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2.0 ENGINEERING DRAWINGS

2.1 GENERAL

This chapter is intended to provide guidance to Developers and Consultants in the preparation of engineering drawings as part of the submission to support the development or operational work applications. Engineering drawings must reflect the intent of these guidelines and the professionalism of the Consultant in designing works that are fit for purpose.

All engineering drawings must be uniquely referenced and require the full signature of a suitably qualified engineer, registered with the Board of Professional Engineers, Queensland and the RPEQ number and date, in the title block.

Unless noted otherwise, Council submission must comprise five (5) sets of drawings in one of the following forms:

- 2 sets of A1 and 3 sets of A3. Typically this applies to major subdivisions.
- 5 sets of A3. Typically this applies to smaller developments where the resolution of the A3 is sufficient to depict the proposed works.

2.2 DRAWING STANDARDS

2.2.1 General

The draftsmanship must be of a standard that is normally accepted in good civil engineering practice, generally in accordance with the requirements of *AS 1100 Technical Drawing*. Substandard drawings and poorly presented calculation tables may be rejected. In this instance, the applicant may be required to resubmit plans accompanied by any additional payable fees.

2.2.2 Sheet Sizes

The preferred sizes of drawing sheets are:

- A1 size (594 mm x 841 mm cut sheet dimensions).
- A3 size (297 mm x 420 mm cut sheet dimensions).

2.2.3 Scales

The chosen scale for a drawing must permit easy and clear interpretation of the information depicted. Where full size drawings are reduced, appropriate block/graduated or prefix scales must be provided to enable interpretation of dimensions specified in the reduction copies.

The preferred scales for use in engineering drawing practice must generally conform to the recommendations of *AS 1100* and the relevant *AustRoads publications*. The recommended scales are 1:1, 1:2, 1:5 and multiplying the aforementioned scales by integral powers of 10. Multiples and submultiples of 10 for scales 1:25 and 1:125 are not preferred but may be accepted.



The following scales are suggested for particular uses but these may be varied as appropriate to the works concerned.

- Plans - 1:1000 or 1:500. Roofwater reticulation layout plans must be drawn in the 1:500 scale.
- Longitudinal Sections - Horizontal 1:1000 and Vertical 1:100 or Horizontal 1:500 and Vertical 1:50.
- Intersection Details - 1:200, 1:100 or 1:250.
- Cross Sections - 1:100.
- Engineering Details - 1:20 or 1:10.

2.2.4 Dimensioning

Units

All dimensions must be expressed in metric units. Linear dimensions on all roadworks plans must be in metres, with the exception of some detail plans of small structures (eg manholes) and some standard plans (eg kerb and channel), which may be in millimetres.

Levels

All levels must be reduced to the Australian Height Datum. Reduced levels of benchmarks and reference pegs including permanent survey marks must be expressed to three decimal places eg 0.001 m. Reduced levels of roadworks and stormwater drainage may be expressed rounded to three decimal places eg 0.001 m.

Position Coordinates

Position coordinates must be tied to the Real Property Azimuth relative to the Cadastre using the Australian Map Grid Coordinate System.

Chainages

Chainages on plans must be expressed to three decimal places eg 0.001 m.

Cross Section Intervals

Road cross sections must be provided at 20.0 m intervals, with further subdivision of 10.0 m to 5.0 m intervals where necessary at horizontal or vertical curvatures.

Grades

Road and pipe grades must be shown to three significant figures eg 2.300%.



2.3 FUNCTIONAL TRAFFIC LAYOUT

To avoid the need for changes to detailed design of roadworks in respect of horizontal alignments, intersections, channelisations and the like, the functional layout plans must be submitted to the Engineering Officer Development & Regulatory Services for approval. **One (1) set of the approved subdivision layout plans must accompany the application before any assessment can proceed.** Once functional layouts are approved, the detailed engineering design can be undertaken.

Approved functional layout plans that also incorporate traffic signs and/or pavement markings does not obviate the need of the applicant to submit a separate application for the approval of traffic signs and pavement marking drawings (refer Section 2.6).

Functional layouts submitted by the applicant must show at least the following information:

1. Background information that includes:
 - Design philosophy or concept description.
 - Design speed for each road type.
 - Reasons for access arrangement.
2. A plan, drawn to scale, showing all relevant existing details, that includes:
 - Land use of adjacent sites and sites opposite the development.
 - Existing intersections and vehicular entrances in the vicinity.
 - Existing road layout.
 - Existing services which have an impact on the layout.
 - Existing pavement marking.
 - Existing trees.
3. Proposed roadworks/channelisation layout, drawn to scale, that includes:
 - Critical dimensions.
 - Proposed pavement marking, including lane marking with lane widths.
 - Relationship of work with other stages.
 - Limit of Brisbane City Council responsibility where other authorities are involved eg Department of Main Roads.
 - All allotments and property boundaries.
4. Any other information considered necessary by the Council to adequately assess the performance of the facility.

The 1:250 scale is recommended for intersections and 1:500 scale for more extensive roadworks. A North Point must be shown on all plans. If the development is at or near an intersection, a plan of the entire intersection is required ie showing all existing legs (not part of the intersection only).



2.4 STREET NAMING AND NUMBERING

Applications and plans for proposed street names and numbers must be lodged with Licensing Sealing & Certificates Unit, Development & Regulatory Services. **One (1) set of the approved subdivision layout plans and one (1) set of the approved functional layout plans must accompany the application before any assessment can proceed.** Eight (8) sets of street naming and numbering plans, preferably in A3 sizes, must be submitted. It is recommended that this application be lodged for approval as soon as possible after functional layout plan approval to avoid any delay in sealing the survey plan in the event that the street names applied for are not approved and need to be resubmitted.

2.5 STREET PLANTING

Where the Developer elects to undertake landscaping of the road reserve instead of paying a monetary contribution, detailed landscape plans prepared by suitably qualified Landscape Architects or Designers must be submitted with the engineering drawings.

The landscaping plan(s) must show at least the following information:

1. Road layout with property boundaries and lot numbers.
2. Road names.
3. Landscaping within road reserve including roundabouts, speed control devices, and traffic islands.
4. All features relating to the landscaping such as concrete footpaths, mowing strips, retaining walls, fences, etc.
5. Location of trees, shrubs, etc with names and spacings.
6. A schedule of plant species with botanical and common names.
7. Any existing trees on site that is to be retained.
8. The exact location of water meters and taps, if required.
9. Position of temporary irrigation system for the duration of the maintenance period.
10. Typical detail of planting hole which should include mulch type and depth, location of weed mat, depth and type of soil mix, root barrier, detail of drainage layers, etc.
11. The area (m²) of landscaping must be shown on the asset register.
12. Any landscaping associated with acoustic fencing, entrance features, street furniture, etc.



2.6 TRAFFIC SIGNS AND PAVEMENT MARKING

Applications and plans for traffic signs and pavement markings must be lodged with the Engineering Officer Development & Regulatory Services for approval. The initial submission must comprise two (2) sets of hardcopy paper plans. **One (1) set of the approved road layout plans and one (1) set of the approved street naming and numbering plans must accompany the application, before any assessment can proceed.**

The 1:250 or 1:500 scale plans must be drawn using Brisbane City Council's standard templates such as title blocks and symbols. The plans must also incorporate the Consultant's logo (the applicant can elect to use Brisbane City Council or an external engineering consultant) and Council's designated traffic area identification number.

The plans will need to incorporate existing and proposed details including but not limited to:

1. Real property boundaries and kerb lines.
2. Driveways.
3. Pavement marking. Existing markings that will be retained and proposed markings must be fully dimensioned. Thin dashed line must be used for existing markings that will be removed. Refer typical example given in Figure E2.6.1.
4. Signs eg parking signs, street name signs, etc. Proposed traffic signs must be shown using the standard sign code eg ERECT R2-14(L) and not shown as pictorial signs. Refer typical example given in Figure E2.6.1.
5. Power poles and service pits.
6. Traffic signals. Refer typical example given in Figure E2.6.2.
7. The preferred future road layout where the proposed streets may be in the future loop roads of cul-de-sacs.
8. Locality plan (for jobs proposing new roads).

The final submission must comprise:

- One (1) A1 size hardcopy on film.
- Three (3) A1 size hardcopies on paper.
- Electronic digital file (preferably AutoCAD drawing file) on floppy disk or CD-ROM.



Urban Management Division
Subdivision and Development Guidelines
Part E Engineering Procedures

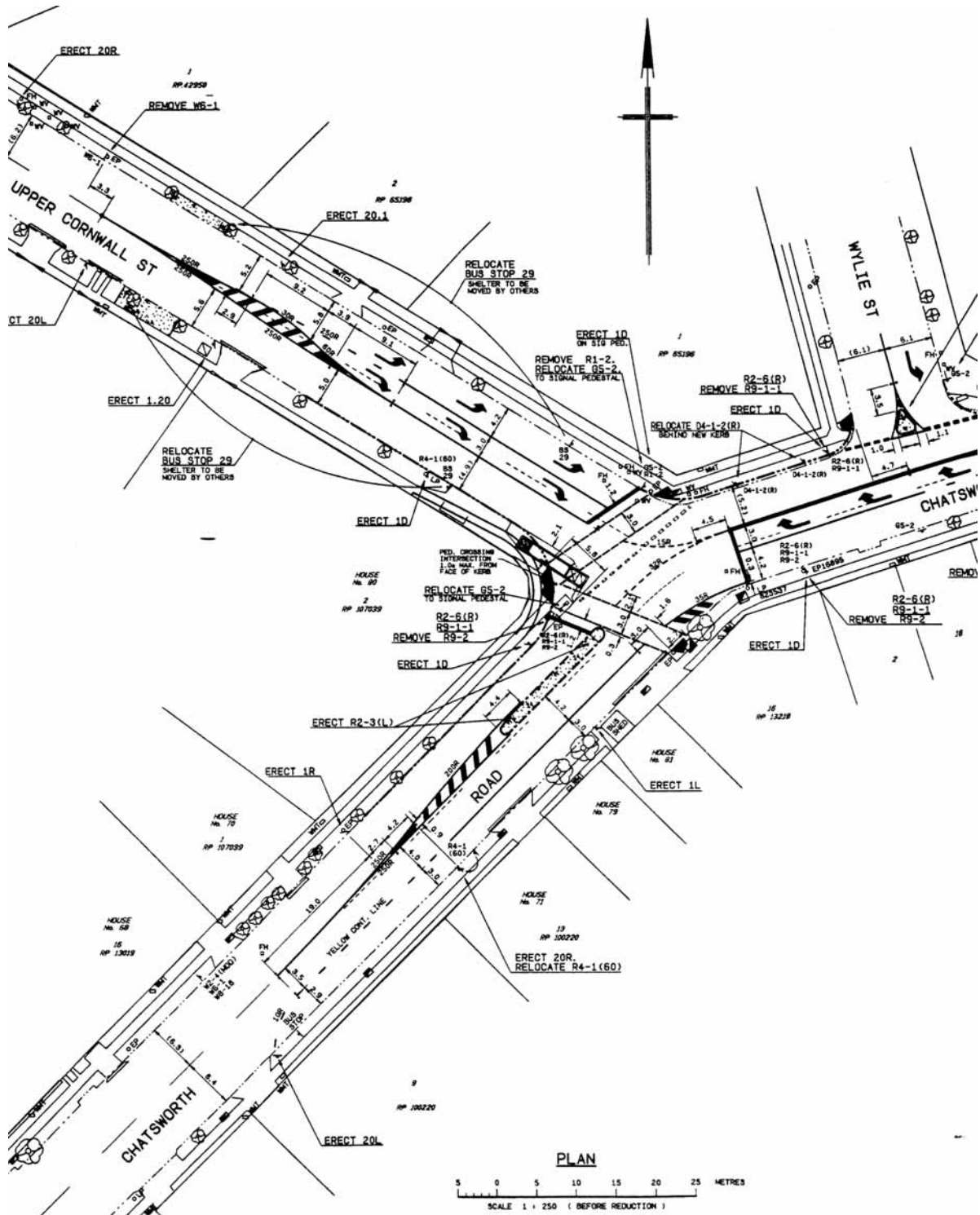


FIGURE E2.6.1
TYPICAL EXAMPLE - SIGNS AND PAVEMENT MARKING PLAN



Urban Management Division
Subdivision and Development Guidelines
Part E Engineering Procedures

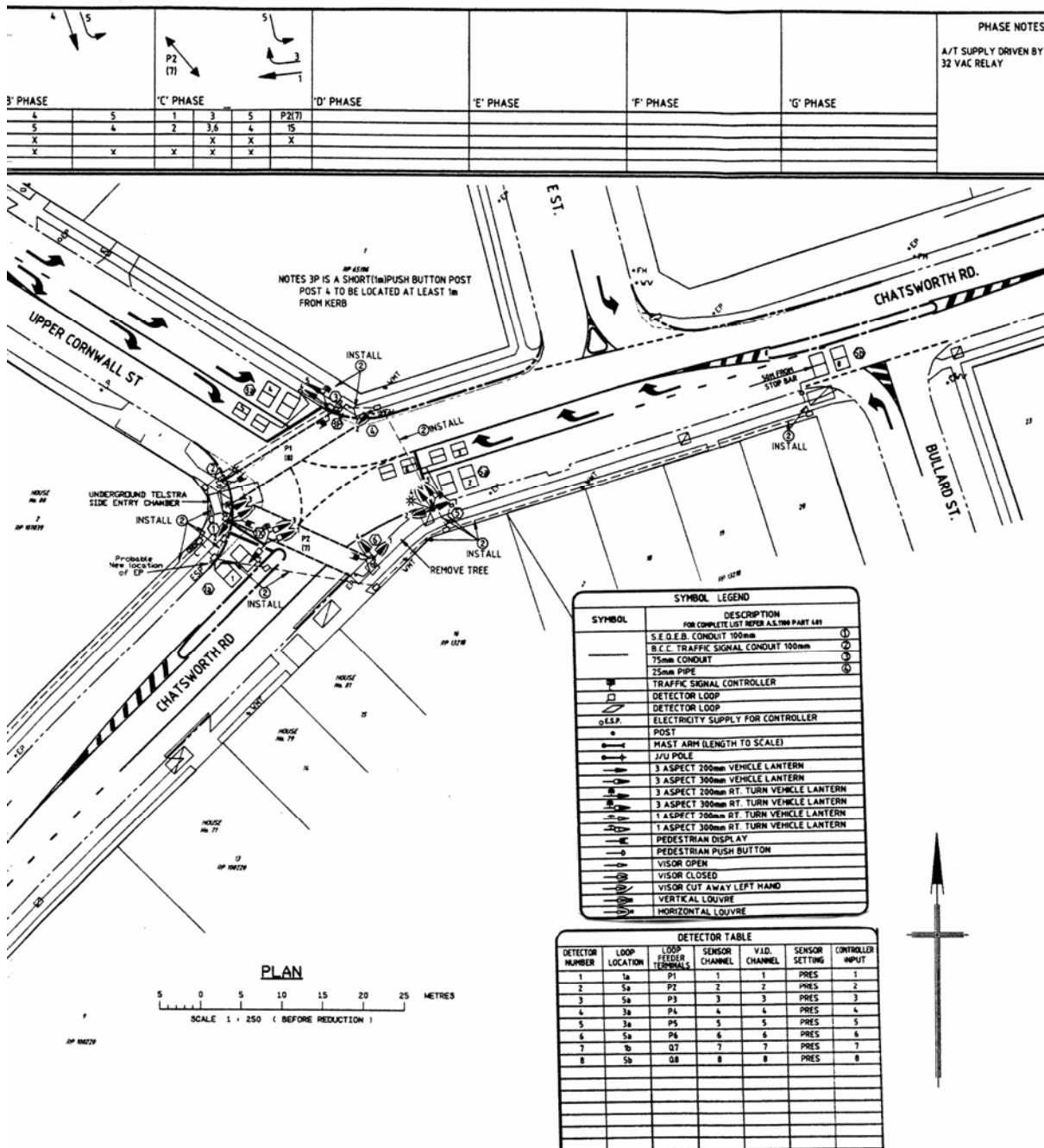


FIGURE E2.6.2
TYPICAL EXAMPLE – TRAFFIC SIGNALS PLAN



2.7 LEADING DRAWING

The leading drawing of the set of plans should contain the following information:

1. Council file reference number.
2. Site address (as per application).
3. Locality plan, clearly showing the stage boundary and adjacent stages if applicable.
4. Drawing index, including plans for other stages if applicable.
5. List of all Council standard drawings used.
6. List of all Consultant's standard drawings used (copies must be attached).
7. Full legend.
8. Asset register, refer Section 2.11.

2.8 EARTHWORKS

Earthworks drawings are required to show all the following information:

1. Any contaminated soil areas.
2. Existing surface contours and/or levels.
3. Finished surface contours and/or levels.
4. Areas of cut.
5. Areas of fill and indicating any requirement for imported fill.
6. Slopes of cut batters and fill embankments.
7. Location and height of any earth retaining structures, such as boulder walls, concrete retaining walls, crib walls, etc.
8. Access to properties where crossfall of allotments is severe.
9. Details of minimum habitable floor levels must be clearly identified on the layout plan where allotments are filled to provide flood immunity.
10. Locations of soil stockpiles.
11. Indicate proposed methods for dust control.
12. Areas subject to Vegetation Protection Order.
13. Where cut and fill operations are near the boundary of adjoining private properties or public space, cross sections must be provided showing the finished levels and positions in relation to the property boundaries. Surface levels and any structures in the adjoining land must be shown. Also refer to Chapter 4 of Part B of this document.



2.9 ROADS

2.9.1 Layout

One (1) set of the approved functional layout plans must accompany the road drawings before any assessment can proceed. Road layout plans are generally required to show the following information:

1. Legend.
2. Road reserve boundaries including any widening, and road identification.
3. Allotment boundaries with proposed lot number.
4. Road centreline, chainages, and bearings including chainages and centreline of intersecting streets.
5. Dimensioned road reserve, footpaths, pavement widths that are different from the standard cross section.
6. Location of existing services.
7. Proposed contours.
8. Proposed easements.
9. Stage boundaries.
10. Horizontal curve data.
11. Traffic islands.
12. Concrete footpaths.
13. Concrete bikeways.
14. Cut-off drains.
15. Vehicular crossings.
16. Areas of paver/stencil concrete treatment.
17. Side drains.
18. Location of guardrails and fences.
19. Pavement tapers.



2.9.2 Longitudinal Section

Road longitudinal section drawings are generally required to show the following information:

1. Chainages.
2. Existing surface levels.
3. Design road centreline.
4. Design kerb lip levels.
5. Cut and fill depths and/or volumes.
6. Grades.
7. Chainages and levels of grade intersection points.
8. Chainages and levels of tangent points of vertical curves.
9. Chainages and levels of crest and sag points.
10. Lengths and radii of vertical curves.
11. Superelevated curves.
12. Minimum or nominal asphalt surfacing and pavement thickness.
13. Scales.
14. Road names.
15. Datum.

2.9.3 Cross Section

Drawings of typical road cross sections are generally required to show all the following information, whereas items 10-12 are generally sufficient to depict the other sections.

1. Road reserve width.
2. Pavement widths.
3. Footpath widths.
4. Crossfall of pavement and footpath.
5. Pavement under kerb and channel, shoulder, traffic islands.
6. Existing services and proposed services.
7. Type of kerb and channel.
8. Subsoil drainage.
9. Road names.
10. Chainages.
11. Datum.
12. Natural surface and finished levels.
13. Position and size of concrete footpath/bikeway.
14. Traffic islands.



2.9.4 Details

Intersections/Road Widening

Drawings are generally required to show the following information:

1. Road names.
2. Stormwater drainage.
3. Lip levels.
4. Curve radius.
5. Adjacent lot numbers, point chainage and offset.
6. Tangent.
7. Road reserve.
8. Pavement contours at sufficient intervals.
9. Channelisation works.
10. Surface treatments.
11. Concrete footpath crossings/bikeway crossings.

Speed Control Devices

Drawings are generally required to show the following information:

1. As per Intersections/Road Widening above.
2. Island geometry and levels.
3. Product code of devices.
4. Radii, chainage and offsets.
5. Island kerb.
6. Landscape area.

Pavers

Drawings are generally required to show the following information:

1. Restraints.
2. Pavements.
3. Drainage.
4. Type of paver eg colour, size, material, product code, manufacturer, etc.



2.10 STORMWATER DRAINAGE

2.10.1 Layout

Stormwater drainage layout plans are generally required to show the following information:

1. Legend.
2. Road reserve boundaries and road identification.
3. Allotment boundaries with proposed lot number.
4. Location of stormwater and roofwater lines (including size), manholes, gullies, outlets, inlets, roofwater inspection pits, etc.
5. Location of existing services.
6. Existing and proposed contours.
7. Proposed easements.
8. Stage boundaries.
9. Concrete footpaths.
10. Concrete bikeways.
11. Cut-off drains.
12. Vehicular crossings.
13. Side drains.
14. Location of flood regulation lines.
15. Position of the waterway eg centreline and top of bank.
16. Extents of overland flow path including cross sectional details.
17. Roofwater kerb adaptors in the kerb and channel.
18. Drawings must incorporate note that outlets in public space and waterways must be inspected before construction. Stormwater outlets in any public space (existing or newly created Council asset) must be addressed at the initial application (conceptual design) stage and not be deferred to the operational works assessment stage, as the method of stormwater conveyance and treatment could influence the development's design, layout and cost. Also refer to Chapter 6 of Part B of this document.



2.10.2 Longitudinal Section

Stormwater drainage longitudinal section drawings are generally required to show the following information:

1. Chainages.
2. Existing surface levels.
3. Design finished surface levels.
4. Pipe invert levels.
5. Manhole chainages.
6. Distance between manholes.
7. Grade of pipes.
8. Pipe capacity.
9. Pipe size.
10. Diameter of pipes.
11. Pipe class eg Class 2.
12. Pipe installation type eg H2 trench.
13. Trench construction method eg excavator wheel load, wacker packer, etc.
14. Hydraulic grade line including the corresponding water levels at junctions.
15. Design storm frequency.
16. Manhole diameters.
17. Invert levels of inlets/outlets. Details must be extended to include the free outlet or creek bed.
18. Gully numbers.
19. Depth to invert at manholes.
20. Datum.
21. Type of gully and size of lintel.
22. Service crossing.



2.10.3 Details

Manholes

Drawings are generally required to show the following information:

1. Connecting pipes.
2. Manhole/chamber size.
3. Identification number.
4. Location chainage.

Inlets/Outlets

Drawings are generally required to show the following information:

1. Identification number
2. Thickness of walls and floor.
3. Reinforcing.
4. Type of treatment to prevent scour, eg energy dissipator.
5. Water quality management devices eg gross pollutant trap, sedimentation basin.
6. Type of grate – galvanised.
7. Surrounding levels eg waterway bed and banks.
8. Position in relation to waterway, property boundary, flow direction, flow velocity, etc.
9. Invert levels.
10. Surcharge structures.

Catchment Plan

Drawings are generally required to show the following information:

1. Tabulation of catchment areas, slopes, runoff coefficient, design discharges, etc.
2. Layout with gully catchments.
3. Full external catchment with contours extending beyond the limits of the site.
4. Existing and proposed contours.

Stormwater Drainage Calculation Sheet

Refer template outlined in Supplement to QUDM, Chapter 6 of Part B of this document.



Open Channel

Drawings are generally required to show the following information:

1. Top and toe of batters.
2. Cross sections.
3. Design levels.
4. Existing surface levels either by contours or spot levels, on the subject site and on the adjoining properties or road reserves.
5. Proposed spot levels and contours.
6. Proposed development and habitable floor levels.
7. Maintenance and/or safety berms.
8. Longitudinal section.
9. Landscaping details.

Detention/Retention Basin

Drawings are generally required to show the following information:

1. As per Open Channel above.
2. Side batters.
3. Spillway.
4. Low flow pipes.
5. Floor subsoil drainage.

Culverts

Drawings are generally required to show the following information:

1. Full structural details.
2. Handrails.
3. Scour protection.

Overland Flow Paths

Drawings are generally required to show the following information:

1. Existing surface levels, either by contours or spot levels, on the subject site and on the adjoining properties or road reserves or waterways.
2. Finished surface levels on the subject sites.
3. Proposed habitable floor and development levels.
4. Overland flow path widths and levels, and cross sections along the flow path for the design flows.
5. Existing drainage structures, including pipe sizes and levels, especially at the proposed discharge point.
6. Overland flow paths for the design storm other than in road reserves must be shown on separate drawings.



2.11 ASSET REGISTER

The asset register is an essential part of the engineering plans and must be accurate and included on the leading drawing, generally in accordance with the proforma set out in Table E2.11.1. The applicant is required to identify and quantify the asset only as the actual construction costs may not be known at the engineering design stage. The register must include all structures and items associated with the subdivision or development that which will be handed over to Council following Off Maintenance. These items are generally referred to as **donated or contributed assets**.

Table E2.11.1 lists a comprehensive set of donated assets excluding water supply and sewerage items. It is envisaged that only a subset of the listed items will apply in most cases as the list also incorporates historical asset such as arched brick drains and heritage construction material such as porphyry. The applicant must not assume that the listed item will imply automatic acceptance of a particular material or product, for example, the use of pavers is now restricted.

The final **asset register must reflect the actual construction and must be submitted as part of the As Constructed Drawings**. For each item, the applicant must specify the asset type, quantity, unit rate, and estimated value. Council will use the unit rates solely for the purpose of asset valuation and capitalisation.



TABLE E2.11.1 DONATED/CONTRIBUTED ASSET REGISTER PROFORMA

ASSET INVENTORY DATA SHEET <i>(Units are in mm unless noted otherwise)</i>					
Development Name:			Stage:		
Address:			UBD Reference:		
Development Approval Ref:			On/Off Maintenance Dates:		
Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
1.00	BIKEWAYS				
1.01	Asphalt	m ²			
1.02	Concrete	m ²			
1.03	Other [<i>please specify</i>]	m ²			
2.00	ROADS: SURFACE				
2.01	Seal A&B Traffic Density	m ²			
2.02	Asphalt A&B Traffic Density	m ²			
2.03	Asphalt C Traffic Density	m ²			
2.04	Asphalt D Traffic Density	m ²			
2.05	Asphalt E Traffic Density	m ²			
2.06	Asphalt F Traffic Density	m ²			
2.07	Asphalt G Traffic Density	m ²			
3.00	ROADS: BASECOURSE				
3.01	Crushed Rock A&B Traffic Density	m ²			
3.02	Crushed Rock C Traffic Density	m ²			
3.03	Crushed Rock D Traffic Density	m ²			
3.04	Crushed Rock E Traffic Density	m ²			
3.05	Crushed Rock F Traffic Density	m ²			
3.06	Crushed Rock G Traffic Density	m ²			
3.07	Deep Lift A to E Traffic Density	m ²			
3.08	Deep Lift F Traffic Density	m ²			
3.09	Deep Lift G Traffic Density	m ²			
4.00	ROADS: BULK EARTHWORKS (TO SUBGRADE LEVEL)				
4.01	Sealed Road – Excavation	m ³			
4.02	Sealed Road – Filling	m ³			
4.03	Unsealed Road – Excavation	m ³			
4.04	Unsealed Road – Filling	m ³			
5.00	FOOTPATHS				
5.01	Concrete	m ²			
5.02	Asphalt	m ²			
5.03	Brick	m ²			
5.04	Pavers	m ²			



ASSET INVENTORY DATA SHEET
(Units are in mm unless noted otherwise)

Development Name:

Stage:

Address:

UBD Reference:

Development Approval Ref:

On/Off Maintenance Dates:

Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
6.00	KERB & CHANNEL / KERB				
6.01	Concrete K&C	m			
6.02	Stone Block K&C	m			
6.03	Porphyry K&C	m			
6.04	Concrete Kerb	m			
7.00	SURFACED MEDIANS				
7.01	Concrete Kerb	m			
7.02	Stone Block Kerb	m			
7.03	Asphalt Infill	m ²			
7.04	Brick Infill	m ²			
7.05	Concrete Infill	m ²			
7.06	Grass Infill	m ²			
8.00	ROAD BRIDGES				
8.01	Bridge Level <12 m Over Road/ Concrete	m ²			
8.02	Bridge Level <12 m Over Water/ Concrete	m ²			
8.03	Bridge Level <12 m Over Water/ Composite	m ²			
8.04	Bridge Level <12 m Over Water/ Timber	m ²			
8.05	Bridge Level 12-21 m Over Water/ Concrete	m ²			
8.06	Bridge Level 12-21 m Over Water/ Timber	m ²			
8.07	Bridge Level 12-21 m Over Road/ Concrete	m ²			
8.08	Bridge Level 12-21 m Over Rail/ Concrete	m ²			
8.09	Bridge Level 12-21 m Over Rail/ Composite	m ²			
8.10	Bridge Level 12-21 m Over Rail/ Timber	m ²			
8.11	Bridge Level 21-63 m Over Water/ Concrete	m ²			
8.12	Bridge Level 21-63 m Over Water/ Composite	m ²			
8.13	Bridge Level 21-63 m Over Water/ Timber	m ²			
8.14	Bridge Level 21-63 m Over Road/ Concrete	m ²			
8.15	Bridge Level 21-63 m Over Rail/ Concrete	m ²			
8.16	Bridge Level 21-63 m Over Rail/ Composite	m ²			
8.17	Bridge Level 21-63 m Over Rail/ Timber	m ²			
8.18	Bridge Level >63 m Over Water/ Concrete	m ²			
8.19	Bridge Level >63 m Over Water/ Composite	m ²			
8.20	Bridge Level >63 m Over Road/ Concrete	m ²			
8.21	Bridge Level >63 m Over Rail/ Concrete	m ²			
9.00	FOOTBRIDGES				
9.01	Bridge Level <8 m Over Water/ Concrete	m ²			
9.02	Bridge Level <8 m Over Water/ Steel	m ²			
9.03	Bridge Level <8 m Over Water/ Timber	m ²			
9.04	Bridge Level 8-12 m Over Water/ Concrete	m ²			



ASSET INVENTORY DATA SHEET
 (Units are in mm unless noted otherwise)

Development Name:

Stage:

Address:

UBD Reference:

Development Approval Ref:

On/Off Maintenance Dates:

Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
9.05	Bridge Level 8-12 m Over Water/ Composite	m ²			
9.06	Bridge Level 8-12 m Over Water/ Steel	m ²			
9.07	Bridge Level 8-12 m Over Water/ Timber	m ²			
9.08	Bridge Level 12-21.6 m Over Road/ Steel	m ²			
9.09	Bridge Level 12-21.6 m Over Water/ Concrete	m ²			
9.10	Bridge Level 12-21.6 m Over Water/ Composite	m ²			
9.11	Bridge Level 12-21.6 m Over Water/ Steel	m ²			
9.12	Bridge Level 12-21.6 m Over Water/ Timber	m ²			
9.13	Bridge Level >21.6 m Over Road/ Concrete	m ²			
9.14	Bridge Level >21.6 m Over Road/ Steel	m ²			
9.15	Bridge Level >21.6 m Over Water/ Concrete	m ²			
9.16	Bridge Level >21.6 m Over Water/ Composite	m ²			
9.17	Bridge Level >21.6 m Over Water/ Steel	m ²			
9.18	Bridge Level >21.6 m Over Water/ Timber	m ²			
9.19	Bridge Level >21.6 m Over Rail/ Concrete	m ²			
9.20	Bridge Level >21.6 m Over Rail/ Steel	m ²			
9.21	Bridge Level >21.6 m Over Rail/ Timber	m ²			
10.00	BOARDWALKS				
10.01	Bridge Level ≤30 m Over Water/ 1x Timber Span	m ²			
10.02	Bridge Level >30 m Over Water/ Timber	m ²			
11.00	CULVERTS				
11.01	Concrete Box Various Sizes [please specify] Eg 2/1500 wide x 900 high RCBC	m ²			
11.02	Concrete Pipe Various Sizes [please specify] Eg 3/1200 diameter RCP Class 3	m ²			
11.03	Steel Pipe Various Sizes [please specify] Eg 3/1200 diameter CSP	m ²			
11.04	Special Cases Various Sizes [please specify] Eg 2/2400 span steel arch	m ²			
12.00	ENCLOSED STORMWATER: DRAINLINES				
12.01	Brick Various Sizes [please specify] Eg arched shape 2400 wide x 1200 high	m			
12.02	Precast Concrete Various Sizes [please specify] Eg 600 dia RCP Class 2, 900w x 600h RCBC	m			
12.03	Cast Insitu Concrete Various Sizes [please specify] Eg 900 diameter, 1200 x 1200 box	m			
12.04	Vitrous Clay Various Sizes [please specify] Eg 600 diameter	m			
12.05	Other Various Sizes [please specify]	m			



ASSET INVENTORY DATA SHEET
(Units are in mm unless noted otherwise)

Development Name:

Stage:

Address:

UBD Reference:

Development Approval Ref:

On/Off Maintenance Dates:

Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
13.00	ENCLOSED STORMWATER: MANHOLES				
13.01	Manhole Various Sizes [please specify] Eg 1500 diameter expanded 900 2.2 m deep	No.			
13.02	Chambers Various Sizes [please specify] Eg 3000 x 3500 x 2300 deep	Item			
14.00	ENCLOSED STORMWATER: GULLIES				
14.01	Gully Various Sizes [please specify] Eg standard gully no lintel	No.			
15.00	ENCLOSED STORMWATER: INLETS/OUTLETS (EXCL CULVERTS)				
15.01	Inlet Various Sizes [please specify] Eg 8000 length concrete apron for 3/1500 RCP	No.			
15.02	Outlet Various Sizes [please specify] Eg 6200 length grouted rock apron for 3/900 RCP	No.			
15.03	Other [please specify] Eg concrete drop structures	Item			
16.00	STORMWATER QUALITY IMPROVEMENT DEVICE (SQID)				
16.01	Constructed Wetland [please specify] Eg details of clay liner, macrophytes, entry trash rack, exit weir, associated sedimentation basin	Item			
16.02	Sedimentation Basin [please specify] Eg details of outlet weir, drainage outlets & trash racks	Item			
16.03	Sediment Trap [please specify] Eg details of weirs, outlet trash racks	Item			
16.04	Open GPT [please specify] Eg details of outlet trash racks, outlet nets, sedimentation basin, bypass line & valve	Item			
16.05	Trash Rack - Vertical or Inclined [please specify] Eg details of steel racks & supports	Item			
16.06	Trash Rack – Horizontal [please specify] Eg details of steel racks & supports	Item			
16.07	Underground GPT - CDS Unit [please specify] Eg manufacturer, model number	No.			
16.08	Underground GPT - Ecosol Unit [please specify] Eg manufacturer, model number	No.			
16.09	Underground GPT - Mini GPT [please specify] Eg details of weir, vertical screen or litter basket	Item			



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Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
16.10	Underground GPT - Vertical Inline Grate [<i>please specify</i>] Eg details of grate, grate support beam, baskets	Item			
16.11	Underground GPT - Static Filtration Unit [<i>please specify</i>] Eg details of filtration screens	Item			
16.12	Underground GPT - Humeceptor [<i>please specify</i>] Eg manufacturer, model number	No.			
16.13	Underground GPT - Humegard [<i>please specify</i>] Eg manufacturer, model number	No.			
16.14	Underground GPT - Basket Groups [<i>please specify</i>]	Item			
16.15	Underground GPT - Other [<i>please specify</i>]	Item			
16.16	Floating Litter Trap [<i>please specify</i>] Eg details of flotation chambers, anchors, collection screens				
16.17	Detention Basin [<i>please specify</i>] Eg details of weir, outlet trash racks	Item			
16.18	Lake [<i>please specify</i>] Eg details of inlet & outlet weirs, foreshore works, macrophyte filters	Item			
17.00	OPEN DRAINS:				
17.01	Lined Channel [<i>please specify</i>] Eg trapezoidal cross section, concrete to bed & banks 500 m length, 5000 base width, 1:4 side batters, average 2000 deep, drawing reference	m ²			
17.02	Unlined Channel [<i>please specify</i>] Eg grass to bed & banks 500 m length, 5000 base width, 1:4 side batters, average 2000 deep, drawing reference	m ²			
17.03	Natural Channel [<i>please specify</i>] Eg rock bed, pools & riffles, native planting to banks, 500 m length, 8000 base width, 1:4-1:6 side batters, average 2500 deep, drawing reference	m ²			
17.04	Drop Structures [<i>please specify</i>] Eg concrete, 2 m drop height, drawing reference	Item			
17.05	Other [<i>please specify</i>]				
18.00	FENCING				
18.01	Steel Beam Guardrail	m			
18.02	Weldmesh 1200 high ARC	m			
18.03	Timber Paling 1650 high	m			
18.04	Log Barrier	m			



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Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
18.05	Chainwire 1800 high	m			
18.06	Chainwire 1200 high	m			
18.07	Tubular Handrail 825 high	m			
18.08	Bollards at 2 m centres	m			
18.09	Concrete 1000 high	m			
18.10	Brick 1000 high	m			
18.11	Other [<i>please specify</i>] Eg 2.2-4.5 m high aerated concrete acoustic fence	m			
19.00	RETAINING WALLS				
19.01	Stone Pitched Gravity max 1500 high	m ²			
19.02	Stone Pitched Gravity max 3000 high	m ²			
19.03	Stone Pitched Gravity max 5000 high	m ²			
19.04	Cantilever Concrete max 1500 high	m ²			
19.05	Cantilever Concrete max 3000 high	m ²			
19.06	Cantilever Concrete max 5000 high	m ²			
19.07	Gravity Concrete max 1500 high	m ²			
19.08	Gravity Concrete max 3000 high	m ²			
19.09	Gravity Concrete max 5000 high	m ²			
19.10	Gabion max 1000 high	m ²			
19.11	Gabion max 2000 high	m ²			
19.12	Gabion max 3000 high	m ²			
19.13	Gabion max 4000 high	m ²			
19.14	Gabion max 5000 high	m ²			
19.15	Gabion max 6000 high	m ²			
19.16	Gabion max 7000 high	m ²			
19.17	Gabion max 8000 high	m ²			
19.18	Boulder max 2000 high	m ²			
19.19	Concrete Block Type 1 Footing max 800 high	m ²			
19.20	Concrete Block Type 1 Footing max 1000 high	m ²			
19.21	Concrete Block Type 1 Footing max 1200 high	m ²			
19.22	Concrete Block Type 1 Footing max 1400 high	m ²			
19.23	Concrete Block Type 1 Footing max 1600 high	m ²			
19.24	Concrete Block Type 2 Footing max 800 high	m ²			
19.25	Concrete Block Type 2 Footing max 1000 high	m ²			
19.26	Concrete Block Type 2 Footing max 1200 high	m ²			
19.27	Concrete Block Type 2 Footing max 1400 high	m ²			
19.28	Concrete Block Type 2 Footing max 1600 high	m ²			
19.29	Brick max 1000 high	m ²			
19.30	Brick max 1300 high	m ²			
19.31	Brick max 1600 high	m ²			
19.32	Interlocking Block max 2000 high	m ²			



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Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
19.33	Crib Block max 2000 high	m ²			
19.34	Crib Block max 3000 high	m ²			
19.35	Crib Block max 4000 high	m ²			
19.36	Crib Block max 5000 high	m ²			
19.37	Reinforced Earth max 3000 high	m ²			
19.38	Reinforced Earth max 4000 high	m ²			
19.39	Reinforced Earth max 5000 high	m ²			
19.40	Reinforced Earth max 6000 high	m ²			
19.41	Reinforced Earth max 7000 high	m ²			
19.42	Reinforced Earth max 8000 high	m ²			
19.43	Sleeper max 1500 high	m ²			
19.44	Treated Log max 1500 high	m ²			
19.45	Other [please specify]	m ²			
20.00	TRAFFIC CONTROL NETWORK				
20.01	Intersection Type 1 One Approach	Item			
20.02	Intersection Type 2 Two Approaches	Item			
20.03	Intersection Type 3 Three Approaches	Item			
20.04	Intersection Type 4 Four Approaches	Item			
20.05	Intersection Type 5 Specials [provide details]	Item			
20.06	Mid-Block Pedestrian Crossing One Approach	Item			
20.07	Mid-Block Pedestrian Crossing Two Approaches	Item			
20.08	Major Directional Signs	No.			
20.09	Bliss System Software	Item			
20.10	Bliss System Hardware	Item			
20.11	Traffic Control Centre	Item			
20.12	Other [please specify]	Item			
21.00	WATERWAY ACCESS STRUCTURES				
21.01	Wharf: Timber	No.			
21.02	Pier: Timber	No.			
21.03	Jetty: Timber	No.			
21.04	Jetty: Concrete	No.			
21.05	Pontoon: Concrete	No.			
21.06	Pontoon: Steel	No.			
21.07	Pontoon: Plastic	No.			
21.08	Boat Ramp: Concrete	No.			
21.09	Boat Ramp: Composite	No.			
21.10	Boat Ramp: Timber	No.			
21.11	Sea Walls: Stone Pitched	m ²			
21.12	Sea Walls: Concrete Cantilever	m ²			
21.13	River Walls: Stone Pitched	m ²			



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Item	Description	Unit	Qty	Rate (\$)	Amount (\$)
21.14	River Walls: Dry Pack Stone	m ²			
21.15	River Walls: Concrete Cantilever	m ²			
21.16	River Walls: Gabions	m ²			
21.17	Groynes: Stone Pitched	m ²			
21.18	Groynes: Dry Pack Stone	m ²			
22.00	EASEMENTS IN FAVOUR OF COUNCIL				
22.01	Roofwater Reticulation	m ²		--	--
22.02	Underground Pipe Drainage	m ²		--	--
22.03	Open Cut Drainage	m ²		--	--
22.04	Overland Flow	m ²		--	--
22.05	Combined Underground/Aboveground	m ²		--	--
22.06	Other [<i>please specify</i>] Eg access and turning areas where on-site refuse collection is required	m ²		--	--
23.00	PARKS				
23.01	Dedicated Parkland	m ²		--	--
23.02	Park Infrastructure Eg play equipment, gazebos, buildings	Item			
24.00	MISCELLANEOUS				
24.01	Landscaping	m ²			
23.02	Other [<i>please specify</i>] Eg entrance features	Item			