SUBDIVISION RESOURCE CONSENTS
LETTER OF ENGINEERING APPROVAL FOR CONSENT–RXXXX

Note: the following is a generic document covering current Council engineering requirements for subdivision approval. Council is currently updating its general engineering standards and Engineering Code of Practice and these should be referred to when available.

We have received your letter dated _____ and approval is given subject to the following conditions and any engineering conditions set down in the resource consent:

1.0 GENERAL

The conditions below, unless specifically referencing part of the works, are standard conditions of approval that may already be provided in the plans and specifications. If not then it is a requirement of this approval that unless already accommodated these will be required to be complied with where applicable, unless agreed otherwise.

If it is intended that assets on private property are to be vested to Council a written request for approval shall be made when the resource consent application is applied for. Appropriate easements shall be provided for vested assets in private property. Preferably plans for approval shall show the demarcation point between private and public assets. This information must be shown on as-built information provided – see the sewer, stormwater, water and as-built sections.

2.0 EARTHWORKS

2.1 Confirm if earth fill has been placed on the site or not. Any earthfill works are required to comply with NZS 4431:1989 Code of Practice for Earth Fill for Residential Development. A Statement of Suitability of Earth Fill is required in the format given in Appendix A of NZS 4431 in accordance with the respective technical responsibilities and other requirements pertaining to this in NZS 4431.

2.2 The Statement of Suitability shall accompany the Producer Statement for the subdivision. Please note that the Statement of Suitability will not be acceptable to the Council if it is modified from the format provided in Appendix A by the addition of a disclaimer or limitation clause.

3.0 ROAD AND ACCESSWAY CONSTRUCTION

3.1 Sub grade condition to be to a minimum CBR of 7 for roads and 10 for private accessways.

3.2 Any on site checks of metal courses undertaken by Council staff of subbase and/or basecourse surfaces associated with any routine monitoring of the construction works are expected to achieve a minimum Clegg Impact Value (CIV) of 35 in trafficable areas and 20 in pedestrian areas.

3.3 Notwithstanding the above, the Consultant shall deflection test all completed road and accessway **(delete if not required)** carriageways by Benkelman Beam Method, or another approved method as agreed. Consistent deflections results less than 1.5mm are to be achieved and not exceeding 2mm. The Consultant shall supply a copy of all test results in conjunction with the other As Built information requested.

3.4 Minimum depth of asphaltic concrete on roads and streets is 30mm, and private lanes and ROW's 25mm.

3.5 Chip seal of accessways shall be a two coat seal with grade 4and 6 chip.

3.6 Any cobblestone or similar interlocking blocks formations in trafficable areas are to be laid to a herringbone pattern, with a 150 mm minimum deep AP65 subbase. All block paving shall conform to NZS 3116:1998, Interlocking Concrete Block Paving.

3.7 Cobblestone areas shall be restrained with the carriageway with suitable concrete edge restraints.

3.8 Any road marking and associated signage shall be shown on the plans for approval. The assessment for road marking and signage shall be in accordance with Transit NZ's Manual of Traffic Signs and Markings (MOTSAM). The application of any road markings shall be undertaken by Councils road marking contractor, Fulton Hogan Ltd in accordance with the specific performance standards required by Council. This will be at Councils cost through its Road Marking Contract, but arranged by the Developer or its nominated agent. **(delete if not required)**

3.9 All concrete pipes under trafficable areas shall be to Z Class RCRRJ standard.

4.0 FOOTPATHS, DRIVEWAYS AND BERMS

4.1 Footpath and vehicle crossing finished basecourse surfaces shall be treated with proprietary weed killer granules at the manufacturers recommended rate prior to sealing.

4.2 Footpath and vehicle crossings in asphalt shall be constructed in accordance with CCS details SD 606,607 & 611. Commercial crossings shall have a minimum depth of asphalt of 40mm. Footpath and vehicle crossings in concrete shall be constructed in accordance with CCS details SD 606,607 & 611. Residential crossings shall have a minimum depth of concrete of 150mm. When low profile kerb and channel is used cut downs are not permitted unless agreed with Council.

4.3 Formed and sealed vehicle entranceways (between the sealed edge of carriageway and the property boundary) are to be provided to each individual lot or ROW to a minimum formed width of 3.5 metres in residential zones and 5.0 metres in business zones. For individual lots arrangements can be made with Council to bond the value of these works to enable an s224 Certificate to be obtained if positioning information cannot be established in advance of this. If a Council roading upgrade project is to occur check with Council to see if entrance ways can be formed as part of the project.

4.4 Any defective areas of berm are to be made good including poor growth, excessive weed growth or damage. If conditions are not appropriate for good growth within the contract or works defects liability period, then arrangements shall be made with the Council to maintain the berms until an acceptable standard is reached.

4.5 Bank battering on berm and property areas shall be formed to a standard that allows easy hand mowing.

5.0 SANITARY SEWER

5.1 On private property where there is a minimum of a 150 mm diameter sewer pipe and more than 5 lots accessing that line Council may accept vesting of that line up to the last manhole. This is providing access suitable to allow Council servicing of the pipe is provided.

5.2 Easement in favour of Selwyn District Council required for sewer main over LotsXX.

5.3 Specify gradients on sewer mains.

5.4 Please confirm that building platform (located anywhere on the Lot) for each Lot can be serviced via gravity by the Council's sewer.

5.5 Consent required over Council main that services Lots XX.

5.6 Common Private Drain Agreement required for Lots XX.

5.7 All testing shall be verified on site by the consultant and test results forwarded to the Council on completion.

5.8 The vent box for manholes shall be to the Selwyn District Council drawing SW 7.0 Vent Box (copy attached).

5.9 Sewer manhole lids shall be circular ductile cast iron, hinged, with a composite ring and 606 mm diameter opening. The design traffic loading shall be HN-HO-72.

5.10 All sewer reticulation services shall be inspected via CCTV. All data and operator analysis shall be collated on an indexed DVD and a copy supplied to Selwyn District Council for approval. The CCTV work is to be carried out at the completion of works (Section 224) and at the end of defects liability period if requested and shall be provided in a format consistent with Councils CCTV Hansen module.

5.11 Building over sewer connections, junctions or manholes will not be permitted. It is possible to relocate sewer mains through consultation with Council at the applicant's expense. Council allows building over straight lengths of sewer lines subject to the following criteria being satisfied:

The owner/occupier shall, at their expense:

(a) Prior to any construction being undertaken:

(i) Inspect the line through a video camera and submit the tape with a site plan to Council. Any repairs as assessed by Council at this stage are to be the responsibility of Council.

(ii) Provide an engineer's certificate stating that the building will not impart any loads to the line.

(b) After consent from Council for construction is granted, and construction has been undertaken:

(i) Re-inspect the line by video camera and submit the tape to Council. Any damage as assessed by Council shall be remedied at the owner/occupiers expense to the satisfaction of Council.

(c) Be aware that Council requires access to all manholes 24 hours a day.

This condition is particularly for sites that are empty with sewer lines through the building platform.

The word 'responsibility' appears under Council repairs, as repair may not always be undertaken (e.g. a wide joint that is not leaking), but will be acknowledged to be fixed by Council should a problem arise. Applicants must repair damage through construction however.

5.12 Private sewer lines serving industrial lots or carrying trade waste as defined in Council's Trade Waste Bylaw shall be provided with an inspection chamber adjacent to the property boundary. Intermediate inspection chambers shall be provided for multi unit sites likely to carry trade waste as approved by Council.

5.13 Sewer pump station design details shall be as detailed on SDC drawing 2363/000/SW Sheets 1-3. An operations manual is required for the sewer pump station which is to be installed near Lot ___.

5.14 The site telemetry requirements for the new sewer pump station are detailed in the attachment Appendix 3.

6.0 STORMWATER

6.1 On private property within urban areas where there is a minimum of a 225 mm diameter stormwater pipe as part of an approved stormwater system and more than 5 lots serviced by that system Council may at the discretion of the Asset Manager accept vesting of the system. This is providing access suitable to allow Council servicing of the system is provided.

6.2 Easement over private property in favour of Selwyn District Council required for access to stormwater system. (delete if not required).

6.3 Stormwater disposal is subject to any requirements as may pertain to Environment Canterbury's Natural Resources Regional Plan (NRRP). As a prerequisite to obtaining s224 approval from Council, a Certificate of Compliance or specific consent is required to be issued from Ecan for the subdivision for the management and disposal of stormwater.

If the applicant commences physical work without prior notification to Environment Canterbury, or prior to obtaining a resource consent for stormwater disposal, then this will be done at the applicant's own risk.

6.4 Where a specific discharge consent is issued by Canterbury Regional Council (Environment Canterbury), any consent or associate conditions imposed by them will be subject to Council acceptance where these obligations will be transferred to Selwyn District Council.

The consent holder will hold and operate the stormwater consent for a minimum of two years after the S224 Completion Certificate has been issued. Council must be satisfied at the end of this period that all aspects of the system, including but not limited to compliance with consent conditions, operations and maintenance costs are acceptable to Council.

6.5 To obtain s224 approval the applicant shall provide to Environment Canterbury at least 3 weeks prior to applying for a s224 certificate a producer statement (construction), for all consent conditions relating to the design of the stormwater system and shall apply for an Environment Canterbury stormwater compliance report where a resource consent for stormwater disposal has been issued.

Council will only issue a s224 when a producer statement and Environment Canterbury compliance report is acceptable to Council.

6.6 The whole of the stormwater reticulation shall be inspected and recorded by CCTV. Inspection records shall comply with NZWWA 'New Zealand Pipe Inspection Manual'. All data and operator analysis shall be collated on an indexed DVD and a copy supplied to Selwyn District Council for approval. The CCTV work is to be carried out at the completion of works (Section 224) and at the end of defects liability period if requested and shall be provided in a format consistent with Councils CCTV Hansen module.

6.7 A Stormwater Operation and Maintenance Manual as a hard copy and in digital format is required to be submitted and approved prior to s224 release for the specific management of the system that would include but not be limited to;

- As built documents/images of system for baseline records. This would include the extent of the stormwater catchments, surveyed long-sections and x-sections of stormwater management devices e.g. basins, wetlands and swales and, where available, any baseline data i.e. heavy metal level in receiving environment.
- Maintenance procedures and how compliance with the consent conditions will be achieve and recorded. This will also cover stormwater system maintenance during the construction and defects liability period(s). **Note:** the stormwater system maintenance includes the roadside sumps, pipes and channels. Council's roading contractor, as part of its routine roading maintenance, will clean the roadside sumps and channels after the issue of the s224. This will be at intervals no less than six monthly. If additional cleaning is required this can be arranged directly with Council's roading contractor, Sicon Ltd, at the applicant's cost. Council will however not be responsible due to non-compliance with the consent or associated conditions imposed by Environment Canterbury during the two year stormwater defects liability period if such routine road cleaning maintenance is undertaken.
- What actions will be undertaken when non-compliance is detected and recorded.
- Where all cleanings from sumps are proposed to be disposed of - in accordance with Regional and local landfill requirements.
- Summary of costs to maintain the system including details of the number of inspections and cleaning of sumps/disposal of sump material.
- What actions will be undertaken before handover to SDC is proposed ie notification procedure at least two months prior requesting handover.
- In addition, Contact details for maintenance personnel engaged by the Developer over the two year defects liability period shall be provided.

6.8 Unless already provided show longitudinal sections for pipes 150mm diameter and above. Show crossing positions of other services.

6.9 The side slope of any grassed swale or other stormwater management device shall be no steeper than 1:6 within the road reserve and 1:5 (grassed) or 1:3 (planted) within a park or utility reserve. Swale base shall have a minimum width of 0.8m and maximum width of 2m.

6.10 For pipe networks at manholes and other nodes, water levels computed during the 10 year design flow must not exceed finished ground level while allowing existing and future Connections to function satisfactorily. Open conveyance systems shall be designed to the same specification.

6.10.1 Where there is no secondary flow path available the primary system shall be designed to convey a 2% (50 year) rainfall event.

6.11 Where the collection and disposal of roof/surface water is to ground, the suitability of the natural ground to receive and dispose of the water without causing damage or nuisance to neighbouring property, shall be determined by a suitably qualified person/engineer.

6.12 Where the collection and discharge of roof/surface water is to a watercourse or drain, the discharge shall be managed in terms of both water quality and quantity. The system shall be designed by a suitably qualified person/engineer. The applicant should consult with Environment Canterbury regarding the discharge.

7.0 <u>WATER</u>

7.1 On private property where there is a minimum of a 50 mm diameter water pipe and more than 5 lots accessing that line Council may accept vesting of that line up to the point of supply i.e. the property side of the water toby/valve. This is providing access suitable to allow Council servicing of the pipe is provided

7.2 Connection into Council's mains to be carried out under supervision of Selwyn District Council's Maintenance Contractor (SICON Limited).

7.3 Easement in favour of Selwyn District Council required for water main over LotsXX.

7.4 Location of hydrants shall comply with NZS 4404 section 501.9.2.2. Blue RRPM's (cats eyes) shall be installed offset from the road centreline adjacent to all hydrants. Hydrant Marker posts are to be installed to comply with Section G3.4 of the NZ Fire Service Code of Practice. Hydrant marker posts are not required in urban areas, but are required in the rural/residential area where there is no kerbing or in rural areas. The type of hydrant marker required is HYDRANT MARKER POST DETAILED ON DRWG NO. 1902/000/A4.

7.5 The services trenching needs to comply or make allowance such that;

- Services shall not be located under footpath(s) either individually or within combined service trenches including that for power, telecom etc. This does not include those locations were services have to cross footpaths
- Sufficient room shall be provided between the lot boundary line and edge of footpath for the installation of a SDC water meter box as part of the water reticulation installation required for each lot.

7.6 Flowmeters are to be supplied and installed when requested for the recording of water velocity and flow at suitable locations in the water network. The flowmeters are to be fitted with a datalogger provided by the manufacturer and be capable of being read manually. The loggers are to be installed in a cabinet on two posts.

7.7 Blanks are to be installed in all meter manifolds within Toby boxes after testing of the laterals. The blanks are to be obtained from ACUFLOW Ltd. and inserted by your contractor with the installation of the water meters. The contact at ACUFLOW is Craig Bensemen and his number is 06 368 4996 or Email is sales@acuflo.co.nz.

7.8 All testing shall be verified on site by the consultant and test results forwarded to the Council on completion.

7.9 Where required under Council Policy W208, water meters shall be installed to Council specifications. Meters shall be Kent MS-M meters or approved later versions. Where water meters are not reading zero after installation provide the initial water meter reading at time of s224

7.10 As per Council Policy W211, reticulation shall be installed to Fire Code of Practice (SNZ PAS 4509 and subsequent amendments) specifications. This includes amongst other matters that spacings between hydrants shall be no more than 135 lineal meters.

7.11 Where water is needed to be temporarily shut off to enable the connection of a subdivision water reticulation to Council reticulation, then SICON must be given 48 hours notice to attend. SICON must be in attendance for every water outage with their costs to be covered by the developer. SICON must be in attendance both at the start of the outage and also for the reconnection of the Council supply.

7.12 Where new water reticulation is to be commissioned and adopted by Council, chlorination shall be undertaken to achieve a minimum of 30ppm chlorine dose and left to stand for at least 24hrs, before being fully flushed.
A record sheet will be completed, detailing the chlorine dose used, the FAC at the start of the 24hr period and prior to flushing.

7.13 That all High Risk properties have testable RPZ type backflow prevention devices installed at the point of supply. These devices are manufactured in compliance with AS/NZS 2845 and installed with frost proof protection in compliance with AS/NZS 3500.1 at the point of supply, likely to be the property boundary. High Risk is to be interpreted as those properties with activities that have the potential to cause death.

That this work will be undertaken by the Council, or the Council's approved agent, on behalf of, and at the cost of, the owner of the property to which the backflow prevention device is installed.

That the Council, or the Council's approved agent, undertake annual backflow testing on point of supply backflow prevention devices on behalf of, and at the cost of, the owner of the property to which the backflow prevention device is installed and keep appropriate records.

8.0 PRODUCER STATEMENT

8.1 A Producer statement from the Consultant specifying that all work has been carried out to the approved plans and specifications is required from _____ within 10 days of Practical Completion of Works.

9.0 NOTICES

Notices shall be advised in writing or email within 24 hours of notice being required to the relevant Council Officer by the Consultant. Failure to provide this notification for Items 9.1 and 9.2 below may result in Council not taking over the asset, or the imposition of extended defects liability periods for the contract works.

9.1 The Roading Contracts Supervisor, telephone (03) 347 2860 or 0274 323 388 is to be informed of commencement of work and timing of the following stages to allow the opportunity to inspect the stage of work if considered necessary:

- Before any subbase placement to allow the inspection of the subgrade.
- Before any carriageway sealing to allow inspection of the basecourse surface.
- Before any back filling around drainage facilities such as sumps, stormwater pipes and associated connections to new and existing drainage facilities.
- After chip sealing of the accessway (Inspection may be undertaken for s224)

Note: The above requirements for notices may be relaxed if the work achieves a consistent standard.

9.2 The Contracts Supervisor Utilities, telephone (03) 347-2873, 0274 479 252 to be informed of the following to allow the opportunity to inspect the stages of works within:

- 24 hours of sewer mains and laterals being installed
- 24 hours of water mains being installed

9.3 For major works the Consultant shall prior to commencement of construction supply a copy of the Contractors Construction programme, and during the course of the work any significant updates to the programme that result.

10.0 DEFECTS LIABILITY PERIODS

10.1 The Consultant shall confirm the period and start and finish dates of the defects liability period(s) (as defined in NZS3910:2003 - Conditions of Contract for Building and Civil Engineering Construction), for the contract works as it may relate to any of the following works at the time of supplying the required as built Information:

- Roading
- Water
- Sewerage
- Stormwater (2 years as per Section 6)
- Lighting
- Landscaping (includes planting and irrigation)

10.2 It is noted that the minimum acceptable defects liability period shall be 12 months for all contract works.

10.3 A joint inspection between the Consultant and Council Staff is required within one month of the expiration of any defects liability period, unless agreed otherwise, to determine the acceptability of the works to Council and to ensure defective works previously identified by Council staff have been satisfactorily repaired.

11.0 AS BUILTS

11.1 As built information shall be supplied by the Consultant shown where applicable on the updated A1 construction plan sheets that includes water, sewerage, stormwater utilities and roading, footpath, landscape, water race and irrigation details.

11.2 The As Built Information including electronic final drawings as per Selwyn District Council requirements (Appendix 2 copy attached) are to be forwarded within 10 working days of Practical Completion of Works. Where any issues arise regarding uploading electronic as builts to Council's GIS (Map info professional 7.5) and Pipe Asset Management Systems (HANSEN) these shall be rectified at the cost to the submitter. ie. incompatibility of formats. Actual costs involved in provision and transfer of this data to Councils systems shall be borne by the consent holder.

11.3 Electronic As Builts shall be provided to Council in the NZ Transverse Mercator Projection 2000 coordinate system.

11.4 All electronic and paper asbuilts must be verified as accurate via review by Council staff and acceptable for Council databases. No S224 will be issued until the work is completed.

11.5 Statement of Suitability of Earth Fill where required, road carriageway and water system test results, information on works defects liability periods and any other requirements as stipulated previously shall also be provided at this time unless already done so.

11.6 An electronic (xls) schedule of all roading, streetlighting, landscaping, water, sewerage and stormwater installed and being vested to Council shall be provided. Plans shall note the point of supply for water and point of discharge for sewer or differentiate clearly Council and private services. Components detailing areas, metres, pressure, class, diameter and manufacturer is required within 30 days of practical completion. Also complete a schedule of material in the format shown on the attached sheet (Appendix 1) and send with as builts.

11.7 Water meter readings that are not reading zero at time of s224 application shall be read and provided to Council along with the water meter numbers.

12.0 STREETLIGHTING

12.1 A separate lighting plan shall be provided for approval of the layout of all lighting in conjunction with the electrical power reticulation of the subdivision. This shall include pole positions, street lighting cable reticulation, and lighting level contours, fitting descriptions etc.

12.2 Lighting shall be in compliance with AS/NZS 1158 Category P3 in urban areas and to P4 in rural residential areas in the first instance. Higher Standards maybe need to be applied based on the function of the road in the roading network.

12.3 Lighting for the new internal subdivision road shall be in compliance with AS/NZS 1158 Category P____ and the lighting for the _____ of _____ Road frontage from Lot ____to Lot ____ shall be in general compliance with Category P___. Council will accept lights mounted on the existing overhead poles along _____. (amend delete as required and note if new poles are required or not.) Walkway lighting shall be to P4 Category and streetlighting poles are to be used unless bollards are approved by the Asset Manager.

12.4 New streetlighting poles shall be positioned at least 1.0 metres clear from a vehicle entrance or kerb cut down and either preferably be in line with a common boundary line or at least 6.0 metres from the boundary if this is not possible.

12.5 New streetlighting poles shall be positioned in grass berm at least 0.7 metres from the back face of kerbing or back of footpath where these exist or from the property boundary or at least 2.0 metres from the edge of seal unless approved otherwise. Streetlighting poles placed near the property boundary is preferable rather than in the middle of a berm to avoid conflict with other services.

12.6 New streetlighting poles shall be positioned at least 6.0 metres clear of any planted trees within the road reserve that will grow over 3 metres in height unless approved otherwise.

12.7 Approved and qualified lighting designers shall undertake lighting designs using approved fittings and lamps that are appropriate to be used in the Council's lighting network.

12.8 The lighting design shall be submitted to Connetics Ltd, Council's Street Light Maintenance Contractor, for checking and their approval prior to construction. This shall include the necessary certification documentation such as a Producer Statement. Connetics have a contractual responsibility with Council to ensure any new lighting assets will comply with Council standards. A copy of the design and relevant documentation shall also be provided to Council.

12.9 Prior to accepting any newly commissioned lighting into the Councils network, the installation shall be checked by Connetics. Any remedial work or improvements required to comply with the approved design shall be carried out as identified. This includes any problems, failures or defects that may arise during the stipulated defects liability period for the subdivision, or the guarantee period for individual fittings or fixtures, whichever is the greater.

12.10 The costs associated with compliance and inspections to meet Councils standards undertaken by Connetics shall be by billed directly by Connetics to the Developer or its nominated agent.

13.0 LANDSCAPING AND IRRIGATION

13.1 A separate landscaping plan shall be provided for approval showing the type, extent and location of plants to be used. This shall include details of any substantive decorative or other structures to be used as part of the landscaping concept. An electronic asbuilt is to be provided.

13.2 Irrigation systems shall be designed and installed to Council's standards to service the landscaping provided unless agreed with Council that irrigation is not required.

13.3 The landscape designer shall ensure that landscape components are designed to avoid interfering with the roading, water, sewerage, stormwater, irrigation, lighting and any other services (allowing for future growth of the landscape components). The design shall ensure

that adequate access to services is provided so that maintenance or renewal can be carried out in the future.

13.4 Trees that will grow over 3.0 metres shall be positioned at least 6.0 metres clear of streetlighting poles unless approved otherwise.

14.0 COUNCIL CONTRIBUTION TO WORKS

14.1 Where there is an agreement in place for Council to make a financial contribution to a part of the physical works then these shall be clearly identifiable and separated in the contract tender. After the contract is tendered and before works commence, Council's calculated share of these works shall be submitted to Council for prior approval along with supporting details such as tendered rates and prices.

14.2 When a claim is submitted to Council for its contribution to a part of the works then these shall be clearly identifiable and separated on any pricing schedule.

14.3 If the scope of the work that was originally agreed, that Council may be contributing to, needs to be changed, then Council must be advised and its approval sought for any changes including the cost variations that may arise.

14.4 Subdivision roading development contributions must be received prior to 28 February in order for the related work to be considered for inclusion in the next financial year's Annual Budget. Council's Long Term Council Community Plan covers a 10 year period which is the period when new "major works" associated with the development contribution is expected to be constructed by. Generally Council will where possible accumulate contributions from adjoining subdivisions to ensure that larger more cost effective work contracts are used and this will affect the timing of any future proposed works.

15.0 PRIVATE ROAD/RIGHT OF WAY NAMING AND PROPERTY NUMBERING

15.1 A private road/right of way that serves a minimum of 5 (five) properties can be named if requested. The applicant shall supply a minimum of 3 (three) names listed in preference for Council consideration. Council will consider those names that are deemed appropriate and approve a name that does not already exist or is not similar to any other name in Selwyn district. Please note that for Rolleston, proposed right of way names must comply with the street naming criteria of literary figures or artists.

15.2 All new property numbers identifying new dwelling lots as a result of subdivision adjoining legal roads and/or private roads/rights of way will be issued property numbers by Council in accordance with Council Policy. The applicant shall supply Council with a finalised lot Deposited Plan to enable numbers to be generated for issue and adoption.

16.0 WATER RACES

16.1 Before diverting a Council water race a relocation application form must be applied for and approved prior to any work being undertaken on the water race (see contact persons section 17.3).

16.2 Access crossings across water races shall have a minimum diameter 225 mm and shall have precast concrete headwalls with RCRRJZ piping.

16.3 Note pipe diameters in water races greater than 300 mm may require specific approval as the operation of the water race could be affected.

17.0 OTHER

17.1 Sanitary drainage and stormwater work not to be vested in Council as public drains and is within a private right of way is to comply with the New Zealand Building Code. Such work is to be carried out by a registered drainlayer. Easements are to be provided for stormwater and sanitary drainage as required.

17.2 All plastic pipes and fittings to comply with AS/NZS standards and that only "licensed marked products" are to be used. The consultant shall confirm to SDC that on completion the above has been complied with.

17.3 Contact the following Council officers/contractors directly relating to the following individual areas of engineering approval or inspections as necessary.

• Earthworks	Contracts Supervisor Roading
• Roading/Accessway Construction	Contracts Supervisor Roading
• Footpath and Berms	Contracts Supervisor Roading
• Road marking	Fulton Hogan Ltd or Asset Engineer Roading
• Sanitary Sewer	Contracts Supervisor Sewer
• Stormwater	Stormwater Engineer
• Water	Utilities Engineer/Contracts Supervisor
• Water Races	Water Race Supervisor
• Telemetry	Telemetry Supervisor
• Streetlighting	Connetics Ltd/Asset Engineer Roading
• Landscaping	Asset Engineer Reserves/ Landscape Architect,
• Irrigation	Asset Engineer Reserves/Water Engineer
• Street Naming and Numbering	Transport Liaison Officer
• As Builts	CAD Officer/Design Engineer
• S224 Requests	Planning Administrator

APPENDIX I

AS-BUILT SCHEDULE OF COMPONENTS

	As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)					
	Subdivision at ……..					
	Consent Approval Number R……..					
Water						
Component	Size(mm)	Pipe length	No. of Items	Pressure	Class	Manufacturer
Pipe						
Pipe						
Pipe						
Fire Hydrants						
Sluice Valve						
Un-Equal Tee						
Gate Valves						
Water Meters						

As-Built Schedule of Components
(Consultant should amend as required to suit subdivision requirements)

Subdivision at ……..

Consent Approval Number R……..

Wastewater/Sewer

Component	Size(mm)	Pipe length	No. of Items	Pressure	Class	Manufacturer
Pipe						
Pipe						
Pipe						
Junction						
Junction Hydrants						
Manhole						
Inspection chamber						
Valve						
Pump						

	As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)					
	Subdivision at ……..					
	Consent Approval Number R……..					
Stormwater (excludes other items listed under roading and s/w basins under reserves)						
Component	Size(mm)	Pipe length	No. of Items	Pressure	Class	Manufacturer
Pipe						
Pipe						
Junction						
Junction						
Manhole						
Sump						
Silt trap						
Swales						
Soak holes						
Humeceptor etc						

	As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)				
	Subdivision at ……..				
	Consent Approval Number R……..				
Roading					
Component	Grade(mm)or Type	Area (cross section sq m.) or length (m)	No.of Items	Class	Manufacturer/supplier
Chip seal carriageway					
Asphalt carriageway					
Footpath					
Kerb and channel					
Swales					
Sumps					
Culverts					
Bridges					

	As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)				
	Subdivision at ……..				
	Consent Approval Number R……..				
Street Lighting					
Component	Type	Model	No.of Items or metres	Class	Manufacturer
Poles					
Outreach arm					
Luminaire					
Lamp					
Mounting height (m)					

As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)				
Subdivision at ……..				
Consent Approval Number R……..				
Reserves/landscaping				
Component	Type	No.of Items	Area	Manufacturer/supplier
Grassed area				
Furniture				
Paths				
Structure - pergolas, fences				
Lights				
Lighting Poles				
Plants in plant beds				
Plants in plant beds				
Plants in plant beds				
Plants in plant beds				
Shrubs				
Shrubs				
Trees				
Trees				

	As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)					
	Subdivision at ……..					
	Consent Approval Number R……..					
Reserves irrigation						
Component	Size(mm)	Pipe length	No.of Items	Pressure	Class	Manufacturer
Pipe						
Sprinklers						
Pop ups						
Drippers						
Control valves						

As-Built Schedule of Components (Consultant should amend as required to suit subdivision requirements)				
Subdivision at ……..				
Consent Approval Number R……..				
Water race				
Component	Size - base width, depth or diameter (mm)	Pipe length	No.of Items	Material
Channel				
Pipes				
Headwalls				
Vehicle crossing pipe				
Soakholes				
Ponds – size, capacity				
Gates – size, capacity				
Weirs				
Divides/chambers				
Manholes				

APPENDIX 2
SELWYN DISTRICT COUNCIL

As-Builts

CONTENTS

1 REFERENCED DOCUMENTS

- NZS 4431:1989 *Code of practice for earthfill for residential purposes*

2 INTRODUCTION

All subdivisions require sufficient and accurate records of built assets.

For subdivisions of 2 to 3 lots, plans shall be on A4 paper, and to scale.

For subdivisions of 4 or more lots, an original must be supplied on A1 Bond paper or appropriate size to see all assets. As-builts shall also be given in a completed File Format (PDF) and AutoCAD DWG/DXF format on cd\dvd or emailed to Council's AutoCAD Officer.

3 AS-BUILT ACCURACY

Provide all as-builts in the X,Y plane to ±100mm. Provide levels as detailed to 2 decimal places e.g. 12.54. All levels for gravity network are to be ±5mm.

For As-Builts that are to be submitted digitally (anything over 4 lots) the co-ordinate system must be in terms of New Zealand Transverse Mercator 2000.

The origin of datum shall be to Mean sea level, Lyttelton datum.

The measured distances of all water/sewer/stormwater plant (manhole valves, fire hydrants) shall be taken from the centre of the plant or lid.

All pipe sizes are to be shown (OD) outside width, unless unique pipes are used for special purpose.

4 AS-BUILT RECORDS

Provide as builts plans, in the same form (e,g,scale,size) as the accepted engineering or landscaping plans and to at least the same level of detail. They must show all built assets to be taken over by the Council.

Where providing paper copies provide: north point, title block and a legend with a key to describe the assets. The longitudinal sections of sewer/stormwater shall show heights to inverts and top levels, grades and distances etc. The colour of yellow shall not be used to show new assets for it is hard to see. All symbols must be of reasonable size so as to be easily recognizable or labelled.

All plans digital and hardcopy must be clearly marked AS-BUILTS and signed and dated. All plans shall include a title block with project name, designer/contractor/, scale or scales being used and amendment box.

All new assets that tie into existing services must have their tie in clearly shown and appropriately labelled. All existing assets that are to be decommissioned must be marked and labelled DECOMMISIONED and dated. The decommissioned asset must be noted if asset is still in the ground (e.g. capped off) or has been removed from the ground.

Typical abbreviations can be used to label common assets, such as WM = water meter
SV = Sluice Valve. A legend or key shall be provided to specify each abbreviation use in a drawing.

5 AS-BUILT DIGITAL LAYERS

All AutoCAD dwg/dwf plans shall use the following layer structure:

1. Water:

WTRMAIN	-	water pipelines
WTRLAT	-	water laterals
WTRTXT	-	text pipe details, size, type,dimensions,offsets, etc
WTRHYD	-	fire hydrants
WTRVALVE	-	water valves
WTRMETER	-	water meters
WTRWELL	-	water wells
WTRDIAG	-	water diagrams, schematic details, cross sections etc.

2. Wastewater/Sewer:

SWRMH	-	sewer manholes
SWRMAIN	-	sewer main pipeline
SWRLAT	-	sewer laterals
SWRPUMP	-	sewer rising main and pump station
SWRTXT		text pipe details, size, type, gradient, dimensions, offsets, levels etc
SWRDIAG	-	sewer diagrams, schematic details, cross sections etc.
SWRLEVELS	-	sewer Top and Invert levels, text only

3. Stormwater:

STWMH	-	stormwater manholes
STINLET	-	stormwater inlet (sumps, intakes)
STMISC	-	stormwater misc (soak holes, basins, oiltraps etc)
STWMAIN	-	stormwater main pipes
STWCHANNEL	-	stormwater open drain,channel and/or swale
STWLAT	-	stormwater laterals
STWTXT	-	text pipe details, size, type, gradient, details, etc
STWDIAG	-	diagrams, schematic details, cross sections etc.
STWLEVELS	-	stormwater Top and Invert levels, text only

4. Other:

PARCELS	-	land boundaries
RDNAME	-	road names
RDEDGE	-	new kerb and channel, edge of seal
FOOTPATH	-	footpath, tracks, pathways
IRRIG	-	Water irrigation, pipes
IRRIGPNT	-	Water irrigation points, pop-ups, sprinklers, drippers etc
IRRIGTXT	-	text pipe details, size, type, control valves, details, etc

Assets not listed above shall have a clear and precise layer name given in the digital file.

6 GEOTECHNICAL REQUIREMENTS

Provide the geotechnical completion report and tabulated results, where required.

The geotechnical completion report will be used by the Council to update the Information Register, or property files for LIM or PIM data. To aid in transferring this information into the LIM system, provide the data in a tabulated form, related to lot numbers where possible. Consent Notices under Section 221 of the Resource management Act (1991) may be required for such sites as a condition of subdivision consent such as:

- the need for an appropriately qualified specialist to carry out further geotechnical investigation as part of the building consent application.
- the specific requirements or recommendations that need to be considered.

If NZS 4431 was applicable to the development, prepare an as-built in accordance with that standard.

If NZS 4431 was not applicable, prepare an as-built plan as follows. it must show the extent and depth of fill in the form of lines that join all points of equal depth of fill at vertical intervals, which adequately define the fill. Alternative methods of representing the fill depth may be acceptable. It must show areas of filling of low density, any fill areas that a geotechnical engineer considers as not complying with the Infrastructure Design Standard, and areas where the standards have been varied from the original construction specification.

The as-built plan must record the position, type and size of all subsoil drains and their outlets. It must also provide information about any under-runners and springs located.

7 NON PIPE ASSETS (pump stations, treatment plants, telemetry system, biofilter, wells, reservoirs etc.)

Provide the following as-built information for non-pipe assets:

- three copies of the product manual;
- two hard copies of the master drawing (buildings, pump, reservoirs, cables, wells, etc.);
- AutoCAD dwg/dfx file of the drawing;
- Operation & Maintenance Manuals: Electrical Mechanical;
- pickup sheets;
- generator capacity details;
- power connection ICP number;
- digital photos of new assets;
- ground maintenance plans (in PDF format);
- consent details;
- well information, well log, water quality results (in hard copy and electronic template);

8 STORMWATER AND LAND DRAINAGE

Provide as-built and information for all pipes and structures to be vested in Council ownership. The as-built information must conform to the schedule of components listed in Appendix 1.
Stormwater as-builts cover all pipe and open waterway related drainage assets.

Only one invert level is required where the inlet and outlet inverts are the same. Backfilling of the service asset must not start until as-built information has been taken. Manholes, sumps, and soakholes shall have a top level and inverts taken from the centre of the asset.

Open channels, swales and drains shall be shown and indicated in which direction it flows.

Offsets to pipes, manholes and laterals are to be from the legal boundaries. Measurements taken from fence lines, power poles and trees etc. are not permitted. Laterals for individual lots to have pipe layout shown and a written measurement shown from the boundary line.

Stormwater manholes are to have running distances shown and starting 0 at downstream manhole picking up Y junctions (laterals at main). Upon reaching the next manhole start at 0 again.

9 WASTEWATER DRAINAGE

Provide as-built and information for all pipes and structures to be vested in Council ownership. The as-built information must conform to the schedule of components listed in Appendix 1.

Sewer as-builts cover all pipe and plant used for transport of sanitary waste/ foul water.

Only one invert level is required where the inlet and outlet inverts are the same. Backfilling of the service asset must not start until as-built information has been taken. Manholes, Inspection chambers, and Flush Tanks ect shall have a top level and inverts taken from the centre of the asset. The longitudinal sections of sewer pipes shall show heights to inverts and top levels, grades and distances.

Offsets to pipes, manholes and laterals are to be from the legal boundaries. Measurements taken from fence lines, power poles and trees etc. are not permitted. Laterals for individual lots to have the pipe layout shown and a written measurement shown from the boundary line.

Stormwater manholes are to have running distances shown. Starting 0 at downstream manhole picking up Y junctions (laterals at main). upon reaching the next manhole start at 0 again.

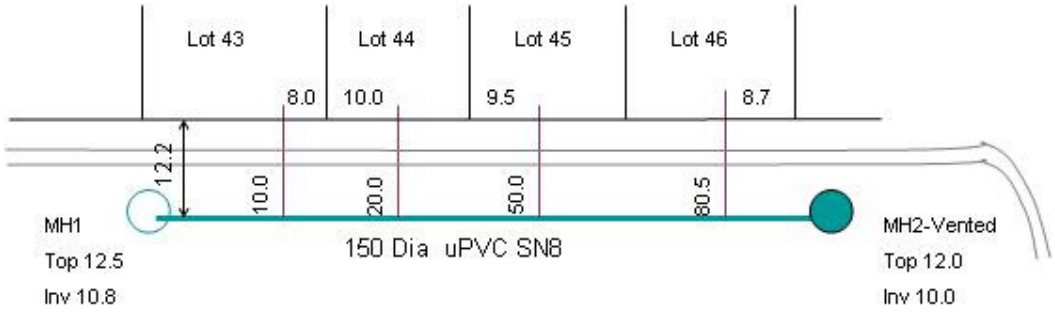

Figure 1 Sewer Layout

10 WATER

Provide as-built and information for all pipes and structures to be vested in Council ownership. The as-built information must conform to the schedule of components listed in Appendix 1.

Offsets are to be shown every 50 meters along a water main or where changes occur in pipe size or bend. Tie in all valves, fire hydrants and laterals etc. in an offset to the nearest boundary. Offsets to pipes, manholes and laterals are to be from the legal boundaries. Measurements taken from fence lines, power poles and trees etc. are not permitted. Laterals for individual lots to have the pipe layout shown and a written measurement shown from the boundary line

Where water meters are installed the meter number must be provide by showing it on the correct section/ lot e.g. 95M672596. This text is to be on the WTRTXT layer.

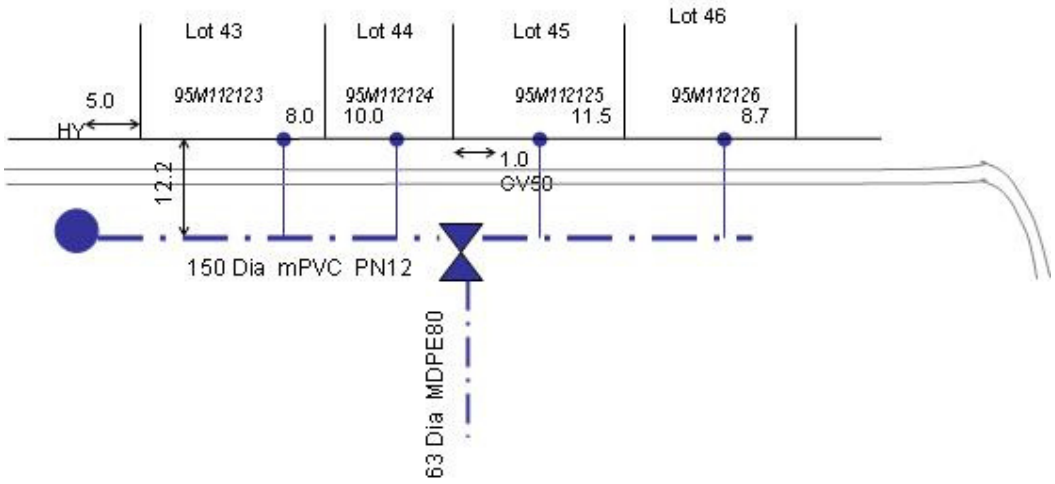

Figure 2 Water Layout

11 ROADING

Provide as-built information for roading, footpath and structures to be vested in Council ownership. The as-built information must provide detail of type of kerb and channel, carriageway width and materials used (pavers, ac, chip seal etc.)

Structures within the carriageway such as bridges, signs, retaining walls, fencing and etc. shall be shown and labelled with appropriate information given on length, width, area, type, and details.

APPENDIX I

Stormwater Features

Pipe-Laterals (diameter, material, pipe type/class and position)

Swale/Open Channel/Drain (size, depth, width and position)

Manholes-Inspection Chamber-Flush Tanks, (top level, invert level, type, diameter and position)

Sump/Inlet (type, top level, invert level, pipe type/size for outlet, and position)

Retention / **Rain Basin** (volume, levels, outline, special features, and position)

Stormwater Miscellaneous: Humeceptors, oil traps, filter beds, weirs, headwalls, veristanks, soakhole, and soakpits (include any relevant information associated with the feature along with position of asset shown on the plans)

Stormwater Valves (size, type, and position)

Stormwater Pump Station (pump make, model, duty heads, capacities, power, structures and position)

APPENDIX II

Sewage Features

Pipe-Laterals (diameter, material, pipe type/class and position)

Sewer Manhole-Inspection Chamber (top level, invert level, type lid type e.g. square, circular, diameter and position)

Sewer Valves (size, type, and position)

Sewer Miscellaneous (pig chamber, rod eyes, mag-flow meter, flush tanks etc.
include any relevant information associated with the feature along with position of asset shown on the plans)

Sewer Pump Station-Treatment Plant (pump make, model, duty heads, capacities, power, treatment, structures and position)

APPENDIX III

Water Features

Pipe-Laterals (diameter, material, pipe type/class and position)

Water Valves (size, type, and position)

Fire Hydrants (make, model and position)

Water Meter (make, model, meter number, size, type, and position)

Water Miscellaneous (BFP, break pressure tank, strainer, flow meters and etc.
include any relevant information associated with the feature along with position of asset shown on the plans)

Water Pump Station-Reservoirs-Intakes-Wells (pump make, model, duty heads, capacities, power, treatment, structures and position)

APPENDIX 3

Selwyn DC Site Telemetry system requirements **(Amend delete as required)**

Site : **XXXXXXXXXXX**

This document outlines the SDC Telemetry monitoring requirements for this subdivision. It does not cover the electrical requirements.

Sewer Pump Station.

The telemetry system uses DATRAN products. This site should use a DATRAN II eXcel RTU and expansion modules as required. The radio should be a Q80 Maxon radio from QTech. Consult with QTech Data Systems for setup and programming. (Contact QTechs sales engineer, 03-3663713)

The following is the typical setup for a 2 pump sewer pump station. This covers the I/O that is wired to the RTU. There is also some information that is derived in the programming of the RTU. QTech Data Systems will have a typical setup for this.

Digital Inputs to the RTU

- Power Failure
- Pump Run (for each pump)
- Pump Fault (for each pump)
- Emergency High level float. This a separate high level float from any of the controls. It is wired to the telemetry. There is also to be a lamp on the switchboard showing the fault. This lamp is powered from the telemetry battery backed up power supply
- Pulses from the sewer outflow flow meter. One pulse per 100 litres.

Analog Inputs to the RTU

- Wet well level. The well water level is to be measured with a pressure transmitter (typically SDC have installed InTech IN-LLT level transmitters for sewer) pump start and stop control is to be done with a Shimaden SR92 controller connected to the pressure transmitter. The level signal is to be battery backed up and connected to the DATRAN telemetry so we can measure well level in times of power failure. It is to be scaled from the bottom of the wet well to the first overflow point (0-100%)
- Sewer Outflow. Signal to come direct from the ABB Magmaster flow meter in the discharge pipework. Meter to be configured to show l/s and the total in m3
- Water Pressure. This is to measure the local water supply pressure. This is usually taken from a point on the washdown hose line upstream of the backflow preventor. Power for this is to come from a 12 to 24 volt inverter powered from the telemetry battery backed up supply. Range is 0-1000 KPa.
- Groundwater Level. This is to be a battery backed up pressure transducer from the telemetry power supply. Install a 35mm Piezo well (McMillans Well Drillers usually do this for SDC) adjacent to the sewer wet well to 1m below the bottom of the wet well.

Water supply flow meters.

There is to be a 150mm ABB Magmaster flow meter installed on each of the 2 150mm supply lines to the subdivision, one at the corner of **XXXXXXX** Rd and **Road 2** and the other at the corner of **XXXXXXX** Rd and **Road 1**.

The flow meters are to be the ABB 24 VDC model. A 24 VDC supply with 2x 12 Volt 32 A/Hr sealed batteries being charged by an Innovative Energies SR250 power supply is to supply the flow meter. Mains power supply is to come from the street light supply circuit.

The flow meter display, power supply etc is to be mounted in a polyester cabinet with a Selwyn DC B key lock barrel installed in the handle.