



FNQROC DEVELOPMENT MANUAL

OPERATIONAL WORKS

AP1

APPLICATION PROCEDURES

Version No. 03/14

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[APPENDIX A – STATEMENT OF COMPLIANCE OPERATIONAL WORKS DESIGN](#)

GENERAL

AP1.01 INTRODUCTION

1. This manual sets out procedures involved in applying for an Operational Works Permit for Works that will ultimately be in the ownership and maintenance responsibility of Council or other service authorities or works which are subject to approval by Council.
2. It should be read in conjunction with the relevant preliminary approval and/or development permit conditions.
3. Conditions of a development permit (including reconfiguration) may require the Applicant to construct, bond and/or submit, various works or documentation before survey plans can be approved and sealed by Local Authority or before a development may be occupied or a land use commenced.
4. Preliminary approvals / Development permits requiring the construction of operational works generally involve the Applicant and/or a Designer applying for an Operational Works Permit and requesting Council approval of designs and specifications.
5. Plans for roadworks, drainage works, water supply, sewerage works, bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures are to be prepared under the direction of and certified by a Registered Professional Engineer Queensland (RPEQ).
6. Plans for landscape works by a person of professional standing and competence in the field of Landscape Architecture or Landscape Design, at a standard acceptable to the Council. Where irrigation plans are required for public parks, traffic islands or roundabouts, they are to be prepared by an irrigation designer with a proven track record of successful irrigation design.
7. Designs, calculations, drawings and specifications are to be submitted as supporting information to an application for a Development Permit for Operational Works.
8. Operational Works Permits will not be issued until evidence of payment of the Portable Long Service Leave and Occupational Health and Safety fees is provided.

DESIGN APPROVAL

AP1.02 PRE-LODGEMENT DISCUSSIONS

1. Prior to lodgement of an Operational Works application for approval of detailed designs, the Designer is encouraged to meet with Council officers to discuss the following matters in the event that the following issues have not been addressed at Reconfiguration of a Lot approval.
 - a. Legal point(s) of stormwater discharge.
 - b. Identify environmentally significant areas and heritage features.
 - c. Internal and external stormwater catchment boundaries.
 - d. Tailwater conditions including water quality requirements and determination of tailwater level.

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- e. Connection point(s) for water supply and available pressure and discharge capacities.
 - f. Discharge point(s) for sewerage.
 - g. Identification of Environmental Relevant Activities.
 - h. Set back distances from watercourses for on-site wastewater treatment and disposal.
 - i. Future planning for the provision of services, eg, water supply, sewerage, drainage and road networks, stream management and stormwater quality management, structures, power, communications and gas. In special circumstances, the Council may require the installation of larger water mains to serve areas beyond the development.
 - j. Site conditions.
 - k. Development Permit Conditions for the particular development.
 - l. Layout design, Speed restriction
 - m. Landscaping works for on street works and public open space
2. Approval of designs can be expedited where the above issues have been resolved in advance.
 3. The Designer may obtain As-Constructed information in relation to existing roads, stormwater drainage, water and sewer reticulation if available from Council, on application and payment of a prescribed fee (where applicable).
 4. In addition to the above, it is advisable that the Designer discuss and obtain Council's agreement to the following issues (where required) prior to submission of designs:
 - a. Possible variations to Council's manuals and standards;
 - b. Variations to design due to inability to obtain drainage discharge approvals; and
 - c. Requests for Council to contribute towards some aspects of the work.
 5. Resolution of these issues, particularly those requiring a decision of Council, (i.e., amendments to conditions of approval, or requests for Council contributions), is essential to avoid protracted approval periods and wasted design effort.

AP1.03 DESIGN REQUIREMENTS

1. The design of operational works shall comply with the relevant Development Permit conditions, Council's local laws, Policies, Planning Scheme and the provisions of this Manual. The developer shall meet all costs associated with the compliance with these minimum requirements.
2. It is Council's requirement that the design of all operational works shall be prepared under the direction of, and certified by a Registered Professional Engineer Queensland (RPEQ). Designer must bear full responsibility for all aspects of the design of all operational works, which they prepare.
3. Road safety audit to be undertaken by a suitably experienced RPEQ as per the requirements in Austroads Guide to Road Safety to verify designs and signage prior to submission to council.

AP1.04 CONSENT OF ADJOINING LANDOWNERS

1. Written approval is required from adjoining property owners authorising any operational works on their property.
2. Approvals to discharge and/or easements over downstream drainage paths from the respective property owners are required from the development site to the approved point of discharge.

AP1.05 DOCUMENTATION

1. Associated with the lodgement of the "Application for Operational Works Development Permit", Engineering Plans and Specifications for the works are to be submitted to Council for approval. (The specific requirements for the submission).
2. Submissions with a full compliment of supporting documentation will ensure minimal delays in Council's approval timeframes
3. Following the issue of an operational works permit, any plans that are required to be amended shall be re-submitted with an accompanying letter outlining the amendments and including any necessary calculations or documentation as supporting information.
4. Further, one complete specification shall be issued to Council incorporating any required amendments following the issue of an operational works permit.

AP1.06 LOCAL AUTHORITY APPROVAL

1. The 'Statement of Compliance – Operational Works Design' (refer Appendix A) has been introduced to expedite the approval process.
2. Council's review of the applications engineering documentation is on an audit basis only except for certain critical elements and disclosed non-complying elements which are subject to detailed examination.
3. If the Council review reveals the Statement of Compliance to be inaccurate or incomplete, the submission may be returned to the Designer for resubmission. A subsequent review fee may be levied in these cases in accordance with Council's fees and charges.
4. It is the Designer's responsibility to ensure the design as submitted takes into account all site conditions and complies and with Council's approval conditions, Council's local laws, Policies, the provisions of this Development Manual and other relevant authorities.
5. Council's review process does not warrant that an approved design complies with the above in every respect, and Council reserves its right to order the rectification of non-complying or unsafe works at the cost of the Developer, despite its prior approval.
6. Within five (5) days of Council's approval, the Designer shall submit an electronic copy of the requirements of 1.08 below.
7. Two (2) street names for each new street (in line with any council naming policy) must be lodged for consideration and approval by Council before construction is complete.

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AP1.07 APPROVAL OF OTHER AUTHORITIES AND REFERRAL AGENCIES

1. The Applicant shall be responsible for gaining the approvals of any other Authorities having jurisdiction over any part of the works.
2. All works on State controlled roads will be subject to the approval of the relevant state authority is to be carried out in accordance with the Department's Policies, Standards and Guidelines
3. All referral agency conditions to be included in design documents and must be approved by each agency (if required), prior to submission to Council

AP1.08 SUPPORTING INFORMATION

General

1. Supporting Information for Operational works shall include the following:
 - a. Design Plans (1 x A1 and 1 x A3 plus 1 additional copy of all plans in PDF format)
 - b. Job Specification (1 copy)
 - c. Design Report (1 copy)
 - d. Design Checklist
 - e. IDAS Assessment Checklist
 - f. Form 1 (Common Details of all Applications) of the IDAS Forms
 - g. Form 6 (Planning Scheme Works) of the IDAS Forms
 - h. Evidence that the prescribed Application Fee as stated in Council's Fees and Charges Schedule, has been paid.
 - i. Evidence of payment of the Portable Long Service Leave and Occupational Health and Safety fee.
 - j. 'Permit to Enter & Construct' letters and easement documents relevant to the application.

Design Plans

2. Design plans shall be definitive and clearly set out so as to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built.
3. All design plans should be clearly numbered with separate sheets numbered as part of a set.
4. Sheets of drawings should not be overcrowded with information and should not rely on colour printing or colour wash to impart information. Drawings should be true to scale A1 size sheets and be suitable for black and white copying and photo reduction.
5. Design plans shall be certified by an RPEQ (refer 1.03.2).

Job Specification

6. A Job Specification shall be prepared by the Designer specifying site specific requirements not covered in standard specifications.
7. All works shall be in accordance with Council's standard specifications where available. Where no Council standard specifications exist for a particular type of work, the Designer may use the relevant state authority specification or their own standard specification. Both options shall be subject to approval by Council.

Design Report

8. The engineering design and materials used must be selected to minimise the whole of life cost to Council. The designer must demonstrate how the design complies with this requirement.
9. The Design Report shall be a bound report signed by the Designer and shall contain all the necessary design calculations, correspondence and information to enable Council to expeditiously check the design submission and grant approval to construct.
10. The Design Report shall contain the following:
 - a. A completed "Statement of Compliance – Operational Works Design" endorsed by the Designer(s)
 - b. A copy of the development approval conditions on which the design is based including a summary of the design submission referencing each of the development approval conditions
 - c. Records of pre-submission discussions with Council including confirming correspondence.
 - d. Copies of letters of approval from adjoining property owners for any works or discharge on their properties.
 - e. Evidence that negotiations have been entered into regarding provision of supply with Service Authorities (including approved reticulation/service plans, if available).
 - f. Stormwater drainage calculations in spreadsheet format in accordance with QUDM requirements including detail of pit types and capture charts used and tailwater levels adopted.
 - g. Stormwater Drainage Catchment Plan(s) detailing external catchments and internal sub catchments.
 - h. Design details of alternatives proposed which depart from the Development Manual/Development Conditions with supporting arguments for how the alternative meets Council's objectives.
 - i. Design calculations for detention basins, dissipaters, open channel, catch drain, adopted tailwater levels etc.
 - j. Design criteria and parameters, operating regimes and calculations for permanent water quality works such as stormwater quality interception devices (SQIDs), sediment basins, trash racks, etc and demonstrated consistency with catchment Stormwater Quality Management Plan and Water Quality Report which accompanies the development application.

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- k. An Erosion and Sediment Control Strategy (ESCS) addressing erosion and sediment management during construction.
- l. Traffic Management Plan in accordance with the Manual of Uniform Traffic Control Devices
- m. Hydraulic analysis reports of the water and sewerage network.
- n. If the water supply is from a newly developed source, provide information on quality, quantity, disinfection and infrastructure proposed.
- o. Pavement design including records of geotechnical tests indicating subgrade CBR's, adopted traffic load, requirements for subsoil drainage and subsoil drainage design by a geotechnical engineer.
- p. Geotechnical reports, where relevant, relating to slope and batter stability, in-situ materials etc.
- q. Structural and Geotechnical certification of design of miscellaneous structures including retaining walls, non-standard headwalls, drainage structures, reservoirs etc.
- r. Design parameters and operating regimes for water supply and sewerage pump stations.
- s. Full design drawings and pre-commissioning plan for water and sewerage pump stations.
- t. Landscaping Design Drawings for Subdivision Works showing details of Parks/Reserve Planting, Street Tree Planting, Buffer Zone Planting and any Hillslope Development Works if applicable.
- u. For staged development, master plans showing the overall design concept for:
 - i. Water including pump stations and water storages,
 - ii. sewer including pump stations,
 - iii. stormwater,
 - iv. roadworks,
 - v. earthworks,
 - vi. roads hierarchy
 - vii. pathways
 - viii. public transport
 - ix. lighting and other services
 - x. easements, freehold lots and land to be deeded to Council for accommodating the works
 - xi. open space areas, and
 - xii. erosion and sediment control strategy and location of permanent survey marks
 - xiii. With Stage 1 development and with updated copies to be provided with each subsequent stage. Subsequent development plans will show the 'as constructed' information of all the earlier stages.
- v. Selection of materials and components to be transferred to Council ownership must comply with Service Standards specified by Council (e.g. minimised whole of life cost; reliability etc).
- w. A fully priced estimate of construction costs in the form of a priced schedule of quantities

PLAN PRESENTATION

AP1.09 GENERAL REQUIREMENTS

1. These presentation minimum standards shall apply to engineering and landscaping plans submitted for approval for operational works associated with approved developments.
2. Standardisation of the presentation of operational works plans submitted for approval is necessary for consistency in Council's records and desirable for expedient review and approval.
3. As per AP1.08
4. Scaled Engineering Drawings in accordance with this manual are required for plan review.

AP1.10 TITLE BLOCK

1. Each sheet of the Design Drawings shall have a Title Block containing the following information:
 - a. Development / Estate Name (if any).
 - b. Locality/Approved Street Name
 - c. Developer's Name.
 - d. Bar Scales as a minimum (Alternately Numerical Scale with original sheet size stated).
 - e. Plan Number and Sheet Number.
 - f. Schedule and Date of Amendments.
 - g. Certification by RPEQ (for engineering drawings).

AP1.11 SHEET SIZES

1. Preferred sheet sizes (Overall dimensions)

A1 841 mm x 593 mm

A3 420 mm x 297 mm

AP1.12 SCALES

1. Scales used for plans should preferably be those recommended by the Standards Association. Generally the following scales should be used 1:1, 1:2, 1:5 and multiples of 10 of these. All scales should be bar scales.

	Urban	Rural
Plans	1:500 *	1:1000
Longitudinal Section:		
Horizontal	1:500	1:1000
Vertical	1:50	1:100
Intersection Details	1:100; 1:200	1:500

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Cross Sections	1:100	1:100
Engineering Details	1:1, 1:2, 1:5 and multiples of 10 of these scales	
* Sewerage Reticulation should be 1:500		

AP1.13 DIMENSIONS

Dimensioning On Plans

1. Linear dimensions on all roadworks plans will 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.
2. Details of methods of dimensioning shall be in accordance with AS 1155 Appendix A - Metric Units in Construction.

Standard Cross-Section Intervals

3. Urban and rural cross-sections should be provided to roads at 20.0m intervals and tangent points, with further reduction to 10.0 m or 5.0 m intervals where necessary due to horizontal or vertical curvature.

Chainages and Offset Dimensions

4. Chainage and Offset Dimensions on plans shall be expressed to 0.01 m. (0.005 may be used as the order of accuracy requires).

AP1.14 LEVELS

1. All levels shall be reduced to Australian Height Datum, unless otherwise approved by the Local Authority.
2. Reduced levels of Bench Marks and Reference Pegs including Permanent Survey Marks shall be expressed to three decimal places i.e. 0.001 m. The location of the origin of the survey shall be on the plan.
3. Reduced levels of roadworks and stormwater drainage shall be expressed to three decimal places ie. 0.001 m.
4. Reduced levels of sewerage reticulation shall be expressed to three decimal places ie. 0.001 m.

AP1.15 GRADES

1. Road grades shall be shown as a percentage to two decimal places.
2. Pipe grades shall be shown either as a percentage to two decimal places or as gradient to one decimal place.

DESIGN DRAWINGS

AP1.16 DRAWINGS REQUIRED

1. Operational works drawings will generally consist of the following:
 - a. Locality Plan.
 - b. Subdivision Layout / Staging Plan (if applicable).
 - c. Earthworks Plan.
 - d. Roadworks and Drainage Plan.
 - e. Longitudinal Section of each Road.
 - f. Type Cross-Sections for each road.
 - g. Cross-Sections of each Road.
 - h. Detail Plan of each Intersection and Cul de sac.
 - i. Longitudinal Section of each Stormwater Drainage Line.
 - j. Sewerage Reticulation Plan, long section and pump station details.
 - k. Water Reticulation Plan, pump station and water storage plans and details.
 - l. Landscape Plan.
 - m. Erosion and Sediment Control Strategy.
 - n. Service providers Conduit Plan, including street lighting.
 - o. Stormwater Catchment Plan / Drainage Calculation Table.
 - n. Miscellaneous Details
2. The minimum requirements for each drawing are detailed in the following sections.

AP1.17 LOCALITY PLAN

1. Locate the subdivision / development in relation to adjacent towns, main roads, major streets, etc
2. North Point.
3. May be included on Layout / Staging Plan for large jobs or Roadworks and Drainage Plan for smaller jobs.

AP1.18 LAYOUT / STAGING PLAN

1. For staged subdivisions, the layout plan should show the relationship of all new roads and infrastructure to each other, and to existing roads and infrastructure adjoining the subdivision. All adjacent structures and services are to be shown also.
2. Where development is to be carried out by Stages, the boundaries of proposed Stages should be shown on this plan, and the stages identified by numbering.

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3. For small subdivisions, where all new roads and infrastructure can be shown on one detail plan, the layout plan may be omitted.

AP1.19 EARTHWORKS PLAN

1. The Earthworks Plan may be included with the Roadworks and Drainage Plan for smaller subdivisions and shall include:
 - a. Legend.
 - b. Existing site contours and finished surface contours. (Spot levels should be used to complement contours).
 - c. Limits and levels of major allotment cut and fill - distinguished by hatching.
 - d. Locations of cut and fill batters relative to allotment boundaries.
 - e. Location and levels of retaining walls (if required).
 - f. Batter slopes and treatments.
 - g. Appropriate flood levels in accordance with Council's Policies
 - h. North Point.
 - i. Location(s) and level(s) of permanent survey mark(s), reference stations etc, used as datum for the works.
 - j. Vegetation including trees proposed to be removed and those to be retained.
 - k. For smaller subdivisions, the earthwork details may be included on the Roadworks and Drainage Plan.

AP1.20 ROADWORKS AND DRAINAGE PLAN

1. The Plan of each road shall include:
 - a. Legend.
 - b. Road reserve boundaries.
 - c. Allotment numbers and boundaries, both existing and proposed (including existing and proposed easements).
 - d. Chainages, on centreline or construction line.
 - e. Bearings of the centreline or construction line. (Set out co-ordinates may also be used).
 - f. Tangent point chainages of each curve.
 - g. Radius and arc, tangent length of each curve.
 - h. Chainage and the Intersection Point of road centre lines or construction lines.
 - i. Kerb lines, kerb radii, and chainage of all tangent points of the kerb line.
 - j. Footpaths / bikeways and Pram ramp locations.
 - k. Fencing.
 - l. Access where required to be constructed.

- m. Edge of pavement, where no kerb is to be constructed.
 - n. Dimensioned road reserve, footpath and pavement widths, where these differ from the standard cross-section.
 - o. Existing and finished surface contours, highlighting cut and fill areas.
 - p. Drain line locations, diameters (including extent of easements where required).
 - q. Drainage structures and structure number.
 - r. Subsoil drain locations.
 - s. Location of existing utilities or other existing works within the site.
 - t. Location of all service clashes including levels of services and clearance distance.
 - u. Location and levels of Bench Marks and reference pegs.
 - v. North Point.
 - w. Line marking, and signing.*
 - x. Guide posts, guard rails and other traffic control devices.*
 - y. Creek protection works and the like.
 - z. Street name signs*
 - aa. Overland drainage paths.
- * May be shown on separate plan(s)

AP1.21 LONGITUDINAL SECTIONS OF ROADS

1. The longitudinal section of each road shall include:
 - a. Chainages.
 - b. Existing surface levels§. Design road centreline levels.
 - c. Cut or fill depths.
 - d. Design grades.
 - e. Chainages and levels of grade intersection points.
 - f. Chainages and levels of tangent points of vertical curves.
 - g. Chainages and levels of crest and sag locations.
 - h. Lengths and radii of vertical curves.
 - i. Sections on control lines on superelevated curves (ie. pavement edges, kerb or lane edges), curve widening and superelevation details.
 - j. Location of services where they cross the centre of the road.

AP1.22 TYPE CROSS-SECTIONS

1. A type cross-section shall be shown for each road, including:
 - a. Road reserve width.
 - b. Pavement widths including medians (as applicable).
 - c. Footpath widths.
 - d. Crossfalls of pavement and footpaths.

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- e. Pavement depth - nominal or design.
 - f. Type of kerb and channel.
 - g. Type of pavement surfacing.
 - h. Sub-soil drainage.
 - i. Table Drain details for rural roads.
 - j. Batter slopes
2. The standard cross-section may be included in the detailed cross-sections provided for each road.

AP1.23 CROSS-SECTIONS OF ROADS

1. A cross-section shall be shown at the intervals defined in this manual for each road and shall show:
 - a. Road reserve boundaries.
 - b. Pavement centre line and/or other construction line.
 - c. Natural surface profile.
 - d. Design Cross-Section.
 - e. Crossfall of pavement and footpath, pavement and footpath widths and pavement depths wherever these differ from the standard cross-section.
 - f. Chainage of cross section
 - g. Datum reduced level

AP1.24 DETAIL PLANS OF INTERSECTIONS & CUL DE SACS

1. Intersection detail plans shall include all the relevant information required for Roadworks and Drainage Plans, as listed above together with additional details such as kerb levels on all kerb returns, pavement contours, channelisation works, line marking, signing and pram ramps.

AP1.25 LONGITUDINAL SECTIONS OF STORMWATER DRAINAGE LINES

1. A longitudinal section of each drain line shall be shown, including:
 - a. Chainages
 - b. Existing surface levels.
 - c. Design finished surface and invert levels.
 - d. Drainage Structure chainages and offsets and inlet and outlet invert levels.
 - e. Distances between drainage structures.
 - f. Grade of each pipe

- h. Material and Diameter of each pipe length.
- i. Hydraulic grade line.
- j. Drainage structure type and sizes and/or reference to separate detail drawing.
- k. Crossings with any other services (location and invert level of pipe crossing).

AP1.26 SEWER CONCEPT PLAN

1. Where a development incorporates multiple stages, a sewer concept plan must be prepared by the consultant.
2. This Concept Plan must be submitted prior to proceeding with detailed design and should include the following:
 - a. Location, size, approximate depth, and alignment of gravity sewers;
 - b. Location, size and alignment of rising mains;
 - c. Location of pump stations and lift stations including justification for the use ;
 - d. Contour information at 1m intervals maximum or to suit the topography of the land for both natural surface and finished surface contours;
 - e. Contributing catchments (internal and external) showing the equivalent tenement (ET);
 - f. Justification for re-directing flows between Sewerage Districts where proposed;
 - g. Details of the influence on downstream catchments and systems;
 - h. The flow contributing to each section of main including the estimated design capacity. See Example below:

	EP 300	
PWWF		14.3 L/sec
Pipe Size		225 diameter
Max Pipe Cap		26.2 L/sec

3. Access for maintenance of the system should be considered when locating manholes etc (Refer Section D 7).
4. During the preparation of the concept plan consideration must be given to the integration of other infrastructure design, overall site earthworks and the impacts on existing upstream and downstream developments and potential developments.
5. As part of the preparation of the Concept Plan, the requirements of Section 2-Concept Design in the Sewage Pumping Code of Australia-WSA 04-2005 shall also be included.

AP1.27 SEWERAGE RETICULATION PLAN AND LONGITUDINAL SECTION

1. The sewerage reticulation plan shall include:
 - a. Legend.

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- b. All allotments and allotment numbers.
- c. Boundary of the subdivision.
- d. North Point.
- e. Location and size of existing sewers.
- f. Invert levels of existing lines.
- g. Location of other services which cross sewer lines.
- h. Location of manholes with manhole numbers (including dimensions where not shown on alignment).
- i. Identification of allotments, which are currently sewered.
- j. Finished surface contours sufficient to enable verification of property connection design.
- k. Details of permanent survey marks including AHD from which levels are to be transferred.
- l. Grading information for new sewer lines including distance between manholes, pipe grades, pipe diameter, pipe material and class of each pipe length.
- m. Manhole cover type and class.
- n. Manhole inlet types.
- o. Locations and level of sewer property connections and type.
- p. Details of pumping stations including location, inlet/outlet levels, overflow, cut-off levels, electrical switchboard layout and water supply, size of pumping plant.
- q. Diameter, material class and route of pressure main(s); indicating air valve and scour valve locations.
- r. Clear identification of any alterations/connections to existing sewers to be completed by Council at developer's cost.
- s. Finished surface contours with spot levels to compliment contours
- t. Ultimate sewer design flows including catchment plan for staged development if applicable;
- u. Gravity sewer pipe capacities;
- v. Structural design of pipes for pipes with more than 3m of cover;
- w. Thrust block calculation where required;
- x. Diagram showing all allotment controls;
- y. Flow velocities under different flow conditions;
- z. Rising main hydraulic grade line;
- aa. System resistance and pump curves showing static and friction head and duty points;
- bb. Demonstration of pipeline capacity to resist cyclical pressure effects over a 100-year lifespan of the systems;
- cc. Estimation of pump start, stop, alarm, overflow and other control levels;
- dd. Calculations supporting the provision of wet well storage;
- ee. Calculations showing that flotation forces are counteracted for all buried or partially buried structures;

- ff. Estimation of electrical loads – Mains Supply proposed; and Radio Frequency interference screening measures;
 - gg. Structural calculations where necessary for the pump well and associated works;
 - hh. Calculations supporting the hydraulic design of emergency relief structures.
 - ii. Privately owned water and sewerage infrastructure, where applicable.
 - jj. Location and dimensions of easements.
2. The longitudinal section of each sewerage line should include:
- a. Existing surface levels;
 - b. Design finished surface;
 - c. Manhole number;
 - d. Distance between manholes;
 - e. Grade of each pipe length;
 - f. Diameter, material and class of each pipe length;
 - g. Manhole diameter and cover type;
 - h. Manhole inlet types;
 - i. Invert levels of existing lines;
 - j. Crossings with any other services (including location, size, invert levels and clearance of pipe crossing).

AP1.28 WATER RETICULATION CONCEPT PLAN

1. Where development incorporates a large number of lots with multiple stages, the Consultant shall submit a Water Reticulation Concept Plan of the water reticulation showing proposed main sizes, connections to existing mains and valve positions. The Concept Plan is to be supported by a computer network analysis.
2. This concept plan shall be submitted prior to providing with detailed design and should include the following:
 - a. Layout of mains, together with the development layout;
 - b. Key to network analysis, ie. Node points, elevation, demand.
 - c. Size and type of mains, indicated graphically and distinguished by colour and/or line type.
 - d. Design parameters – number of lots, number of ET design flows.
 - e. Legend of land uses (i.e. Residential, Industrial Precincts etc.).
 - f. Supply points and pressure or Hydraulic Grade Line (HGL) as supplied by Council.
 - g. Location of pumps, pressure reducing valves and reservoir top water level (TWL) and volume where applicable.
 - h. Limit of water district serviced by the reticulation mains.
 - i. Contours for the entire development, at minimum 1m intervals.
 - j. Consideration for connection to adjoining and/or future developments as directed.

AP1.29 WATER RETICULATION PLAN

1. The water reticulation plan shall include:
 - a. Legend.
 - b. Water services for the development
 - c. All allotments and allotment numbers.
 - d. Boundary of subdivision.
 - e. North Point.
 - f. Location and size of existing mains.
 - g. Location, size, material and class of new mains.
 - h. Location of other services which cross the mains.
 - i. Details of connection to existing mains
 - j. Location of each bend.
 - k. The location of valves, hydrants, scours and caps, T's, reducers, etc.
 - l. Road crossing conduit locations, size and class.
 - m. Water service connection details (if application to Local Authority).
 - n. Pump Stations and reservoir/s (if required)
 - o. Network Analysis (if required)
 - p. Type and class of pipes for the pressure and cyclical loading regime;
 - q. Thrust block calculation where required;
 - r. Operating conditions for pressure reducing valves;
 - s. Structural calculations where necessary for valve pits and associated works

AP1.30 LANDSCAPE PLAN

1. The landscape plan shall contain the following details:

Site and Layout

- a. Proposed and existing contours at 5 metre intervals.
- b. Extent of existing vegetation including type and location
- c. Significant trees showing level at base and proposed levels, indicating which trees/vegetation is to be removed.
- d. Proposed layout of roadways including:
 - i. Kerb and channel
 - ii. Stormwater drainage pits and manholes,
 - iii. Street lighting,

- iv. Property boundaries
- v. Traffic islands, roundabouts, traffic calming devices etc.
- vi. Existing and proposed water supply, sewerage services and easements
- e. Proposed freehold lots covering water supply and sewerage infrastructure
- f. Layout and numbering of individual lots, including street names.
- g. Existing parks, reserves etc.
- h. Adjoining land uses, access corridors.
- i. Existing watercourses, watersheds, gullies, with a buffer zone to either side of creeks, where required.
- j. Revegetation areas including extent, type, technique and erosion prevention proposals.

On-Street Works

- k. Alignment and location of proposed concrete footpaths and bike paths.
- l. Grass establishment areas.
- m. Lighting proposals and street furniture, if appropriate.

Traffic Islands and Roundabouts

- n. Alignment of kerb and channel and concrete backing to roadside kerb.
- o. Soil mix type and depth.
- p. Proposed planting layout and plant schedule, including species, number, size, setout, staking.
- q. Mulch types and depth.
- r. Irrigation proposals.

Public Open Space

- s. Dimensions and landscape treatment to buffer zones.
- t. Location and dimension of all off-road bikeways and pedestrian pathways, with trees at 15 metre intervals, showing size and species.
- u. Location of boundaries to all parkland, reserves and easements, including fencing proposals and details of removable vehicle barriers.
- v. Location and type of play equipment, if applicable, including type, extent and edge treatment to safety surfacing.
- w. Proposed lighting.
- x. Mounding, showing base, crown, levels and gradients.
- y. Proposed furniture including benches, bins, BBQ's, shade structures, signage.
- z. Taps, drinking fountains, irrigation connection point.
- aa. Proposed planting and mulched garden beds.
- bb. Irrigation plan at 1:200 scale.

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2. Detailed specifications will be required to cover all proposed works including the following:
 - a. Play equipment and safety surfacing.
 - b. Plant schedule
 - c. Revegetation requirements
 - d. Grass establishment
 - e. Mulch
 - f. Hard landscaping
 - g. Furniture and lighting
 - h. Irrigation, if applicable.

AP1.31 EROSION AND SEDIMENT CONTROL STRATEGY

1. The Erosion and Sediment Control Strategy shall include:
 - a. North Point
 - b. A plan of development showing the road and allotment boundaries
 - c. Existing surface and finished surface contours at an interval close enough to define terrain.
 - d. Contours shall extend beyond the limits of the development site to fully define the limits of external catchments.
 - e. Existing drainage paths and drainage infrastructure.
 - f. Extent of clearing and trees to be removed.
 - g. Line diagram of drain lines and drainage structures.
 - h. The identification and location of all Erosion and Sediment control measures (ie catch drains, diversion drains, sediment traps, sediment basins etc.) that are proposed for the period when the site is disturbed.
 - i. Location of sensitive and restricted access areas.
 - j. Existing significant vegetation to be retained.
 - k. Revegetation works.
 - l. Calculations are to be submitted in accordance with QUDM and based on soil type(s) of the site
 - m. Measures to be employed for each facet of the construction process. As a minimum this is to include stripping/earthworks, trenching/services installation and when stormwater and roadways are completed
 - n. Consideration for construction during the wet season (typically Nov – Mar) with regard given to increased storm intensity and minimising disturbed areas and for construction during the dry season with regard given to dust suppression

AP1.32 SERVICE PROVIDERS / CONDUIT PLAN INCLUDING STREET LIGHTING

This plan shall include:

- a. Legend.
- b. Road Reserve Boundaries
- c. Allotment Numbers and Boundaries
- d. North Point
- e. Kerb and channel or edge of pavement where no kerb is to be constructed.
- f. Road Crossings Conduits Type and size
- g. Location of Pad Mount Transformers
- h. Location of Telecommunications Authority's Roadside Cabinets & Shelters and Cables
- i. Location of Street Lighting including designation of hierarchy of all roads
- j. Location of Electricity Authority's Cables and Facilities paying particular attention to connection to existing power supply.
- k. Electrical reticulation plans
- l. Gas pipes, valve, syphon points and storage facilities

AP1.33 STORMWATER CATCHMENT PLAN/DRAINAGE CALCULATIONS TABULATION

1. A catchment plan shall be submitted, for Council submission purposes only and shall not form part of construction documentation.
 - a. North point.
 - b. A plan of the development showing the road and allotment boundaries.
 - c. Existing and finished surface contours (in different line types) at an interval close enough to define the terrain and allow definition of the sub catchments.
 - d. Contours shall extend beyond the limits of the development site to fully define the limits of external catchments.
 - e. Sub catchment boundaries, labels and areas.
 - f. Line diagram of drainline, manhole, gully and outlet locations.
 - g. Labelling of stormwater structures.
 - h. Adjacent to each Stormwater Pit tabulation is to be provided illustrating the roadway approach flow, the width of approach flow, and the bypass flow.
 - i. Overland flow paths.
 - j. Proposed easements.
 - k. Stormwater calculations shall be in a spreadsheet format in accordance with the QUDM. This tabulation should include a bypass flow width value at all kerb return pits.

AP1.34 PEST PLANT MANAGEMENT

1. In accordance with the *Land Protection (Pest and Stock Route Management) Act 2002* the applicant must not remove soil or any matter containing reproductive pest plant

APPLICATION PROCEDURES

- material, and transport such matter to another location. Appropriate measures must be put in place to ensure that soil and other organic materials are not inadvertently (or otherwise) transported to other locations.
2. Prior to the issue of a Development Permit for Operational Works, the applicant must:
 - a. Clearly state if there is an excess amount of soil on the development site;
 - b. Provide appropriate documentation to show where any excess soil is to be used or placed on the site
 - c. Provide a plan which indicates where a shake down or wash down area will be placed to ensure that all vehicles entering and exiting the development site are subject to a cleansing procedure to remove soil and any other organic materials
 - d. Construct a shakedown or wash down area during the first stage of development. This is not to be in the vicinity of a creek, or a waterway or drain which leads to a creek or other water body.
 - e. Permanently contained material which is removed on the site, and
 - f. Maintain the site to the point of sale so that declared weeds are eradicated or controlled
 3. Soil or other matter contaminated with weed seed or organic material should not be used in landscaping, eg buffer mounds
 4. Reference should be made to council pest management unit to obtain advice
 5. These conditions relate to all Class 1, 2 and 3 plants identified in the *Land Protection (Pest and Stock Route Management) Regulation 2003* ([see web site](#)). These plants may also be identified by viewing them on the relevant State Government department website for "Pest" Fact Sheets.

AP1.35 MISCELLANEOUS DETAILS

1. Detail are required for the following either on separate drawings or appropriate service plan:
 - a. Stormwater inlet and outlet structures, other than standard head walls.
 - b. Manhole details where pipe alignments are critical for clearances or flow considerations.
 - c. Water Quality permanent works structures (SQIDs, sediment basins, trash racks etc.).
 - d. Details of Erosion Control and Stormwater Management Structures.
 - e. Surcharge structures.
 - f. Overland drainage paths.
 - g. Sewer and water pump stations showing all relevant levels and dimensions for pumps, etc. (where not provided elsewhere).
 - h. Footbridges.
 - i. Reservoirs
 - j. Water source treatment/disinfection works

- k. Entry structures
- l. Retaining walls
- m. Buildings
- n. Any details or variations from standard drawings.

RECORDS

AP1.36 DESIGN RECORDS

1. The Designer shall provide Council with appropriate design records in a format such that design staff with no prior knowledge of the particular design can understand them readily.
2. A design file shall be maintained by the Developer or the Developer's Designer containing records of calculations, approvals and decisions, geotechnical data and other design data which could be relevant in reviewing aspects of the design or planning future maintenance responsibilities.
3. The Developer is to provide a detailed submission for all structures being built as part of the development, for separate building approval and inspection. Submission is to include detailed design plans and a Structural Certificate from a RPEQ.

APPENDIX A

STATEMENT OF COMPLIANCE OPERATIONAL WORKS DESIGN

FNQROC DEVELOPMENT MANUAL

Council
(INSERT COUNCIL NAME)

**STATEMENT OF COMPLIANCE
OPERATIONAL WORKS DESIGN**

This form duly completed and signed by an authorised agent of the Designer shall be submitted with the Operational Works Application for Council Approval.

Name of Development

Location of Development

Applicant

Designer

It is hereby certified that the Calculations, Drawings, Specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the FNQROC Development Manual and that the completed works comply with the requirements therein, **except** as noted below.

Compliance with the requirements of the Operational Works Design Guidelines	Non-Compliance refer to non-compliance report / drawing number
Plan Presentation	
Geotechnical requirements	
Geometric Road Design	
Pavements	
Structures / Bridges	
Subsurface Drainage	
Stormwater Drainage	
Site Re-grading	
Erosion Control and Stormwater Management	
Pest Plant Management	
Cycleway / Pathways	

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Landscaping	
Water Source and Disinfection/Treatment Infrastructure (if applicable)	
Water Reticulation, Pump Stations and water storages	
Sewer Reticulation and Pump Stations	
Electrical Reticulation and Street Lighting	
Public Transport	
Associated Documentation/ Specification	
Priced Schedule of Quantities	
Referral Agency Conditions	
Supporting Information (AP1.08)	
Other	

Conscientiously believing the above statements to be true and correct, signed on behalf of:

Designer **RPEQ No**

Name in Full

Signature **Date**.....