

## **Appendix M: ENGINEERING PLAN CHECKLIST**

# WDC Engineering Plan Checklist

All references to NZS4404 should be read in conjunction with Whanganui District Council Supplement Document 2016.

Please strike-out what is not applicable to the application

## Roading

(Reference Section 3 NZS4404:2010 and Whanganui District Council Supplement Document 2016)

The submitted engineering plans should include all existing and proposed utilities

### **Layout**

1. Plan and Long-section
  - a. Grade
  - b. Kerblines
  - c. Centre of Road
  - d. Subsoil drains
  - e. Vehicle Crossings shown on plans(**Appendix B**)
  - f. Turning head details
  - g. Horizontal and Vertical Curves
2. Cross-section
  - a. Crossfall
  - b. Services locations within the legal or proposed road
  - c. Carriageway Width
  - d. Berms
  - e. Footpaths
  - f. Detailed paving structure
  - g. Subsoil drains
  - h. Kerb and Channel

### **Items to be considered for inclusion in Roading Design**

3. Intersection details
4. Streetlights
5. Street trees
6. Road markings
7. Street signs
8. Pedestrian Links

### **Pavement**

9. Pavement design (**Section 3.3 NZS4404:2010**)
10. CBR – Pavement depth
11. Road pavement materials
12. Subsoil drains
13. Kerb and Channel type

### **Testing**

14. Road formation testing schedule submitted (**Appendix L**)

## **Stormwater**

(Reference Section 4 NZS4404:2010 and WDC Supplement Document 2016)

The submitted engineering plans should include all existing and proposed utilities

### **Layout**

1. Plan and Long-section
  - a. Grades
  - b. Positioning in relation to other services
2. Manholes
  - a. Size and type.
  - b. Lid Level and Invert Level, all connection invert levels(**Appendix B; CM-WDC-003 Supplement Document 2016**)
  - c. Drops through MH
  - d. Change in direction
  - e. Losses through MH's
  - f. Haunching
3. Sumps in Right of Way or Road
4. Laterals to each lot direct to a reticulated system
5. Overland Flow Paths / Secondary Flow Paths shown on plans (**Section 4.3 & 4.4 NZS4404:2010**)
6. Existing drains(open drains/ culvert drains)

### **Design**

7. Pipe size sufficient to serve design
8. Pipe material/class
9. Stormwater calculation sheets (**Section 4.3 & 4.4 NZS4404:2010**)
10. Bedding specification (**Appendix I, Section 4 Supplement Document 2016**)
11. Is on site attenuation a requirement for this catchment (**Refer to TA Engineer**)
12. Swale design (if required)

### **Testing**

13. CCTV of existing mains prior to site work commencing
14. Testing for pipe laying (**Appendix I, Section 4 Supplement Document 2016**)
  - a. Schedule of all testing requirements
  - b. Specify Accredited Laboratory
15. Post construction CCTV

## **Wastewater**

(Reference Section 5 NZS4404:2010 and WDC Supplement Document 2016)

The submitted engineering plans should include all existing and proposed utilities

### **Layout**

1. Plan and Long-section
  - a. Grades
  - b. Positioning in relation to other services
2. Manholes **(Section 5.3 & 5.4 NZS4404:2010)**
  - a. Size and type.
  - b. Lid Level and Invert Level, all connection invert levels**(Section 5.3 & 5.4 NZS4404:2010)**
  - c. Drops through MH
  - d. Change in direction
  - e. Losses through MH's
  - f. Haunching
3. Future Catchment Design taken into account **(Section 5.3 & 5.4 NZS4404:2010)**
4. Laterals to each lot

### **Design**

5. Pipe size sufficient to serve design **(Section 5.3 & 5.4 NZS4404:2010)**
6. Pipe material/class
7. Adequate grades
  - a. Self-cleaning
  - b. Provide gravity line
8. Bedding Material
9. Layout
  - a. Minimum clearances **(NZS4404:2010)**
10. Pump station design calculations
11. Rising mains, specific design required **(Section 5.3 & 5.4 NZS4404:2010)**

### **Testing**

12. CCTV of existing mains prior to site work commencing
13. Testing Schedule for pipe laying **(Appendix I, Section 4 Supplement Document 2016)**
  - a. Schedule of all testing requirements
  - b. Specify Accredited Laboratory
14. Post Construction CCTV

## **Water**

(Reference Section 6 NZS4404:2010 and WDC Supplement Document 2016)

The submitted engineering plans should include all existing and proposed utilities

### **Layout**

1. Mains Layout and depths(**Section 6.3 & 6.4 NZS4404:2010**)
2. Property service connection and toby
3. Approved material identified ( **Appendix A Supplement Document 2016**)
4. Types and Locations of appurtenances (**Section 6.3 & 6.4 NZS4404:2010**)
  - a. Stop Valves
  - b. Pressure Reducing Valves
  - c. Hydrant and Fire Services (**refer to NZS 4509**)
  - d. Scours and Pump out branches
  - e. Termination details
  - f. Backflow preventers(**Appendix B; WS-WDC-011 Supplement Document 2016**), **alternative design can be discussed with TA**
5. Water Meters in Commercial/Industrial development
6. Location and Details of Trust Blocks and Anchor (**NZS4404:2010**)

### **Design**

7. Adequate Hydraulics proven in design
8. Pipe size sufficient for design
9. Material and class of pipe
10. Bedding Material(**Appendix I, Section 5.5 Supplement Document 2016**)

### **Testing**

11. Pressure Testing (**Appendix C NZS4404:2010**)
12. Disinfection (**Appendix D NZS4404:210**)