and kerb profiles facilitate drainage
* Raised pavements: provide
  + Cross sections in both direction
  + Full depth asphalt
  + Piano key line marking

1. Pavement Composition

* Geotechnical report, California Bearing Ratio (CBR), subgrade improvement
* EDCM traffic data, pavement depth chart
* Comply with DCP drawings
* Full depth asphalt in heavily trafficked areas & industrial areas
* Concrete parking lanes when separated by M2 kerb
* Major intersections & roundabouts: minimum type V wearing course

1. Drainage

* Double grated entry pits at low point
* Side entry pits at tangent points
* Pipe cover measured from subgrade levels; pipe class sufficient for Austroads T44 truck load
* Only manufactured splay pipes at curves
* Consider Melbourne Water scheme drainage
* 100 year Flood levels at low points: maximum depth EDCM
* Lots achieve minimum free board with flood levels for 100 year events
* Underground drainage at all arterial roads to cater for 100 year events
* Consider capacity of pits at low points to function at 50% blockage
* Runoff from all roads must be taken through underground drainage systems within road reserve. Runoff from roads not to be conveyed through easements

1. Hydrology & Hydraulics

* EDCM

1. Certificate of Compliance for Structural Design

|  |  |
| --- | --- |
| * Retaining walls | * Impact absorbing guardrails |
| * Nonstandard pits | * Boardwalks |
| * Box culverts | * Structural Fences |
| * Handrails | * Any other structural member |

**Processes & Documents for Engineering Drawings Approval**

1. Provide Engineer’s estimate – separate estimates for each stage - complying to

* Approved pavement composition
* Drainage pipes: sizes & classes
* Pits: sizes & quantity
* Retaining walls
* Culverts & handrails
* Nominate **Payee details** on each individual cost schedule

1. Plan checking fees paid against the invoice **by cheques only**
2. Upload into Objective Connect folder.
   * ‘As approved’ drawings, drainage computations & catchment plans, all in colour, all bound to one document,
   * Naming convention: Estate Name Stage XXX As Approved Drawings

Processes & Documents for Engineering Statement of Compliance

1. Provide Engineer’s estimate – separate estimates for each stage - complying to

* Constructed pavement composition
* Drainage pipes: sizes & classes
* Pits: sizes & quantity
* Retaining walls
* Culverts & handrails
* Nominate **Payee details** on each individual cost schedule

1. Supervision fees paid against the invoice **by cheques only**
2. Maintenance bond/ fees paid against the invoice **by cheques or bank guarantees**
3. Upload in Objective Connect Share Folder: (refer permit conditions for specifications)

* Electronic copy of all
  + ‘As constructed’ drawings in both Adobe PDF (in colour) and AutoCAD DWG file formats
* Electronic copy of
  + Catchment plans and drainage computations for storm events of 5/10 year and 100 year return periods
* Drainage and related assets in D Spec format: refer permit conditions
* Roads and related assets in R Spec format: refer permit conditions
* Permanent Survey Mark (PSM) information (signed by Surveyor)
* Certificate of Compliance for Construction Supervision as required
* Compaction test reports

Naming convention for all documents: Estate Name Stage XXX Document Name as above