Engineering Subdivision Check Sheets & Processes

Contents

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
  - 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
  - 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
  - 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
2. 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
3. Storm Water Management Strategy (SWMS)
   - Melbourne Water approval
   - Council approval
   - Melbourne Water Scheme Drains
   - Treatment facility
4. 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
5. Engineering Design & Construction Manual (EDCM)
   - Service offsets
   - Guidelines for off road bicycle paths at intersections
6. Development Contributions Plan (DCP)
   - Ultimate footprint of road reserves, intersections
   - Cross section elements
7. 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
8. 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
9. Bike lanes/off road bike paths: PSP, EDCM, Endorsed subdivision permit plan
10. Topography and existing features, including contours for the subject land
11. 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
12. Location of existing infrastructure, utility mains, power poles
13. 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

14. 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
15. 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
3. 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
4. Large lots: super lots, reserves, schools, future commercial lots
   - Drainage connection of sufficient size
   - All utility service connections
5. 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
6. Signage & line marking: provide as separate sheet
7. Temporary end of road works treatment
8. Intersections: design as highpoints for drainage
9. 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

10. Water reticulation plans
    - Hydrant spacing @ 200m
    - Serviceability of rear of lots within 120m from nearest hydrant
    - Minimum class 3 backfill
11. Sewer reticulation plans
    - Minimum class 3 backfill within road reserves
    - Comply with SD6-10 in joint easement trenches
12. 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
2. 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
3. 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
4. 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
5. 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
6. Hydrology & Hydraulics
   - EDCM
7. Certificate of Compliance for Structural Design
   - Retaining walls
   - Nonstandard pits
   - Box culverts
   - Handrails
   - Impact absorbing guardrails
   - Boardwalks
   - Structural Fences
   - 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
2. Plan checking fees paid against the invoice **by cheques only**
3. 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
2. Supervision fees paid against the invoice **by cheques only**
3. Maintenance bond/ fees paid against the invoice **by cheques or bank guarantees**
4. 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