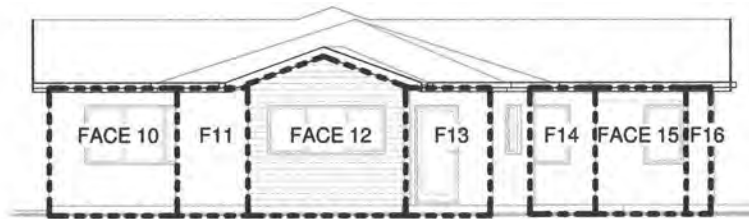
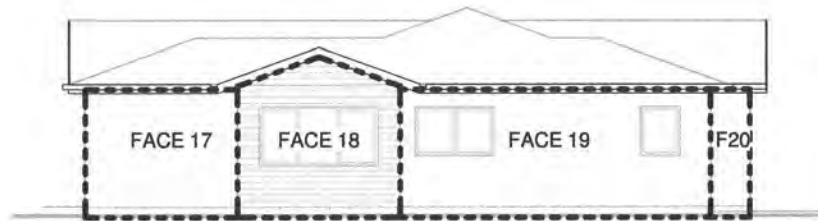


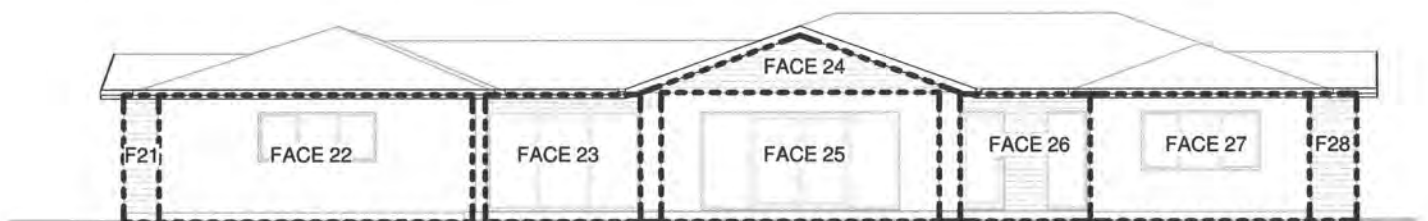
ELEVATION 1



ELEVATION 2



ELEVATION 3



ELEVATION 4

|                                                                                                                                                                                                                                                    |                                                                                                        |                  |         |            |     |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------|---------|------------|-----|--------|
| <b>A.D</b><br><b>architecture</b><br><small>LTD</small><br><small>Ph: 04 298 5662 Fax: 04 298 5663</small><br><small>info@adarchitecture.co.nz</small><br><small>www.adarchitecture.co.nz</small><br><small>PO Box 1385, Paraparaumu Beach</small> | Proposed House<br>for<br>Mulholland Const.<br>at<br>22 Fairway Oaks Drive, Waikanae<br>Lot 3 DP 348205 | RISK KEY         |         |            |     |        |
|                                                                                                                                                                                                                                                    |                                                                                                        | BUILDING CONSENT |         |            |     |        |
|                                                                                                                                                                                                                                                    |                                                                                                        | Job              | Scale   | Date       | Rev | Sheet  |
|                                                                                                                                                                                                                                                    |                                                                                                        | 09043            | 1 : 150 | 30-10-2009 | 1   | (A4) R |



**Cuttriss**

Land Surveyors, Engineers & Resource Managers

ATT: Simon Copp.

## STORMWATER SOAKPIT REPORT SPECIFIC DESIGN FOR NEW DWELLING

~~LOT 4 DP 348205  
20 FAIRWAY OAKS  
WAIKANA~~

Lot 3, DP 348205  
22 Fairway Oaks

A 11-2-2010

Client: MULHOLLAND

Job Number: 19819

JULY 2007

### Cuttriss Consultants Ltd



PO Box 30 429 3<sup>rd</sup> Crest House 94 Queens Drive LOWER HUTT  
Telephone 0-4-939 9245 Fax 0-4-939 9245 Email [hutt@cuttriss.co.nz](mailto:hutt@cuttriss.co.nz)



PO Box 386 33 Kapiti Road PARAPARAUMU  
Telephone 0-4-904 5420 Fax 0-4-904 5423 Email [kapiti@cuttriss.co.nz](mailto:kapiti@cuttriss.co.nz)

ref: Kockerbeck/19819

30 July 2007

Mulholland Constructions Ltd  
2 Taheke Street  
PARAPARAUMU BEACH

Attention: Paul Mulholland

Dear Paul

**SOAKAGE TESTS FOR SPECIFIC DESIGN FOR STORMWATER DISPOSAL – LOT 4  
DP 348205, 20 FAIRWAY OAKS, WAIKANAЕ**

Following the engagement of our services for carrying out a soakage test and specific design for stormwater disposal at the above address we detail our findings and report below.

**DOCUMENTS**

Refer to the enclosed A4 plans (reduced scale) and test record sheets. The plan shows the location of the proposed dwelling and the positions of the test undertaken. The test sheets record the soakage results and a soakage rate has been interpolated from these results. It should be noted that generally the raw soakage rates have a factor of safety of 3 applied to them (i.e. soakage rates divided by 3) in accordance with KCDC subdivision guidelines.

Rainfall data for determining the anticipated stormwater rainfall intensity has been sourced from the Kapiti Coast District Council Subdivision and Development Principles and Requirements, Part 4 of Appendix A.

A consent notice with respect to specific design for stormwater is associated with this lot and has been appended to this report. The relevant section of the consent notice is:

*"There shall not be any discharge of stormwater onto the road or into systems that will be taken over by the Council. Specific design for stormwater disposal shall be required for each lot. This design shall accompany any building consent or future subdivision resource consent applications. As a minimum stormwater from roof areas, right of ways and impermeable yards shall be disposed of on site."*

Our understanding from KCDC on previous lots in this development is that any proposed stormwater system is required to be designed for a return period of a 1 in 100 year design storm.

Therefore the basis of the soakpit design is section E1: Surface Water from the approved document prepared by of the Building Industry Authority (BIA). In accordance with E1 the rainfall intensity used in the design is for an event having 1 hour duration and a 1% probability of occurring annually (1 in 100 year event).

**LOCATION**

The location of the site is on Fairway Oaks Drive in Waikanae. We have been previously provided with a site plan of the proposed new house location and measured the location of the test off existing features on site.

Access to the new dwelling will be off Fairway Oaks.

## TOPOGRAPHY

The site generally consists of sand dunes and has been earthworked. The site falls towards the adjacent road as shown on the attached plan.

The dimensions of the site are such that the boundary tapers out to the northeast. The proposed new dwelling utilises much of the site to the south. Based on the topography and the layout of the lot we believe the best place for a proposed soakpit is to utilise the sections of land next to the adjacent road located to the north. According to the clients request we have chosen the location next to the proposed driveway as shown on the attached plan.

## TESTING

A percolation test has been carried out on the site. Test location A has been carried out as shown on the appended plans. The test hole was presoaked before hand.

## RESULTS

The results are summarised below and appended to this report in a table and graphical format.

| <u>Test No.</u> | <u>Predominant Soil</u> | <u>Location</u>                 | <u>Raw Soakage</u><br>(mm/hr) | <u>Design Soakage<sup>1</sup></u><br>(mm/hr) |
|-----------------|-------------------------|---------------------------------|-------------------------------|----------------------------------------------|
| A               | sand                    | as shown<br>on attached<br>plan | 2105                          | 702                                          |

Generally the test results indicated very high soakage.

## DESIGN

The design has assumed that the soakpit will be possible to collect the driveway runoff. Therefore it should be located at a lower level towards the proposed adjacent driveway. Consideration will need to be given to this during the design of the driveway and the installation of the soakpit.

Filter cloth on the sides and along the top of the excavation shall have a mass per unit area of 140 g/m<sup>2</sup> and a minimum thickness of 0.45mm in accordance with E1. Note filter cloth should not be placed on the base of the excavation.

The impermeable areas such as e. g. front paths will need to fall back out towards the driveway and the runoff collected and directed into any pipework and subsequently into the soakpit in order to comply with the conditions of the consent notice. An allowance, within the calculations, has been made for the driveway and impermeable surfaces associated with pathways.

## OTHER ALTERNATIVES

Other options were considered other than rock filled soakpits, such as the Atlantis underground modular water tanks, but these were considered uneconomic for this situation.

Consideration was also given to the use of an attenuation rainwater tank to attenuate some of the water from this site, but given the layout of the site it was considered that this would be unfavourable aesthetically having a tank out in front of the house. We believe there is limited space on the balance of the site for any tank to be installed, and hence have adopted a rock filled soakpit design.

<sup>1</sup> Design soakage has a factor of safety of 3 applied for this particular site for the design for the Q<sub>100</sub> event.

## MAINTENANCE

Our recommendation for the monitoring and maintenance of on-site stormwater disposal soakpits is as follows:

*The soakpit needs to be checked monthly by the builder during any subsequent construction works, or after intense sediment deposit in the catchment area. On completion of all construction works the likelihood of sediment build-up will be reduced. It is suggested that the soakpit be checked by the landowner every 6 months subject to the amount of sediment discovered. If checks confirm sediment build-up is within 100mm of perforation holes, the soakpit must be cleaned.*

## CONCLUSION

This report has been prepared for the specific design of a stormwater soakpit for stormwater disposal from the roof of the new dwelling, driveway area, and has made an allowance for a likely impermeable area of pathways.

The designs of suitable soakpit dimensions for location A are detailed in the calculations of this report and summarised below. Refer also to the appended design drawings.

### Soakpit Dimensions

|                                  |                                          |
|----------------------------------|------------------------------------------|
| Rubble Design minimum dimensions | 4.0m long                                |
|                                  | 3.0m wide                                |
|                                  | 1.38m deep (allowance for 100mm topsoil) |

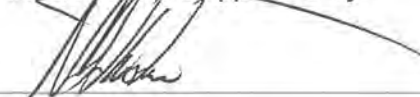
Soakpits should be constructed as detailed in our appended design drawings, and inspected at the time of being constructed. An inspection should be carried out on the base of the excavation by Cuttriss Consultants or KCDC at the time of constructing the soakpit.

Prepared by:



Sandra Kockerbeck  
Graduate Engineer  
**CUTTRISS CONSULTANTS LTD**

Reviewed and approved by:



Neil Johnstone  
Chartered Professional Engineer  
**CUTTRISS CONSULTANTS LTD**

# Soakage Tests carried out in PVC lined hole @ Location A

Date of test 20-Jul-07

Area of pipe sleeve (80mm ID)

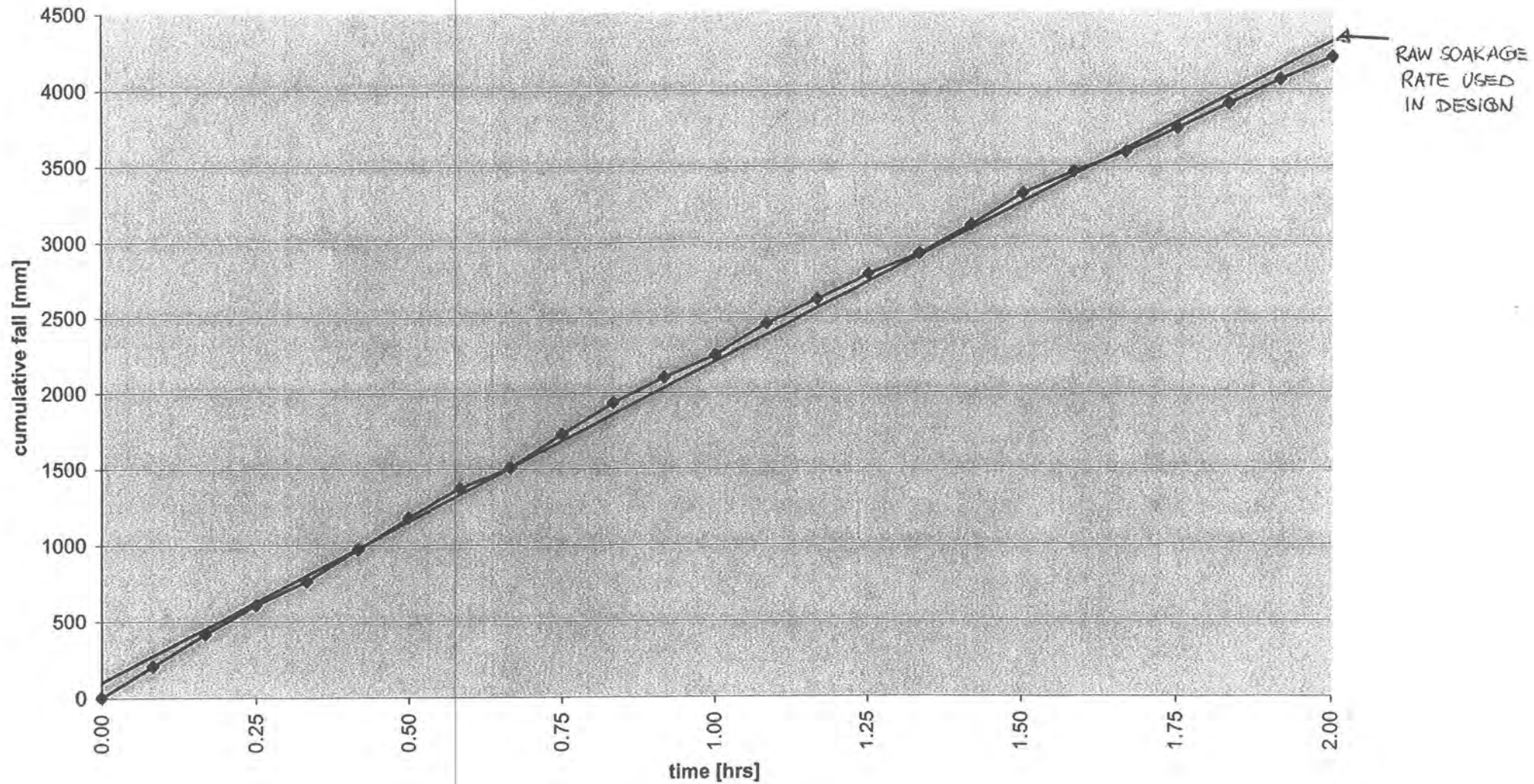
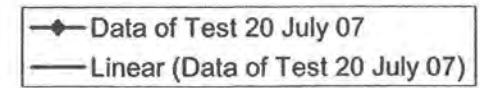
0.005 m<sup>2</sup>

Depth of augered hole: 1.50m

Length of pipe: 1.80m

| Time     | Time Difference | Cumulative Time (hours) | level in pipe (mm) | Cumulative fall in pipe (mm) |
|----------|-----------------|-------------------------|--------------------|------------------------------|
| 13:40:00 | 0 min           | 0.00                    | 0                  | 0                            |
| 13:45:00 | 5 min           | 0.08                    | 205                | 205                          |
| 13:50:00 | 5 min           | 0.17                    | 414                | 414                          |
| 13:55:00 | 5 min           | 0.25                    | 605                | 605                          |
| 14:00:00 | 5 min           | 0.33                    | 762                | 762                          |
| 14:00:00 | 5 min           | 0.33                    | 0                  | 762                          |
| 14:05:00 | 5 min           | 0.42                    | 210                | 972                          |
| 14:10:00 | 5 min           | 0.50                    | 418                | 1180                         |
| 14:15:00 | 5 min           | 0.58                    | 610                | 1372                         |
| 14:20:00 | 5 min           | 0.67                    | 744                | 1506                         |
| 14:20:00 | 5 min           | 0.67                    | 0                  | 1506                         |
| 14:25:00 | 5 min           | 0.75                    | 220                | 1726                         |
| 14:30:00 | 5 min           | 0.83                    | 425                | 1931                         |
| 14:35:00 | 5 min           | 0.92                    | 593                | 2099                         |
| 14:40:00 | 5 min           | 1.00                    | 743                | 2249                         |
| 14:40:00 | 5 min           | 1.00                    | 0                  | 2249                         |
| 14:45:00 | 5 min           | 1.08                    | 209                | 2458                         |
| 14:50:00 | 5 min           | 1.17                    | 366                | 2615                         |
| 14:55:00 | 5 min           | 1.25                    | 535                | 2784                         |
| 15:00:00 | 5 min           | 1.33                    | 673                | 2922                         |
| 15:00:00 | 5 min           | 1.33                    | 0                  | 2922                         |
| 15:05:00 | 5 min           | 1.42                    | 189                | 3111                         |
| 15:10:00 | 5 min           | 1.50                    | 396                | 3318                         |
| 15:15:00 | 5 min           | 1.58                    | 541                | 3463                         |
| 15:20:00 | 5 min           | 1.67                    | 672                | 3594                         |
| 15:20:00 | 5 min           | 1.67                    | 0                  | 3594                         |
| 15:25:00 | 5 min           | 1.75                    | 154                | 3748                         |
| 15:30:00 | 5 min           | 1.83                    | 315                | 3909                         |
| 15:35:00 | 5 min           | 1.92                    | 473                | 4067                         |
| 15:40:00 | 5 min           | 2.00                    | 616                | 4210                         |

**Graph 1 - Cumulative fall vs time @ Location A**  
**4210 mm (diff h) / 2 hr (diff t) = 2105 mm/hr**



Mulholland  
 Lot 4 DP 348205 - 20 Fairway Oaks Subdivision, Waikanae  
 Normalised Rainfall P  
 Return Period

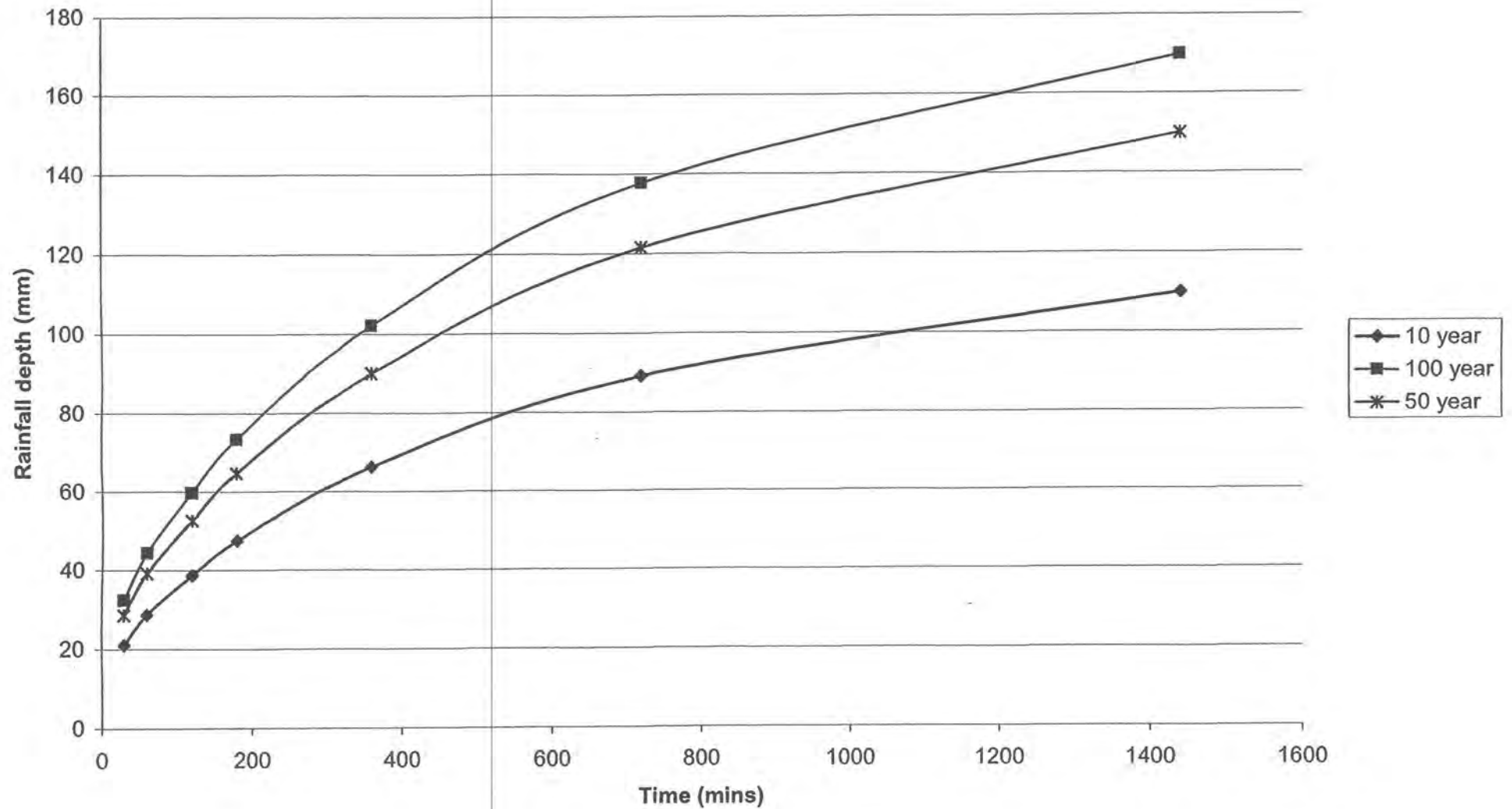
|             |                    |
|-------------|--------------------|
| 2yr event   | 75 mm in 24 hours  |
| 5yr event   | 95 mm in 24 hours  |
| 10yr event  | 110 mm in 24 hours |
| 20yr event  | 125 mm in 24 hours |
| 50yr event  | 150 mm in 24 hours |
| 100yr event | 170 mm in 24 hours |

|               |           |
|---------------|-----------|
| k =           | 2.78      |
| Roof Area =   | 0.0254 ha |
| Driveway =    | 0.0101 ha |
| Allowance 10% | 0.0036 ha |
| Total Area =  | 0.0391 ha |
| C =           | 0.90      |

| Duration (minutes) | Normalised Rainfall Depth | 2Y Rainfall depth (mm) | 2Yr rainfall intensity (mm/hr) | design flow Q <sub>2</sub> (l/sec) | 5Y Rainfall depth (mm) | 5Yr rainfall intensity (mm/hr) | design flow Q <sub>5</sub> (l/sec) | 10Y Rainfall depth (mm) | 10Yr rainfall intensity (mm/hr) | design flow Q <sub>10</sub> (l/sec) | 20Y Rainfall depth (mm) | 20Yr rainfall intensity (mm/hr) | design flow Q <sub>20</sub> (l/sec) |
|--------------------|---------------------------|------------------------|--------------------------------|------------------------------------|------------------------|--------------------------------|------------------------------------|-------------------------|---------------------------------|-------------------------------------|-------------------------|---------------------------------|-------------------------------------|
| 30                 | 0.19                      | 14                     | 28.5                           | 2.8                                | 18                     | 36.1                           | 3.5                                | 21                      | 41.8                            | 4.1                                 | 24                      | 47.5                            | 4.6                                 |
| 60                 | 0.26                      | 20                     | 19.5                           | 1.9                                | 25                     | 24.7                           | 2.4                                | 29                      | 28.6                            | 2.8                                 | 33                      | 32.5                            | 3.2                                 |
| 120                | 0.35                      | 26                     | 13.1                           | 1.3                                | 33                     | 16.6                           | 1.6                                | 39                      | 19.3                            | 1.9                                 | 44                      | 21.9                            | 2.1                                 |
| 180                | 0.43                      | 32                     | 10.8                           | 1.1                                | 41                     | 13.6                           | 1.3                                | 47                      | 15.8                            | 1.5                                 | 54                      | 17.9                            | 1.8                                 |
| 360                | 0.60                      | 45                     | 7.5                            | 0.7                                | 57                     | 9.5                            | 0.9                                | 66                      | 11.0                            | 1.1                                 | 75                      | 12.5                            | 1.2                                 |
| 720                | 0.81                      | 61                     | 5.1                            | 0.5                                | 77                     | 6.4                            | 0.6                                | 89                      | 7.4                             | 0.7                                 | 101                     | 8.4                             | 0.8                                 |
| 1440               | 1                         | 75                     | 3.1                            | 0.3                                | 95                     | 4.0                            | 0.4                                | 110                     | 4.6                             | 0.4                                 | 125                     | 5.2                             | 0.5                                 |

| Duration (minutes) | Normalised Rainfall Depth | 50Y Rainfall depth (mm) | 50Yr rainfall intensity (mm/hr) | Design flow Q <sub>50</sub> (l/sec) | 100Y Rainfall depth (mm) | 100Yr rainfall intensity (mm/hr) | Design flow Q <sub>100</sub> (l/sec) |
|--------------------|---------------------------|-------------------------|---------------------------------|-------------------------------------|--------------------------|----------------------------------|--------------------------------------|
| 30                 | 0.19                      | 29                      | 57.0                            | 5.6                                 | 32.3                     | 64.6                             | 6.3                                  |
| 60                 | 0.26                      | 39                      | 39.0                            | 3.8                                 | 44.2                     | 44.2                             | 4.3                                  |
| 120                | 0.35                      | 53                      | 26.3                            | 2.6                                 | 59.5                     | 29.8                             | 2.9                                  |
| 180                | 0.43                      | 65                      | 21.5                            | 2.1                                 | 73.1                     | 24.4                             | 2.4                                  |
| 360                | 0.60                      | 90                      | 15.0                            | 1.5                                 | 102.0                    | 17.0                             | 1.7                                  |
| 720                | 0.81                      | 122                     | 10.1                            | 1.0                                 | 137.7                    | 11.5                             | 1.1                                  |
| 1440               | 1                         | 150                     | 6.3                             | 0.6                                 | 170.0                    | 7.1                              | 0.7                                  |

### Normalised Rainfall for Lot 4 - 20 Fairway Oaks



## SOAKPIT DESIGN FOR ROOF & DRIVEWAY STORMWATER RUNOFF DISPOSAL

### SOAKPIT DESIGN TO E1/VM1

Rubble filled soakpits with chamber installed @ location A

Estimated Dimensions W = 3 m L = 4 m

C = 0.9 (from Table 1)

i = 44.2 mm/hr Asp = 12 (WxL)

roof area = 254 m<sup>2</sup>

Sr = 702 mm/hr

driveway = 101 m<sup>2</sup>

10% allowance = 36 m<sup>2</sup>

A = 391 m<sup>2</sup>

Rc = 10 x C x I x A = 15.6 m<sup>3</sup> (total rainfall)

Vsoak = Asp x Sr / 1000 = 8.42 m<sup>3</sup> (base soakage)

Vstor = 7.1 m<sup>3</sup> (design storage)

Storage of 1050 dia chamber = 1.29 m<sup>3</sup> (storage available in chamber 1.5m deep)

Hole volume = 15.4 m<sup>3</sup> (rubble volume)

Hole depth = 1.28 m

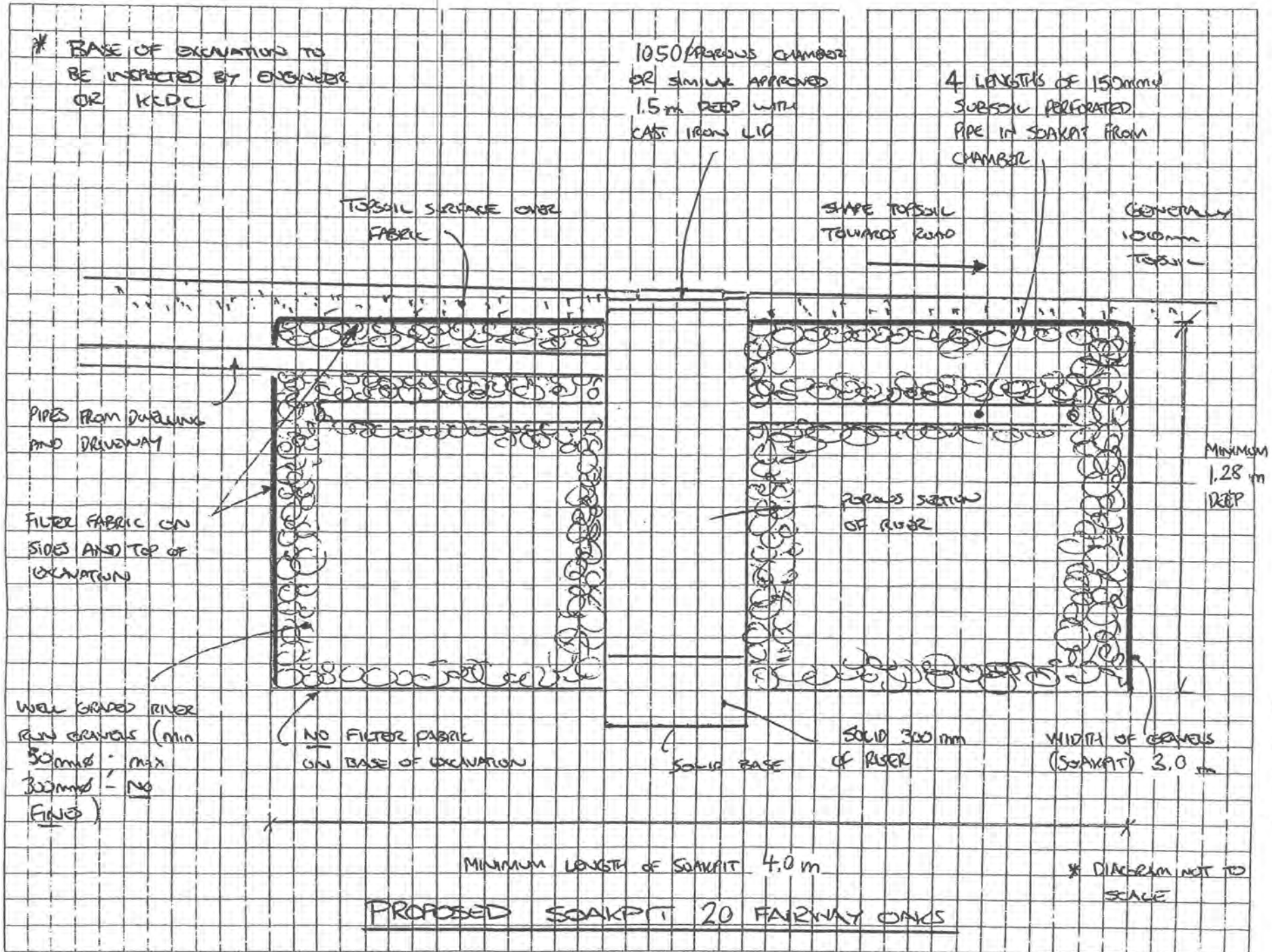
**Final Soakpit Dimensions**  
W = 3  
L = 4  
D (min) = 1.38 (assumes 100mm topsoil)

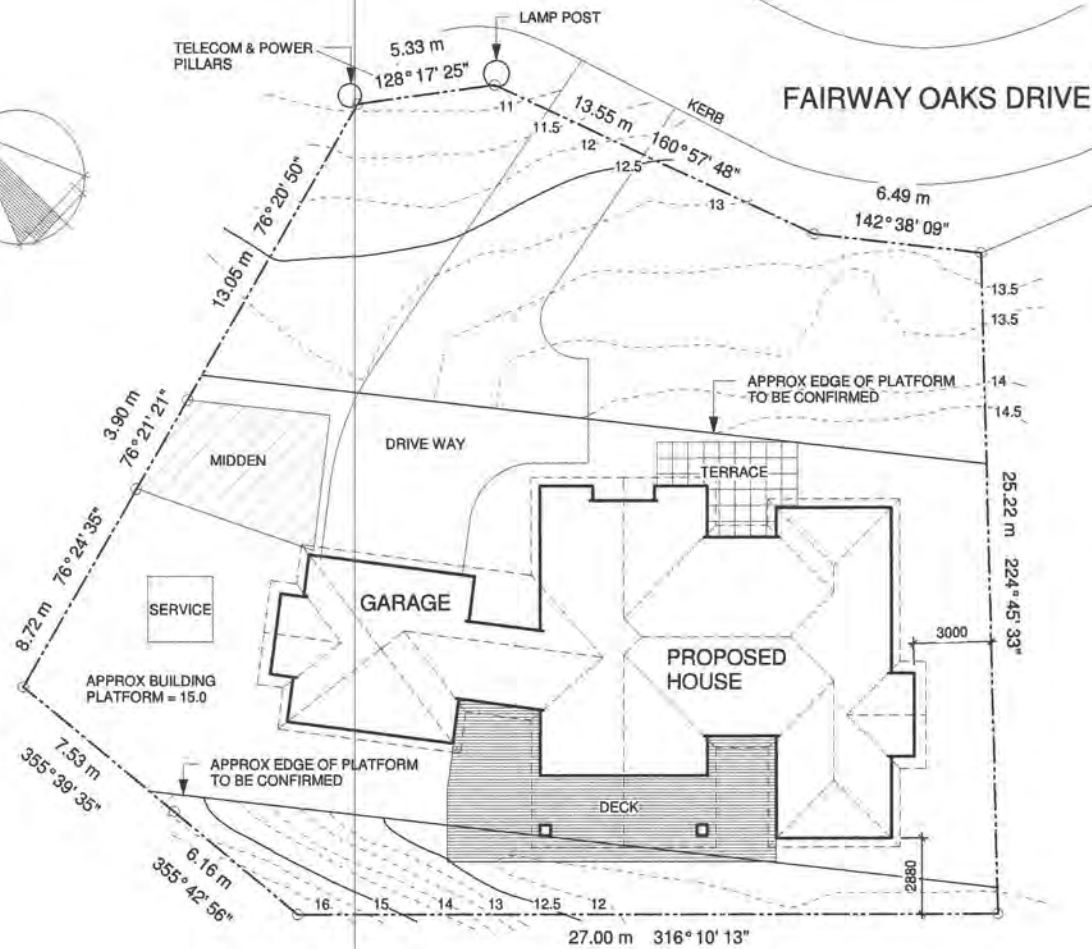
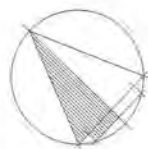
Date 30/07/07

Project Name MURUMUND - 20 FAIRWAY OAKS Project No. 19819

Prepared By SK

Page 1 of 1





SITE PLAN  
1 : 200

AREAS  
SITE AREA = 901.8m<sup>2</sup>  
BUILDING AREA = 204.1m<sup>2</sup>  
TERRACE AREA = 15.5m<sup>2</sup>  
DECK AREA = 56.1m<sup>2</sup>

SITE COVERAGE = 204.1m<sup>2</sup> = 23.0%

ZONE = RESIDENTIAL  
WIND ZONE = HIGH  
CORROSION ZONE = NO

|                                                                                                                                                                 |            |             |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|---------|
| 1                                                                                                                                                               | 18-01-2010 | Revision 1  |         |
| Rev                                                                                                                                                             | Date       | Description |         |
| Proposed House<br>Mulholland Const.<br>22 Fairway Oaks Drive, Waikanae<br>Lot 3 DP 348205                                                                       |            |             |         |
| <b>A.D</b><br><b>architecture</b><br>L T D<br>Ph: 04 298 5662 Fax: 04 298 5663 www.adarchitecture.co.nz<br>info@adarchitecture.co.nz PO Box 1585, Papanui Beach |            |             |         |
| SITE PLAN                                                                                                                                                       |            |             |         |
| BUILDING CONSENT                                                                                                                                                |            |             |         |
| DO NOT SCALE DRAWING                                                                                                                                            |            |             |         |
| Job                                                                                                                                                             | Date       | Rev         | Sheet   |
| 09043                                                                                                                                                           | 30-10-2009 | 1           | (A3) 01 |



## Opus' Protocol for the Accidental Discovery of Archaeological Sites

**In the event of an "accidental discovery" of archaeological matter including human remains the following steps shall be taken:**

1. All work within the vicinity of the site<sup>1</sup> will cease immediately.
2. The plant operator will shut down all construction equipment and activity, leave the site area and unearthed archaeological material *in-situ* and advise the relevant person<sup>2</sup> (eg site construction supervisor, consultant, owner).
3. The relevant person will take immediate steps to secure the area of the site to ensure the archaeological matter remains undisturbed. Work may continue outside of the site area.
4. The relevant person will ensure that the matter is reported to the Regional Archaeologist at the New Zealand Historic Places Trust, the *kaitiaki papatipu runanga* and to any required statutory agencies<sup>3</sup> if this has not already occurred.
5. The relevant person will ensure that a qualified archaeologist is appointed to ensure all archaeological matter is dealt with appropriately.
6. In the event of the material being of Maori origin the relevant person will ensure that the *kaitiaki papatipu runanga* is contacted in order that appropriate cultural processes are implemented to remedy or mitigate any damage to the site.
7. Any and all visits to the project site must be cleared by the relevant person. It is advisable that a list of authorised personnel to visit the site is maintained. Under law it is a requirement to undertake the overall safe management of the site, including the health and safety of all persons visiting the site. To meet this requirement and also to protect the integrity of the accidental discovery, we consider it important that all visits to the project site are recorded, cleared and inducted into the site.
8. The relevant person will ensure that the necessary people shall be available to meet and guide representatives of the New Zealand Historic Places Trust and *kaitiaki papatipu runanga*, and any other party with statutory responsibilities, to the site.
9. Works in the site area shall not recommence until authorised by the relevant person who will consult with the New Zealand Historic Places Trust staff, *kaitiaki papatipu runanga*, the NZ Police (and any other authority with statutory responsibility) to ensure that all statutory and cultural requirements have been met.
10. All parties will work towards operations recommencing in the shortest possible timeframes while ensuring that any archaeological sites discovered are protected until a decision regarding their appropriate management is made, and as much information as possible is gained. Appropriate management could include recording or removal of archaeological material.



<sup>1</sup> The immediate area or location where the material, artefacts or human remains (without being exclusive) have been discovered.

<sup>2</sup> For example, the New Zealand Police in the event that human remains are found.

<sup>3</sup> Appropriate runanga (tangata whenua rights) for the area

**Main Identity**

---

**From:** "Kiri Petersen" <kiri.petersen@opus.co.nz>  
**To:** "Mulholland Constructions" <paul@mulhollandconstructions.co.nz>  
**Sent:** Thursday, September 24, 2009 11:50 AM  
**Subject:** Fairway Oaks Lot 3  
Hi Paul

I've had a quick look into this and I don't think you should need an archaeological authority for these works. From the records that I have, Lot 3 was stripped of topsoil (and probably flattened) during the first stage of earthworks in 2004. The midden that was covenanted was singled out due to its size and rarity of contents. As the Lot was modified under an archaeological authority, with an archaeologist present, and as the earthworks you are proposing are very shallow (no deeper than 200mm), another Authority should not be required from the NZHPT.

My recommendation is that I contact the HPT explaining all of the above and get their OK for you to proceed without an Authority. I would also advise you contact Danny Mullen from Te Ati Awa, so he is aware that you have got permission to do the work without an Authority, otherwise he might get worried.

Let me know if you'd like me to proceed.

Regards,



**Kiri Petersen**  
**Archaeologist**

Opus International Consultants Ltd  
kiri.petersen@opus.co.nz  
Tel +64 4 471 7077, Fax +64 4 499 3699  
<http://www.opus.co.nz>

Level 5 Majestic Centre, 100 Willis Street, PO Box 12 003, Wellington, New Zealand

**Sent:** Monday, 19 October 2009 9:51 a.m.  
**To:** Kiri Petersen  
**Subject:** RE: Fairway Oaks Lot 3: 2004/247

Hi Kiri

That's fine, and it's good that they've approached you for advice.

If you think that they are unlikely to encounter archaeological deposits then they can proceed without an authority on that recommendation. If on the off chance they do encounter intact deposits, they'll still be required to stop works and contact NZHPT to obtain an authority, so I'd recommend that you prepare a standard accidental discovery protocol. They should also be advised that there may be some delay if this should occur.

Give me a ring if you want to discuss, or otherwise happy to talk with Paul directly.

**Andy Dodd**

Archaeologist - Central Region | Historic Places Trust | Pouhere Taonga  
 Level 1 Tadi House 1 Blair Street | PO Box 19173 | Wellington 6149  
 PH: 04 802 0008 | Fax: 04 802 5180 | Mob: 027 217 8903 | [www.historic.org.nz](http://www.historic.org.nz)



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**From:** Kiri Petersen [mailto:kiri.petersen@opus.co.nz]  
**Sent:** Thursday, 15 October 2009 2:58 p.m.  
**To:** Andy Dodd  
**Subject:** Fairway Oaks Lot 3: 2004/247

Hi Andy

I've been asked to provide advice to the new owner of Lot 3 of Fairway Oaks, regarding whether he will need to apply for an archaeological authority to develop this property. In my opinion an authority is not required as this lot has been heavily earthworked in the past, and the extent of works he is proposing is minor. I have relayed this opinion to the owner, and have said that I will need to get confirmation from the Trust that this is the case.

The Fairway Oaks subdivision has a long history - Karen Grieg and Nicola Molloy were the first archaeologists involved from 2002, who then passed the flag to me to complete the monitoring and reporting (final report was submitted in 2007). The initial earthworks were monitoring by Karen and Nicola under Authority 2004/247 in 2004. I was then contacted in 2006 to carry out monitoring for two further phases of earthworks. The report submitted by me in 2007 encompassed all these works. Lot 4 was subject to another NZHPT Authority (2007/339) for further works, and the same purchaser of this property (Paul Mulholland) has now purchased Lot 3 and wishes to develop the property.

The attached subdivision plan shows large 'cut' area located on Lot 3, which has been carried out during a previous monitoring phase. The attached photos (taken in 2006) also show the flattened dune in this Lot. There is a midden located in the northern part of this section, which has been covenanted (shown in attached plan). Paul Mulholland has said that he is very aware of this midden and will not be doing any earthworks in the vicinity.

Proposed future earthworks for Lot 3 include digging for shallow foundations and access drive with accompanying drainage (no deeper than ca. 200mm), and excavation for the installation of a water tank which will involve the removal of material up to ca. 1m deep. This tank will be situated right at the edge of the property in an area which has been subject to heavy modification in the past for the creation of the main road.

Could you please notify me as to whether Mr Mulholland can proceed without an Authority.

Many thanks,



**Kiri Petersen**  
**Archaeologist**

*Opus International Consultants Ltd*

*kiri.petersen@opus.co.nz*

*Tel +64 4 471 7077, Fax +64 4 499 3699*

*<http://www.opus.co.nz>*

*Level 5 Majestic Centre, 100 Willis Street, PO Box 12 003, Wellington, New Zealand*

**Main Identity**

---

**From:** "Kiri Petersen" <kiri.petersen@opus.co.nz>  
**To:** "Mulholland Constructions" <paul@mulhollandconstructions.co.nz>  
**Sent:** Thursday, October 29, 2009 11:10 AM  
**Attach:** Opus\_A\_D\_P.pdf  
**Subject:** Fairway Oaks Lot 3: 2004/247  
 Hi Paul

Please find attached a copy of Opus' standard Accidental Discovery Protocol. This document covers all the important protocols to follow in the event that archaeological material is found when undertaking works without an HPT Authority. All those involved with earthworks should read this document, including the machinery operators. It's a good idea to have a discussion with these guys prior to the start of works to explain a bit about the site history (i.e. that heaps of middens have been found in this subdivision, and that a rare example is covenanted in the corner of the section), and make sure they know what an archaeological site looks like (eg shells, burnt stones, charcoal, bones etc). It would also be a good idea to fence off the approximate area of the covenanted midden so everyone on site is aware of its presence. Any questions feel free to call.

Regards,



**Kiri Petersen**  
**Archaeologist**

Opus International Consultants Ltd  
 kiri.petersen@opus.co.nz  
 Tel +64 4 471 7077, Fax +64 4 499 3699  
<http://www.opus.co.nz>

Level 5 Majestic Centre, 100 Willis Street, PO Box 12 003, Wellington, New Zealand

---

**From:** Kiri Petersen [mailto:kiri.petersen@opus.co.nz]  
**Sent:** Tuesday, 20 October 2009 7:29 p.m.  
**To:** 'Mulholland Constructions'  
**Subject:** FW: Fairway Oaks Lot 3: 2004/247

Hi Paul

Please see below email - I am back in the office Thursday the 28th of October if you'd like to discuss.

Cheers,



**Kiri Petersen**  
**Archaeologist**

Opus International Consultants Ltd  
 kiri.petersen@opus.co.nz  
 Tel +64 4 471 7077, Fax +64 4 499 3699  
<http://www.opus.co.nz>

Level 5 Majestic Centre, 100 Willis Street, PO Box 12 003, Wellington, New Zealand

---

**From:** Andy Dodd [mailto:adodd@historic.org.nz]

COPY

10 February 2010

Mulholland Constructions Ltd  
3 Fairway Oaks Drive  
WAIKANAЕ

**Building Consent:** 100044

Dear Sir

### **Request for further information**

**Description:** New Residential Dwelling  
**Location:** 22 Fairway Oaks Drive, Waikanae  
**Legal Description:** LOT 3 DP 348205 C/T 197932

Unfortunately, we are unable to process your *Building Consent* until we receive the information detailed below.

#### **Information Needed:**

Please provide a storm water design that complies with the consent notice attached. ✓

A vent is required on the drain branch to the laundry. ✓

The toby requires modification to comply with the plan change 75 requirements ✓  
I shall organise on your behalf and the bill will be sent to you as agent.

The information requested above relates to Plumbing and drainage only. You will be notified of any further requirements of a general nature once your plans have been perused by the Building Control Consents team.

Please contact me if you would like to discuss this matter.

Yours sincerely

Simon Copp/

Building Control Officer

**Jill Burke (CS)**

---

**From:** Alex Luhn [Alex@adarchitecture.co.nz]  
**Sent:** Friday, 19 February 2010 12:21 p.m.  
**To:** Jill Burke  
**Subject:** FW: 09043 Mulholland - Reply to RFI  
**Attachments:** 09043\_Mulholland\_BC-RevA.pdf

Hi Jill,

Please find attached RevA plan set with all required amendments as discussed yesterday.  
Project 09043 Mulholland – 22 Fairway Oaks Drive, Waikanae.

Amendments in RevA:

- 1) Added daylight planes to rear and side boundary are shown on Site Plan and Elevations.
- 2) Changed position of house to comply with required distances to boundaries.
- 3) Changed roof design over deck to avoid encroachment into daylight plan 3.

I hope everything is working fine now. Please let me know if you need further information.

Thanks  
Regards,  
Alex Luhn



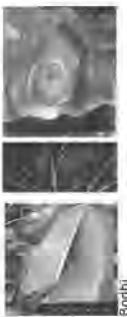
The Pier ■ 6- 8 Seaview Road  
P. O. Box 1585 ■ Paraparaumu Beach  
tel: 04 2985662 ■ fax: 04 2985663  
[www.adarchitecture.co.nz](http://www.adarchitecture.co.nz)

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(20100218) \_\_\_\_\_

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<http://www.eset.com>



23 February 2010

Mulholland Constructions Ltd  
3 Fairway Oaks Drive  
WAIKANAE

Dear Sir/Madam

### **Request for further information**

**Description:** New Residential Dwelling  
**Location:** 22 Fairway Oaks Drive, Waikanae  
**Legal Description:** LOT 3 DP 348205 C/T 197932

As discussed on 22/2/10 I have vetted your consent application from the bottom plate up and will assess the foundations for the structure, when the amended details are supplied from your engineer.

Below is a list of items we require in addition to the ammended foundation design in order for us to issue consent.

#### **Information Needed:**

1. Provide full construction details and membrane specifications for the wet area shower.
2. As LSOP treatment can affect certain bitumen based products, please confirm all purlins will be fully dried prior to instillation.
3. Cladding details: a) Provide plaster specifications, b) Sill detail on pg 15 appears insufficient due to lack of fall at the base of the window and sill supports, c) Beams 2&3 appear exposed-please provide cladding/beam penetration details, d) detail WBD window junction pg 13- please provide a back flashing and dimension the gap between the end of the brick cladding and framing, e) Brick poly butt joint pg 16 appears insufficient- please provide a back flashing
4. Bracing: a) please provide bracing calculations, b) As bracing lines appear to exceed 6m in the garage-please provide additional lateral support, recommend the use of dragon ties, c) distribution along M line at C intersection appears insufficient, d) Please clarify roof bracing.
5. Deck: the deck in relation to the adjacent bank appears to pose a safety from falling issue, please clarify how compliance with the building code will be met.

We have suspended your application and will not proceed any further until the above information is received.

Please contact me if you would like to discuss this matter.

Yours sincerely

Jaime Sherlock

## Jaime Sherlock

---

**From:** Alex Luhn [Alex@adarchitecture.co.nz]  
**Sent:** Tuesday, 2 March 2010 1:48 p.m.  
**To:** Jaime Sherlock  
**Cc:** paul@mulhollandconstructions.co.nz  
**Subject:** RE: 09043 Mulholland - BC 100044 - RE:RFI  
**Attachments:** 09043\_Mulholland\_BC-RevC.pdf; 09043\_Mulholland\_Bracing.pdf

Hi Jamie,  
Please find attached revised bracing calculation sheet and bracing plan with the correct numbers.

Tanks and regards, Alex

---

**From:** Jaime Sherlock [mailto:jaime.sherlock@kapiticoast.govt.nz]  
**Sent:** Tuesday, 2 March 2010 12:57 p.m.  
**To:** Alex Luhn  
**Subject:** RE: 09043 Mulholland - BC 100044 - RE:RFI

Hi Alex,  
I working on the revised info right now and will need to get a revised bracing calculation sheet, the cladding weight and roof pitch is incorrect.  
I will keep on and get everything ready in preparation for the revised info.

Regards,  
Jaime Sherlock  
Kapiti Coast District Council

---

**From:** Alex Luhn [mailto:Alex@adarchitecture.co.nz]  
**Sent:** Friday, 26 February 2010 1:05 p.m.  
**To:** Jaime Sherlock  
**Subject:** 09043 Mulholland - BC 100044 - RE:RFI

Hi Jamie,  
Please find attached RevB plan set, revised truss design, bracing calculations, DURO manual and Branz appraisal for BC100044-Mulholland – 3 Fairway Oaks Drive, Waikanae.  
I've sent a full plan set since I had to add and take off some of the plans what changed the numbering.

### Amendments in RevB:

1. Find construction details for wet area shower on sheet 17 and DURO manual / Branz appraisal as attachment.
2. Added note to 'Selected Products' : (MAKE SURE ALL PURLINS BE FULLY DRIED PRIOR UNDERLAY INSTALLATION) on all relevant sheets.
3. Cladding details:
  - a) No plaster finish anymore.
  - b) New sill detail on sheet 16. Due to taking off the plaster, all cladding 2 details are revised.
  - c) Find beam/cladding penetration detail on sheet 15.
  - d) Find revised brick/window junction detail with requested back flashing and gap between brick cladding and framing on sheet 15.
  - e) No brick/poly butt joint detail required anymore due to changing poly construction over

2/03/2010

windows to weatherboard cladding to match rest of the house. Find corresponding wbd/brick butt joint detail on sheet 15.

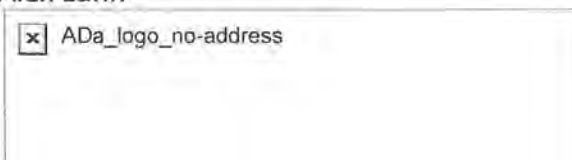
4. Bracing:

- a) Find bracing calculations attached.
- b) Distance between bracing line M and N is 5.5m and distance between walls in garage is 6.0m. Since all walls within 2.0m offset from bracing lines and angle to bracing lines was considered in calculations, I reckon no dragon ties are required.
- c) Bracing to intersection of bracing lines M and C added – sheet 07.
- d) Find roof plan / roof bracing on sheet 8.

- 5. No handrail required for final finished ground level to be no more than 1.0m max below FFL of decking. Find corresponding note on Floor Plan – sheet 2.

I hope everthing is working fine now. If you need further information, please let me know.

Thanks and Regards,  
Alex Luhn



The Pier ▫ 6- 8 Seaview Road  
P. O. Box 1585 ▫ Paraparaumu Beach  
tel: 04 2985662 ▫ fax: 04 2985663  
[www.adarchitecture.co.nz](http://www.adarchitecture.co.nz)

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2/03/2010

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Information from ESET NOD32 Antivirus, version of virus signature database 4906  
(20100301) \_\_\_\_\_

The message was checked by ESET NOD32 Antivirus.

<http://www.eset.com>



# **SPECIFICATION**

of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

## **Proposed House**

(project name)

## **22 Fairway Oaks Dr. Waikanae Beach**

(project address)

## **Mulholland Const.**

(owners name)

Job Number: 09043

Date: October 2009

## 1012 TABLE OF CONTENTS

|       |                                                        |    |
|-------|--------------------------------------------------------|----|
| 1012  | TABLE OF CONTENTS.....                                 | 2  |
| 1232  | INTERPRETATION & DEFINITIONS .....                     | 3  |
| 1233  | REFERENCED DOCUMENTS .....                             | 4  |
| 1234  | DOCUMENTATION .....                                    | 5  |
| 1237  | WARRANTIES .....                                       | 8  |
| 1240  | ESTABLISHMENT .....                                    | 10 |
| 1250  | TEMPORARY WORKS & SERVICES .....                       | 11 |
| 1270  | CONSTRUCTION .....                                     | 13 |
| 2210  | PREPARATION AND GROUNDWORK .....                       | 18 |
| 3120  | CONCRETE .....                                         | 20 |
| 3820  | CARPENTRY .....                                        | 24 |
| 4160  | WRAPS, UNDERLAYS AND DPC.....                          | 27 |
| 4261  | BRICK VENEER CLADDING.....                             | 30 |
| 4311D | DIMOND PROFILED METAL ROOFING .....                    | 34 |
| 4521V | VANTAGE ALUMINIUM WINDOWS AND DOORS .....              | 39 |
| 4555  | GARAGE DOORS.....                                      | 46 |
| 4610  | GLAZING .....                                          | 48 |
| 4710P | PINK® BATTs® & PINK® BATTs® SILENCER® INSULATION ..... | 50 |
| 4821  | FLASHINGS.....                                         | 52 |
| 5110G | GIB® PLASTERBOARD LININGS .....                        | 55 |
| 5230  | INTERIOR DOORS.....                                    | 59 |
| 6700  | PAINTING GENERAL.....                                  | 61 |
| 7112  | RAINWATER STORAGE TANKS.....                           | 67 |
| 7120  | HOT AND COLD WATER SYSTEM.....                         | 71 |
| 7140  | SANITARY PLUMBING .....                                | 75 |
| 7150  | SANITARY FIXTURES, TAPWARE & ACCESSORIES.....          | 77 |
| 7211  | GAS SYSTEM.....                                        | 81 |
| 7410  | DRAINAGE .....                                         | 83 |
| 7701  | ELECTRICAL BASIC .....                                 | 85 |

## 1232 INTERPRETATION & DEFINITIONS

### 1. GENERAL

This general section relates to interpretation and definitions that are used in this specification.

#### 1.1 INTERPRETATIONS

Required: Required by the documents, or by a statutory authority.  
Proprietary: Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.  
Provide and fix: "Provide" or "fix" or "supply" or "fix" if used separately mean provide and fix unless explicitly stated otherwise.  
Review: Review by the contract administrator is for general compliance only. Review does not remove the need for the contractor to comply with the stated requirements, details and specifications of the manufacturers and suppliers of individual components, materials and finishes. Neither can the review be construed as authorising departures from the contract documents.

#### 1.2 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.  
Principal: The person defined as "principal" in the conditions of contract.  
Contractor: The person contracted by the principal to carry out the contract.  
Contract administrator:  
The person appointed by the principal to administer the contract on the principal's behalf. It includes the architect, engineer, designer, project manager or other person so appointed. Where no person has been appointed by the Principal, it means the Principal or the Principal's representative.

#### 1.3 ABBREVIATIONS

The following abbreviations are used throughout the specification:

|        |                                                               |
|--------|---------------------------------------------------------------|
| AAMA   | American Architectural Manufacturers Association              |
| AS     | Australian Standard                                           |
| AS/NZS | Joint Australian/New Zealand Standard                         |
| ASTM   | American Society for Testing and Materials                    |
| AWCINZ | Association of Wall and Ceiling Industries of New Zealand Inc |
| BRANZ  | Building Research Association of New Zealand                  |
| BS     | British Standard                                              |
| CSIRO  | Commonwealth Scientific and Industrial Research Organisation  |
| HERA   | Heavy Engineering Research Association                        |
| MPNZA  | Master Painters New Zealand Association Inc                   |
| NZBC   | New Zealand Building Code                                     |
| NZS    | New Zealand Standard                                          |
| NZS/AS | Joint New Zealand/Australian Standard                         |
| TNZ    | Transit New Zealand                                           |

#### 1.4 DEFINED WORDS

Words defined in the conditions of contract, New Zealand Standards, or other reference documents, to have the same interpretation and meaning when used in their lower case, title case or upper case form in the specification text.

#### 1.5 WORDS IMPORTING PLURAL AND SINGULAR

Where the context requires, words importing singular only, also include plural and vice versa.

## 1233 REFERENCED DOCUMENTS

### 1. GENERAL

This general section relates to other documents referred to in this specification.

#### 1.1 REFERENCED DOCUMENTS

Throughout this specification, reference is made to various New Zealand Building Code (NZBC) acceptable solutions and verification methods for criteria and/or methods used to establish compliance with the Building Act.

Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS, NZS/AS), Transit New Zealand specifications (TNZ) to overseas standards and to listed Acts, Regulations and various industry codes of practice and practice guides. The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

It is the responsibility of the contractor to be familiar with the materials and expert in the techniques quoted in these publications.

Documents cited both directly and within other cited publications are deemed to form part of this specification. However, this specification takes precedence in the event of it being at variance with the cited documents, with the resolution of any variance being confirmed by the Contract administrator in writing and then notified to the Building Consent Authority for consent prior to any work proceeding.

#### 1.2 DOCUMENTS REFERRED TO

Documents referred to in the GENERAL sections are:

|                                                  |                                                                                            |
|--------------------------------------------------|--------------------------------------------------------------------------------------------|
| NZBC F4/AS1                                      | Safety from falling, 2.0 Construction site barriers                                        |
| NZBC F5/AS1                                      | Construction and demolition hazards, 1.0 Work-site barriers                                |
| NZS 6803                                         | Acoustics - Construction Noise                                                             |
| Building Act 2004                                |                                                                                            |
| Building Regulations 1992                        |                                                                                            |
| Health and Safety in Employment Act 1992         |                                                                                            |
| Health and Safety in Employment Regulations 1995 |                                                                                            |
| New Zealand Building Code 1992                   |                                                                                            |
| Historic Places Trust Act 1993                   |                                                                                            |
| Resource Management Act 1991                     |                                                                                            |
| Smoke Free Environments Act 1990                 |                                                                                            |
| OSH                                              | Approved code of practice for the safe erection and use of scaffolding                     |
| OSH                                              | Guidelines for the provision of facilities and general safety in the construction industry |

## 1234 DOCUMENTATION

### 1. GENERAL

This general section relates to documentation required by the Territorial Authority/Building Consent Authority for compliance with the New Zealand Building Code. It also includes documentation relating to:

- Substitutions
- Manufacturers documents

#### **Building Consent Authority documentation**

### 1.1 BUILDING CONSENT

Obtain the original or copies of the building consent forms and documents from the owner and keep them on site. Liaise with the Building Consent Authority for all notices to be given and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

### 1.2 BUILDING CONSENT COMPLIANCE

It is an offence under the Building Act 2004 to carry out any work not in accordance with the building consent.

- The resolution of matters concerning building code compliance to be referred to the contract administrator for a direction in writing and then to the Building Consent Authority for consent.
- Where any alteration is requested by the territorial authority or any other authority, do not undertake such alteration until the matter has been referred to the contract administrator for direction.

#### **Architectural Documentation**

### 1.3 DOCUMENTS

The work shall be carried out to the true intent of the Contract Documents with any further details which may be issued from time to time for the purpose of more fully explaining those already shown. The drawings and this specification shall be accepted and considered sufficient for the general description of the works and the Contractor shall not depart from them without written consent. Should any discrepancy be found between the drawings and specification then the Designer should be consulted for a ruling.

### 1.4 CONTRACT OBSERVATION

The role of the consultants commissioned to design the work does not include administering the contract and/or observing the construction or completing the project. The contract documents prepared are sufficient for the construction of the project by a competent contractor. Consequently the consultants will not be liable (in contract tort or otherwise) for any claim, damage, liability, loss or expense incurred or arising in any way in relation to the contractor not carrying out and/or completing the work as described in the contract documents.

### 1.5 PROJECT PERSONNEL

Provide names and contact detail of the contractor's key personnel and tradespersons who are involved with the project. Provide the names in the form required in the GENERAL section of the specification. Review the list once a month and reissue it if changes have been made.

### 1.6 KEY PERSONNEL

Provide names and contact detail of key personnel. Provide names, registrations numbers (where appropriate) and contact detail of key personnel that are required by the Building Consent Authority as part of the application for the Code Compliance Certificate.

Include the following as applicable:

- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician

- Roofer
- Bricklayer
- External window manufacturer

#### 1.7 PRODUCER STATEMENTS

When producer statements verifying construction are required, provide copies to both the Building Consent Authority and the contract administrator. Provide producer statements in the form required by the Building Consent Authority.

#### 1.8 DOCUMENTATION REQUIRED FOR CODE COMPLIANCE

Review the issued Building Consent for details of documents and information that will be required by the Principal for the application for a Code Compliance Certificate. Obtain such required documents from the relevant parties for delivery to the contract administrator after the final inspection has been carried out by the Building Consent Authority

#### **Substitutions**

#### 1.9 PROPOSED SUBSTITUTIONS

A substitution may be proposed where specified products are not reasonably available. A substitution may also be proposed by the Contractor where the Contractor considers a proposed substitution to be an alternative to the specified product. Except where a specified product is not available, the Contract administrator is not bound to accept any substitutions. Where branded work sections are included in this specification, substitution of those products or systems will not be allowed.

#### 1.10 NOTIFICATION OF SUBSTITUTIONS

Notify proposed substitution of specified products. Notification to include but not be limited to:

- Product identification
- Manufacturer's name, address, telephone and facsimile numbers, website and email address
- Detailed comparison between the properties and characteristics of the specified product and the proposed substitution
- Statement of NZBC compliance, including durability
- Details of manufacturer warranties

plus an assessment of

- Any changes required to the programme including any extension of time required
- Any consequential effects of the proposed substitution
- Allowance for time and cost for re-design and documentation (if applicable)
- Allowance for time and cost for obtaining an amendment to the Building Consent (if applicable)
- Any change in cost associated with the proposed substitution

and if requested

- All current manufacturer's literature on the product
- Accreditations and appraisals available
- Reference standards
- Product limitations
- Samples
- List of existing installations in the vicinity of the project

#### 1.11 ACCEPTANCE OF SUBSTITUTIONS

The Contract administrator must advise of acceptance of substitutions in writing.

#### **Amendment to issued Building Consent**

#### 1.12 CONTRACTOR AMENDMENTS TO BUILDING CONSENT

Where the contractor has sought acceptance of a substitution or a variation which is for the contractor's own convenience and the substitution or variation requires an

amendment to the Building Consent, the contractor must apply for and obtain the required amendment.

The contractor must:

- Obtain approval for substitutions from the Contract administrator.
- Prepare and provide to the Building Consent Authority all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

#### 1.13 PRINCIPALS AMENDMENTS TO BUILDING CONSENT

Where the principal is proposing a substitution or a variation which requires an amendment to the Building Consent, the contractor must provide to the principal information that the contractor has that is required for the amendment.

The principal will:

- Prepare and provide to the Building Consent Authority all documentation required for the amendment.
- Pay all fees and other costs associated with this amendment.
- Where the amendment affects other approved plans, also amend those plans.

#### **Manufacturer's documents**

#### 1.14 BRANDED WORK SECTIONS

Branded sections may be included in this specification relating to specific products and systems to be installed as part of the contract works. Where branded sections are included, substitutions to the branded products and systems will not be allowed.

#### 1.15 MANUFACTURER'S AND SUPPLIER'S REQUIREMENTS

Manufacturers and supplier's requirements, instructions, specifications or details mean those issued by them for their particular material, product or component and are the latest edition.

#### 1.16 MANUFACTURER'S AND SUPPLIER'S DOCUMENTS

Refer to individual sections for a detailed list of manufacturer's and supplier's documents relating to work on this project. Retain current copies of the documents listed, and all other relevant manufacturer's technical literature, on site. Make this information available to all personnel and ensure they are familiar with requirements for handling, storing, preparing for, fixing and finishing all products before commencing work. Provide a copy of all listed manufacturer's literature to the Contract administrator.

#### 1.17 ONGOING MAINTENANCE REQUIREMENTS

Refer to individual sections for details of manufacturer's and supplier's requirements for ongoing maintenance necessary to ensure continuing compliance with the durability requirements of the NZBC. Provide a copy of literature detailing ongoing maintenance and inspection requirements to the Contract administrator.

## 1237 WARRANTIES

### 1. GENERAL

This general section refers to the requirements for warranties as listed, either in this work section or in specific work sections. It includes: -

- Warranties for parts of the work required by the Principal in a required form
- Installer/applicator warranties for parts of the work in the installer/applicator's standard form
- Manufacturer/supplier warranties provided with products, appliances and the like in the suppliers standard form
- Guarantees provided by contractors in the contractor's standard form

#### Warranties

### 1.1 PROVIDE WARRANTIES

Provide executed warranties in favour of the principal in respect of, but not limited to, materials, components, service, application, installation and finishing called for in that specified section of work. The terms and conditions of the warranty in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability under the terms of the warranty called for in that specified section of work.

Where installer/applicator warranties are included in a branded section of this specification they shall be provided in lieu of the warranties that are otherwise required.

Where installer/applicator warranties are available they may be provided in lieu of the warranties that are otherwise required provided these warranties are subject to similar conditions and periods as those listed in the SCHEDULE OF WARRANTIES.

- Conform to the WARRANTY AGREEMENT form included in the specification/conditions of contract.
- Commence warranties from the date of practical completion of the contract works (unless otherwise stated).
- Maintain their effectiveness for the times stated.
- Provide executed warranties no later than the date of the Contractor's Completion Statement.

### 1.2 WEATHERTIGHTNESS AND WATERTIGHTNESS WARRANTY

A warranty is required from the contractor for a minimum period of 2 years, covering the weathertightness of the complete building envelope and the watertightness of all liquid supply and disposal systems and fittings. This general warranty is in addition to any specific warranties required.

### 1.3 SCHEDULE OF WARRANTIES

The following is a summary of the warranties and warranty periods called for in work sections.

|          |                                     |
|----------|-------------------------------------|
| 2 years  | Weathertightness and watertightness |
| 5 years  | Pressed steel tile roofing          |
| 5 years  | Aluminium windows and doors         |
| 10 years | Sealants                            |
| 1 year   | Vinyl surfacing                     |
| 1 year   | Carpeting                           |
| 2 years  | Painting                            |
| 2 years  | Decorative coatings                 |
| 2 years  | Hot and cold water system           |
| 1 year   | Electrical general                  |

### 1.4 WARRANTIES – MANUFACTURER/SUPPLIER

Where warranties are offered covering materials, equipment, appliances or proprietary products, provide all such warranties to the contract administrator.

Provide warranties in favour of the principal. The terms and conditions of such warranties in no case negate the minimum remedies available under common law as if no warranty had been offered. Failure to provide the warranty does not reduce liability for execution and materials for that part of the work.

- Conform to the manufacturer/suppliers standard form.
- Commence the warranties from the date normally applicable.
- Maintain their effectiveness for the times stated.
- Provide warranties no later than the date of the Contractor's Completion Statement.

#### **Guarantees - Contractor**

1.5

##### **MASTER BUILD SERVICES LTD GUARANTEE**

Provide a Master Build New Homes or Alterations & Additions Guarantee including all costs in the contract price and covering loss of deposit, completion, inspection, execution and material defects under the terms of the guarantee offered by Master Build Services Ltd. Execute with all three signatories: owner, registered master builder and Master Build Services Ltd, before commencing the contract works.

## **1240 ESTABLISHMENT**

### **1. GENERAL**

This general section relates to site establishment including: -

- Notices and approvals
- Inspections
- Site preparation
- Signage
- Temporary construction

#### **Notices and approvals**

### **1.1 STATUTORY OBLIGATIONS**

Comply with all statutory obligations and regulations of regulatory bodies controlling the execution of the works.

### **1.2 BUILDING CONSENT AUTHORITY AND NETWORK UTILITY APPROVALS**

Attend on Building Consent Authority officers, statutory and network utility inspectors, as necessary to obtain approvals (in addition to building consent approval) for and the satisfactory completion of, the works.

### **1.3 NOTIFY NETWORK UTILITY OPERATORS**

Notify all network utility operators of proposed works before commencing site operations. Ascertain location of services or confirm that none exist in the vicinity of the works. Take all necessary precautions to avoid damage to existing services.

#### **Site preparation**

### **1.4 SITE AND SOIL SURVEYS**

Carry out all investigations necessary and peruse all information available to determine ground conditions and likely ground performance both on the site and adjacent to it. Also refer to the territorial authority project information memorandum (PIM).

#### **Temporary construction**

### **1.5 TEMPORARY ROADS**

Provide as necessary all temporary roads, tracks, crossings and hard standing required for the efficient execution of the works and maintain to approval.

### **1.6 TEMPORARY BUILDINGS**

Provide as necessary temporary sheds, offices, lunch rooms, sanitary accommodation and other temporary buildings required for storage, management of the works, for the use of workers while on site and as required by Acts and Regulations.

### **1.7 FENCING**

Provide temporary fencing as necessary to protect the public and others, for the proper execution of the works and to meet the requirements of territorial or other authority.

## **1250 TEMPORARY WORKS & SERVICES**

### **1. GENERAL**

This general section relates to temporary works and services required for the construction of the contract works. It includes:

- Temporary works and services including temporary fencing
- Scaffolding and shoring
- General care and protection

#### **Temporary works**

#### **1.1 COMPLY WITH NEW ZEALAND BUILDING CODE**

Refer to New Zealand Building Code clauses and approved document paragraphs for the criteria and/or methods that must be used in this section to establish compliance with the code.

#### **1.2 COSTS RELATING TO TEMPORARY WORKS**

Pay all rates/fees in respect of temporary works.

#### **1.3 MAINTENANCE OF TEMPORARY WORKS**

Maintain, alter, adapt and move temporary works and services as necessary. Clear away when no longer required and make good.

#### **1.4 SAFEGUARD THE SITE, THE WORKS AND MATERIALS**

Take all precautions to prevent unauthorised access, including access outside working hours, to the site, the works and adjoining property. Safeguard the site, the works, materials and plant from damage and theft.

#### **1.5 SITE FENCING – NON PUBLIC AREAS**

Provide and maintain a 1 metre high site fence to non public areas. Construct using:

- warratah stakes at 1.5 metre centres fitted with safety caps
- plastic safety mesh

#### **1.6 PROVIDE SEDIMENT AND SILT RUN OFF PROTECTION**

Provide appropriate measures to prevent or minimise sediment generation and silt run off. Comply with territorial and other authority requirements relating to carrying out earthworks.

Prevent silt run off by:

- exposing only as much ground as required at any time
- providing run off channels, contour drains or earth bunds to divert clean water away from the site on to stable sealed or grassed ground
- capture silt by the use of silt fences, vegetation buffer strips, sediment ponds or earth bunds.

Provide sediment control by:

- earth bunds constructed across the slope to control and detain run off
- silt fences constructed using filter fabric stretched between posts at a maximum of 1 metre spacing.

Pump water from trenches and other areas of the site using methods to prevent sediment entering any drain or watercourse. Filter dirty water before discharging into drainage system.

#### **Temporary services**

#### **1.7 WATER**

Provide clean, fresh water for the works and make arrangements for distributing about the site.

- 1.8 **ELECTRICITY**  
 Nominate the person to install and be responsible for the complete temporary electrical installation. The name and designation of the person responsible is to be displayed prominently and close to the main switch or circuit breaker.
- Inspect and overhaul the installation at such intervals as are prescribed by the network utility operator but not exceeding three monthly intervals.
- 1.9 **TELEPHONE**  
 Provide on site temporary telephone facilities.
- Scaffolding and shoring**
- 1.10 **GENERAL SCAFFOLDING**  
 Provide as necessary general scaffolding for the efficient execution of the works. Placement, erection and structure to be by certified suppliers/erectors and approved by the Labour Department OSH inspectors before being used. Comply with the OSH publication: "Approved code of practice for the safe erection and use of scaffolding."
- Care and protection**
- 1.11 **PROTECT EXISTING TREES**  
 Protect existing trees, fences, gates, walls, gardens and other designated site features which are to remain in position during the execution of the works.
- Construct a temporary fence at the outer edge of the drip line of trees to be protected. Comply with territorial authority requirements.
- 1.12 **EXISTING SITE SERVICES**  
 Make good all damage to existing roads, footpaths, grounds, sewers or other services, caused in carrying out the contract works.
- 1.13 **CONSTRUCTION KEYING AND SECURITY**  
 Provide locksets with temporary keying, or install with the cylinders removed.
- 1.14 **TEMPORARY STORAGE**  
 Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers' requirements.
- 
- 1.15 **PERIODIC SITE CLEANING**  
 Carry out periodic site cleaning during the contract period. Place waste material in appropriate storage pending removal from the site.
- 1.16 **PERIODIC RUBBISH REMOVAL**  
 Maintain on site appropriate means for the storage and removal of construction waste material. Where required or appropriate provide for the separate storage of recyclable waste and other materials requiring special disposal. Keep food waste separate from construction waste.

## **1270 CONSTRUCTION**

### **1. GENERAL**

This GENERAL section relates to common requirements for construction issues including: -

- Quality assurance
- Noise and nuisance
- Set out
- Archaeological discovery
- Common execution requirements
- Common materials requirements
- Supply of spare materials
- Common requirements for samples and tests
- Final presentation and cleaning
- Commissioning

#### **Quality control and assurance**

### **1.1 QUALITY ASSURANCE**

Carry out and record regular checks of material quality and accuracy, including:

- Concrete quality and finish.
- Dimensional accuracy of structural column locations (following completion of foundations).
- All perimeter columns and frames for plumb.
- Levels of all floors relative to the site datum.
- Framing timber moisture content.

Where any material, quality or dimension falls outside specified or required tolerances, obtain written direction from the contract administrator. Where building consent approval is affected, confirm remedial action with the Building Consent Authority.

Provide all materials, plant, attendances, supervision, inspections and programming to ensure the required quality standards are met by all project personnel.

#### **Noise and nuisance**

### **1.2 LIMIT CONSTRUCTION NOISE**

Minimise the effects of noise generation by including in the planning of the work such factors as placing of plant, programming the sequence of operations and other management functions. Limit construction noise to comply with the requirements of NZS 6803, the requirements of the Resource Management Act sections 326, 327 and 328 and the Health and Safety in Employment Regulations clause 11.

### **1.3 ACCEPTABLE NOISE LEVELS**

Refer to NZS 6803 Tables 2 and 3 for the upper limits of construction work noise in residential and industrial areas over the various time periods, particularly 0730 to 1800 hours. Note also the allowed adjustments and exemptions in Section 6. Do not exceed these limits.

### **1.4 PROVIDE INFORMATION TO NEIGHBOURS**

Provide information to neighbours of any noise generation from the site liable to constitute a problem. Explain to them the means being used to minimise excessive noise and establish with them the timings most suitable for the noise generating work to be carried on.

Discuss with any complainant the measures being used to minimise noise. Where possible modify these measures to accommodate particular circumstances. Finally, determine the sound level at the location under discussion using methods and observation reporting as laid down in NZS 6803. If the noise level is above the upper limits of tables 2 and 3, cease the noise generating operation and remedy the problem.

- 1.5 INCONVENIENCE TO OTHERS**  
When the works are to be carried out in or around occupied premises, ascertain the nature and times of occupation and use. Carry out the works in a manner to minimise inconvenience, nuisance and danger to occupants and users.
- 1.6 DIRT AND DROPPINGS**  
Remove dirt and droppings deposited on public or private thoroughfares from vehicles servicing the site to the satisfaction of the appropriate authorities and the contract administrator.
- 1.7 DAMAGE AND NUISANCE**  
Take all precautions to prevent damage and nuisance from water, fire, smoke, dust, rubbish and all other causes resulting from the construction works.
- Set-out and tolerances**
- 1.8 SURVEY INFORMATION**  
Locate and verify survey marks and datum points required to set out the works. Record and maintain their position. Re-establish and replace disturbed or obliterated marks.
- 1.9 SET-OUT AND DATUM**  
Set out the work to conform with the drawings. Establish a permanent site datum to confirm the proposed building ground floor level and its relationship to all other existing and new building levels.
- 1.10 SET-OUT BY LICENSED CADASTRAL SURVEYOR**  
Before commencing construction provide the contract administrator with a certificate prepared by a licensed cadastral surveyor that the set-out is complete and that the building is accurately placed on the site.
- During construction provide the contract administrator with a certificate, prepared by the same licensed cadastral surveyor confirming the set-out of the foundations and grid lines. Necessary adjustments are to be determined and agreed to by the contract administrator before proceeding further.
- 1.11 CONFIRM HEIGHT IN RELATION TO BOUNDARY**  
Provide a certificate prepared by a licensed cadastral surveyor that the building has been constructed within the allowed height in relation to boundary. Provide the certificate to the local authority. Provide a copy of the certificate to the contract administrator
- 1.12 USE OF SET-OUT INSTRUMENTS**  
Permit without charge, the use of instruments already on site for checking, setting out and levels.
- 1.13 CHECK DIMENSIONS**  
Check all dimensions both on drawings and site, particularly the correlation between components and work in place. Take all dimensions on drawings to be between structural elements before linings or finishes, unless clearly stated otherwise.
- 1.14 TOLERANCES**  
All work to be level, plumb, and true to line and face. Unless otherwise specified in specific work sections of this specification, tolerances for structural work shall comply with the following:
- |                        |                                                                                                                                                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Concrete construction: | To NZS 3109 Concrete construction<br>Clause 3.9 Tolerances for reinforcement<br>Table 5.1 Tolerance for precast components<br>Table 5.2 Tolerance for in situ construction<br>To NZS 3114 Concrete surface finishes |
| Masonry construction:  | To NZS 4210 Masonry construction: Materials and workmanship<br>Clause 2.6.5 Tolerances<br>Table 2.2 Maximum tolerances                                                                                              |

Timber framing: To NZS 3604 Timber framed buildings  
Clause 2.2 Tolerances  
Table 2.1 Timber framing tolerances

Refer to work sections for tolerance requirements for finishes

#### **Archaeological discovery**

##### **1.15 ANTIQUITIES AND ITEMS OF VALUE**

Report the finding of any fossils, antiquities and other items of value, to the Contract Administrator. All to remain undisturbed until approval is given for removal.

Pre-1900, items or evidence of human activity on the site, come under the Historic Places Trust Act 1993. If such items or evidence is discovered work must stop immediately and the Contract Administrator must be notified immediately. The site maybe classified as an Archaeological Site under the Act, and the Contract Administrator or Owner must contact the NZ Historic Places Trust for authority to proceed.

Post-1900 items remain the property of the owner, pre-1900 items may remain the property of the owner or the Crown subject to what is found.

#### **Execution**

##### **1.16 EXAMINE PREVIOUS WORK**

Before commencing any part of the work carefully examine the previous work on which it may depend. Report in writing to the contract administrator defects that may affect the quality of the proposed work and obtain instructions. Commencing work on any part means that previous work is accepted as being satisfactory for work of the required standard.

##### **1.17 WORKER QUALIFICATIONS**

All work to be level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

##### **1.18 MINIMISE DELAYS DUE TO WEATHER**

Use appropriate techniques and methods to prevent damage and minimise delays due to weather.

#### **Materials**

##### **1.19 NEW PRODUCTS AND MATERIALS**

Materials and products to be new unless stated otherwise, of the specified, and complying with all cited documents.

##### **1.20 COMPATIBILITY OF MATERIALS AND FINISHES**

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

##### **1.21 STORING PRODUCTS AND MATERIALS**

Take delivery of and store products, materials and components in accordance with codes of practice and the product manufacturer's or supplier's stated requirements. Maintain the proper condition of any protective packaging, wrappings or supports during delivery, unloading and storage.

##### **1.22 HANDLING PRODUCTS AND MATERIALS**

Handle products, materials and components in accordance with codes of practice and the manufacturer's or supplier's stated guidelines. Avoid distortion and any contact with potentially damaging surfaces or conditions.

- 1.23 **SUBSTRATE CONDITIONS**  
Ensure substrate conditions are within the manufacturer's or supplier's stated guidelines both before and during the installation of any material, product or system. Obtain written instructions on the necessary action to rectify unsatisfactory conditions.
- 1.24 **INSTALLING PRODUCTS AND MATERIALS**  
Install in accordance with the manufacturer's or supplier's technical literature. Ensure that all installers are familiar with the required substrate conditions and the manufacturer's or supplier's specified preparation, fixing and finishing techniques.
- 1.25 **COMPLY WITH STANDARDS**  
Comply with the relevant and/or cited Standard for any material or component. Obtain certificates of compliance when requested by the contract administrator.
- 1.26 **CONDITION OF MATERIALS AND COMPONENTS**  
To be in perfect condition when incorporated into the work.
- 1.27 **INCOMPATIBLE MATERIALS AND METALS**  
Separate incompatible materials and metals with separation layers, sleeves or gaskets of plastic film, bituminous felt or mastic or paint coatings, installed so that none are visible on exposed surfaces.

#### **Samples and tests**

- 1.28 **SAMPLES AND PROTOTYPES**  
Where specified in the work sections, submit samples, prepare sample panels, and construct prototypes for review as to appearance, form and conformance with the drawings and specifications. Submit all information required to assist the review process, including technical data, manufacturer's literature, independent appraisals and producer statements.
- Timing for the provision and review of samples, sample panels and prototypes to be included in the contract programme. Allow a minimum of 10 working days for each review. Proceed only after instructions to proceed have been issued in writing by the contract administrator.
- In situ work may be incorporated in the finished work if so confirmed, otherwise allow to remove completely and replace.
- 1.29 **CONTROL STANDARD**  
Obtain the contract administrator's confirmation of material, component and work samples which then become the quality control standard. Remove from the site any rejected samples. Retain confirmed samples with care on site for comparison throughout the contract. Remove from the site when no longer required.

#### **Spares**

- 1.30 **SPARES**  
Collect, protect and store safely all spare materials required under the contract. Give the contract administrator an inventory of all spares.

#### **Final presentation and cleaning**

- 1.31 **REMOVE TEMPORARY PROTECTION**  
Remove all temporary markings, coverings, labels and protective wrappings unless instructed otherwise.
- 1.32 **REPLACE DAMAGED MATERIALS**  
Replace all materials or component damaged during the works to the standard of and integral with the original.

- 1.33 **COMPLETE ALL SERVICES**  
Ensure all services are complete and operational, with all temporary labelling removed, required labelling fixed and service instructions provided.
- 1.34 **CLEANING BY CONTRACTOR**  
Clear the contract works of all construction materials, waste, dirt and debris. Clean the contract works including:
- Wipe all surfaces to remove construction dust
  - Clean out service ducts and accessible concealed spaces
  - Clean out all gutters and rainwater heads
  - Wipe dust from both sides of glass. Take particular care when removing paint or cementitious materials to not damage the glass.
  - Remove adhesive residue left by labels and other temporary protection/markings
  - Clean out the interior of all cabinetry
  - Wash down external concrete including driveways and concrete masonry. Take care when waterblasting to not cause damage to the surface or allow water to enter the building.
  - Remove rubbish and building material from the area immediately adjacent to the contract works
- 1.35 **CLEANING BY COMMERCIAL CLEANER**  
Use a commercial cleaning firm to clean the whole of the interior of the building, including all appliances, equipment, fittings, surfaces and finishes to leave it without any blemish. Cleaning to include:
- Clean and wash down all external surfaces to remove dirt, debris and marking.
  - Clean all interior surfaces including cabinetwork, joinery, sanitary and hardware items.
  - Vacuum or polish all floor finishes.
  - Clean and polish all glass, both sides.
- Commissioning**
- 1.36 **MOVING PARTS**  
Adjust, ease and lubricate all doors, windows, drawers, hardware, appliances, controls and all moving parts to give easy and efficient operation.
- 1.37 **SECURITY AT COMPLETION**  
Remove any temporary lock cylinders and complete final keying prior to handing over keys to the principal on completion of the works. Leave the works secure with all accesses locked. Account for all keys/cards/codes and hand to the principal along with an itemised schedule, retaining a duplicate schedule signed by the principal as a receipt.

## **2210 PREPARATION AND GROUNDWORK**

### **1. GENERAL**

This section relates to the clearance, excavation and backfilling of the site area in preparation for:

- footings and floor slabs

#### **1.1 DOCUMENTS**

Documents referred to in this section are:

- |          |                                                                               |
|----------|-------------------------------------------------------------------------------|
| NZS 3604 | Timber framed buildings                                                       |
| OSH      | Approved code of practice for safety in excavation and shafts for foundations |

#### **1.2 SITE SAFETY**

Provide adequate support for all excavations. Cover holes and fence off open trenches and banks.

#### **1.3 ARCHAEOLOGICAL DISCOVERY**

If fossils, antiquities and other items of value are found refer to the general section CONSTRUCTION for actions to be taken with archaeological discovery.

### **2. PRODUCTS**

#### **2.1 EXCAVATED CLEAN FILL**

Clean, free of contamination, mineral soil from other formations in the excavation which may be selected and approved as suitable for filling by having grading and moisture content properties that will allow recompaction to 95% of maximum density.

#### **2.2 SAND FILL**

Clean sand of such grading in particle size to achieve mechanical compaction to 90% maximum density.

#### **2.3 HARD FILL**

Scoria or crushed rock to GAP (General All Passing) 40 grading.

### **3. EXECUTION**

#### **3.1 EXCAVATION GENERALLY**

Carry out excavation, using plant suitable for the purpose, to the guidelines set by the OSH publication: Approved code of practice for safety in excavation and shafts for foundations.

#### **3.2 BURNING OF MATERIALS**

Burning of materials is not permitted on site.

#### **3.3 PROTECT EXISTING WORK**

Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained.

#### **3.4 PROTECT TREES**

Protect from damage trees, shrubs, natural site features and existing landscaped areas nominated on the drawings as being retained. Ensure existing levels are undisturbed beneath the dripline of retained trees.

#### **3.5 EROSION CONTROL**

Ensure measures are in place to contain silt dislodged as a result of water infiltration and to prevent it being carried off site with stormwater.

#### **3.6 SURFACE PREPARATION**

Comply with NZS 3604, section 3.5, Site preparation. Remove all turf, vegetation, trees, topsoil, stumps, uncontrolled fill and rubbish from the area to be built on.

- 3.7 **STOCKPILE TOPSOIL**  
Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.
- 3.8 **GENERAL EXCAVATION**  
Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.
- 3.9 **FOUNDATION EXCAVATION**  
Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and free of soft spots, stepped as detailed and clean and free of water.
- 3.10 **INADEQUATE BEARING**  
If bearing is not to NZS 3604, 3.1.2 and 3.1.3, then excavate further and backfill with material as follows. Confirm any changes with the territorial authority.  
Below slabs on grade: Hardfill compacted in 150mm layers  
Below footings: 10 MPa concrete  
Service trenches: Hardfill compacted in 150mm layers  
  
If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.
- 3.11 **STANDARD OF COMPACTION**  
Place fill in layers of not more than 150mm and compact to achieve 95% of maximum dry density. For granular fill material, the fill shall be compacted to 80% of saturated dry density.
- 3.12 **GRANULAR BASE FOR SLABS**  
To conform to NZS 3604, section 7.5.3, Granular base. Consolidate with a vibrating roller. Blind the surface with 20mm of coarse sand or sand/cement and roll ready to receive a damp-proof membrane.
- 3.13 **GENERAL BACKFILLING**  
Obtain written confirmation from the owner before using any excavated material. Compact approved backfilling in 150mm layers with the last 200mm in clean topsoil, lightly compacted and neatly finished off.
- 3.14 **SURPLUS MATERIAL**  
Remove surplus and excavated material from the site.

## **3120 CONCRETE**

### **1. GENERAL**

This section relates to formwork, reinforcement, concrete mixes and the placing of concrete.

#### **1.1 DOCUMENTS**

Documents referred to in this section are:

|             |                                             |
|-------------|---------------------------------------------|
| NZS 3101.1  | Concrete structures standard                |
| NZS 3104    | Specification for concrete production       |
| NZS 3109    | Concrete construction                       |
| NZS 3114    | Specification for concrete surface finishes |
| NZS 3604    | Timber framed buildings                     |
| AS/NZS 4671 | Steel reinforcing materials                 |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### **2. PRODUCTS**

#### **2.1 NORMAL CONCRETE**

Normal concrete 20 MPa grade, maximum aggregate size 19 mm ready-mixed to NZS 3104. Provide delivery dockets listing mix and despatch details.

#### **2.2 PRESCRIBED MIX CONCRETE**

Prescribed mix concrete 17.5 MPa grade minimum strength, using either separate batching of sand and builder's mix or coarse aggregate to NZS 3104: table 3.1, Grading recommendations for combined and uncombined coarse aggregates.

#### **2.3 SITE CONCRETE**

Special concrete 10 MPa with minimum water for workability, all materials and batching to NZS 3104: table 3.1, Prescribed mixes (P).

#### **2.4 REINFORCEMENT**

Bars to AS/NZS 4671. Grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to AS/NZS 4671.

#### **2.5 TYING WIRE**

Mild drawn steel wire not less than 1.2 mm diameter.

#### **2.6 SPACERS AND CHAIRS**

Precast concrete or purpose made moulded PVC to approval. Where concrete spacer blocks are used in exposed concrete work use blocks matching surrounding concrete.

#### **2.7 DAMP-PROOF MEMBRANE**

0.25 mm minimum polyethylene to NZS 3604, clause 7.5.4, Damp-proof membrane.

### **3. EXECUTION**

#### **3.1 HANDLE AND STORE**

Handle and store reinforcing steel and accessories without damage or contamination. Store on timber fillets on hard ground in a secure area clear of any building operation. Lay steel fabric flat.

Ensure reinforcement is clean and remains clean so that at the time of placing concrete it is free of all loose mill scale, loose rust and any other contamination that may reduce bonding capacity.

#### **3.2 FALSEWORK AND FORMWORK**

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified

finished quality. Ensure timber or plywood used for formwork is non-staining to the set concrete.

Securely fix and brace formwork sufficiently to support loads and with joints and linings tight enough to prevent water loss. Do not use tie wires or rods unless approved in writing by the owner. Unless detailed otherwise, provide a 19 mm chamfer or fillet strip at all interior and exterior angles of beam and column forms. Mitre at intersections.

Water blast to clean formwork. Keep formwork wet before concrete is placed.

Unless detailed otherwise, set up soffit boxing for beams and slabs to provide a camber when forms are stripped, of 3 mm rise for every 3 metres of total clear span.

### 3.3 INSTALL DAMP-PROOF MEMBRANE

Apply polythene membrane to prepared basecourse with 150 mm laps between sheets. Tape seal laps and penetrations with 50 mm wide pressure sensitive plastic tape. Refer to drawings for perimeter details.

### 3.4 CUT AND BEND REINFORCEMENT

Cut and bend bars using proper bending tools to avoid notching and to the requirements of NZS 3109: 3.3 Hooks and bends. Minimum radii of reinforcement bends to NZS 3109: table 3.1, Minimum radii of reinforcement bends. Do not rebend bars. Where rebending is necessary, use a purpose built tool, proper preparation and preheating.

### 3.5 ADJUSTMENTS

Use a purpose built tool for on site bending and to deal with minor adjustments to steel reinforcement.

### 3.6 TOLERANCES, BENDING

To NZS 3109: clause 3.9, Tolerances for reinforcement.

### 3.7 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in NZS 3109: clause 3.6, Spacing of reinforcement.

### 3.8 LAPPED SPLICES

Length of laps where not dimensioned on the drawings in accordance with the SELECTIONS. Increase laps of plain round steel by 100%. Provide laps only where indicated on the drawings. Tie all lapping bars to each other.

### 3.9 REINFORCEMENT COVER

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on the drawings. Where cover is not shown on drawings provide minimum cover to NZS 3101 part 1, table 3.6, Minimum required cover for a specified intended life of 50 years. Fix chairs for top reinforcement in slabs at 1.0 metre centres or to ensure adequate support. Cover tolerances to NZS 3109: clause 3.9, Tolerances for reinforcement.

### 3.10 CASTING IN

Build in all grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required by all trades and as shown on the drawings, prior to pouring the concrete.

Do not use grounds exceeding 100 mm in length. Location and form of conduits to be approved in writing by the owner. Minimum cover 40 mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25 mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar.

Form all pockets, chases and flashing grooves as required by all trades and as shown on the drawings.

Wrap all pipes embedded in concrete with tape to break the bond and to accommodate expansion. Do not embed pipes for conveying liquids exceeding a temperature of 50°C in concrete.

- 3.11 **CONSTRUCTION JOINTS**  
Locate and construct as shown on the drawings or in accordance with NZS 3109: clause 5.6, 5.6.3 Type B.
- 3.12 **PRE-PLACEMENT INSPECTION**  
Do not place concrete until all excavations, boxing and reinforcing have been inspected and passed by the Building Consent Authority.
- 3.13 **SURFACE FINISHES**  
To NZS 3114: clause 105, Specification of finishes, as scheduled or as denoted on the drawings.
- 3.14 **EXPOSED CONCRETE**  
Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Unless detailed, obtain written confirmation of the type and pattern of all joints.
- 3.15 **CONCRETE SURFACE TOLERANCES**  
To NZS 3114: clause 104, Surface tolerances and clause 105, Specification of finishes, with the suggested tolerances becoming the required tolerances.
- 3.16 **PUMPING CONCRETE**  
Set up and supervise pump operation, placing and compaction of the mix to NZS 3109: clause 7.4, Handling and placing and clause 7.6, Compaction Advise the ready-mix supplier of the type of pump and the slump required, in addition to the concrete grade, strength and quantity.
- 3.17 **COMPACTION**  
Use power operated vibrators on foundations, vertical constructions and beams.
- 3.18 **RESIDENTIAL FLOOR SLABS**  
Construct to NZS 3604: clauses 4.8 Concrete and 7.5, Concrete slab-on-ground floors in timber buildings. Lay to true and straight surfaces, screeded, floated and steel (manual or power) trowelled finish. Tolerance on flatness: maximum 3 mm gradual deviation over a 3 metre straight-edge, to NZS 3109: clause 104, Surface tolerances.
- 3.19 **SAW CUTS**  
Cut slabs where indicated on the drawings and as required to control shrinkage cracking. Carry out cutting as soon as possible, without causing tear-out of aggregate and before shrinkage cracking has occurred, generally within 24 hours of pouring. Where saw cuts are made, cut out 100 mm of every second wire of the mesh for a length of 50 mm each side of the saw cut position. Saw cuts:  $\frac{1}{3}$  slab depth or 30 mm minimum.
- 3.20 **SURFACE DEFECTS**  
Make good surface defects immediately after forms are stripped. Make good hollows or bony areas with 1:2 mortar or plaster, finished to the same tolerances as the parent concrete. Fill any tie rod holes with 1:2 mortar.
- 3.21 **CURING OF CONCRETE**  
Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.
- 3.22 **STRIKE FORMWORK**  
Strike formwork without damaging or overloading structure. Do not remove formwork before the following minimum periods:
- 4 days:                      slab construction

3.23

**CLEAN OUT**

Clean out saw cuts. Fill with cement grout where the floor will be covered with carpet or vinyl.

3.24

**REMOVE**

Remove all unused materials and all concrete and reinforcing debris from the site.

## **3820 CARPENTRY**

### **1. GENERAL**

This section relates to the supply and erection of light timber framing, floors, flooring underlays for ceramic tiling and insulation.

#### **1.1 DOCUMENTS**

Documents referred to in this section are:

|              |                                                    |
|--------------|----------------------------------------------------|
| AS/NZS 1748  | Mechanically stress-graded timber                  |
| AS/NZS 2904  | Damp-proof courses and flashings                   |
| NZS 3602     | Timber and wood-based products for use in building |
| NZS 3603     | Timber structures standard                         |
| NZS 3604     | Timber framed buildings                            |
| NZS 3631     | New Zealand national timber grading rules          |
| NZS 3640     | Chemical preservation of round and sawn timber     |
| AS/NZS 4347  | Damp-proof courses and flashings - Methods of test |
| BRANZ BU 453 | Fasteners selection                                |

#### **1.2 SAMPLES**

Provide samples of the following for review prior to ordering:

- Boarding for exterior decks
- Timber strip flooring.

#### **1.3 DIMENSIONS**

All timber sizes except for battens are actual minimum dried sizes.

### **2. PRODUCTS**

#### **2.1 TIMBER FRAMING, TREATED**

Species, grade and in service moisture content to NZS 3602 and treatment to NZS 3640. Either mechanically stress graded to AS/NZS 1748, or visual grading to NZS 3631.

#### **2.2 TIMBER FRAMING, CHEMICAL FREE, MECHANICALLY STRESS GRADED**

Species, grade and moisture content in service as set out in NZS 3602. Machine stress graded to AS/NZS 1748, with an average moisture content at supply of 16% or less.

#### **2.3 TIMBER TRUSSES**

Moisture content: 16% at supply

#### **2.4 SOFTWOOD SPACED BOARDING FOR EXTERIOR DECKS**

Selected radiata pine, treated to H3.2 CCA to NZS 3640, clause 6.3.1, Round, part round, or sawn timber. Dressed four sides and with arrises removed.

#### **2.5 NAILS**

Type to NZS 3604, section 4: Durability, and of the size and number for each particular types of joint as laid down in the nailing schedules of NZS 3604, sections 6-10.

#### **2.6 BOLTS AND SCREWS**

Of engineering and/or coach type complete with washers, to the requirements of NZS 3604, section 4: Durability, and of the number and form required for each particular junction to NZS 3604, sections 6-10.

#### **2.7 NAIL PLATES**

Comply with the requirements of NZS 3604, section 4: Durability, and of the number and form required for each particular junction to NZS 3604, sections 6-10. Plates to the plate manufacturer's design for the particular locations as shown on the drawings.

#### **2.8 CONNECTORS**

Comply with the requirements of NZS 3604, section 4: Durability, and of the number and form required for each particular junction to NZS 3604, sections 6-10. Connectors and structural brackets to the connector manufacturer's design for particular locations shown on drawings.

- 2.9 **POLYETHYLENE DPC**  
Polyethylene film to AS/NZS2904 and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings to doors and windows.
3. **EXECUTION**
- 3.1 **EXECUTION GENERALLY**  
To NZS 3603 and NZS 3604 except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).
- 3.2 **SEPARATION**  
Separate all timber framing timbers from concrete, masonry and brick by: -  
- a full length bituminous damp-proof membrane overlapping timber by at least 6mm; or  
- a 12mm minimum free draining air space
- 3.3 **ATTENDANCE**  
Provide and fix blocks, nogs, openings and other items as required by other trades.
- 3.4 **MOISTURE CONTENT**  
Maximum allowable equilibrium moisture content (EMC) for non air-conditioned or centrally heated buildings for framing to which linings are attached.  
Framing at erection: 24% maximum  
Framing at enclosure: 20% maximum  
Framing at lining: 16% maximum  
Timber strip flooring: 10% at time of laying
- 3.5 **SET-OUT**  
Set out framing in accordance with the requirements of NZS 3604 and as required to support sheet linings and claddings.
- 3.6 **FRAMING WALLS**  
Frame to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to NZS 3604, section 8, Walls.
- 3.7 **FRAMING ROOFS**  
Frame to required loading and bracing complete with valley boards and purlins. Design and fit roof trusses complete with anchorage. All fabricated and fastened to NZS 3604, section 9, Posts and 10, Roof framing.
- 3.8 **FRAMING CEILINGS**  
Frame to required loading and bracing complete with runners and battens set out to support ceiling lining. All fabricated and fastened to NZS 3604, section 13, Ceilings. Trim for openings in ceilings and hatches to NZS 3604 section 13.3, Openings in ceilings. Provide blocking for water tanks located in the ceiling space to NZS 3604, section 13.4, Water tanks in roof space.
- 3.9 **INSTALLING WALL WRAPS, UNDERLAYS AND SHEET INSULATION PRODUCTS**  
Refer to WALL CLADDING, WRAPS, UNDERLAYS AND DPC and INSULATION for the installation of wall wraps, underlays and sheet insulation.
- 3.10 **LAYING TIMBER SPACED BOARDING FOR EXTERIOR DECKS**  
Confirm whether the grooved side of the boards are face up or face down. Avoid excessively short or long lengths, drill for all fixings, stagger end joints and space boards a maximum of 2mm apart in general conditions, or maximum 3mm apart if boards are likely to swell after fixing. Fix using annular grooved galvanized jolt head nails, heads driven flush with the board surface.

### 3.11

#### DPC TO LOSP TREATED TIMBER

Lay polyethylene DPC under LOSP treated bottom plate of all timber framed walls on concrete, in a single layer with 50mm overlaps at joints to provide a waterproof barrier.

## **4160 WRAPS, UNDERLAYS AND DPC**

### **1. GENERAL**

This section relates to the application of:

- DPC
- wall wraps
- roofing underlays

#### **Building code compliance**

### **1.1 DURABILITY**

The work covered by this part of the specification has been designed and manufactured to achieve the durability provisions of NZBC B2.3.1

#### **Documents**

### **1.2 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|             |                                                                         |
|-------------|-------------------------------------------------------------------------|
| NZBC E2/AS1 | External moisture                                                       |
| AS 1530     | Methods for fire tests on building materials, components and structures |
| NZS 2295    | Pliable, permeable building underlays                                   |
| AS/NZS 2904 | Damp-proof courses and flashings                                        |
| NZS 3604    | Timber framed buildings                                                 |
| NZS 4200    | Pliable building membranes and underlays                                |
| AS/NZS 4347 | Damp-proof courses and flashings - Methods of test                      |
| AS/NZS 4389 | Safety mesh                                                             |
| AS/NZS 4534 | Zinc and zinc/aluminium-alloy coatings on steel wire                    |
| NZMRM       | NZ metal roof and wall cladding - Code of practice.                     |

Documents listed above and cited in the clauses that follow are part of this specification. However this specification takes precedence in the event of it being at variance with the cited document.

### **1.3 ABBREVIATIONS**

The following abbreviations are used in this specification.

|       |                                              |
|-------|----------------------------------------------|
| NZMRM | New Zealand Metal Roofing Manufacturers Inc. |
|-------|----------------------------------------------|

### **1.4 INTERPRETATION**

Wall underlay used in this specification has the same meaning as building wraps in NZS 3604 and NZBC E2/AS1.

#### **Requirements**

### **1.5 INSTALLATION SKILL LEVELS**

Installers to be familiar with the manufacturer's technical literature and the NZMRM NZ metal roof and wall cladding - Code of practice.

## **2. PRODUCTS**

#### **Materials**

#### **DPC**

### **2.1 POLYETHYLENE DPC**

Polyethylene film to AS/NZS2904 and embossed on both sides. Thickness 500 microns minimum, manufactured for use as a damp-proof course and concealed flashings to doors and windows.

#### **Wall wraps**

- 2.2 **POLYETHYLENE BREATHER TYPE MEMBRANE**  
High tensile coated polyolefin woven into sheet form with micro sized pores that allow the membrane to breathe with a fire retardant flammability index of 1, tested to AS 1530.

**Roofing underlay**

- 2.3 **BITUMINOUS SELF-SUPPORTING**  
Bituminous self-supporting roofing underlay tested to NZS 2295.

**Accessories**

- 2.4 **WINDOW DOOR SEALING SYSTEM**  
Proprietary window and door flashing tape.
- 2.5 **STUD STRAPS**  
19 mm wide polyethylene straps.
- 2.6 **WIRE NETTING**  
75 mm galvanized hexagonal wire netting to AS/NZS 4534.
- 2.7 **GUTTER AND UNDER FLASHINGS**  
Bituminous breather type building paper cut to width by manufacturer for use under valley, apron flashing and internal gutters. Soffit liner cut to width from bituminous breather type building paper.
- 2.8 **ADHESIVE TAPE**  
Adhesive tapes to compliment the underlay. Pressure sensitive aluminium foil tapes for joining foil insulation and vapour barriers.

**3. EXECUTION**

**Conditions**

- 3.1 **GENERAL REQUIREMENTS**  
To NZS 3604 Section 11 Table 11.1 Underlays; and NZBC E2/AS1 Table 23 Properties of Roof Underlays and Building Wraps; and manufacturers technical literature.
- 3.2 **STORAGE**  
Store building underlays and accessory materials, under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor and protected from sunlight, UV radiation and moisture.

- 3.3 **INSPECTION**  
Before starting work, check that the framing will allow work of the required standard. Carry out remedial work identified before laying underlay.

**Application DPC**

- 3.4 **DPC TO LOSP TREATED TIMBER**  
Lay polyethylene DPC under LOSP treated bottom plate of all external timber framed walls on concrete, in a single layer with 50 mm overlaps at joints to provide a waterproof barrier.
- 3.5 **DPC TO BRICK VENEER**  
Lay DPC along based of cavity and fix top edge to studs with galvanized clouts. Turn DPC out over concrete rebate under bottom course of veneer.

**Application - Wraps / wall underlay**

- 3.6 **WALL UNDERLAY**  
Fix horizontally to outside face of substrate in true alignment, with succeeding sheets overlapping 150 mm. Fix to manufacturers requirements. Scribe neatly around

penetrations and openings to leave no gaps. Tape all penetrations. Keep clean, undamaged and without visible weather deterioration until closed in.

#### **Application - Roofing underlay**

##### **3.7 WIRE NETTING**

Lay 75 mm galvanized wire netting at right angles across the purlins and drawn taut before fixing. Tie edges of netting together with galvanized wire clips.

##### **3.8 BUILDING PAPER ROOF UNDERLAY**

Lay vertically over purlins on wire netting with a 150 mm side lap. Fix securely to purlins with galvanized fixing clips. Lay underlay to avoid excessive dishing between purlins. When used vertically limit individual runs to 10 metres for bituminous based papers and 7 metres for fire retardant underlays.

##### **3.9 GUTTER AND UNDER FLASHINGS**

Lay bituminous breather type building paper cut to width by manufacturer for use as an underlay to valley, apron flashings, internal gutters and soffit liner. Lap under flashings with adjoining underlays. Fix soffit liner from top plate down 150 mm past ribbon plate.

#### **Completion**

##### **3.10 CLEAN UP**

Clean up as the work proceeds.

##### **3.11 LEAVE**

Leave work to the standard required by following procedures.

##### **3.12 REMOVE**

Remove debris, unused materials and elements from the site.

## **4261 BRICK VENEER CLADDING**

### **1. GENERAL**

This section relates to clay brickwork as a veneer cladding.

#### **Related work**

#### **Documents**

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|               |                                                                                                   |
|---------------|---------------------------------------------------------------------------------------------------|
| NZBC B1/AS1   | Structure - General, 2.0 Masonry                                                                  |
| AS/NZS 1170.2 | Structural design actions - Wind actions                                                          |
| NZS 1170.5    | Structural design actions - Earthquake actions - New Zealand                                      |
| AS/NZS 2699.1 | Built-in components for masonry construction - Wall ties                                          |
| AS/NZS 2699.3 | Built-in components for masonry construction - Lintels and shelf angles (durability requirements) |
| NZS 3103      | Sands for mortars and plasters                                                                    |
| NZS 3604      | Timber framed buildings                                                                           |
| NZS 4210      | Masonry construction: materials and workmanship                                                   |
| BRANZ         | Masonry veneer - Good practice guide                                                              |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### **Requirements**

#### **1.2 QUALIFICATIONS**

Bricklayers to be experienced, competent and familiar with the materials and the techniques specified.

#### **Performance**

#### **1.3 FIXINGS, WIND**

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604 and the wind loads on various wall areas as given by AS/NZS 1170.2.

#### **1.4 FIXINGS, EARTHQUAKE**

Use fixings and methods capable of sustaining the loads appropriate to the area as set out in NZS 3604 and NZS 4210 and as required by NZS 1170.5.

#### **1.5 COMPLIANCE**

Brickwork to comply with NZBC B1/AS1 Structure - General, 2.0 Masonry.

### **2. PRODUCTS**

#### **Materials**

#### **2.1 CLAY BRICKS**

To AS/NZS 4455.

#### **2.2 LINTELS**

To AS/NZS 2699.3.

#### **2.3 VERMIN STOP**

Galvanized hexagon 10 mm mesh of 1 mm diameter steel wire 100 mm wide, complete with galvanized steel staples.

- 2.4 **DAMP-PROOF COURSE**  
Polyethylene based strip used as a damp-proof course and flashing, also for slip joints between brick courses.

**Components**

- 2.5 **METAL TIES**  
To AS/NZS 2699.1, Veneer ties shall be fixed to framing members with screws or other non-impact fasteners.

**Accessories**

- 2.6 **SAND FOR MORTAR**  
To NZS 3103. Chloride levels to not exceed 0.04% by dry weight of sand.
- 2.7 **MORTAR**  
Composed of Portland cement, sand and water with an admixture to the provisions of NZS 4210: 2.2 Mortar. Obtain written approval of admixture being used. Obtain written approval if intending to use hydrated lime in the mortar.
- 2.8 **MORTAR COLOUR**  
Add mineral oxide pigment conforming to requirements of NZS 4210, clause 2.2.2.2(f).
- 2.9 **ADMIXTURES**  
To NZS 4210.
- 2.10 **WATER**  
Clean, fresh and free from excess alkali, salt, silt and organic materials.

**3. EXECUTION**

**Conditions**

- 3.1 **TOLERANCES**  
To NZS 4210, table 2.2 Maximum tolerances.
- 3.2 **HANDLING AND STORAGE OF MATERIALS**  
To NZS 4210 for aggregates, cement, bricks and reinforcement.
- 3.3 **CONCRETE BASE**  
Check vertical and horizontal alignment. Any discrepancies exceeding the permitted tolerances shall be corrected before units are laid.
- 3.4 **MEASURE MATERIALS**  
Measure materials for mortar accurately by weight or volume using suitably calibrated equipment.
- 3.5 **WET WEATHER**  
Keep bricks dry at all times prior to laying. Protect the top row of uncompleted brick walls. Protect freshly laid brickwork during interruption through rain and at completion of each day's work.
- 3.6 **COLD WEATHER CONSTRUCTION**  
When air temperature is below 5°C take the precautions required by NZS 4210: 2.18 Cold weather construction.
- 3.7 **HOT WEATHER CONSTRUCTION**  
When air temperature is above 25°C or there is a drying wind, or lower temperatures, take the precautions required by NZS 4210: 2.19 Hot weather construction.
- 3.8 **KEEP FACE WORK CLEAN**  
Keep clean during erection and until completion of the contract works. Turn back scaffold boards at night and during heavy rain. Do not rub face work to remove stains.

## **Application**

- 3.9      **COLOUR MIXING**  
Check all bricks delivered to site for colour variation, prior to commencing work. Ensure bricks are thoroughly blended from several pallets to ensure an even colour spread throughout the work.
- 3.10     **UNIFORMITY**  
Carry up work with no portion more than 1500 mm above another at any time, raking back between levels.
- 3.11     **BONDING**  
Lay bricks to the required bonding in the various locations.
- 3.12     **PROVIDE WEEPHOLES**  
Provide weepholes at the bottom of cavities and cells to NZS 3604, section 11.7.4 Cavities and as necessary to drain moisture to the outside air.
- 3.13     **INSTALL VERMIN STOP**  
Fold and staple one edge of the mesh to the substrate and with the mesh sloping outwards, set the other edge half the thickness of the veneer or 50 mm, whichever is less, into the mortar joint.
- 3.14     **FORM OPENINGS**  
Unless detailed otherwise form openings to typical details from BRANZ Masonry veneer - Good practice guide.
- 3.15     **INSTALL LINTELS**  
Fit angle lintels to openings, sized to NZS 3604, table 11.4 Veneer lintels and placed to NZS 3604, section 11.7.6 Openings.
- 3.16     **CAVITY WIDTH**  
No cavity width less than 40 mm or more than 75 mm unless detailed otherwise.
- 3.17     **CAVITY VENTILATION**  
Ventilate to outside air with top and bottom openings to the requirements of NZS 3604, section 11.7.4 Cavities. Seal cavity off from roof space.
- 3.18     **TIE SPACING**  
Unreinforced veneers to NZS 4210: 2.9.7 Tie classification and spacing.
- 
- 3.19     **SEPARATION JOINTS**  
Provide for wall movements of veneer with control joints to NZS 4210: 2.10 Methods of controlling wall movements. Weatherproof as necessary.
- 3.20     **ERECT**  
Erect the cavity walls with cavities of the widths detailed. Bond the two thicknesses of brickwork together using 185 mm x 105 mm box ties, with extra ties at reveals and openings and all ties laid to fall towards outer thickness. Keep the cavity clear by lifting screeds or other means. Leave openings at the base, clean out cavity at completion and after inspection brick up openings to match the surrounding work.
- 3.21     **FORM REVEALS**  
Form lintels, jambs and sills as detailed complete with damp-proofing and all ready for following work.
- 3.22     **CAVITY BRIDGES**  
Seal the two thicknesses of brickwork with galvanized drip formers where in situ concrete is being placed above.
- 3.23     **PLACE TIES**  
Place ties to: -

- NZS 4210: 2.9.5 Tie anchorage, cover and fixing; and
- NZS 4210: 2.9.6 Placing of ties
- NZS 4210: 2.9.7 Tie classification and spacing

At unsupported edges and at all openings through veneered walls or non-grouted cavity walls, wall ties to be provided:

At the top and bottom of the opening:

- Not more than 300 mm or 2 courses, whichever is the smaller

At the sides of the opening or at an unsupported edge:

- Not more than 300 mm
- Where the veneer wall continues above or is interrupted by a damp-proof course or waterproof membrane, wall ties shall be provided in each of the first two courses above the membrane.

### 3.24 FORM OPENINGS

Provide a flexible damp-proof course, extending 200 mm beyond ends of lintels and sloping to weepholes over all openings in cavity walls.

### 3.25 LIQUID DAMP-PROOFING

Apply bituminous brush-on liquid applied membrane as a primer and 2 coats, to drain water effectively out of the cavity.

### 3.26 DAMP COURSE TO JAMBS

Provide a flexible damp-proof course to jambs of openings in cavity walls, fully lapped with horizontal damp-proof courses at head and sill.

### 3.27 DAMP COURSE TO SILLS

Provide a flexible damp-proof course under jointed sills, turned up at back and ends.

### Application - ancillary work

### 3.28 BUILD IN FIXINGS

Build in necessary fixing bricks or blocks for trims.

### 3.29 BUILD IN ELEMENTS

Build in sills, copings, lintels, steps and other elements using mortar similar to that in adjacent walls.

### 3.30 BUILD IN DOORS AND WINDOWS

Build in door and window frames as the work proceeds and bed in mortar similar to that in adjacent work.

### Completion

### 3.31 PROGRESSIVE CLEANING

Clean off all mortar and other contaminants from the face work immediately they occur.

### 3.32 EFFLORESCENCE, WATER CLEANING

To remove deposits, brush with a stiff-bristle broom and take away brushings from the locality. Remove remaining deposit with a damp sponge. Wash wall thoroughly with a plentiful supply of clean water. Repeat this process every 4 weeks from appearance through to the completion of the contract works.

### 3.33 REPLACE

Replace damaged, cracked or marked elements.

### 3.34 LEAVE

Leave work to the standard required by following procedures.

### 3.35 REMOVE

Remove all debris, unused materials and elements from the site.

## 4311D DIMOND PROFILED METAL ROOFING

### 1. GENERAL

This section relates to the supply and fixing of **Dimond** profiled roofing complete with accessories

#### Documents

#### 1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

|               |                                                                          |
|---------------|--------------------------------------------------------------------------|
| AS/NZS 1170.2 | Structural design actions - Wind actions                                 |
| AS 1397       | Steel sheet and strip - hot-dipped, zinc-coated or aluminium/zinc-coated |
| NZS 2295      | Pliable, permeable building underlays                                    |
| AS 3566       | Self-drilling screws for the building and construction industries -      |
| NZS 3604      | Timber framed buildings                                                  |
| AS/NZS 4200.1 | Pliable building membranes and underlays - Materials                     |
| AS/NZS 4200.2 | Pliable building membranes and underlays - Installation requirements     |
| AS/NZS 4534   | Zinc and zinc/aluminium-alloy coatings on steel wire                     |
| AS/NZS 4389   | Safety Mesh                                                              |
| NZMRM         | NZ Metal roof and wall cladding - Code of practice                       |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### 1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:

**Dimond** Roofing and Cladding Systems Manual, September 2001

Copies of the above literature are available from **Dimond**

Web: [www.dimond.co.nz](http://www.dimond.co.nz) (Architects and specifiers section)

Telephone: 0800 DIMOND (0800 346 663)

#### 1.3 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

|     |                                             |
|-----|---------------------------------------------|
| BMT | Base metal thickness                        |
| MRM | New Zealand Metal Roofing Manufacturers Inc |
| MS  | Modified silicone                           |

#### Requirements

#### 1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified system, or associated components and products.

#### 1.5 QUALIFICATIONS

Roofers to be Dimond Certified Commercial Installer, or experienced, competent roofers familiar with **Dimond** products.

Carry out work with experienced, competent installers familiar with the products being used and with appropriate qualifications such as the National Certificate in Metal Roofing and Cladding.

#### Warranties

#### 1.6 WARRANTY - INSTALLER/APPLICATOR

Warrant this work under normal environmental and use conditions against weatherproofing failure.

|         |                                                 |
|---------|-------------------------------------------------|
| Period: | 5 years from the date of completion of the roof |
| Form:   | Roofing installers standard form                |

Include a copy of the **Dimond** maintenance requirements with the warranty.  
Refer to the general section WARRANTIES - INSTALLER/APPLICATOR for additional requirements.

Provide one bound copy of all relevant **Dimond** maintenance information on completion of the roofing work.

#### 1.7 WARRANTY - MANUFACTURER/SUPPLIER

Warrant this work under normal environmental and use conditions against materials failure.

|          |                                             |
|----------|---------------------------------------------|
| 15 years | For failure of coating adhesion             |
| 15 years | For weatherproofing by material penetration |
| Form:    | <b>Dimond</b> standard form                 |

#### Performance

#### 1.8 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by NZS 3604 and the wind loads on various wall areas as given by AS/NZS 1170.2. Allow for specific loadings at corners and the periphery of the roof, where localised pressure factors apply.

#### 1.9 CO-ORDINATE

Co-ordinate to ensure substrate and preparatory work is complete and other work programmed in the order required for access and completion of the roof. Ensure that all necessary members are positioned so that flashings can be fastened at both edges through the roof profile or cladding to the primary structure.

#### 1.10 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed roofing system, including penetrations through the roof and junctions with walls and parapets.

### 2. PRODUCTS

#### Materials

#### 2.1 WIRE NETTING

Galvanized hexagonal 75mm mesh from 1mm diameter steel wire to AS/NZS 4534.

#### 2.2 SAFETY MESH

Safety mesh galvanized rectangular 300mm X 150mm X 2.0mm steel wire to AS/NZS 4389.

#### 2.3 UNDERLAY

Breather type kraft paper laminates to NZS 2295.

#### 2.4 PRE-FINISHED HOT-DIPPED ALUMINIUM COATED STEEL

Formability G400 steel sheet coated to AS 1397.

#### 2.5 FLASHINGS GENERALLY

Formable grade 0.55 BMT for pre-painted steel as the profiled sheets, notched where across profile or provided with a soft edge.

#### 2.6 FLASHINGS TO VERGE, RIDGE AND HIP

Supplied by the roofing manufacturer to match or to suit the roofing.

#### Components

#### 2.7 FASTENERS GENERALLY

Minimum Class 4 durability and not less than the roofing material being fixed. Screw fasteners to be head stamped identifying the manufacturer and class.

- 2.8 **FIXING CLIPS**  
Galvanized steel (powder coated for aluminium) to suit the material and profile of the rigid sheet and location as required by the roofing manufacturer. Fix to steel with 16mm x 10 gauge galvanized wafer head self-drilling screws and to timber with 50mm long x 4.5mm galvanized spiral rolled flat head nails.

- 2.9 **FIXING SCREWS**  
To AS 3566. Screws appropriate to the roofing material and the supporting structure, as required by the roofing manufacturer and with a minimum Class 4 durability and not less than the material being fixed.

- 2.10 **RIVETS**  
Sealed aluminium, minimum diameter 4mm.

#### **Accessories**

- 2.11 **SEALANT**  
Neutral curing MS sealant or polymer sealant as required by the roofing manufacturer and used as directed.

- 2.12 **CLOSURE STRIPS**  
Non-bituminous compressible, profiled foam strips to fit the sheet profile.

- 2.13 **LAP SEALING TAPE**  
Closed cell self adhesive nitrile tape.

### **3. EXECUTION**

#### **Conditions**

- 3.1 **INSPECTION**  
Inspect the roof framing and supporting structure to ensure that it is complete and fully braced ready for roofing and free from any misalignments or protrusions that could damage the roofing.
- 3.2 **STORAGE**  
Take delivery of and accept packs of roofing undamaged on delivery. Reject all damaged material. Store on a level firm base with packs well ventilated and completely protected from weather and damage. Do not allow moisture to build up between sheets. If sheet packs become wet, fillet or cross stack to allow air movement between sheets.

- 3.3 **HANDLING**  
Avoid distortion and contact with damaging substances, including cement. Do not drag sheets across each other and other materials. Protect edges and surface finishes from damage. Use soft, flat sole shoes when fixing and for all other work on the roof.

- 3.4 **SEPARATION**  
Isolate dissimilar materials in close proximity as necessary by painting the surfaces or fitting separator strips of compatible materials. Place isolators between metals and treated timber and cement based materials. Do not use unpainted lead sheet or copper in contact with or allow water run-off onto galvanized or aluminium/zinc coated steel.

#### **Application**

- 3.5 **SAFETY MESH**  
Fix safety mesh over exposed roof areas to AS/NZS 4389 and the manufacturer's requirements.
- 3.6 **WIRE NETTING**  
Fix wire netting where specified, drawn tight and nailed or screwed to purlins with edges butted and twitched together to form a complete net.

- 3.7 LAY ROOF UNDERLAY**  
Fit and lap roofing underlay/foil over the netting/mesh. Lay underlay/foil horizontally or vertically with a 150mm side lap, oversailing the spouting and/or gutters by 20mm.
- 3.8 FIX INSULATION**  
Run and fix insulation blanket as detailed and to the insulation manufacturer's requirements.
- 3.9 SET-OUT**  
Carefully set out with consideration of the position of side laps to take account of the prevailing wind and line of sight. Ensure all sheets are square and oversailing the gutter true to line. Check during fixing to eliminate creep or spread and string lines along purlin centres to keep fastenings in line.
- 3.10 END LAPS**  
End laps are not permitted, except where specifically detailed.
- 3.11 THERMAL MOVEMENT**  
For sheet lengths more than 18 metres, make provision for thermal expansion where required
- 3.12 FIXING GENERALLY**  
Install and fix in accordance with the NZMRM NZ Metal roof and wall cladding - Code of practice recommendations, and to the roofing manufacturer's required fixing patterns and details for each area of the building roofing. Use only screws as required by the roofing manufacturer. Paint colour matched fixings and accessories before installation.
- 3.13 MARKING AND CUTTING**  
Cut only by shearing tools. Do not use black lead pencils for marking aluminium/zinc coated products.
- 3.14 FIX SHEETS**  
Fix sheets in place using the fastening system required by the roofing manufacturer for specified profiles, making due allowance for dynamic local wind pressures on the building and thermal movement in the sheet.
- 3.15 STOP ENDS AND DOWNTURNS**  
Form stop-ends at the upper end of sheets. Form downturns at the gutter line where the roof pitch is less than 8 degrees. Form using the required tools.
- 3.16 FLASHINGS**  
Flash roof to parapets, walls and penetrations to detail. Flashings to be installed on timber framing with a moisture content of less than 25%. Where no detail is provided flash to NZ Metal roof and wall cladding - Code of practice recommendations and the roofing manufacturer's requirements. Cut accurately and fix using sealant and rivets to detail and to the roofing manufacturer's requirements to form a weatherproof cover. For highly visible flashings, plan joints/junction to take account of the aesthetic requirements.
- 3.17 SEPARATION**  
Separate metal sheeting from CCA treated timber with building paper or other suitable isolation material.
- 3.18 USE OF SEALANTS**  
Select and use sealants only as recommended by the roofing manufacturer. Apply sealant in two narrow beads transversely across flashing intersections, close to the two edges. Avoid exposing sealant on outside surfaces.
- 3.19 FLASHING PENETRATIONS**  
Flash all penetrations through the roof. Fit pipe flashings with a proprietary collar flashing, with other penetrations flashed as detailed and to provide a weathertight installation. Ensure that flashings are set to avoid any ponding of water.

### **Completion**

- 3.20      **REPLACE**  
Replace damaged or marked elements.
- 3.21      **LEAVE**  
Leave this work complete with all necessary flashings, undercloaks, valleys, ridges and hips all properly installed as the work proceeds so the finished roof is completely weathertight.
- 3.22      **REMOVE**  
Remove trade rubbish and unused materials from the roof and surrounds daily during the work. Sweep down at the end of each day, and clean out spoutings, gutters and rainwater pipes on completion of the roof. Remove debris, unused materials and elements from the site.

## 4521V VANTAGE ALUMINIUM WINDOWS AND DOORS

### 1. GENERAL

This section relates to the manufacture, supply, and installation of **Vantage**:

- aluminium windows
- aluminium doors and frames
- hardware and furniture
- flashings

#### Related work

### 1.1 RELATED SECTIONS

Refer to GLAZING for glazing.

#### Documents

|                          |                                                                                                                            |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------|
| NZBC E2                  | External moisture                                                                                                          |
| NZBC F4/AS1              | Safety from falling                                                                                                        |
| AS/NZS 1170.2            | Structural design actions - Wind loads                                                                                     |
| NZS 1170.5               | Structural design actions - Earthquake actions - New Zealand                                                               |
| AS 1734                  | Aluminium and aluminium alloys - Flat sheet, coiled sheet and plate                                                        |
| AS/NZS 1866              | Aluminium and aluminium alloys - Extruded rod, bar, solid and hollow shapes                                                |
| AAMA 2604.05             | Performance requirements and test procedures for high performance organic coatings on aluminium extrusions and panels      |
| AS 3715                  | Metal finishing - Thermoset powder coatings for architectural applications                                                 |
| BS 3900                  | Methods of tests for paints, Part C5: Determination of film thickness                                                      |
| NZS 4211:1985            | Performance of windows                                                                                                     |
| NZS 4223.3               | Code of practice for glazing in buildings - Human impact safety requirements                                               |
| AS/NZS 4284              | Testing of building facades                                                                                                |
| AS/NZS 4680              | Hot-dip galvanized (zinc) coatings on fabricated ferrous articles                                                          |
| WANZ                     | Window installation system - An Alternative Solution for the installation of windows and doors                             |
| WANZ                     | Powder Coating Quality Assurance System (PQAS)                                                                             |
| WANZ                     | SFA 3503-03:2005 Anodising Standard                                                                                        |
| BRANZ BU 337             | Protecting Window Glass from Surface Damage                                                                                |
| US Federal Specification |                                                                                                                            |
| TT-S-001543A             | Sealing compound, silicone rubber base (for caulking, sealing and glazing in buildings and other structures)               |
| TT-S-00230C              | Sealing compound, elastomeric type, single component (for caulking, sealing and glazing in buildings and other structures) |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### 1.2 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:  
**Vantage** Specifiers Guide

Copies of the above literature are available at

Web: [www.vantage.co.nz](http://www.vantage.co.nz)  
Email: [marketing@apl.nz.co.nz](mailto:marketing@apl.nz.co.nz)  
Telephone: 0-7-849 2113

### 1.3 ABBREVIATIONS AND TERMS

|                  |                            |
|------------------|----------------------------|
| PVF <sup>2</sup> | Polyvinylidene Fluoride    |
| SLS              | Serviceability limit state |
| ULS              | Ultimate limit state       |

### Requirements

- 1.4 **QUALIFICATIONS**  
Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.
- 1.5 **SHOP DRAWINGS AND INSTALLATION DETAILS**  
Shop drawings to show the general arrangement of the aluminium joining including, but not be limited to:  
Construction details (minimum scale 1:5) showing the interface between joinery elements and the building structure including: -
- Joining details and method of fixing between individual elements and between this installation and adjacent work
  - Interaction between claddings and linings
  - Flashing details
  - Sealants and air seals
  - Non standard fixing details including bracketing

And where required the following:

- Design calculations
- Producer Statement in the form PS1 Producer Statement Design
- Rebate sizes
- Dimensions of all typical elements and of any special sizes and shapes
- Provision for the exclusion and/or drainage of moisture
- Provision for adjustment of fixings to ensure true alignment of windows and doors
- Sealant types and full size sections of all sealants and backing rods
- Provision for thermal movement
- Provision for seismic movement and movement under wind loads
- Sequence of installation
- Glazing specification and details

Where requested provide the following additional information

- Information of Professional Indemnity Insurance held by the person providing calculations and shop drawings.

Refer to the general section SHOP DRAWINGS for the requirements for submission and review and the provision of final shop drawings.

Complete shop drawing review before commencing fabrication.

### Warranties

- 1.6 **WARRANTY - MANUFACTURER/SUPPLIER**  
Provide a material manufacturer/supplier warranty:  
5 years: For fabrication

- Provide this warranty on the manufacturer's standard form.

Refer to the general section for the required form of WARRANTY AGREEMENT and details of when completed warranty must be submitted.

- 1.7 **WARRANTY - INSTALLER**  
Provide an installer/applicator warranty:  
2 years: For installation

- Provide this warranty in the installer/applicator standard form.

Refer to the general section WARRANTIES for additional requirements.

### Performance

- 1.8 **PERFORMANCE - WIND**  
Construct windows, exterior doors and frames to withstand design wind pressures to NZS 3604.
- 1.9 **PERFORMANCE - STRUCTURAL/WEATHER-TIGHTNESS**  
The structural and weather-tight performance of the completed joinery, the glazing and infill panels is the responsibility of the window manufacturer.
- Finishes**
- 1.10 **CERTIFY COATINGS**  
Certify on request compliance with this specification and support with control and sampling records. Test for film thickness to BS 3900, part C5, method No. 4, using method (b) for certifying thickness and method (a) where any dispute arises as to the thickness provided.  
The coating to be applied by an Endrocolour® applicator who can certify that the coating has been applied in accordance with the WANZ PQAS System.
- 1.11 **CERTIFICATION**  
Provide evidence of a certificate by a laboratory accredited by International Accreditation of New Zealand that the windows and doors offered comply with the requirements of NZS 4211:1985 and the specified design wind pressure and air leakage level.
- 2. PRODUCTS**
- Materials**
- 2.1 **ALUMINIUM EXTRUSIONS**  
Alloy designation to comply with AS/NZS 1866. Branded and extruded for powder coating.
- 2.2 **REVEALS - TIMBER PAINTED**  
Timber reveals for paint finish with all sides primed flush finished for architraves.
- 2.3 **FLASHINGS GENERALLY**  
Material, grade and colour of head flashings to match the window frames. Ensure that materials used for head, jamb and sill flashings are compatible with the window frame materials and fixings and cladding materials.
- Components - for cavity systems**
- 2.4 **WANZ CAVITY CLOSER**  
Flashing device to close the cavity above the window or door unit to direct water that occasionally penetrates the wall cladding into the cavity spaces adjacent to the window.
- 2.5 **WANZ SUPPORT BAR**  
Extruded aluminium support bar with built in drainage and ventilation to NZBC E2, to provide continuous support to the window unit.
- 2.6 **WANZ SUPPORT ANGLE**  
Support angle for use with the sill pan for deeper claddings to transfer the weight of the window back to the frame
- Components**
- 2.7 **GLAZING GASKETS**  
Thermoplastic rubber compatible with ~ sealant. Do not stretch glazing gaskets during installation. Measure and cut gaskets 1% over length before installation to avoid stretching.

- 2.8 **HARDWARE AND FURNITURE**  
Hinges, stays, catches, fasteners, latches, locks and furniture as offered by the window and door manufacturer. Key alike all lockable hardware able to be keyed alike.

- 2.9 **SAFETY STAYS**  
Stainless steel non releasable restrictors to limit window opening to NZBC F4/AS1, Table 2, Acceptable opening sizes for barriers.

### **Finishes**

- 2.10 **POWDER COATED ALUMINIUM**  
Polyester powder organic coating in accordance with WANZ Powder Coating Quality Assurance System and AS 3715.

## **3. EXECUTION**

### **Conditions - generally**

- 3.1 **DO NOT DELIVER**  
Do not deliver to site any elements which cannot be unloaded immediately into suitable conditions of storage.
- 3.2 **UNLOAD WINDOW JOINERY**  
Unload, handle and store elements in accordance with the window manufacturer's requirements.
- 3.3 **AVOID DISTORTION**  
Avoid distortion of elements during transit, storage and handling.
- 3.4 **PREVENT DAMAGE**  
Prevent prefinished surfaces rubbing together, and contact with mud, plaster and cement. Keep paper and cardboard wrappings dry.
- 3.5 **PROPRIETARY ELEMENTS**  
Fix in accordance with the window manufacturer's requirements.
- 3.6 **PROTECTIVE COVERINGS**  
Retain protective coverings and coatings to BRANZ BU 337 and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

- 3.7 **ADDITIONAL PROTECTION**  
Supply and fix additional protection as necessary to prevent marking of surfaces which will be visible on completed work.

### **Conditions - fixings and fastenings**

- 3.8 **SUPPLY OF FIXINGS**  
Use only fixings and fastenings recommended by the manufacturer of the component being fixed and to comply with the design wind pressure stated in the STANDARD OF PERFORMANCE clause.
- 3.9 **EXPOSED FIXINGS AND FASTENINGS**  
Ensure fixings and fastenings exposed to the weather are of aluminium, or Type 316 stainless steel.
- 3.10 **PROTECTED FIXINGS AND FASTENINGS**  
Fixings and fastenings not exposed to the weather may be hot-dip galvanized steel with a coating weight of 610 g/m complying with AS/NZS 4680.

- 3.11 **TIMBER REVEALS**  
Before fixing to aluminium frames, ensure that timber reveals which are being painted have been primed on all surfaces.
- Assembly**
- 3.12 **FABRICATION**  
Fabricate frames as detailed on shop drawings. Install glazing, hinges, stays and running gear as scheduled. Provide temporary bracing and protection. Temporarily secure all opening elements for transportation.
- 3.13 **HARDWARE GENERALLY**  
Factory fit all required and scheduled hardware. Account for all keys and deliver separately to the site manager.
- 3.14 **SAFETY STAYS**  
Factory fit safety stays to all windows scheduled for safety stays and to all windows where safety stays are required to comply with NZBC F4/AS1 4.0, Opening windows.
- Application**
- 3.15 **CORROSION PROTECTION**  
Before fixing, apply suitable barriers of bituminous coatings, stops or underlays between dissimilar metals in contact, or between aluminium in contact with concrete.
- 3.16 **CONFIRM PREPARATION OF WALL OPENINGS**  
Confirm that wall openings have been prepared ready for the installation of all window and door frames. Do not proceed with the window and door installation until required preparatory work has been completed.
- Required preparatory work includes the following:
- wall cladding underlay/building wrap to openings finished and dressed off ready for the installation of window and door frames to NZBC E2/AS1:9.1.5 Building wrap to wall openings.
  - claddings neatly finished off to all sides of openings
  - installation of flashings (those which are required to be installed prior to frames).
- 3.17 **INSTALLATION**  
Fix to comply with the reviewed shop drawings and installation details including flashings and bedding compounds, pointing sealants and weathering sealants.
- 3.18 **INSTALLATION CAVITY CONSTRUCTION**  
Install to Wanz Installation System details and drawings including Wanz cavity closers, support bars and support angles
- 3.19 **INSTALL FLASHINGS**  
Install flashings to heads, jambs and sills of frames as supplied and required by the cladding manufacturer and as detailed on the drawings. Finish head flashings to match window finish.
- Place all flashings so that the head flashing weathers the jamb flashings, which in turn weathers over the upstand of the sill flashing. Ensure that sill flashings drain to the outside air.
- Except where window/door frames are recessed, ensure that head flashings over-sail unit by 30mm minimum at each end.
- 3.20 **COMPLETE AIR SEAL**  
To NZBC E2/AS1:9.1.6 Air seals. Form an air-tight seal by means of a proprietary expanding foam or sealants used with backing rods, applied between the window / door reveal and structural framing to a depth of 10 - 20mm, to provide a continuous air tight seal to the perimeter of the window or door.

- 3.21 **FIX HARDWARE**  
Fix all sash and door hardware and furniture as scheduled.

**Application - jointing and sealing**

- 3.22 **SEAL FRAMES ON SITE**  
Seal frames to each other and to adjoining structure and finishes, all as required by the window manufacturer and to make the installation weathertight. Do not seal the junction between the sill member and the cladding or sill flashing which must remain open.
- 3.23 **PREPARE**  
Ensure joints are dry. Remove loose material, dust and grease.
- 3.24 **PREPARE JOINTS**  
Prepare joints in accordance with the sealant manufacturer's requirements, using required solvents and primers where necessary.
- 3.25 **PREPARATION**  
Mask adjoining surfaces which would be difficult to clean if smeared with sealant.
- 3.26 **BACKING**  
Insert polyethylene rod or tape back-up behind joints being pointed with sealant.
- 3.27 **BACK UP**  
When using back-up material do not reduce depth of joint for sealant to less than the minimum required by the manufacturer of the sealant.
- 3.28 **POINTING, BEAD**  
Tool sealant to form a smooth, flat bead.
- 3.29 **FINISHING**  
Remove excess sealant from adjoining surfaces, using the cleaning materials nominated by the sealant manufacturer and leave clean.

**Completion - cleaning**

- 3.30 **REMOVE TRADE DEBRIS**  
Remove trade debris by appropriate means on a floor by floor basis as each floor is completed and again before any work is covered up by others. Arrange for general removal.

- 3.31 **TRADE CLEAN**  
Trade clean window frames, operable windows and doors, glass and other related surfaces inside and out at the time of installation to remove marks, dust and dirt, to enable a visual inspection of all surfaces.

- 3.32 **PROTECTIVE COVERINGS**  
Retain protective coverings and coatings and keep in place during the fixing process. Provide protective coverings and coatings where required to prevent marking of surfaces visible in the completed work and to protect aluminium joinery from following trades. Remove protection on completion.

- 3.33 **SAFETY**  
Indicate the presence of transparent glasses for the remainder of the contract period, with whiting, tape or signs compatible with the glass type. Indicators other than whiting must not be applied to the glass surface. Masking tape must not be used for this purpose.

**Completion**

- 3.34 **PROTECTION**  
Protect finishes against damage from adjacent and following work.

- 3.35      **REPLACE**  
Replace damaged, cracked or marked elements.
- 3.36      **IN SITU TOUCH-UP TO POWDER COATED ALUMINIUM**  
In situ touch-up of polyester or fluoropolymer coated aluminium is only permitted only to minor surface scratching. Otherwise replace all damaged material.
- 3.37      **LEAVE**  
Leave work to the standard required for following procedures.
- 3.38      **REMOVE**  
Remove safety indicators and protective coverings, and wipe down all joinery thoroughly to leave it perfectly clean. Remove debris, unused materials and elements from the site.
- 3.39      **MANIFESTATIONS**  
To NZS 4223.3, 303.1: Manifestation (making glass visible).

## **4555 GARAGE DOORS**

### **1. GENERAL**

This section relates to the manufacture, supply and installation of garage door systems including required opening/operating systems.

#### **Related work**

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|             |                                                              |
|-------------|--------------------------------------------------------------|
| AS/NZS 1170 | Structural design actions                                    |
| NZS 1170.5  | Structural design actions - Earthquake actions - New Zealand |
| NZS 3604    | Timber framed buildings                                      |
| AS/NZS 4505 | Domestic garage doors                                        |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### **Performance**

#### **1.2 LOADS**

Garage doors complete with hinges, roller assemblies and fasteners to comply with wind and seismic load performance requirements to NZS 3604, table 5.1, AS/NZS 1170 and NZS 1170.5

#### **1.3 RESPONSIBILITY FOR PERFORMANCE**

Accept responsibility for the structural and weather-tight performance of the completed garage door installation.

### **2. PRODUCTS**

#### **2.1 GARAGE DOOR**

Manufactured to AS/NZS 4505 complete with a compliance label stating manufacturer, serial number, wind and seismic classification and testing/certification details

### **3. EXECUTION**

#### **3.1 PREPARATION FOR INSTALLATION**

Check that the trimmed and lined openings are formed and constructed to suit the required door units. Do not proceed until openings are properly formed.

#### **3.2 MANUFACTURERS REQUIREMENT FOR INSTALLATION**

Install door, track and operating equipment complete with all specified and necessary accessories and hardware to the manufacturer's requirements.

#### **3.3 START UP**

Carry out start up procedures and verify proper performance of the doors.

#### **3.4 ADJUSTMENT**

Lubricate bearings and sliding parts and adjust doors to operate easily, free of warp, twist or distortion with a weather tight fit round the entire perimeter.

#### **3.5 DEMONSTRATION**

Carry out start up procedures and verify proper performance of the door. Demonstrate the operation of the door to the principal/principal's representative. Set security features to principal's requirements. Reset security features at practical completion of the contract works.

#### **3.6 OPERATING INSTRUCTIONS AND MAINTENANCE PROCEDURES**

Provide operating instructions for the garage doors and associated opening equipment. Provide a list of all components requiring regular maintenance.

### **Completion**

- 3.7      **ENSURE**  
Ensure all elements are free of marks or blemishes, with all moving parts working fully and freely.
- 3.8      **REPLACE**  
Replace damaged, cracked or marked elements.
- 3.9      **LEAVE**  
Leave work to the standard required by following procedures.
- 3.10     **REMOVE**  
Remove all debris, unused materials and elements from the site.

## **4610 GLAZING**

### **1. GENERAL**

This section relates to the supply and glazing of glass into external and internal joinery on or off site, and other specialty glasswork:

- shower screens
- mirrors

#### **1.1 DOCUMENTS**

Documents referred to in this section are:

|             |                                                          |
|-------------|----------------------------------------------------------|
| NZBC B1/AS1 | Structure, 7.0 Glazing                                   |
| NZBC F2/AS1 | Hazardous building materials, 1.0 Glazing                |
| NZS 3604    | Timber framed buildings                                  |
| NZS 4223.1  | Glazing in buildings - Glass selection and glazing       |
| NZS 4223.3  | Glazing in buildings - Human impact safety requirements  |
| NZS 4223.4  | Glazing in buildings - Wind, dead, snow and live action  |
| AS/NZS 2208 | Safety glazing materials in building                     |
| AS/NZS 4667 | Quality requirements for cut-to-size and processed glass |

### **2. PRODUCTS**

#### **2.1 GLASS**

Processed glass to AS/NZS 4667, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

Clear float glass: Clear annealed transparent float glass

Laminated glass: Grade A safety glazing material to AS/NZS 2208 with PVB or CIP resin interlayer.

Tinted float glass: Body tinted float glass

Special glass, thickness to NZS 4223 parts 1, 3 and 4 unless otherwise specified:

#### **2.2 TEMPORARY PROTECTION FILM**

Factory applied UV resistant film to protect the glass from construction damage.

#### **2.3 SAFETY MIRROR GLASS**

Float mirror glass with silver plating and vinyl backing, safety glazing material to AS/NZS 2208.

#### **2.4 GLASS SCREENS**

Proprietary shower/bath screens, formed to shape before toughening, complete with matching hardware.

### **Components, aluminium glazing**

#### **2.5 GLAZING TAPE AND GASKETS**

Single/double sided pressure sensitive self-adhesive low/medium/high density foam tapes/butyl tapes selected to suit the glazing detail to window manufacturers' requirements.

#### **2.6 SETTING BLOCKS**

Santoprene/Neoprene, 80-90 Shore A hardness, set at quarter points or to detail, to support the weight of glass panes.

### **Components, mirrors**

#### **2.7 MIRROR ADHESIVE**

Adhesive mirror-mastic and double-sided adhesive tape.

### **3. EXECUTION**

#### **3.1 GLAZING GENERALLY**

To NZS 4223.1 and 4, and for human impact safety glazing to NZS 4223.3.

To AS/NZS 4666 for IGU's.

**Application aluminium**

**3.2 INSTALL GLASS TO ALUMINIUM FRAMES**

Install glass to NZS 4223.1.

Bead glaze to Section 4 Glazing.

Channel glaze to Section 4 Glazing, Section 5 Framed, Unframed,  
Partly Framed Glass Assemblies.

**3.3 INSTALL SAFETY GLASS**

To NZS 4223.3, as modified by NZBC F2/AS1.

**Application mirrors**

**3.4 MIRRORS, ADHESIVE FIXED**

Fix with adhesive mirror-mastic and double-sided adhesive tape.

**Application miscellaneous**

**3.5 INSTALL GLASS SCREENS**

Install shower screen and doors to manufacturer's requirements. Fix wall channel with silicone sealant.

**Finishing**

**3.6 SAFETY**

After glazing indicate the presence of transparent glasses, with whiting, tape or signs compatible with the glass type.

**3.7 MANIFESTATIONS**

To comply with NZS 4223.3, 303.1. Manifestations (making glass visible)

**3.8 TRADE CLEAN**

Clean off or remove safety indicators and any temporary protection film at completion of the building.

## 4710P PINK® BATTS® & PINK® BATTS® SILENCER® INSULATION

### 1. GENERAL

This section relates to Tasman Insulation Pink® Batts® thermal insulation materials installed in residential buildings.

#### 1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

|             |                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------|
| NZBC H1/AS1 | Energy efficiency, 2.0 Building thermal envelope                                                            |
| NZS 3602    | Timber and wood-based products for use in building                                                          |
| NZS 4218    | Energy efficiency - Small building envelope                                                                 |
| NZS 4246    | Energy efficiency - Installing insulation in residential buildings                                          |
| AS 1530.1   | Methods for fire tests on building materials, components and structures - Combustibility test for materials |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### 1.2 MANUFACTURER'S DOCUMENTS

Tasman Insulation New Zealand: Pink® Batts® Insulation Data Sheet

Copies of the above literature are available at

Web: [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz)

Telephone: 0800 802 287

#### 1.3 NO SUBSTITUTIONS

Substitutions are not permitted to any specified Tasman Insulation Pink® Batts® insulation or associated products, components or accessories.

#### 1.4 QUALIFICATIONS, PINK® BATTS®

Installers to be **PinkFit® - Preferred Pink® Batts® installers**. A list of approved installers can be obtained at [www.pinkbatts.co.nz](http://www.pinkbatts.co.nz), by telephoning Freephone 0800 746 534 (0800 PINKFIT) or from the local building supplies merchant.

#### 1.5 GUARANTEE

Provide a Tasman Insulation durability statement.

On completion of the installation, a **PinkFit®** guarantee form is provided to confirm the insulation has been installed to NZS 4246.

## 2. PRODUCTS

### Materials, thermal

#### 2.1 GLASS WOOL THERMAL INSULATING SLABS

**Pink® Batts®**, non combustible to AS 1530.1, accepted into the Asthma & Respiratory Foundation of New Zealand and the Sensitive Choice Programme, bio-soluble glass wool manufactured from up to 80% recycled glass, bonded with a thermosetting resin to form rectangular insulating slabs and tested for rigidity in wall applications.

## 3. EXECUTION

#### 3.1 STORAGE

Accept materials undamaged and dry and store in a location that protects them from the weather and damage. Avoid distortion, stretching, compression, puncturing and damage to edges of materials. Do not use damaged or wet insulation materials.

#### 3.2 HANDLING

Wear protective clothing as necessary and when handling, avoid delamination or distortion of the rectangular form. Maintain full thickness unless compression is an installation system requirement.

3.3 INSPECTION

Before starting installation of blankets and slabs, check that the location and framing are free from moisture, that the cavities are not interconnected and that mesh, building papers and vapour barriers are in place.

**Application, thermal insulation**

3.4 FIT GLASS WOOL THERMAL INSULATING PINK® BATTS® INSULATION

Lay, install, fit and fix **Pink® Batts®** to assist in meeting NZBC H1/AS1: Energy efficiency, 2.0 Building thermal envelope. Install insulation to comply with R values to meet relevant table requirements in housing to NZS 4218 and in large buildings to NZS 4243.1.

Friction fit insulating **Pink® Batts®** insulation in place to completely fill the whole of the cavities with no gaps and with no folds and to the Tasman Insulation requirements. Slightly oversize length for friction fit and cut across slab and fill cavity. Cut smaller pieces for smaller spaces and around penetrations. Leave no gaps between, and maintain full thickness of the insulating segments over the whole of the installation. Do not cover vents. Leave a clear 150 mm clear gap around recessed light fittings and metal flues.

**Completion**

3.5 CLEAN UP

Clean up as the work proceeds, so no spare offcuts or any other matter or item remain behind claddings or linings.

3.6 LEAVE

Leave work to the standard required by following procedures.

3.7 REMOVE

Remove debris, unused materials and elements from the site.

## **4821 FLASHINGS**

### **1. GENERAL**

This section relates to the fabrication and installation of flashing systems not forming part of a proprietary system.

#### **Documents**

#### **1.1 DOCUMENTS**

Documents referred to in this section are:

|                  |                                                                                                                    |
|------------------|--------------------------------------------------------------------------------------------------------------------|
| Code of practice | NZ metal roof and wall cladding                                                                                    |
| NZBC             | B2/AS1 Durability                                                                                                  |
| NZBC             | E2/AS1 External moisture                                                                                           |
| AS/NZS 2728      | Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements |
| AS 3566          | Self-drilling screws for the building and construction industries - General requirements and mechanical properties |
| NZS 3604         | Timber framed buildings                                                                                            |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### **Requirements**

#### **1.2 QUALIFICATIONS**

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

#### **1.3 VERIFY DIMENSIONS**

Verify dimensions against site measurements prior to fabrication.

#### **Standards of performance**

#### **1.4 DURABILITY REQUIREMENTS**

Design and install the flashings appropriate for the durability applications in accordance with NZBC B2/AS1. Clause 3.2 requires that all hidden elements have at least the same durability as that of the element that covers it. Refer to B2/AS1 Table 1: Durability Requirements of Nominated Building Elements and NZBC E2/AS1 Table 20 Material selection.

#### **1.5 COMPATIBILITY REQUIREMENTS**

Each flashing material shall be selected in accordance with NZBC E2/AS1 Table 20 to minimise corrosion. Refer to either NZS 3604 Clause 4.2 or AS/NZS 2728 for the relevant exposure conditions. For compatibility of materials in contact and subject to run-off, refer to NZBC E2/AS1 table 21 and 22.

#### **1.6 DESIGN**

For flashings where there are no specific details or drawings, provide a full size mock up of the flashing to integrate components into the weathertight system. Co-ordinate with the trades affected by the installation.

### **2. PRODUCTS**

#### **2.1 FLASHING MATERIALS**

Acceptable materials for flashings are described in NZBC External Moisture E2/AS1 Clause 4.0. Material, grade and colour as detailed and scheduled. Ensure that materials used for flashings are compatible with the building and cladding materials and their fixings. Fabricate flashings from a ductile grade of metal designed for lateral strength by folding, stiffening or ribbing on external edges, having a maximum un-stiffened width of 300 mm.

- 2.2 **FIXINGS**  
Rivets, screws, nails and cleats to be compatible with the materials being fastened. Fasteners complying with the corrosion requirements of AS 3566 are suitable for use with ZINCALUME® steel products. Use only low carbon non-conductive sealing washers.

- 2.3 **JOINTS - SEALANTS**  
Neutral curing silicone rubber sealant that is acetic acid free with low resistance to compression and be-able to withstand large temperature variations.

### 3. **EXECUTION**

#### **Conditions**

- 3.1 **DELIVERY**  
Keep flashings dry in transit. Take delivery of flashings in an undamaged condition. Reject all damaged materials.
- 3.2 **STORAGE**  
Store materials and accessories on a level, firm base, in dry conditions, well ventilated, out of direct sunlight and completely protected from weather and damage. Ensure storage areas are away from current work areas. Cover to keep dry until fixed.
- 3.3 **HANDLING**  
Avoid distortion and contact with potentially damaging surfaces/substances. Do not drag flashings across each other, or across other surfaces. Protect edges, corners and surfaces from damage.
- 3.4 **SUBSTRATE**  
Do not commence work until the substrate is of the standard required by the installer for the specified flashings, level and in true alignment.
- 3.5 **PROTECT**  
Protect surfaces, window and door joinery, and finishes already in place, from the possibility of damage during the installation process.
- 3.6 **CONFIRM LAYOUT**  
Before commencing work confirm the proposed installation of the flashings and expansion joints and other visual considerations of the finished work.
- 3.7 **CO-ORDINATE INSTALLATION**  
Co-ordinate installation of flashings with associated trades.

#### **Application**

- 3.8 **INSTALLATION**  
Install flashings in accordance with NZ Metal Roof and Wall Cladding Code of Practice and in compliance with NZBC E2/AS1 4.0 Flashings. For very high wind zones and where the pitch of the roof is below 10° the flashing joint laps shall be sealed with sealant at each end of the lap to prevent the ingress of water.  
  
Form hem on vertical upstands of hidden flashings to prevent capillary action. Refer to NZBC E2/AS1 Table 7 for general dimensions of flashings.
- 3.9 **FIXINGS**  
Fix flashings with fasteners appropriate to the situation. For fixing flashings with proprietary brackets or clips ensure they are aligned to allow for movement and are compatible with the flashing material.  
  
Fix screws with the shank perpendicular to the surface of the flashing with the washer fitted firmly against the flashing. Screws to be compatible with the flashing material.

Rivets 'blind' or 'pop' are to be sealed when used. Aluminium rivets are compatible with zinc or AZ coated steel. Monel and stainless steel rivets can be used to fix galvanized steel flashings. Minimum diameter of rivet to be used is 4.0 mm. Drill hole 1 mm larger than the rivet size. Seal head of rivet with neutral cured silicone.

3.10 JOINTING - SEALANTS

Clean surfaces to be lapped using a solvent ensuring all traces of the solvent are removed with a clean rag. Apply sealant by gun in a continuous bead of approximately 5 mm diameter. Width of sealant when compressed should not exceed 25 mm. Sealant joints shall be mechanically fixed for strength. Refer to NZ Metal Roof and Wall Cladding Code of Practice for details.

3.11 FINAL INSPECTION

A final inspection by the installer to take place after completion of the flashing work. Any defects or subsequent damage to be made good.

**Completion**

3.12 PROTECT

Protect new work from damage.

3.13 REPLACE

Replace all damaged or marked elements.

3.14 LEAVE

Leave work to the standard required for following procedures.

3.15 REMOVE

Remove debris, unused materials and elements from the site.

## 5110G GIB® PLASTERBOARD LININGS

### 1. GENERAL

This section relates to the supply, fixing and jointing of GIB® plasterboard linings and accessories to timber and steel framed walls and ceilings to form:

- standard systems
- bracing systems
- wet area systems

### 1.1 DOCUMENTS REFERRED TO

Documents referred to in this section are:

AS/NZS 2588      Gypsum plasterboard  
AS/NZS 2589      Gypsum linings - Application and finishing  
NZS 3604          Timber framed buildings  
BRANZ technical paper P21: A wall bracing test and evaluation procedure

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

### 1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

IIC                      Impact insulation class

### 1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents which refer to work in this section are:

General:              GIB® Site Guide (May 2006)  
Wet areas:            GIB Aqualine® Wet Area Systems (March 2007)  
Bracing:               GIB® Bracing Systems (March 2006)  
Accessories:          GIB-Cove®  
                             GIB® Goldline™ Platinum Tape-on Trims

Copies of the above literature are available at

Web:                    [www.gib.co.nz](http://www.gib.co.nz)

Telephone:            0800 100 442

### Requirements

### 1.4 NO SUBSTITUTIONS

Substitutions are not permitted to any specified GIB® systems, GIB® system components, GIB® plasterboard, associated GIB® products or GIB® accessories.

### 1.5 INSTALLER WORK SKILLS AND QUALIFICATIONS

GIB® plasterboard fixers and plasterers to be experienced competent workers, familiar with GIB® plasterboard lining systems installation and finishing techniques. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or
- Contractor membership of the Association of Wall and Ceiling Industries New Zealand (AWCINZ)

### Performance

### 1.6 INSPECTIONS AND ACCEPTANCE

Allow for inspection of the finished plasterboard surface:

- before applying sealer and
  - before applying finish coatings or decorative papers,
- so that after assessment of the type and/or angle of illumination and its effect on the completed decorative treatment, group approval and acceptance of the surface can be given.

- 1.7 **BRACING REQUIREMENTS**  
Provide braced wall systems using bracing rated plasterboard sheet to meet the requirements of NZS 3604 when tested to BRANZ technical Paper P21: A wall bracing test and evaluation procedure. Refer to drawings for location and type.
2. **PRODUCTS**
- Materials**
- 2.1 **GIB® PLASTERBOARD**  
Gypsum plaster core encased in a face and backing paper formed for standard and water resistance use to AS/NZS 2588.  
GIB® Standard plasterboard  
GIB Aqualine® wet area plasterboard
- 2.2 **CORNICE**  
GIB-Cove® plasterboard cornice.
- Components**
- 2.3 **SCREWS**  
GIB® Grabber® drywall screws.
- 2.4 **NAILS**  
GIB® Nails (gold passivated).  
Size: 30mm, 40mm
- 2.5 **METAL ANGLE TRIMS**  
GIB® galvanized steel slim angle trims.
- 2.6 **CONTROL JOINTS**  
GIB® Rondo® P35 control joints.
- 2.7 **TAPE ON TRIMS AND EDGES**  
GIB® Goldline™ tape-on paper tape and galvanized steel trims and edges or GIB® UltraFlex high impact corner mould.
- Accessories**
- 2.8 **ADHESIVE**  
Timber frame: GIBFix® Wood Bond wallboard adhesive.  
Timber frame LOSP treated: GIBFix® All-Bond wallboard adhesive.
- 2.9 **JOINTING COMPOUND**  
Bedding compound: GIB Tradeset®, GIB Lite Blue®, GIB ProMix® All Purpose, GIB® AquaMix, GIB Plus 4®  
Finishing compound: GIB ProMix® All Purpose GIB ProMix® Lite, GIB® All Purpose and GIB Plus 4®, GIB® Topcoat  
Cove: GIB-Cove® Bond
- 2.10 **JOINTING TAPE**  
GIB® paper jointing tape.
3. **EXECUTION**
- Conditions**
- 3.1 **STORAGE**  
Store GIB® plasterboard sheets and accessories in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material. Refer to GIB® Site Guide (May 2006).

- 3.2 **LEVELS OF PLASTERBOARD FINISH**  
Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589. Refer to GIB® Site Guide (May 2006).

- 3.3 **CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE**  
Before commencing work, agree in writing upon the surface finish assessment procedure necessary to ensure that the levels of finish specified, along with the effect of the type and/or angle of illumination on them, are obtained and are acceptable.

**Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the required plasterboard level of finish has been achieved.**

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping GIB® plasterboard **prior** to the application of a range of decorative finishes under various lighting conditions. Refer to GIB® Site Guide (May 2006).

- 3.4 **SUBSTRATE**  
Do not commence work until the substrate is plumb, level and to the standard required by the sheet manufacturer's requirements. Refer to GIB® Site Guide (May 2006).

- 3.5 **TIMBER FRAME MOISTURE CONTENT**  
Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining: 18% or less for plasterboard linings. Refer to GIB® Site Guide (May 2006).

- 3.6 **PROTECTION**  
Protect surfaces; cabinetwork, fittings, equipment and finishes already in place from the possibility of water staining and stopping damage. Refer to GIB® Site Guide (May 2006).

#### **Application**

- 3.7 **INSTALL CEILING BATTENS**  
Install timber ceiling battens.
- 3.8 **LINING WALLS AND CEILINGS GENERALLY**  
Form to GIB® Site Guide (May 2006). Ensure bulk insulation thickness shall not exceed that of the wall framing.

- 3.9 **FORM WET AREA SYSTEMS**  
Form to GIB Aqualine® Wet Area Systems (March 2007).

- 3.10 **FORM BRACING SYSTEMS**  
Form to GIB® Bracing Systems (March 2006).

- 3.11 **FORM CONTROL JOINTS**  
Form control joints to GIB Ultraline® PLUS Lining System (February 2006) and GIB® Site Guide (May 2006)

- 3.12 **INSTALL COVES**  
Install to GIB-Cove® literature using GIB-Cove® Bond.

- 3.13 **INSTALL TAPE-ON TRIMS**  
Install to GIB® Goldline™ Tape-on trims literature and/or GIB® Ultraflex high impact corner mould literature.

#### **Finishing**

- 3.14 **FINISHING GENERALLY**  
To GIB® Site Guide (May 2006) and AS/NZS 2589.

#### **Completion**

- 3.15      **REPLACE**  
Replace damaged sheets or elements.
- 3.16      **CLEAN DOWN**  
Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean.
- 3.17      **REMOVE**  
Remove debris, unused materials and elements from the site.
- 3.18      **LEAVE**  
Leave work to the standard required by following procedures.

## **5230 INTERIOR DOORS**

### **1. GENERAL**

This section relates to the supply and installation of interior doors.

#### **1.1 RELATED SECTIONS**

Refer to GLAZING for glass type and thickness

#### **1.2 DOCUMENTS**

Documents referred to in this section are:

|          |                                                      |
|----------|------------------------------------------------------|
| NZS 3602 | Timber and wood-based products for use in building   |
| NZS 3604 | Timber framed buildings                              |
| NZS 3610 | Specification form profiles of mouldings and joinery |

### **2. PRODUCTS**

#### **2.1 TIMBER**

To NZS 3602.

#### **2.2 PROFILES, FACINGS, SCRIBERS AND ARCHITRAVES**

Traditional profiles to NZS 3610. Proprietary profiles and special profiles as detailed.  
Pencil radius corners of profiled schedules for paint finish.

#### **2.3 INTERIOR DOORS, TIMBER VENEER**

Hollow core doors as scheduled complete with matching 6 mm clashing strip to both sides and to the exposed edge of cavity slider doors.

#### **2.4 INTERIOR CAVITY SLIDER**

Solid/hollow core door hung within a proprietary cavity slider frame and complete with brand-matched sliding door gear.

#### **2.5 GLAZED DOORS**

Solid timber framed, stop end jointed and bead glazed.

#### **2.6 DOOR HINGES**

Size and gauge to carry door. 3 hinges per door.

#### **2.7 INTERIOR SLIDING DOOR GEAR**

To suit door/sash size and glazed weight and as detailed.

### **3. EXECUTION**

#### **3.1 SITE MEASURE**

Confirm framed openings on site for dimension, plumb and straightness prior to fabrication or ordering of timber joinery. Confirm lintel head and sill deflection for sliding or bi-fold door systems is within the manufacturer's specified tolerances. Provide not less than 10 mm unless otherwise required.

#### **3.2 EXECUTION GENERALLY**

Manufacture to the methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

#### **3.3 FACTORY FIT HARDWARE**

Factory fit the following where specified: -  
- Hinges

#### **3.4 FACTORY FINISHING**

Before delivery to site: -

- Brace square and provide protection to assemblies during delivery to site. Where factory glazed, indicate the presence of transparent glasses with whiting, tape or signs compatible with the glass type.

### **Internal doors**

#### **3.5 INTERNAL DOOR LINERS**

Heads and jambs finished minimum 18 mm, with 10 mm planted door stops. Width to match width of lined walls. Hang doors on hinges, sliding, or sliding-folding gear to the door manufacturer's requirements and to operate freely. Countersink and plug frames scheduled for clear finish. Fit hardware.

#### **3.6 INTERNAL CAVITY SLIDERS**

Install in accordance with the door manufacturer's requirements, allowing for removal of top trim for maintenance.

### **Completion**

#### **3.7 CHECK**

Check and adjust operation of all sashes, doors, hardware and furniture.

#### **3.8 TEMPORARY PROTECTION**

On completion remove any temporary protection and leave ready for following work.

## **6700 PAINTING GENERAL**

### **1. GENERAL**

This section relates to the general matters related to painting work

#### **Documents**

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|                                          |                                                                                                                      |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| AS/NZS 2311                              | Guide to the painting of buildings                                                                                   |
| AS/NZS 2312                              | Guide to the protection of structural steel against exterior atmospheric corrosion by the use of protective coatings |
| OSH                                      | Guidelines for the provision of facilities and general safety in the construction industry                           |
| OSH                                      | Guidelines for the management of lead-based paint                                                                    |
| MPNZA                                    | Specification manual                                                                                                 |
| MPNZA                                    | Painters hazard handbook                                                                                             |
| Health and Safety in Employment Act 1992 |                                                                                                                      |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### **1.2 ABBREVIATIONS**

The following abbreviations are used throughout this part of the specification:

|       |                                              |
|-------|----------------------------------------------|
| APAS  | Australian Paint Approval Scheme             |
| MPNZA | Master Painters New Zealand Association Inc. |
| VOC   | Volatile organic compound                    |

#### **Requirements**

#### **1.3 NO SUBSTITUTIONS**

Substitutions are not permitted to any specified manufacturer's system, or associated components and products.

#### **1.4 QUALIFICATIONS**

Painters to be a member of MPNZA and experienced competent workers, familiar with the materials and the techniques specified.

#### **1.5 CONTROL SAMPLES**

Prepare samples of the finished work as scheduled, including preparation and colour as specified. Obtain written approval of the appearance before proceeding.

#### **1.6 HEALTH AND SAFETY**

Refer to the requirements of the Health and Safety in Employment Act and OSH: Guidelines for the provision of facilities and general safety in the construction industry. If the elimination or isolation of potential hazards is not possible then minimise hazards in this work on site by using the proper equipment and techniques as required in the MPNZA Painters hazard handbook. Supply protective clothing and equipment. Inform employees and others on site of the hazards and put in place procedures for dealing with emergencies.

Refer to OSH: Guidelines for the management of lead-based paint for the required procedures and precautions when:

- treating/removing lead-based paint
- burning off paint
- sanding off paint
- using solvent based paint removers.

#### **1.7 MATERIAL SAFETY DATA SHEET**

Obtain from each paint manufacturer the material safety sheet for each product used. Keep sheets on site and comply with the required safety procedures.

## **Warranties**

- 1.8 **WARRANTY**  
Warrant this work under normal environmental and use conditions against failure.  
2 years: Warranty period
- Refer to the general section WARRANTY AGREEMENT for the required format and details of when completed warranty must be submitted.

## **Performance**

- 1.9 **MANUFACTURER'S INSPECTION**  
Allow the paint manufacturers to inspect the work in progress and to take samples of their products from site if requested.
- 1.10 **INSPECTION OF WORK**  
Inspection of the whole of the work at each of the stages scheduled may be made. Agree a programme that will facilitate such inspection, including notification when each part and stage of the work is ready for inspection.

## **2. PRODUCTS**

### **Materials**

- 2.1 **PAINT TYPES**  
Use the manufacturer's complete system and only the products specified.
- 2.2 **MATERIALS GENERALLY**  
Use only the Manufacturer's products which are guaranteed for their consistency and performance under ISO 9001 and APAS approval, prepared, mixed and applied as directed in the Manufacturer's specification sheets, specification manuals and product data sheets.
- 2.3 **THINNERS AND ADDITIVES**  
Only use thinners or additives within the stated limits for the particular situations specified.

### **Accessories**

- 2.4 **FILLERS**  
For recommendations on; fillers, stopping, paint strippers, cleaning agents, etching solutions, mould inhibitors, rust inhibitors, knotting and other commodities used for the surface preparation, refer to the manufacturer of the specified coating.

## **3. EXECUTION**

### **Conditions**

- 3.1 **EXECUTION**  
To conform to manufacturer's requirements and those methods, practices and techniques contained in AS/NZS 2311, the MPNZA Specification manual, and OSH Guidelines for the provision of facilities and general safety in the construction industry.
- 3.2 **PREPARE**  
Prepare surfaces to the coating manufacturer's requirements.
- 3.3 **COATED SURFACES**  
Ensure that substrate surfaces are able to achieve the specified finish.
- 3.4 **PRE-PRIMED SURFACES**  
Sand down any breakdown or damage of the primer to a sound surface and immediately re-prime.

- 3.5 **BRUSH DOWN**  
Brush down surfaces immediately before application, to remove dust, dirt and loose material.
- 3.6 **COMPATIBILITY**  
Check that materials are as required by the paint manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other. Use paint from the same manufacturer for each paint system. If not compatible, obtain instructions before proceeding.
- 3.7 **TREATED SURFACES**  
Where surfaces have been treated with preservatives or fire retardants, check with the treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance. If they are not compatible, obtain instructions before proceeding.
- 3.8 **ANCILLARY SURFACES**  
The coatings listed in schedules and elsewhere are of necessity simplified. Coat ancillary exposed surfaces to match similar or adjacent materials or areas, except where a fair-faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.
- 3.9 **HARDWARE**  
Do not paint hinges or hardware that cannot be removed. If items can be removed, carefully remove hardware, fixtures and fittings before commencing work. Set aside where they cannot be damaged or misplaced and replace on completion.
- 3.10 **PROTECTION**  
Use dropsheets, coverings and masking necessary to protect adjoining fixtures, fittings and spaces from paint drops, spots, spray and damage.

**Preparation - unpainted and pre-primed timber and wood based products**

- 3.11 **MOISTURE CONTENT**  
Ensure moisture content at the time of application is near to the equilibrium moisture content pertaining to the particular locality in which the timber is used, without any excessive moisture content gradient between core and surface.
- 3.12 **PREPARING DRESSED TIMBER**  
Ensure dressed timber is smooth, free from raised or woolly grain, planing burrs or other machining defects. Slightly round or ease sharp edges to ensure they can be properly coated. Sand timber to bring up to a smooth finish along the direction of the grain. Sand timber back to new condition timber that has been weathered.
- 3.13 **PREPARING PRE-PRIMED TIMBER**  
Check pre-prime coat for damage, powdering, weathering or loss of adhesion. Where primer is sound, thoroughly brush along the direction of the grain to remove dust and dirt. If there is doubt, sand back and re-prime.
- 3.14 **TIMBER SPECIES**  
Check that the preparation and paint system is suitable for the timber species.
- 3.15 **PREPARING DAMAGE AND DEFECTS**  
Scrape clean loose or soft material holes, depressions, resin or gum pockets, knot holes, surface splits, checks, or any localised decay. Apply primer and/or sealer specified and fill these areas with linseed oil putty or other appropriate filler.
- 3.16 **FIXINGS**  
Take timber fixings below the painted or clear finished surface. Leave corrosion resistant timber fixings flush with clear finished surfaces.

- 3.17 **CLEANING**  
Remove grease and oil by wiping down with solvent or water-based degreasing agent. Remove resin by wiping down with solvent or water-based degreasing agent or heating and scraping. Remove sanding dust. Bad staining may be untreatable and require replacement of timber, discuss with paint manufacturer and main contractor.
- Preparation - gypsum plaster**
- 3.18 **PREPARING GYPSUM PLASTER**  
Fill and sand small crevices and cracks. Surface moisture content not to exceed 12% at time of coating.
- Preparation - unpainted linings**
- 3.19 **PREPARING FIBROUS PLASTER**  
Check for and remove release agents and other contaminants by washing with clean water or solvent and allow to dry. Fill cracks and surface imperfections with patching plaster and lightly sand smooth. Remove dust.
- 3.20 **PREPARING PLASTERBOARD**  
Check that joints are prepared to a smooth level surface finish. Fill cracks and surface imperfections with the sheet manufacturer's required stopping compound and lightly sand smooth. Remove dust.
- Preparation - painted surfaces generally**
- 3.21 **SURFACE PREPARATION**  
Refer to the Manufacturer's specification sheets and product data sheets. Carry out the preparatory work required by them for each of the substrates.
- For interior surfaces such as paper faced plasterboard use the Manufacturer's recommended finishing compound as an aid to achieving a Level 5 finish.
- 3.22 **MOULD**  
Sterilise surface mould by washing or sponging the whole surface with a one part sodium hypochlorite household bleach to three parts clean water solution. Allow bleach to act for 30 minutes and wash off with clean water. Wash cloths and sponges regularly in clean water. Reapplication may be necessary. Treat with anti-mould solution to the treatment manufacturer's requirements.
- 3.23 **GAP FILLING**  
Fill cracks, holes, indented and damaged surfaces with putty, plaster filler, wood filler, or plastic wood, as appropriate and in accordance with the paint manufacturer's requirements. Allow to dry or set before sanding back level with the surface. Prime coat or seal the timber before using putty. Wet cement or gypsum base plasters before applying filler. Use only Portland cement base types, or water-insoluble organic-based gap fillers in exterior or wet areas.
- Application - before applying final coatings**
- 3.24 **OFF-SITE WORK**  
Carry out off-site preparation and coating under cover, in a suitable environment and with adequate lighting. Store items both before and after coating in a clean, dry area, protected from the weather and mechanical damage, properly stacked and spaced to permit air circulation and to prevent sticking of surfaces.
- 3.25 **PRIMING JOINERY**  
Before priming preservative treated timber ensure that any cut surfaces have been retreated. Liberally coat end grain, allow to soak in and then recoat. Ensure LOSP. treated joinery has dried sufficiently to lose odour.

- 3.26 **CONCEALED JOINERY SURFACES**  
Apply off-site coatings to all surfaces including those which will be concealed when incorporated into the building.
- 3.27 **CONCEALED METAL SURFACES**  
Apply primer to suit the coating system to all metal surfaces which will be concealed when incorporated into the building.
- 3.28 **DOORS**  
Prime or seal and paint all six faces of doors before hanging.
- 3.29 **BEAD GLAZING**  
Before glazing apply the first two coats, or the primer and one undercoat, to rebates of stained, varnished or painted joinery and beads.
- 3.30 **PUTTY GLAZING**  
Follow putty manufacturers recommendations for application, drying, and painting. Ensure that the putty is fully protected by the coating system as soon as it is sufficiently hard.
- Application - generally**
- 3.31 **PAINTING GENERALLY**  
Comply with the paint manufacturer's requirements and any additional requirements in this specification.
- 3.32 **MIXING**  
Thoroughly mix paints. Lift any settled pigment and ensure the paint is homogenous.
- 3.33 **ENVIRONMENT**  
Paint exterior surfaces only in favourable weather conditions:
- warm dry days without frost or heavy dews
  - avoid painting in direct sunlight any surfaces that absorb heat excessively
  - as far as possible apply paint in the temperature range 15°C to 25°C
  - do not paint if temperatures fall outside the range of 10°C and 35°C unless paints with the necessary temperature tolerance have been specified
  - do not apply solvent borne paint if moisture is present on the surface
- 3.34 **SEQUENCE OF OPERATIONS**  
Painting work to generally follow the following sequences:
- complete surface preparation before commencing painting
  - apply paint in the specified sequence using the specified paint
  - allow full drying time between coats to the paint manufacturer's requirements
  - do not expose primers, undercoats and intermediate coats beyond manufacturers stated instructions before applying the next coat
  - finish broad areas before painting trim
  - ensure batch numbers of tins are matched for whole areas
  - internally, paint ceilings before walls and walls before joinery, trim and other items
- 3.35 **PAINT APPLICATIONS**  
Select brush, roller, or pad and apply paint to the requirements of the paint manufacturer and to obtain a smooth even coating of correct thickness, uniform gloss and colour.
- 3.36 **DRYING TIME**  
Before handling or applying the next coat of paint, give each coat the full drying time as required by the paint manufacturer. Ensure that surfaces are dry and that condensation does not occur before the paint reaches surface-dry condition.
- 3.37 **LIGHTLY SAND**  
Lightly sand primers, sealers, undercoats and intermediate coats to remove dust pick-up, protruding fibres and coarse particles. Remove dust immediately before applying the next coat.

- 3.38 **DEFECTIVE WORK**  
Correct defective work immediately and re-coat as required, following precisely the paint system specified.
- 3.39 **EACH COAT**  
Each coat of paint and the completed paint system to have the following qualities and properties:
- uniform finish, colour, texture, sheen and hiding power
  - the specified number of coats applied
  - no blemishes such as runs, sags, crinkling, fat edges, entrained paint skins, hairs, dust, bare or starved patches, cracks, brush marks, ladder marks and blistering
  - proper covering of corners, crannies, thin edges, cracks, end grain and other difficult places of application
- Completion**
- 3.40 **CLEAN**  
Clean adjoining surfaces, glass and fittings of any paint contamination. Clean off glass indicators at completion of the building works. Clean glass inside and out to a shining finish.
- 3.41 **CLEAN EQUIPMENT**  
Use the Manufacturer's environmental wash system for the cleaning of water-based paint and plasters from brushes, rollers, plastering or spray equipment to separate the solids from the water component for safe disposal.
- 3.42 **LEAVE**  
Leave the whole of this work uniform in gloss and colour, of correct thickness, free from painting defects, clean and unmarked and to the standard required by following procedures.
- 3.43 **REMOVE**  
Remove dropsheets, coverings and masking to leave surrounding surfaces and areas clean, tidy and undamaged. Remove debris, unused materials and elements from the site.
- 3.44 **REPLACE HARDWARE**  
Replace hardware without damage to it or the adjoining surface. Leave properly fitted and in working order.

## 7112 RAINWATER STORAGE TANKS

### 1. GENERAL

This section relates to the installation of domestic rainwater storage tanks.

#### Related work

#### 1.1 RELATED SECTIONS

Refer to DRAINAGE GENERAL for general requirements

Refer to RAINWATER SYSTEMS for downpipe installation

#### Documents

|               |                                                                                 |
|---------------|---------------------------------------------------------------------------------|
| AS/NZS 1260   | PVC-U pipes and fittings for drain, waste and vent application                  |
| AS 2070       | Plastic materials for food contact use                                          |
| AS/NZS 2845.1 | Water supply - Mechanical backflow prevention devices                           |
| AS/NZS 3000   | Electrical installations                                                        |
| AS/NZS 3500.1 | Plumbing and drainage - water services                                          |
| AS/NZS 3500.3 | Plumbing and drainage - stormwater drainage                                     |
| AS/NZS 4020   | Testing of products for use in contact with drinking water                      |
| AS/NZS 4130   | Polyethylene (PE) pipes for pressure applications                               |
| AS/NZS 4766   | Polyethylene storage tanks for water and chemicals                              |
| ATS 5200.026  | Technical Specification for plumbing and drainage products - Cold water storage |
| NZBC G1       | Personal Hygiene                                                                |
| NZBC G12/AS1  | Water Supplies                                                                  |
| HB 230        | Rainwater Tank Design and Installation Handbook                                 |

#### Requirements

#### 1.2 HEALTH REQUIREMENTS

Refer to The Ministry of Health publication "Household water supplies: The selection, operation, and maintenance of individual household water supplies" for guidance.

#### 1.3 QUALIFICATIONS

Work to be carried out by tradesmen experienced, competent and familiar with the materials and techniques specified.

#### Performance

#### 1.4 PRODUCER STATEMENT

Provide a producer statement from a suitably qualified person for:  
Installation of system.

Producer statements to be in the form required by the Building Consent Authority.

#### 1.5 DESIGN AND INSTALLATION

To HB 230 Rainwater Tank Design and Installation Handbook, to AS/NZS 3500.3 and to NZBC G1 and G12.

#### 1.6 TESTING OF PRODUCTS

Materials used in the manufacture of rainwater tanks to be tested to AS/NZS 4020.

### 2. PRODUCTS

#### Components

#### 2.1 RAINWATER STORAGE TANK

- Underground tank manufactured from reinforced concrete. To be designed, inspected and certified by a professional consulting engineer in accordance with the specified test method, performance requirements, pressure testing and objects of AS/NZS 1546.1 and AS/NZS 4766.

Tanks to be fitted with a secure fitting lid to provide internal access for cleaning or inspection.

### **Accessories**

- 2.2 **TANK FITTINGS**  
Fittings kit supplied with the tank for complete installation.
- 2.3 **POLYETHYLENE PIPES AND FITTINGS**  
High density polyethylene pipe and fittings to AS/NZS 4130.
- 2.4 **WATER PUMP**  
Pump designed to pressurised water supply from tank into the building.
- 2.5 **TANK VENT**  
Vent with insect proof stainless steel mesh fitted on top of the tank.
- 2.6 **FIRST FLUSH WATER DIVERTER**  
Wall mounted or underground system specific to installation. To prevent the first flow of water from the roof entering the water storage tank.
- 2.7 **FILTER SYSTEM**  
Inline cartridge filter housing fitted between the first flush diverter and the inlet, or a 955 micron filter tank screen system fitted within the tank.
- 2.8 **TANK VACUUM SYSTEM**  
Designed to suck from the bottom of the tank when the tank is full to overflowing. System to include anti siphon device.
- 2.9 **WATER TREATMENT (UV)**  
Combination filtration and UV disinfection system.
- 2.10 **SEALS**  
Uniseals for pipe connections to the top of the tank.
- 2.11 **TANK BASE BEDDING**  
Clean sand or concrete 100 to 150 mm thick.
- 2.12 **CONCRETE**  
To NZS 3104: Prescribed mix 17.5 MPa: For in situ tank base and water pump pad.

### **3. EXECUTION**

#### **Conditions**

- 3.1 **SITE ACCESS**  
Transportation on site to the position of the tank is at the risk and responsibility of the contractor. Make provision for manoeuvring and unloading of tank

#### **Application - site**

- 3.2 **SITE EXCAVATION FOR UNDERGROUND GROUND TANK**  
Excavate to required size. Place tank into excavation and connect up to the plumbing system with backflow prevention fitted to AS/NZS 3500.1. Drainage system to AS/NZS 3500.3. Backfill with free draining material to manufacturer's requirements. Ensure tank access lids are designed and installed to prevent child and stormwater ingress.
- 3.3 **LAYING AND JOINTING**  
Lay in straight lines between changes of line or grade from the lower end of the drain with sockets pointing uphill. Set each pipe true to line and grade and each joint completed before the next pipe is laid.

#### **Application - fittings**

- 3.4 **WATER PUMP INSTALLATION**  
Install pump on a solid base bolted down through base plate. Place weather tight housing over the pump and secure to base. Connect to water supply and power supply
- 3.5 **WATER TREATMENT SYSTEM INSTALLATION**  
Install ultraviolet light radiation treatment unit between pump and house to manufacturer's specifications. Connect to power supply provided.
- 3.6 **BACK FLOW PREVENTION DEVICES**  
Install to AS/NZS 2845.1, to AS/NZS 3500.1 and to NZBC G12/AS1.

**Application - connections**

- 3.7 **FIRST FLUSH WATER DIVERTER**  
Install either adjacent to the tank or underground, first flush water diverter. Connect downpipes from the roof gutter to the first flush water diverter. Connect the first flush diverter to the top of the tank. Refer to manufacturer's installation details.
- 3.8 **FILTER INSTALLATION**  
Install proprietary in-line filter before the inlet connection.
- 3.9 **INLET CONNECTION**  
Install inlet pipe into top of tank at manufacturer's designated mounting area using a Uniseal type connection.
- 3.10 **OUTLET CONNECTION**  
Install pipe to manufacturer's installation details. To the outlet connect a floating arm draw-off to deliver water from 100 mm below the surface. From the base connection run a flexible hose to the pump. Install ball valve in line between base connection and water pump. Support all pipework at outlet.
- 3.11 **OVERFLOW PIPE**  
Install pipe to manufacturer's installation details and connect into stormwater system or directed away from base of tank into garden.
- 3.12 **PIPE SEALS**  
Insert Uniseals in clean cut holes of the correct size. Insert Uniseal into hole with widespread facing the pipe to be inserted. Lubricate the pipe with detergent and push through the Uniseal. Use only on top of tank connections.
- 3.13 **ELECTRICAL CONNECTION**  
Installation to AS/NZS 3000. Allow to connect up water pump and water treatment unit to the power supply as provided.

**Commissioning**

- 3.14 **POST INSTALLATION TESTING**  
Test and commission the completed system to manufacturer's requirements and AS/NZS 3500.1.16 Testing and Commissioning. At the completion and testing of the water service, check all valves and other components to confirm their correct performance.

**Completion**

- 3.15 **REPLACE**  
Replace damaged or marked elements.
- 3.16 **LEAVE**  
Leave work to the standard required by following procedures.
- 3.17 **CLEAN**  
Clean and flush out the whole installation. Remove silt and debris.

## 7120 HOT AND COLD WATER SYSTEM

### 1. GENERAL

This section relates to potable water supply connection to the project, and the installation of hot and cold water supply pipework, hot water cylinders and isolation valves.

#### Related work

#### 1.1 RELATED SECTIONS

Refer to SANITARY FIXTURES, TAPWARE AND ACCESSORIES for sanitary fixtures and tapware selections.

#### 1.2 DOCUMENTS

Documents referred to in this section are:

|               |                                                                                                                   |
|---------------|-------------------------------------------------------------------------------------------------------------------|
| NZBC B2/AS1   | Durability                                                                                                        |
| NZBC G12/VM1  | Water supplies                                                                                                    |
| NZBC G12/AS1  | Water supplies                                                                                                    |
| NZBC H1/AS1   | Energy Efficiency                                                                                                 |
| AS/NZS 2642.2 | Polybutylene pipe fittings Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications |
| AS/NZS 3500.5 | National plumbing and drainage - Domestic installations                                                           |
| NZS 3501      | Specification for copper tubes for water, gas and sanitation                                                      |
| AS/NZS 4130   | Polyethylene (PE) pipes for pressure applications                                                                 |
| NZS 4305      | Energy efficiency domestic type hot water systems                                                                 |
| NZS 4617      | Tempering (3-port mixing) valves                                                                                  |
| DIN 8077      | Polypropylene (PP-R) Pipe dimensions                                                                              |
| DIN 8078      | Polypropylene (PP-R) Pipes Types 1, 2 & 3, General quality requirements and testing.                              |

Plumbers, Gasfitters and Drainlayers Act 2006

#### 1.3 QUALIFICATIONS

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a plumber registered under the Plumbers, Gasfitters and Drainlayers Act 2006.

#### Warranties

#### 1.4 WARRANTY

Warrant this work under normal environmental and use conditions against failure of materials and execution.

Warranty period: 2 years

Refer to the general section for the required form of WARRANTY AGREEMENT and details of when completed warranty must be submitted.

## 2. PRODUCTS

### 2.1 POLYBUTYLENE PIPE

Polybutylene tubing to AS/NZS 2642.1, AS/NZS 2642.2 and AS/NZS 2642.3 complete with fittings and accessories brand-matched with durability to NZBC B2/AS1 Durability, table 1 and NZBC G12/AS1 Water supplies table 1.

### 2.2 VALVES

Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief or temperature valve, pressure relief valve and isolating valves to NZBC G12/AS1: Water supplies.

### 2.3 BACKFLOW PREVENTION DEVICES

Provide backflow prevention devices to AS/NZS 2845 where it is possible for water or contaminants to backflow into the potable water supply. Refer to NZBC G12 AS/1 3.4 Backflow protection, and table 2, Selection of Backflow Protection.

- 2.4 **TEMPERING VALVE**  
Tempering valve to NZS 4617 to NZBC G12/AS1: Water supplies.
- 2.5 **TANKS**  
Pre-formed black polyethylene or stainless steel tank, complete with access opening and lid and overflow tray.

**Materials - hot water heating appliances**

- 2.6 **GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**  
Continuous flow unit with an integral gas burner and flue to NZS 4305.

**Components**

- 2.7 **INSULATION**  
Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements and to NZBC H1/AS1.
- 2.8 **PROTECTIVE TAPE**  
Plasticised PVC tape system with primer, mastic fixing and outer coating.

**3. EXECUTION**

- 3.1 **HANDLE AND STORE**  
Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover on a clean level area, stacked to eliminate movement and away from work in progress.

Store tapware in a shelved, dry and securely locked area. Retain tapware in the manufacturer's original packaging, complete with all fixings and installation instructions. Label each unit separately with its space/fixture number to match.

- 3.2 **EXECUTION GENERALLY**  
Generally carry out the whole of this work and tests to NZBC G12/VM1 or G12/AS1: Water supplies.

- 3.3 **CORE HOLES AND SLEEVES**  
Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.

- 3.4 **CONCEAL**  
Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.

- 3.5 **CORROSION**  
Separate all metals subject to electrolytic action from each other and from treated timber, concrete and other lime substances by space, painting of surfaces, taping, or separator strips.

- 3.6 **THERMAL MOVEMENT**  
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations.

- 3.7 **PIPE SIZE**  
Flow rates to each outlet to be no less than those given in NZBC G12/VM1 or G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures. Pipe size as determined in table 4, Tempering valve and nominal pipe diameters.

- 3.8 **ELECTROLYTIC ACTION**  
Avoid electrolytic action by eliminating contact or continuity of water between dissimilar metals.

- 3.9 **EXCAVATE**  
Excavate for the water main to a firm, even trench base in straight runs. Allow to backfill.
- Application - jointing**
- 3.10 **JOINTING POLYBUTYLENE PIPE**  
Aluminium clamped, seal ring compression or push fit "O" ring seal jointing to pipe system manufacturer's requirements.
- Application - pipework installation**
- 3.11 **WATER SUPPLY CONNECTION**  
Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to NZBC G12/AS1: Water supplies.
- 3.12 **POTABLE WATER SUPPLY PIPEWORK INSTALLATION**  
From connection point, run pipes complete with all fittings, support and fixing, joins and install to manufacturers specifications. Size the pipes and branches in straight runs to deliver the acceptable flow rate to NZBC G12/VM1 or G12/AS1: Water supplies, table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures and size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Pipework support spacing to be firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with machine made 3 diameter bends, complete with necessary valves and fittings. Conceal pipework and pressure test before the wall linings are fixed.
- 3.13 **HOT WATER PIPEWORK**  
Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to NZBC G12/VM1 or G12/AS1: Water supplies, table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, and preformed 3 diameter bends, complete with all necessary valves and fittings.
- Lag all pipes with rigid insulation to the manufacturer's requirements and G12/VM1 or G12/AS1: Water supplies.
- 3.14 **EQUIPOTENTIAL BONDING**  
Earth metallic water supply pipe and metallic sanitary fixtures to NZBC G12/AS1: Water supplies: 9.0.
- 
- 3.15 **IN-LINE FILTER**  
Install an in-line filter immediately adjacent to the main isolating valve at the point of entry to the building, in an accessible position to allow for easy cleaning.
- Application - hot water systems**
- 3.16 **INSTALLING HOT WATER PIPE INSULATION**  
Insulate all hot water pipes to NZBC H1/AS1 Energy Efficiency, AS/NZS 3500.5, 3.11.7 Insulation of piping and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.
- 3.17 **INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**  
Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with NZBC G12/AS1: 6.11. Install flue in accordance with the manufacturer's details and requirements.
- 3.18 **INSTALL TEMPERING VALVE**  
Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

- 3.19      **PENETRATIONS**  
Provide and fit collars and escutcheon plates to match the pipework at all penetrations through constructions.

**Installation - valves**

- 3.20      **INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED**  
Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.
- 3.21      **INSTALLING BACKFLOW PREVENTION DEVICE**  
Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS/NZS 2845.3.

**Completion**

- 3.22      **LABEL**  
Label all pipework with permanent adhesive markers at 3 metre minimum intervals.
- 3.23      **CLEAN IN-LINE FILTER**  
Clean all in-line filters on completion of works.
- 3.24      **REPLACE**  
Replace damaged or marked elements.
- 3.25      **LEAVE**  
Leave work to the standard required by following procedures.
- 3.26      **REMOVE**  
Remove debris, unused materials and elements from the site.

## **7140 SANITARY PLUMBING**

### **1. GENERAL**

This section relates to above ground gravity flow sanitary plumbing.

#### **Related work**

#### **1.1 RELATED SECTIONS**

Refer to SANITARY FIXTURES, TAPWARE AND ACCESSORIES for sanitary fixtures tapware and accessories.

#### **1.2 DOCUMENTS**

Documents referred to in this section are:

|                                               |                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------|
| NZBC G12/AS1                                  | Water supplies                                                          |
| NZBC G13/AS1                                  | Foul water - sanitary plumbing                                          |
| AS 2887                                       | Plastic waste fittings                                                  |
| AS/NZS 1260                                   | PVC pipes and fittings for drain, waste and vent applications           |
| AS/NZS 2032                                   | Installation of PVC pipe systems                                        |
| AS/NZS 3500.2                                 | Plumbing and drainage - Sanitary plumbing and drainage                  |
| NZS 7643                                      | Code of practice for the installation of unplasticised PVC pipe systems |
| Plumbers, Gasfitters and Drainlayers Act 2006 |                                                                         |

#### **1.3 QUALIFICATIONS**

Carry out work by or under the direct supervision of a person registered under the Plumbers, Gasfitters and Drainlayers Act 2006.

### **2. PRODUCTS**

#### **2.1 UPVC WASTE, DISCHARGE AND VENT PIPES**

uPVC pipe to AS/NZS 1260 complete with fittings brand-matched to the pipe manufacturer's requirements.

#### **2.2 EXPOSED PIPES AND TRAPS**

Chrome plate on copper pipes and associated copper and brass fittings.  
White polybutylene or PVC, including all associated fittings.

### **3. EXECUTION**

#### **3.1 EXECUTION GENERALLY**

Carry out this work and complete all tests to AS/NZS 3500.2.

Carry out this work and complete all tests to NZBC G1/AS1: 2.0, 3.0 and G13/AS1.

#### **3.2 ELECTROLYTIC ACTION**

Avoid electrolytic action by eliminating actual contact or continuity of water between dissimilar metals.

#### **3.3 INSTALL TRAPS, WASTE AND VENT PIPES**

Connect waste outlets to traps and run waste pipes and back vents concealed, sized and fixed to AS/NZS 3500.2 /NZBC G13/AS1 and NZS 7643. Discharge wastes into the drainage system stack, soil pipe, or gully trap as shown. Bird proof mesh to all roof vents and vermin proof mesh to all untrapped waste pipes.

#### **3.4 PENETRATIONS**

At penetrations through constructions provide and fit collars and escutcheon plates to match pipework.

#### **3.5 TEST**

Test soil and waste disposal systems to ensure no leakage exists and leave in proper working order.

#### **3.6 CLEAN UP**

Remove labels and clean fittings. Remove unused materials from the site.

## **7150 SANITARY FIXTURES, TAPWARE & ACCESSORIES**

### **1. GENERAL**

This section relates to the supply and installation of sanitary fixtures, tapware and sanitary accessories.

#### **Related work**

### **1.1 RELATED SECTIONS**

Refer to GLAZING for frameless shower and bath screens not included in this section.  
Refer to HOT AND COLD WATER SYSTEM for hot water cylinders.  
Refer to SANITARY PLUMBING for the supply and fitting of waste disposal pipework

#### **Documents**

### **1.2 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|               |                                                                              |
|---------------|------------------------------------------------------------------------------|
| NZBC E3/AS1   | Internal moisture                                                            |
| NZBC F2/AS1   | Hazardous building materials                                                 |
| NZBC G1/AS1   | Personal hygiene                                                             |
|               | 2.0 Fixture construction and installation                                    |
|               | 3.0 Location of sanitary fixtures                                            |
|               | 4.0 People with disabilities                                                 |
| NZBC G12/VM1  | Water supplies                                                               |
| NZBC G12/AS1  | Water supplies                                                               |
| NZBC G13/AS1  | Foul water - sanitary plumbing                                               |
| AS/NZS 1730   | Washbasins                                                                   |
| AS/NZS 2023   | Baths for ablutionary purposes                                               |
| AS/NZS 3500.2 | Plumbing and drainage - sanitary plumbing and drainage                       |
| NZS 3662      | Performance of showers for bathing                                           |
| AS/NZS 3718   | Water supply - tapware                                                       |
| NZS 4223      | Code of practice for glazing in buildings - human impact safety requirements |

Plumbers, Gasfitters and Drainlayers Act 2006

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### **Requirements**

### **1.3 QUALIFICATIONS**

Plumbers to be experienced competent workers, familiar with the materials and the techniques specified. Plumbing work to be carried out under the direct supervision of a plumber registered under the Plumbers, Gasfitters and Drainlayers Act 2006.

### **1.4 SAMPLES**

Submit samples on request of nominated tapware, along with the relevant manufacturers' technical literature for review.

### **1.5 SUPPLIER**

A specialist in the supply of tapware, and employing experienced architectural representatives available to assist during the course of the installation.

## **2. EXECUTION**

#### **Conditions - sanitary fixtures**

### **2.1 DELIVERY**

Only deliver to the site fixtures or fittings that can be immediately unloaded into suitable storage or be placed for direct installation.

- 2.2 **STORAGE AND HANDLING**  
Take delivery of and store components complete with protective casings and coverings in areas that are enclosed, clean and dry and where no work is being done. Remove protection only to the extent that will allow installation.
- 2.3 **QUALITY STANDARDS**  
Installation work to comply with NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, NZBC G13/AS1 and the fixture manufacturer's requirements.
- 2.4 **SUBSTRATE**  
Ensure substrate and fixings will allow work of the specified standard.
- 2.5 **CO-ORDINATION**  
Do not proceed if the points of supply and drainage services do not match the points of the fixtures without force or distortion.
- 2.6 **INSTALLATION REQUIREMENTS**  
Install to NZBC G1/AS1, NZBC G12/VM1, NZBC G12/AS1, NZBC G13/AS1, NZBC E3/AS1 and to the fixture manufacturer's installation requirements for each component.
- 2.7 **PROVIDE SUPPORT**  
Confirm fixing points needed for each unit and provide solid noggings at each fixing bracket location.

**Conditions - tapware**

- 2.8 **RETAIN**  
Retain tapware in the manufacturer's original packaging and ensure that units are complete with fixings and installation instructions. Label each unit separately with its fitting name and space number.
- 2.9 **STORE**  
Store tapware packages in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.

**Conditions - sanitary accessories**

- 2.10 **RETAIN**  
Retain fixtures, fittings and hardware in the manufacturer's original packaging and ensure that units are complete with associated fixings and installation instructions. Label each unit separately to match the submitted and approved schedule.
- 2.11 **PACKAGE**  
Package fixtures, fittings and hardware units required in clear plastic and label each to match the drawings and the submitted schedule. Place packages in cartons selected for 'level', 'location', and/or 'sector' and label the packages and the cartons similarly.
- 2.12 **STORE**  
Store items in a shelved, dry and securely locked area. Provide supervision when the secure area is unlocked and packages and cartons are being distributed; signing off each package from the schedule as released.
- 2.13 **INSPECTION**  
Before starting the installation of proprietary items, check relevant spaces and wall and floor finishes for any condition that would not allow the proper installation of any unit. Do not proceed until such conditions have been remedied.

**Application - sanitary fixtures**

- 2.14 INSTALLING VITREOUS CHINA FIXTURES**  
Install to NZBC G1/AS1: Part 3, G12/AS1, G13/AS1 and AS/NZS 3500.2. Carry out preparatory and assembly work, including connections to supply and drainage services and the application of slurries and sealants in sequence. Fit the toilet pan in position, plumb, level, flush and rigid without stressing the attachment points of the component.
- 2.15 INSTALLING WASHBASINS**  
Install to NZBC G1/AS1, AS/NZS 1730. Set basins firmly to walls or vanities as detailed and to comply with NZBC E3/AS1. Connect through trap to the drainage system.
- 2.16 INSTALLING VANITIES**  
Install in accordance with the manufacturer's requirements. Seal top and upstand to wall surface to comply with NZBC E3/AS1.
- 2.17 INSTALLING SHOWERS**  
Install to NZBC G1/AS1 and to NZS 3662. Sit tray firmly in place as detailed, to levels shown and connect to drainage service, ready for following work. Lining materials and finishes to comply with NZBC E3/AS1.
- 2.18 INSTALLING SHOWER CABINETS**  
Install to NZBC G1/AS1 and to NZS 3662 and in accordance with cabinet manufacturer's details and requirements. Ensure that doors fit closely and accurately. Test for water egress around sides and base. Lining materials and finishes to comply with NZBC E3/AS1.
- 2.19 INSTALLING BATHS**  
Install to NZBC G1/AS1. Set firmly in cradle with required points fully supported, level and flush. Connect to supply and drainage services.
- 2.20 INSTALLING SINK BENCHES**  
Install in accordance with manufacturer's/supplier's requirements. Connect to supply and drainage services.
- 2.21 INSTALLING TUB UNITS**  
Install in accordance with manufacturer's requirements. Connect to supply and drainage services.
- 2.22 INSTALLING CISTERNS**  
Fit firmly in place and connect the specified cisterns from the supply services through the flush pipes to the relative fixtures in the positions as detailed all plumb and level.

#### **Application - tapware**

- 2.23 GENERAL**  
Fit specified to AS/NZS 3718 in accordance with the manufacturer's requirements. Maintain safe water temperatures to comply with NZBC G12/AS1.

#### **Application - sanitary accessories**

- 2.24 INSTALLING ACCESSORIES**  
Fit specified fittings firmly in place at required dimensions relative to floor and adjoining sanitaryware fittings, all plumb and level.
- 2.25 LOCATE**  
Locate units at heights and/or locations shown on the drawings, or as required to comply with NZBC G1/AS1. For any dimension not shown or known, request direction before proceeding.
- 2.26 CUTTING AND FITTING**  
Where cutting and fitting of the substrate is necessary for installing any unit, carry out this work before the painting or finishing of that surface. Remove any hardware when required for painting, placing it in the packaging or carton originally supplied and returning it to the secure store until ready for re-installation.

- 2.27      **INSTALLING UNITS**  
Install each unit in accordance with the proprietary fixture manufacturer's requirements, using the templates and tools supplied or recommended by them. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.
- 2.28      **INSTALLING SHOWER SCREEN**  
Install to NZBC F2/AS1 and NZS 4223 and to the product manufacturer's requirements. Set units level, plumb and true to line and required location, with moving parts and actions freely and easily operating. Do not make any modifications to supplied units.
- Completion**
- 2.29      **REPLACE**  
Replace damaged or marked elements.
- 2.30      **PROTECTIVE COATINGS**  
Leave fixtures, fittings and accessories clean and unblemished with stickers and protective coatings removed, with supply and drainage connections and all parts fully operating and working. Leave the whole of this work free of blemishes, undamaged and to the standard of finish required for following work.
- 2.31      **REMOVE**  
Remove debris, unused materials and elements from the site.

## **7211 GAS SYSTEM**

### **1. GENERAL**

This section relates to the fabrication, installation and operation of piping systems for low pressure natural gas.

#### **Related work**

#### **1.1 RELATED SECTIONS**

Refer to GAS APPLIANCES for gas appliances

#### **Documents**

#### **1.2 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|                                               |                                                                                                                          |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| NZBC G10/AS1                                  | Piped services (Gas)                                                                                                     |
| NZBC G11/AS1                                  | Gas as an energy source                                                                                                  |
| AS/NZS 4129                                   | Fittings for polyethylene pipes for pressure applications                                                                |
| AS/NZS 4130                                   | Polyethylene(PE) pipes for pressure applications - Dimensions for series 2 pipes - gas (nominal outside diameter series) |
| AS/NZS 4130                                   | Polyethylene (PE) pipes for pressure applications - Dimensions for series 3 pipes - gas (nominal inside diameter series) |
| AS 4176                                       | Polyethylene/aluminium and cross linked polyethylene/aluminium macrocomposite pipe systems for pressure applications     |
| NZS 5258                                      | Gas distribution                                                                                                         |
| NZS 5261                                      | Gas Installation                                                                                                         |
| AS 5601                                       | Gas Installations                                                                                                        |
| Electricity Regulations 1997                  |                                                                                                                          |
| Gas Regulations 1993                          |                                                                                                                          |
| Plumbers, Gasfitters and Drainlayers Act 2006 |                                                                                                                          |

Documents listed above and cited in the clauses that follow are part of this specification. However, this specification takes precedence in the event of it being at variance with the cited document.

#### **Requirements**

#### **1.3 COMPLY**

Comply with the Gas Regulations, Electricity Regulations and the network utility operator's requirements. Give notices for inspections and carry out tests as required.

#### **1.4 PRIMARY CONNECTION**

Include for the cost of this service complete with excavation and backfilling.

#### **1.5 QUALIFICATIONS**

Gasfitters to be experienced competent workers, familiar with the materials and the techniques specified and registered under the Plumbers, Gasfitters and Drainlayers Act.

#### **1.6 LAYOUT PLAN**

Supply a 1:100 scale as-built plan of gas pipe runs, sizes, componentry and fittings at completion of the installation.

#### **1.7 DESIGN**

Design the piping system to NZS 5261 and AS 5601, with pipe sizes to give a minimum pressure at any appliance inlet of 1.13 kPa for natural gas, when all appliances are in use; and with a maximum design pressure drop from meter outlet to any appliance of 80 Pa.

#### **Performance**

- 1.8 **PRESSURE TEST**  
Pressure test the system for leakage to NZS 5261 before pipework is concealed by linings.
- 1.9 **FINAL INSPECTION AND TEST**  
Submit the work for inspection and test and prove to the satisfaction of the network utility operator that the installation complies with all Acts and Regulations and has been tested for leakage and proved to be sound.
- 1.10 **CERTIFICATION CERTIFICATE**  
Provide a Gasfitting Certification Certificate as required by Regulation 24 of the Gas Regulations 1993 and when required provide a copy to the energy supplier.
2. **PRODUCTS**
- Materials**
- 2.1 **PIPEWORK GENERAL**  
Pipework requirements to NZS 5261, NZS 5261 Table 24 - Gas Pipework, and AS 5601 Table 3.1 Consumer piping materials and duty limits.
- 2.2 **COPPER PIPE**  
Complete with fittings to NZS 5261.
- 2.3 **POLYETHYLENE PIPE**  
Polyethylene pipes to AS/NZS 4130 Series two, or AS/NZS 4130 Series three. Fittings to AS/NZS 4129.
- 2.4 **ISOLATING VALVES**  
Manual shut-off valves to NZS 5261.
- 2.5 **METER**  
Primary meter to suit design load, supply pressure and pressure drop, supplied and installed by the network utility operator.
3. **EXECUTION**
- Conditions**
- 3.1 **GENERALLY**  
Carry out the whole of this work to the requirements of NZBC G10/AS1: Piped services (Gas); NZBC G11/AS1: Gas as an energy source and NZS 5261.
- 3.2 **ARRANGE**  
Arrange for the network utility operator to connect their distribution system to the primary meter, to NZS 5258.
- 3.3 **METER INSTALLATION**  
Check the location of the meter enclosure with the owner. Recess or conceal as detailed. The metal frame of the meter acts as a thermal bridge. This may be overcome with the addition of 12 mm bitumen coated softboard of EPS installed to the back of the meter prior to installation. Advise the network utility operator or their agent of the location for the meter. Not all network utility operators install gas meters. Meters are owned by retailers or meter lease companies and installed by them or their agent.
- Application**
- 3.4 **INSTALL PIPING**  
Run the system, completely concealed, in the most suitable type of pipe for each part of the installation, bent, supported, jointed and complete with all fittings to NZS 5261. Confirm the type of pipe and its location. Label pipework to distinguish it from other services.

## **7410 DRAINAGE**

### **1. GENERAL**

This section relates to the supply and laying of gravity foul water (sewage), stormwater and field drains.

#### **1.1 DOCUMENTS REFERRED TO**

Documents referred to in this section are:

|                                               |                                                                                          |
|-----------------------------------------------|------------------------------------------------------------------------------------------|
| NZBC B1/AS1                                   | Structure - general, 6.0 Drains                                                          |
| NZBC E1/AS1                                   | Surface water<br>3.0 Drainage system materials and construction                          |
| NZBC E2/AS1                                   | External moisture<br>12.3 Drainage                                                       |
| NZBC G13/AS2                                  | Foul Water - drainage                                                                    |
| AS/NZS 1254                                   | PVC pipes and fittings for storm and surface water applications                          |
| AS/NZS 1260                                   | PVC pipes and fittings for drain, waste and vent applications                            |
| AS/NZS 2032                                   | Installation of PVC pipe systems                                                         |
| AS/NZS 2033                                   | Installation of Polyethylene pipe systems                                                |
| AS/NZS 2566.1                                 | Buried Flexible Pipelines - Structural Design                                            |
| AS/NZS 2566.2                                 | Buried Flexible Pipelines - Installation                                                 |
| AS/NZS 3500.2                                 | Plumbing and drainage - Sanitary plumbing and drainage                                   |
| AS/NZS 3500.3                                 | Plumbing and drainage - Stormwater drainage                                              |
| AS/NZS 4671                                   | Steel reinforcing materials                                                              |
| AS/NZS 5065                                   | Polyethylene and polypropylene pipes and fittings for drainage and sewerage applications |
| NZS 3104                                      | Specification for concrete production                                                    |
| Plumbers, Gasfitters and Drainlayers Act 2006 |                                                                                          |

#### **1.2 AS-BUILT DRAWINGS**

Supply a 1:100 scale as-built drawing of drains and fittings to the territorial authority and to the owner on completion.

#### **1.3 QUALIFICATIONS**

Drainlayers to hold a current licence within the terms of the Plumbers Gasfitters & Drainlayers Act 2006 and be experienced, competent and familiar with the materials and techniques specified.

### **2. PRODUCTS**

#### **2.1 CONCRETE**

17.5 MPa prescribed mix to NZS 3104.

#### **2.2 REINFORCEMENT**

Plain round and/or deformed steel bars, Grade 300 to AS/NZS 4671.

#### **2.3 UPVC PIPES**

uPVC pipes bends, junctions, fittings and joints to AS/NZS 1254 and AS/NZS 1260.

#### **2.4 INSPECTION COVERS**

Cast iron frame with screw-down cover.

#### **2.5 DRAINAGE AND FILLING MATERIALS**

|           |                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------|
| Granular: | Clean gravel or crushed stone or a blend of these. Particle size from minimum 7mm to maximum 20mm. |
| Selected: | Fine grain soil or granular material suitable for bedding; excluding topsoil.                      |
| Ordinary: | Top soil or other excavated materials.                                                             |

### **3. EXECUTION**

#### **3.1 EXCAVATE**

Excavate for drains to a firm even base with correct gradients set in straight runs.

- 3.2 MANUFACTURER'S REQUIREMENTS**  
All drainage installations to the pipe and fitting manufacturer's requirements.
- 3.3 DRAINAGE GENERALLY**  
Carry out drainage work and tests to AS/NZS 3500.2 (sanitary drainage) AS/NZS 3500.3 (stormwater drainage) as modified by NZBC B1/AS1: 6.0. Lay uPVC pipe systems to relevant sections of AS/NZS 2032, NZS 2566.1 and AS/NZS 2566.2. Lay polyethylene pipes and fittings to relevant sections of AS/NZS 2033 and NZS 2566.1.
- 3.4 LAY FOUL WATER DRAINS**  
Lay drains in straight runs to correct gradients, to discharge into the network utility operator's sewer. Set inspection fittings on a concrete base.
- 3.5 LAY STORMWATER DRAINS**  
Confirm the required location of downpipes and finished ground levels before commencing pipework. Set downpipe bends in concrete with the concrete brought up to protect the top of the bend from damage. Lay drains in straight runs to correct gradients to discharge into the network utility operator's stormwater system.
- 3.6 INSTALL STORMWATER INSPECTION CHAMBERS**  
To NZBC E1/AS1, with a 75mm fall across the chamber and with channels to form a cascade where necessary. Channel top should be 100mm above the pipe soffit. Bench from channels at 1V on 10H. Benching should be made of 17.5 MPa concrete vibrated to smooth finish. Plastering is not allowed. Fit a cast iron cover and frame.
- 3.7 INSTALL FOUL WATER INSPECTION CHAMBERS**  
To NZBC G13/AS2, with ceramic channels to form a 75mm fall across the chamber. Channel top should be 100mm above the pipe soffit. Bench from channels 1V on 10H. Benching should be made of 17.5 MPa concrete vibrated to smooth finish. Plastering is not allowed. Fit a cast iron cover and frame.
- 3.8 SOAKHOLES OR TRENCHES**  
Dispose of stormwater on site as shown on the drawings, by soakage, to suit local geology and soil structure; all as directed by the territorial authority.
- 3.9 CONCRETE ENCASEMENT**  
Concrete encase shallow drains and drains under driveways, on a 100mm deep 17.5 MPa concrete bed reinforced with three 10mm mild steel bars. Surround pipes with a polythene membrane to allow movement and encase in 100mm 17.5 MPa concrete.
- 
- 3.10 FIELD TEST**  
Field test drains for watertightness (UPVC to AS/NZS 2032 or AS/NZS 2566. 2 Appendix N) to the satisfaction of the territorial authority inspector.
- 3.11 BACKFILL**  
Backfill drain lines in 150mm layers, well tamped but without disturbing the drains. Finish off with 150mm of topsoil, slightly mounded above the finished ground line.

## 7701 ELECTRICAL BASIC

### 1. GENERAL

This section relates to the wiring for domestic and small scale commercial installations, including:

- power
- lighting
- electrical automation
- security system
- complete with componentry
- electrically-powered fittings

#### Documents

### 1.1 DOCUMENTS

Documents referred to in this section are:

|                 |                                                                                                                                                                                                                                              |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NZBC E2/AS1     | External moisture                                                                                                                                                                                                                            |
| NZBC F6/AS1     | Visibility in escape routes                                                                                                                                                                                                                  |
| NZBC F7/AS1     | Warning systems, 3.1 Domestic smoke alarms                                                                                                                                                                                                   |
| NZBC G4/AS1     | Ventilation                                                                                                                                                                                                                                  |
| NZBC G9/AS1     | Electrical installations within Domestic Dwellings                                                                                                                                                                                           |
| AS/NZS 1125     | Conductors in insulated electric cables and flexible cord                                                                                                                                                                                    |
| AS/NZS 1768     | Lightning protection                                                                                                                                                                                                                         |
| AS 1670.6       | Fire detection, warning, control and intercom systems - System design, installation and commissioning - Smoke alarms                                                                                                                         |
| AS/NZS 2293     | Emergency escape lighting for buildings                                                                                                                                                                                                      |
| AS/NZS 3000     | Electrical installations (known as the Australian/New Zealand Wiring Rules)                                                                                                                                                                  |
| AS/NZS 3008.1.2 | Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical New Zealand installation conditions                                                                                  |
| AS/NZS 3100     | Approval and test specification-general requirements for electrical equipment                                                                                                                                                                |
| AS/NZS 3112     | Approval and test specification - Plugs and socket-outlets                                                                                                                                                                                   |
| AS/NZS 3113     | Approval and test specification - Ceiling roses                                                                                                                                                                                              |
| AS/NZS 3190     | Approval and test specification - Residual current devices (current-operated earth-leakage devices)                                                                                                                                          |
| AS/NZS 3350     | Safety of household and similar electrical appliances - General requirements                                                                                                                                                                 |
| AS/NZS 3439.3   | Low-voltage switchgear and controlgear assemblies - Particular requirements for low-voltage switchgear and controlgear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards |
| AS 3786         | Smoke alarms                                                                                                                                                                                                                                 |
| NZS 4301.1      | Intruder alarm systems - systems installed in clients premises                                                                                                                                                                               |
| AS/NZS 5000.2   | Electric cables - Polymeric insulated - for working voltages up to and including 450/750v                                                                                                                                                    |
| NZCEP           | NZ Electrical Codes of Practice                                                                                                                                                                                                              |
| NZCEP 54        | NZ Electrical Codes of Practice for the installation of recessed luminaires and auxiliary equipment (available at <a href="http://www.energysafety.govt.nz">www.energysafety.govt.nz</a> )                                                   |
| IEC 61643       | Components for low voltage surge protection devices                                                                                                                                                                                          |

### 1.2 ABBREVIATIONS

The following abbreviations are used throughout this part of the specification:

|     |                                         |
|-----|-----------------------------------------|
| CFL | compact fluorescent lamp                |
| ELV | extra low voltage                       |
| GLS | general lighting service                |
| IP  | international protection classification |
| LCD | liquid crystal display                  |
| LED | light emitting diode                    |
| MCB | miniature circuit breaker               |

|      |                                                                        |
|------|------------------------------------------------------------------------|
| NUO  | Network Utility Operator                                               |
| PCB  | printed circuit board                                                  |
| PIR  | passive infrared                                                       |
| RCBO | residual current-operated circuit breaker with over current protection |
| RCCB | residual current-operated circuit breakers                             |
| RCD  | residual current device                                                |
| SIA  | security integration architecture                                      |
| TPS  | tough plastic sheathed                                                 |

### Requirements

- 1.3 **COMPLY**  
Comply with the Electricity Regulations 1997, AS/NZS 3000, AS/NZS 3008.1.2 and the New Zealand electrical codes of practice for listed and prescribed work and with the utility network operator's requirements. Apply for the service connection. Arrange for the required inspections of listed work. Pay all fees.
- 1.4 **QUALIFICATIONS**  
Carry out work under the direct supervision of a holder of a practising licence under the Electricity Regulations 1997.
- 1.5 **QUALIFICATIONS - SECURITY SYSTEM**  
Installation by an installer licensed under the Private Investigators and Security Guards Act. Installation of all security equipment to comply with NZS 4301 Intruder alarm system - systems installed in client's premises.
- 1.6 **CERTIFICATE OF COMPLIANCE**  
Supply a certificate of compliance to the owner, as required by the Electricity Regulations 1997 clause 39, within 20 days of completion as required by clause 42. The network utility operator is to inspect before the meter installation, listed work inspection, polarity check and supply becoming live.

### Warranties

- 1.7 **WARRANTY**  
Warrant the complete electrical installation under normal environmental and use conditions against failure of materials and execution.  
1 year: Warranty period
- Refer to the general section for the required form of WARRANTY AGREEMENT and details of when completed warranty must be submitted.

## 2. PRODUCTS

- 2.1 **MAINS SUPPLY, SINGLE PHASE**  
Tough plastic sheathed neutral screened cable to AS/NZS 4961 and AS/NZS 3008.1.2, with a minimum rating of 60 amps per phase. Include pilot cable where required by network utility company.
- 2.2 **CABLES**  
Tough plastic sheathed copper conductors to AS/NZS 5000.2, stranded above 1.0mm<sup>2</sup>, and to AS/NZS 3008.1.2. Minimum sizes as below. Increase sizes if the method of installation, thermal insulation, cable length or load will reduce the cable rating below that of the MCB rating, or produce an excessive voltage drop.
- |                    |                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------|
| Lighting circuits: | Domestic: 1.5mm <sup>2</sup> on 10 amp MCBs                                                   |
| Lighting circuits: | Commercial: 1.5mm <sup>2</sup> on 16 amp MCBs                                                 |
| Power circuits:    | 1.5mm <sup>2</sup> on 16 amp MCBs for domestic and unenclosed or unfilled cavity construction |
|                    | 2.5mm <sup>2</sup> on 16 amp MCBs for domestic insulated construction, or filled cavity       |
|                    | 2.5mm <sup>2</sup> on 20 amp MCBs for unenclosed or unfilled cavity construction              |

2.5mm<sup>2</sup> on 16 amp MCBs for insulated construction, or filled cavity, or lengths over 30 metres

Hot water cylinder circuits: Single phase: 2.5mm<sup>2</sup> on 20 amp MCBs  
Range/oven/hob circuits: Single phase: 6mm<sup>2</sup> on 32 amp MCBs

Heat resistant cable for final connections to all heated appliances, and high temperature cable in ambient conditions that may be above 35°C.

**2.3 METER BOX**

Proprietary manufactured, zinc plated powder coated metal case, or ABS plastic, with glazed panel door, weatherproof where mounted outdoors, and complete with meter mounting, main switch and fuse.

**2.4 DISTRIBUTION BOARD**

Flush surface mount boards manufactured to AS/NZS 3439.3 and installed in accordance with AS/NZS 3000. Manufactured from engineering grade resin with a glow wire rating of 850°C, complete with neutral and earth busbars, and insulated comb phase bar. Distribution boards to have 20% spare capacity for future additions and alterations.

**2.5 CIRCUIT PROTECTION**

General requirements including main switch 63A or 100A. Residual current protection 30mA, ensure RCCBs' meet Type A and comply with AS/NZS 3190. MCBs to 4.5kA or 6kA rated.

**2.6 WALL BOXES**

Standard grid size or equivalent to be manufactured from plastic or metal, with 2 or more gang size to be metal with steel inserts for accessory securing screws. Screw fixed.

**2.7 SWITCH UNITS**

Single pole switches to be 16 amp minimum rated, double pole or intermediate to be 16 amp minimum rated. All switches to be 230 volt a.c. polycarbonate flushplate units. Refer to drawings/schedules for number of switches per unit, dimmer units, neon (indicator or toggle) units and 2 way units.

**2.8 HOT WATER SYSTEM SWITCH**

One way 20 amp switch complete with cable clamp for flexible PVC conduit to element enclosure.

**2.9 SWITCHED SOCKET UNITS**

10 amp, 230 volt flat 3 pin socket outlets fitted with safety shutters and manufactured to AS/NZS 3100, AS/NZS 3112 and AS/NZS 3113, single or multi gang as detailed.

**2.10 SMOKE ALARMS**

To AS 3786. A wired 230 volt ionised smoke detector type.

**2.11 SURGE PROTECTION**

Protection for the homes appliances with IEC 61643 Class II surge protection devices fitted to the switchboard. For variable electronic equipment fit IEC 61643 Class III surge protection to switched socket outlets.

**2.12 CEILING ROSES**

White plastic mounting base with screwed cover, manufactured to AS/NZS 3113. Terminal type. Cylindrical section TPS for suspended fittings.

**2.13 BATTEN HOLDERS**

Standard white plastic bayonet cap, with cap angled where wall mounted. Brass liners.

**2.14 DOOR BELL SYSTEM**

Complete with transformer for mounting on distribution board.

**2.15 LIGHT FITTINGS**

Fluorescent and High Intensity Discharge fittings with low loss control gear and power factor corrected to 0.95 minimum. Control gear suitable for dimming if this is required. All

fittings complete with lamps; Incandescent GLS lamps pearl, coiled-coil 230v rated, bayonet cap; Fluorescent triphosphor 2700K; CFL; halogen ELV 12v dichroic reflector with cover glass unless detailed otherwise.

- 2.16 **EXHAUST FANS**  
Ceiling, wall or duct mounted exhaust fans for ventilation to NZBC G4/AS1, and compliant with AS/NZS 3350.

- 2.17 **HEATED TOWEL RAILS**  
Fixed wired heated towel warmers, double insulated, IPX4 splash-proof, compliant with AS/NZS 3350, scratch resistant powdercoated or chrome finish.

- 2.18 **OUTDOOR SWITCHES & SOCKETS**  
Using materials with superior UV protection, impact strength, and addition chemical resistance when compared with interior polycarbonate fittings. Weather protected, switches to IP56 minimum, and sockets to IP53 minimum. Sockets fitted with safety shutters behind socket pins, and all products able to be padlocked off or on.

### **Security System**

- 2.19 **CONTROL PANEL**  
Control panel system with a minimum of one installer code, one master code, 6 zones minimum and 6 user codes. The installer to select codes to suit installation.

- 2.20 **DETECTORS**  
There are two main types of detectors:  
- Standard passive infrared sensors: Install in stable environments with no wind flow and no direct bright sunlight.  
- Passive infrared/ microwave sensors: Install in area where environmental stability is an issue.

- 2.21 **AUDIBLE DEVICES**  
Internal sirens can be either a 12V Piezo Siren or a Horn speaker with a sound pressure level of no less than 95dB.

External siren can be either a stainless steel design or have hardened plastic casing. Both designs to be fully weatherproof but not limited to IP66 Rating. The siren box to contain a strobe diffuser in either blue or red. The siren shall contain a horn speaker, 12v speaker or an electronic siren. The external siren box to have both a cover and rear wall tamper mechanism.

- 2.22 **CABLING**  
Security alarm wiring to NZS 4301.1 for installation.  
Security alarm wiring to NZS/AS 1125 for cables.  
Security alarm wiring to be multi stranded and not single stranded, minimum 0.5mm<sup>2</sup>.

- 2.23 **PERIPHERALS**  
Fit anti-tamper devices to detectors, control panels and equipment housings, programmed to give a tamper indication when the system is unset and a tamper alarm when the system is set.

Standard keypad manufactured of moulded hardened plastic with either a LED or LCD screen, to match the style of the wiring accessories in diameter, colour and aesthetics.

- 2.24 **COMMUNICATIONS**  
Digital dialler to be built into the PCB of all control panels, with the options for both monitoring and remote dial in windows based software. Digital dialler to comply with all the industry standard communication formats including contact I.D and SIA, and NZ Telepermit certification.

Remote software able to upload / download programming changes and or history events and change status of the security alarm with the ability to be turned off if required.

### **3. EXECUTION**

#### **3.1 MAIN SUPPLY**

Lay underground mains to the NUO requirements. Excavate trench, install cable and marker tape and backfill.

#### **3.2 METER BOX**

Fit to meter box manufacturer's and Electricity Retailer's requirements. Recess into external wall in sheltered area and flash to weatherproof to NZBC E2/AS1 fig 69. Arrange for meter installation and connection.

#### **3.3 DISTRIBUTION BOARD**

Fit to AS/NZS 3000 and board manufacturer's requirements. Recess into wall or surface mount and ensure fire containment properties of the enclosure are maintained.

#### **3.4 CIRCUIT PROTECTION**

Install MCBs at distribution board to AS/NZS3000 to protect each final sub circuit.

#### **3.5 EARTH BONDS**

Bond together and to earth all plumbing fittings not adequately isolated, to AS/NZS 3000, the Electricity Regulations 1997 and the fitting manufacturer's requirements.

#### **3.6 MAIN EARTH**

Provide a plastic toby box to contain and protect the earth electrode. Fix the connecting earth wiring closely and securely against wall surfaces.

#### **3.7 EARTH LEAKAGE PROTECTION**

Install RCD protection to AS/NZS 3000.

#### **3.8 DOMESTIC INSTALLATIONS**

Install 30mA RCD protection at the distribution board for all final sub circuits to control socket outlets and lighting except for fixed or stationary cooking equipment, to AS/NZS 3000.

#### **3.9 HIGH RISK AREA INSTALLATIONS**

Install 30mA RCDs at the distribution board for areas not covered in Domestic installations, or using fixed wired RCD protected socket outlets in areas that may represent increased risk of electric shock to the user:

- Wet areas: bathrooms, laundries, kitchens.
- Near pools and water features.
- Where intended for use with cleaning equipment.
- Hand-held tools subject to movement in use, i.e. work-shops, garages.

#### **3.10 SET-OUT**

The position of outlets and equipment shown on drawings is indicative of requirements. Confirm documents and site conditions are not in conflict with other services or features. Resolve conflicts and discrepancies before proceeding with work affected. Confirm on site the exact location, disposition and mounting heights of all outlets, fittings, equipment, penetrations, and use of exposed wiring. Fix outlet items level, plumb and in line.

#### **3.11 CABLING**

Install wiring systems to AS/NZS 3000. All cabling run concealed. No TPS cable laid directly in concrete. Locate holes in timber framing for the passage of cables at the centre line of the timber member. Install cable in conduits where required to pass through concrete or underground. In walls run cabling horizontally and vertically in straight lines. In ceilings either run cabling along ceiling framing or attached to catenary wires. Clip cabling to ceiling framing/catenary wires.

#### **3.12 CABLING CIRCUITS**

Install all circuits with the appropriately rated cable and circuit protection. Install with a maximum of 8 light switch units or 4 double or single switched socket units on any circuit. Minimum 2 lighting circuits per floor. Separate circuits for all electric heating appliances. Kitchen sockets to be on at least two different circuits.

- 3.13 WALL BOXES**  
Mount flush in cavity construction size to fit products selected. Fix vertically mounted wall boxes to studs. Screw fix horizontally mounted switched socket outlet wall boxes to solid blocking or noggs. Fix switch panel wall boxes to solid blocking.
- 3.14 SWITCH AND SOCKET UNITS**  
Fit all single and double switch units, all sockets to the following heights (to the centre of the unit) unless shown otherwise on the drawings.  
Switch Units: 1000mm  
Socket Units: 150mm above work benches  
400mm elsewhere  
  
Mount light switches and switch socket outlets vertically and socket units horizontally. Label all switch units that control electrical equipment or special lighting circuits by colour filled engraving on the switch. Use proprietary engraved switch mechanisms where applicable.
- 3.15 ISOLATING SWITCHES**  
Locate isolating switches in positions as confirmed by the owner, when not specifically shown on the drawings.
- 3.16 LIGHT FITTINGS**  
Install light fittings in locations and at heights specified and confirmed by the owner, in accordance with the fitting manufacturer's requirements. Install recessed fittings to NZECP 54.
- 3.17 EXTRA LOW VOLTAGE LIGHTING**  
Use electronic transformers for ELV lamps, one transformer per lamp. Locate to manufacturer's requirements and as close as practicable to the lamp. Ensure transformers and rear of light fittings are adequately ventilated and clear of any thermal insulation, to NZECP 54.
- 3.18 SMOKE ALARMS**  
Install Type 1 domestic smoke alarm system to NZBC F7/AS1 3.1, AS 1670.6 and to the alarm manufacturer's requirements. Fit neatly and without damage to the surrounding finish.
- 3.19 SURGE PROTECTION**  
Install surge protection devices to manufacturer's requirements and in accordance with AS/NZS 3000 and AS/NZS 1768. When fitting IEC 61643 Class II protection at the switchboard, protect the device by a dedicated MCB.
- 3.20 ELECTRIC POWERED FITTINGS AND EQUIPMENT**  
Install and wire fittings and equipment to individual fittings and equipment manufacturer's requirements. Refer to the drawings for required layouts and locations for equipment.
- 3.21 BATHROOM ELECTRICAL FIXTURES**  
Install all electrical fixtures. Connect the following bathroom and toilet electrical items:  
- Heated towel rails: Install to manufacturers requirements and installed in accordance with AS/NZS 3000 and the NZBC G9/AS1  
- Exhaust fans: Install exhaust fans to manufacturer requirements. Installed in accordance with AS/NZS 3000 and NZBC G4/AS1.
- 3.22 OUTDOOR/EXTERIOR SERVICES**  
Install all wiring systems in accordance with AS/NZS 3000 and in accordance with the manufacturer's recommendations:  
  
Provide circuits and connections for exterior installations, including ELV 12/24 Volt path lighting and electronic irrigation systems. Refer to drawings for connection points. Where underground, ensure appropriate protection, such as thickness of sheathing, conduit, depth of cabling, and proximity to other services.

Use the appropriate rated fittings for power control and power supply. Weather protected switches to IP56, and sockets to IP53 as a minimum. Install to manufacturer's specifications using recommended fittings and sealants to maintain the products integrity.

Earth leakage protection to be provided for in areas where there is increased risk to human safety in the form of either RCDs at the distribution board, or socket outlet. RCDs are recommended for visible awareness of protection.

3.23

**LABELLING**

Include label under each controller, switch and circuit breaker on distribution boards. Include a warning notice if light dimmers are used in the installation. List the rating of each circuit.

**Security System**

3.24

**SECURITY SYSTEM**

Install to the system manufacturer's requirements, control panel, detectors and associated equipment fitted neatly and without damage to surrounding finishes. Installation of security equipment to NZS 4301.3 Intruder alarm system. All 230v mains power connections to the security panel are to be in accordance with AS/NZS 3000. The 230V power is to be switched using a dedicated single gang Isolator switch or similar.

3.25

**COMPLETION**

Leave installation operating correctly, with equipment clean and operational.

KCDC Building Consent Authority  
Building Consent Documentation Filed



|                |
|----------------|
| BC No.         |
| Street Address |

100044

**New Dwelling**  
**22 Fairway Oaks Dr**  
**WAIKANAE**

*Tick indicates document(s) included in this Building Consent*

|                                                            |    |
|------------------------------------------------------------|----|
| Building Consent Application,                              | ✓  |
| Application checksheet,                                    | ✓  |
| Costing schedule,                                          | ✓  |
| Plans and specifications,                                  | ✓  |
| Invoice and receipt,                                       | ✓  |
| Processing records/checksheets,                            | ✓  |
| Inspection page printouts                                  | ✓  |
| 1-24 29 - 35 46                                            | ✓  |
| Building consent and memorandum,                           | ✓  |
| Inspection reports,                                        | ✓  |
| Application for CCC,                                       | ✓  |
| Code of Compliance Certificate,                            | ✓  |
| Producer statements and supporting documentation,          | ✓  |
| Peer review documents,                                     | NA |
| Fire design documents,                                     | NA |
| Requests for further information and other correspondence, | NA |
| Amendments,                                                | NA |
| Supplementary information,                                 | NA |
| Energy work certificates,                                  | ✓  |
| Notices to Fix,                                            | NA |
|                                                            |    |

This form comprises part of the Building Consent documentation and indicates the contents of the Building Consent File. Refer KCDC Policy 029.

## Form 436

## PROCESSING CHECKLIST

BC...100044

00031

RECEIVED  
20 JAN 2019  
WAPITI COAST  
DISTRICT COUNCIL

No = Plans, specifications & documentation not complying with the Building Code &/or Bld. Act (The reason specified alongside each prompt)

Yes = Plans, specifications & documentation complying with the Building Code &/or Bld. Act (The reason specified alongside each prompt)

N/A = Not Applicable to this application. (The deletion of whole sections as N/A is permitted)  
For alternatives comment below each section.

Note - The further information requests are identified by hand written numbers and corresponding on FIR letters / e-mails sent

Category.....

## Site Plan (NZS 3604 Sec 3.4, 4.5 Code cl B1, B2, E1, E2 F1 &amp; F2 Sect. 72, 75 BA04)

N/A NO YES

Comments

- ☐ ☐ ☒ Wind zone High V/ High Specific..... GIS.....
- ☒ ☐ ☐ Flooding / ponding hazards ..... GIS.....
- ☒ ☐ ☐ Slippage/ fault line hazards ..... GIS.....
- ☒ ☐ ☐ Erosion, river & coastal hazards ..... GIS.....
- ☐ ☒ ☐ Subsidence/ soft soil hazards ..... Site inspection notes \* Confirmation of good ground required
- ☐ ☐ ☒ Corrosion zone Sea spray or Zone 1 ..... GIS.....
- ☒ ☐ ☐ Soil contamination ..... GIS.....
- ☐ ☐ ☒ Distances to boundaries / siting..... District plan.....
- ☐ ☐ ☒ Floor levels/ contours..... E2/AS1 & NZS 3604 E1.....
- ☒ ☐ ☐ Two or More Allotments..... Sec 75 - 83 Bld Act.....
- ☐ ☐ ☐ Noise / sound insulation (airport & highway).....

227: Point 1 soil conditions RC stated specific design required for foundations

2: Storm water discharge requirements - Check SC Point 3 Checked by Jill Boike - Planner

## Specific Design (Verified Online PS2 B1 B2 VMI)

Comments

- ☐ ☐ ☒ PS1 Design Certificate ..... B1 B2 VMI.....
- ☒ ☐ ☐ PS2 Peer Review..... B1 B2 VMI.....
- ☐ ☐ ☒ Calculations ..... VMI.....
- ☐ ☐ ☒ CPeng ..... Verified Online.....

Melanie Thomson covering B1 for Ristratt - assumptions - Good ground - Expedited

Order bottom now covering structural design for cluster timber piles - B1 & B2 covered.

## Concrete / Foundation Plan (NZS 3604 NZS 4210 &amp; 4229 E2/AS1)

Comments

## Layout

- ☐ ☐ ☒ Layout dimensions..... NZS 3604.....
- ☐ ☐ ☒ Control joints..... NZS 3604.....
- ☐ ☐ ☒ Slab thickening..... NZS 3604, cl 7.5.....
- ☐ ☐ ☒ Alternative..... specify reason By engineer

## Section

- ☐ ☐ ☒ Depth & width..... NZS 3604.....
- ☐ ☐ ☒ Reinforcement..... NZS 3604; B2.....
- ☐ ☐ ☒ Plate fixings..... NZS 3604; B2 cl 7.5.....
- ☐ ☐ ☒ DPM ..... NZS 3604; B2.....
- ☐ ☐ ☒ Engineer design and Calcs..... B1; B2.....
- ☐ ☐ ☒ Concrete strength..... B1; B2 cl 4.8.2.....
- ☐ ☐ ☒ Alternative..... specify reason By engineer

**Timber / Subfloor Plan** (NZS3604 NZS 3602 & 3640, B1,B2)

Comments

## Layout

N/A NO YES

- ☐ ☐ ☐ Layout dimensions.....
- ☐ ☐ ☐ Bearers details.....B1 ; B2.....
- ☐ ☐ ☐ Joist details.....B1:B2.....
- ☐ ☐ ☐ Alternative.....specify reason.....

## Section

- ☐ ☐ ☐ Foundation type/size..... NZS 3604;B2.....
- ☐ ☐ ☐ Piles post sizes & treatment ..... NZS 3604;3602;3640;B2.....
- ☐ ☐ ☐ Pile c/c..... NZS 3604.....
- ☐ ☐ ☐ Fixing..... NZS 3604;B2.....
- ☐ ☐ ☐ Coatings(durability)..... NZS3604 ;B2.....
- ☐ ☐ ☐ Ventilation& Access to sub floor spaces ..... NZS 3604.....
- ☐ ☐ ☐ Alternative.....specify reason .....

\*  
If the addition is an upper storey show details on upgrading existing foundations, joints, piles, etc (may require Engineer design)

**Floor plans / layout** (B1, B2, C1-4, D1, E3, F7, G1, G2, G12 G3, G9, G11, G13)

Comments

## General

N/A NO YES

- ☐ ☐ ☒ Room dimensions.....
- ☐ ☐ ☒ Sectional lines.....
- ☐ ☐ ☒ Location of partitions.....
- ☐ ☐ ☒ All designated spaces.....
- ☐ ☐ ☒ Lintels..... NZS 3604;B2.....
- ☐ ☐ ☒ Beams..... NZS 3604, B2 by engineer.....
- ☐ ☐ ☒ Point loads by engineer or preloader.....B1 B2.....
- ☐ ☐ ☒ Smoke detectors..... F7.....
- ☐ ☐ ☒ Wet areas / WCs ..... D1, Table 2; B2.....
- ☐ ☐ ☒ Kitchen.....G3, G9,G11.....
- ☐ ☐ ☒ Alternative.....specify reason .....

Changes to existing work requires both an existing floor plan & a proposed floor plans  
Facility provided for washing utensils / food G3, Section 1.1 & Figure 1:  
Preparation Area and Access to Facility Paragraphs 1.1.2 and 1.5

**Wall / Framing** B1, B2, E3

Comment

## General

- ☒ ☐ ☐ Identify engineering / Structural items/ portals, .....B1 B2.....
- ☐ ☐ ☒ By preloader or to NZS 3604..... B1 B2.....
- ☐ ☐ ☒ Fixing types ..... NZS 3604.....B1 B2.....
- ☐ ☐ ☒ Stud c/c as per wind zone.... NZS 3604.....B1 B2.....
- ☐ ☐ ☒ Building wrap..... NZS 3604.....
- ☐ ☐ ☒ Stud heights of rooms..... NZS 3604.....B1 B2.....
- ☒ ☐ ☐ Alternative.....specify reason .....

Roof..... NZS 3604, 3602 & 3640 B1B2E2 E2/ASI

Comments

Trussed / by prenailler or Framed roof NZS 3604

N/A NO YES

- ☐ ☐ ☒ Fixing layout & details.....B1 B2.....
- ☐ ☐ ☒ Correct layout.....B1.....
- ☐ ☐ ☒ Max span (12m or Engineer).....B1.....
- ☐ ☐ ☒ Purlin or batten c/c.....B1 B2.....
- ☐ ☐ ☒ Rafters / Beams.....B1 B2.....
- ☐ ☐ ☐ Alternative.....specify reason.....

Roof cladding - Metal ; Profiled Metal; Masonry, Membranes Code E2, E2/ASI B2

- ☐ ☐ ☒ Pitch / profile.....E2.....
- ☐ ☐ ☒ Underlay.....E2.....
- ☐ ☐ ☒ Flashings.....E3;E2.....B1 B2.....
- ☐ ☐ ☒ Parapets.....B1 E2 B2.....
- ☐ ☐ ☒ Membrane Roofs and substrate Code E2/ASI B2.....
- ☐ ☐ ☒ Gutters, Barges & Fascias detail Refer E2, section 8.3, cl 8.3.9.....
- ☐ ☐ ☐ Alternative.....specify reason.....

Installation of profiled metal roof cladding shall be by trained installers, approved by the tile manufacturer or NZ agent. In some cases experienced builders undertake installation, refer E2, section 8.4, cl 8.4.2 'General'.

*B V B/A Gutter*

Claddings CodeB1 & B2 E2/ASI, Branz good practice Guides & Weather tightness Vol 12&3

Comments

- ☐ ☐ ☒ Risk matrix Cavity or direct.....E2.....
- ☐ ☐ ☒ Brick Veneer.....E2 "The brick book" Branz Masonry Guide ; B2.....
- ☐ ☐ ☒ Timber Weatherboard ....E2 Branz Timber Guide Vol 1&2; B2.....
- ☐ ☐ ☒ Stucco .....B1 NZS 3604 Branz good practice guide; B2.....
- ☐ ☐ ☒ Profiled Metal.....E2 Metal Roofing Practice; B2.....
- ☐ ☐ ☒ Plywood .....E2 ; B2.....
- ☐ ☐ ☒ Fiber Cement W/b.....E2; B2.....
- ☐ ☐ ☒ Board & Batten..... Branz good practice guide; B2.....
- ☐ ☐ ☒ Fiber Cement Sheet.....E2; B2.....
- ☐ ☐ ☒ Weathertightness details.....E2 ; B2.....
- ☐ ☐ ☐ Alternative.....specify reason.....

*Timber: H/S J Bolt top of wall Ex cor H/S J Apartments*  
*Plaster on Masonry: H/S J Bolt top Ex cor in cor Brick to W.B. internal*  
*Q Fg/B Plaster on EPS H I Q EPS-Brick Bk*

Bracing NZS 3604 B1, B2, E3

N/A NO YES

- ☐ ☐ ☐ Subfloor bracing.....B1& NZS 3604.....
- ☐ ☐ ☒ Wall bracing..... B1 & NZS 3604.....
- ☐ ☐ ☒ Roof bracing..... B1& NZS 3604.....
- ☐ ☐ ☒ Bracing calculations..... B1 & NZS 3604.....
- ☐ ☐ ☒ Provide bracing plan layout..... B1 & NZS 3604.....
- ☐ ☐ ☒ Double top plate (if > 5m)..... B1 & NZS 3604.....
- ☐ ☐ ☒ Indicate dragon tie (if > 6m)..... B1 & NZS 3604.....
- ☐ ☐ ☒ Diaphragm ceilings (if > 7.5m)..... B1 & NZS 3604.....
- ☐ ☐ ☒ Check for distribution ..... B1 & NZS 3604.....
- ☐ ☐ ☐ Alternative.....specify reason.....

*\* DT Storage \* distribution along M line at connections } All details*  
*\* calculations \* clarify foot bracing } now provided on*

**Light & Ventilation** *B1 G4, Clause 1.2; G4, clause 1.3 G7, G9 F2*

General

Comments

N/A NO YES

- ☐ ☐ ☒ Vent 5%.....G4 .....
- ☐ ☐ ☒ Light 10%.....G7 .....
- ☐ ☐ ☒ Electrical.....G9.....
- ☐ ☐ ☒ Mechanical ventilation.....G4.....
- ☐ ☐ ☒ Exterior space for awareness.....G7.....

Glazing

- ☐ ☐ ☒ Safety glass.....F2 .....
- ☐ ☐ ☒ Wind zone..... B1. NZS 3604.....
- ☒ ☐ ☐ Alternative.....specify reason .....

**Insulation** *BRANZ Home Insulation Guide, NZS 4218, AS/NZS 2918*

Comments

- ☐ ☐ ☒ Floor .....H1.....
- ☐ ☐ ☒ Wall..... H1.....
- ☐ ☐ ☒ Roof..... H1.....
- ☐ ☐ ☒ Windows / glazing..... H1.....
- ☒ ☐ ☐ Alternative.....specify reason.....

**Stairs / Landings / Handrails** *D1, sec 4*

Comments

- ☐ ☐ ☒ Stair tread & risers.....D1 .....
- ☐ ☐ ☒ Landing size.....D1.....
- ☐ ☐ ☒ Handrail.....D1.....
- ☐ ☐ ☒ Riser opening (min) where children.....D1.....
- ☐ ☐ ☒ Residential Accessibility.....D1 .....
- ☐ ☐ ☒ Alternative.....specify reason.....

Stair type

*Minor Private: Max rise 220mm/Min tread 220mm,**Secondary Private: Max rise 200mm/Min tread 250mm,**Main Private: Max rise 190mm/Min tread 280mm. (Main private includes exterior stairs)***Decks / Balconies / Barriers** *D1, F4 & NZS 3604, Section 6 & 7,*

Comments

- ☐ ☒ ☒ Barrier & deck fixing durability.....D1 B1 B2.....
- ☒ ☐ ☐ Top rails, balusters, bottom rails, palings.....D1 B1 .....
- ☐ ☒ ☒ If Engineer then calculations required.....B1 B2.....
- ☒ ☐ ☐ Max 3m height or Engineer.....B1 B2.....
- ☐ ☐ ☒ Deck joist sizes, grade, treatment, span & spacing.....D1 B1 B2.....
- ☐ ☐ ☒ Piles & bearers the correct grade, treatment, size, spacing & span.....D1 B1 B2..... *degrees checked*
- ☐ ☐ ☒ Slip resistance .....D1.....
- ☒ ☐ ☒ Appropriate waterproofing membrane..... B1 B2.....
- ☐ ☐ ☒ Stringer size & connections .....D1 B1 B2.....
- ☐ ☐ ☒ Thresholds.....D1 E2.....
- ☐ ☐ ☒ Alternative.....specify reason .....

*confirm deck height above and provide safety barrier if required.*  
*back - less than 1m*

**Fire (Residential) NZBC F7;Cdoc***Comments*

N/A NO YES

- ☒ ☐ ☒ Travel distances max 24m.....C3.15.....
- ☐ ☐ ☒ Smoke detectors.....F7.....
- ☒ ☐ ☐ Wood burners .....F7.....
- ☒ ☐ ☐ Garage fire wall details .....C7 (C7.10 C7.8) .....
- ☒ ☐ ☐ Alternative.....specify reason .....

**Swimming Pool & Fencing** *Fencing of Swimming Pools Act 1987**Comments*

- ☐ ☐ ☐ Refer to Compliance for sign off.....
- ☐ ☐ ☐ Specific Engineering Design .....
- ☐ ☐ ☐ Proprietary system/design.....
- ☐ ☐ ☐ Section/construction .....
- ☐ ☐ ☐ Pool backwash discharging the sewer.....
- ☐ ☐ ☐ Fence height .....
- ☐ ☐ ☐ Gate(s) / door(s) open outward.....

**Ambiguity / Contradictions***Comments*

- ☐ ☐ ☒ Manufacturers Specs .....
- ☐ ☐ ☒ Engineer compared with Designer/Architect .....
- ☒ ☐ ☐ Any Other contradictions .....

**Alternative Solutions**

Record assessment, decision and reasons for decisions below. Has the designer substantiated why they believe the proposal complies with the building code? Is there a determination on a similar proposal? Has corroborative evidence been provided (peer review, appraisal or determination)? Include reference to comparison with acceptable solutions, other documents / standards / best practice guides / publications, expert opinion, determinations, in-service history, product certification, professional judgment, building code objectives. Refer BRANZ Bulletin # 456 (Dec 2004). List any conditions / communications / actions:

Club on files by CPENG.

# This sheet relevant to plumbing & drainage only

Comments

## General

N/A NO YES

- ☐ ☐ ☒ Kitchen area.....G3/AS1
- ☐ ☐ ☒ Laundry.....
- ☐ ☐ ☒ Bathrooms.....
- ☐ ☐ ☒ Location of sanitary fixtures.....
- ☐ ☐ ☒ Plumbing layout.....

Plumber's Reg no..11116.....

Drainlayers Reg no..04108.....

## Effluent Disposal Systems

Comments

- ☐ ☐ ☐ Engineering Site Investigation
- ☐ ☐ ☐ Design Specification & Producer Statement

(The design criteria should include: Capacity based on bedroom numbers, Loading calculation, site evaluation, soil profile, site characteristics.)

Stormwater disposal required

## Water Supplies

Comments

- ☐ ☐ ☒ G 12 .....
- ☐ ☐ ☒ Town supply.....
- ☐ ☒ ☐ Private scheme.....
- ☐ ☐ ☒ Type & location.....Council full supply
- ☒ ☐ ☐ Alternative.....specify reason.....

Today requires modification at the owners cost

S/R 0914404

## Sanitary Drainage

Comments

- ☐ ☐ ☒ E13..N2/AS3500.....
- ☐ ☐ ☒ Layout .....
- ☐ ☐ ☒ Council availability or .....
- ☐ ☒ ☐ Septic tank design & calcs.....
- ☒ ☐ ☐ Alternative.....specify reason

\* Branch to laundry drain requires vent

## Stormwater Drainage

Comments

- ☐ ☐ ☒ E1 .....
- ☐ ☒ ☐ Layout .....Consent notice not completed with
- ☐ ☒ ☐ Council availability .....
- ☒ ☐ ☐ Alternative.....specify reason

## Sanitary Plumbing

Comments

- ☐ ☐ ☒ E13..N2..AS500.....
- ☐ ☐ ☒ Layout .....
- ☒ ☐ ☐ Alternative.....specify reason .....

Reuses forms filled out ✓  
Easement checked ✓

# Accessibility D1; NZS 4121

Comments

N/A NO YES

- ☐ ☐ ☐ Car parks .....
- ☐ ☐ ☐ Projections .....
- ☐ ☐ ☐ Kerb Ramps.....
- ☐ ☐ ☐ Footpaths/Ramps / Landings .....
- ☐ ☐ ☐ Entrances.....
- ☐ ☐ ☐ Public Facilities.....
- ☐ ☐ ☐ Lifts.....
- ☐ ☐ ☐ Stairs.....
- ☐ ☐ ☐ Stair / handrails.....
- ☐ ☐ ☐ Doorways/Doors/Corridors/ Lobbies.....
- ☐ ☐ ☐ Controls.....
- ☐ ☐ ☐ Places of assembly/entertainment/Recreation.....
- ☐ ☐ ☐ Warning Systems.....
- ☐ ☐ ☐ Toilet Facilities / Laundering .....
- ☐ ☐ ☐ Food preparation / accommodation.....
- ☐ ☐ ☐ Signs.....

## Fire report C1,C2, C3, C4

Comments

- ☐ ☐ ☐ Purpose group FHC .....
- ☐ ☐ ☐ Fire cell separation /use of building .....
- ☐ ☐ ☐ f- rating .....
- ☐ ☐ ☐ s- rating .....
- ☐ ☐ ☐ Occupancy numbers .....
- ☐ ☐ ☐ Means of escape .....
- ☐ ☐ ☐ Travel distances .....
- ☐ ☐ ☐ External walls/unprotected areas .....
- ☐ ☐ ☐ Fire resistance to supporting elements/floors/ walls. ....
- ☐ ☐ ☐ Risks to/below escape routes .....
- ☐ ☐ ☐ Fire safety precautions .....
- ☐ ☐ ☐ SFI's / SDI's .....
- ☐ ☐ ☐ Alternatives .....
- ☐ ☐ ☐ Referral to DRU .....
- ☐ ☐ ☐ Alternative.....specify reason

## Solid waste G15

Comments

- ☐ ☐ ☐ Waste bin area .....
- ☐ ☐ ☐ Environmental health referral .....
- ☐ ☐ ☐ Alternative.....specify reason

## Hazardous Agents, Materials & substances F1 - F3

Comments

- ☐ ☐ ☐ Waste bin .....
- ☐ ☐ ☐ Environmental health referral .....

## Work Sheet

Review Check sheet

### General stamp prompts

Wind Zone  
Corrosion  
Cladding  
Electrical  
Bracing Highlighted  
Boundary setting out  
Engineers design

Set Status  
Complete checklist  
Addenda  
Section 72 / ponding  
Set inspections

## Dialogue Record

**Dialogue Record**  
List further information requested, info received, records / reference of communication etc. via Phone / Email / letter / counter / fax

[illegible]

|           |            |                                                                                 |
|-----------|------------|---------------------------------------------------------------------------------|
|           |            |                                                                                 |
|           |            |                                                                                 |
|           |            |                                                                                 |
|           |            |                                                                                 |
|           |            |                                                                                 |
|           |            |                                                                                 |
|           |            |                                                                                 |
| 2/10/2010 | Simon Copp | Letter posted + emailed to Paul/M. S/w design required + Branch drain vent req. |

|                                                                                                                                                                                                                                                             |  |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------|
| <b>Change Of Use – Sec 114:</b> (record decisions and basis for decisions – confirm whether sec 115 applies)                                                                                                                                                |  | ..... |
| Date                                                                                                                                                                                                                                                        |  |       |
|                                                                                                                                                                                                                                                             |  |       |
| <b>Alteration to Existing Building – Sec 112:</b> (record decisions and basis for decisions – confirm whether sec 118 applies and if so, has it been complied with?). List conditions / communications / actions:                                           |  | ..... |
| Date                                                                                                                                                                                                                                                        |  |       |
|                                                                                                                                                                                                                                                             |  |       |
| <b>Hazards – Sec 71-74 :</b> (record decisions and basis for decisions – see under "site plan above already done")                                                                                                                                          |  | ..... |
| Date:                                                                                                                                                                                                                                                       |  |       |
| <b>Compliance Schedule – Sec 100 - 107:</b> (record if new / amended compliance schedule required, and attach copy of replica compliance schedule. Ensure that note is recorded on building consent that new / amended compliance schedule will be issued). |  |       |
| Date                                                                                                                                                                                                                                                        |  |       |
|                                                                                                                                                                                                                                                             |  |       |

Note :- Refer to the associate code clause along side each prompt above for compliance or reason of decision  
**Plan checked yet Unsatisfactory**  
 (request for further information- see attached copy)

**Signature, name & date**  
 Bldg..... *Simon Copp 22/2/10*  
 Plumbing..... *Simon Copp 10/2/2010*  
 Fire.....

I am satisfied on reasonable grounds that the provisions of the Building Code are met and the  
**Building consent may be granted (refer Bld Act Sec 49(1))**  
 All previous Further Information Requests now satisfactory.

**Signature, name & date**  
 Bldg..... *Simon Copp 2/3/10*  
 (for all pages except those listed below)  
 Plumbing..... *Simon Copp 12/2/2010*  
 (For pages 6 of 11 unless otherwise listed)  
 Fire.....  
 (As listed on page 7 of 11)

## Addenda to Form 436

### Allocation of work to approvals officer outside current competency

| Building Category | Circle appropriate category | 0 | 1 | 2 | 3 |
|-------------------|-----------------------------|---|---|---|---|
|                   |                             |   |   |   |   |
|                   |                             |   |   |   |   |

| 1) Authorized by Team leader or delegate      | Level of supervision reqd                          | Reason for decision                                                                                                                                 |
|-----------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Name, Signature & date                        | Coaching<br>Mentoring<br>Peer review on completion | In training<br>Vetting one level above competency<br>Other                                                                                          |
| 2) Approval Officer undertaking training      | Record of Learning                                 | Decision                                                                                                                                            |
| Name, Signature & date                        |                                                    | I am satisfied on reasonable grounds that the provisions of the Building Code are met and the building consent may be granted (refer Bld Act 49(1)) |
| Current competency level<br>Category 0,1 or 2 |                                                    |                                                                                                                                                     |
| 3) Coach/Mentor/Peer reviewer                 | Training needs identified                          | Comments                                                                                                                                            |
| Name, Signature & date                        |                                                    | I am satisfied on reasonable grounds that the provisions of the Building Code are met and the building consent may be granted (refer Bld Act 49(1)) |
| Current competency level<br>Category 1,2 or 3 |                                                    |                                                                                                                                                     |

#### Allocation notes

- Categories of building are determined on receipt of application
- All applications are re assessed for the category and allocated to each appropriate Officer at the earliest opportunity and then placed in processing shelves accordingly
- Approvals staff are aware of their own competency level and check the allocation of work.
- Approvals staff may select, for training purpose, a consent 1 (one) category higher than their current competency for the purpose of increasing their skill level provided they gain approval from the Team Leader Building Consent Approvals. Once approval is given the Team Leader Building Consent Approvals will arrange for the appropriate supervision and final peer review.

**Building Consent Application — use this Checksheet for:**  
**Single Residential Dwelling and Accessory Buildings**

— including single stand-alone dwellings, dwelling additions and/or alterations, repiling, garages, decks, gazebos, sheds, retaining walls etc.

— **An Application Form is attached to this checksheet —**  
**(Please include this checksheet with your application)**

**Address of project:**

*22 Fairway Oaks - Waikanae*

This checksheet shows you the information that has to be supplied with your building consent application. Please attach **2 copies** of the following information (unless otherwise specified) with your completed Building Consent Application form.

Please tick relevant box in the Customer Use column as you attach the information. If the box is not relevant to your application, write NA across the box. Please check each section carefully and complete those sections that are relevant to your project.

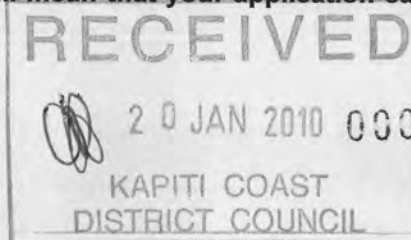
**Once you have attached all the required information, please check for completeness as an incomplete application or lack of any supporting information will mean that your application cannot be accepted for processing.**

CUSTOMER USE



**1. GENERAL**

Complete this section for all applications



KCDC USE

☒

a. **Building Consent Application Form** (1 copy)

Completed and signed by the owner or by an agent on behalf of the owner.

☒☐

b. **Proof of ownership** (1 copy)

*KCDC to obtain*

One recent copy of current certificates/s of title (i.e. not older than 3 months) or where applicable one copy of purchase agreement (if recently purchased) or one copy of relevant portions of current lease

☒☒

c. **Locality Plan (1:500) showing:**

Physical location of the subject building in relation to streets or landmarks, north point, name of building and lot and DP number.

☒☒

d. **Site Plan (1:100) showing:**

Dimensions of all boundaries, north point, finished floor levels, ground contours (extended to boundaries) and/or levels, site area, street name and number, lot and DP number, outline of building, distance to boundaries and the position of swimming or spa pools. Include on the site plan the designated wind zone of the site (e.g. specific design, very high, high, medium or low).

☒☐

e. **Application Fee**

Applications will not be accepted without payment of the appropriate fees. Fees payable are set out in the published fee schedule of the council that has jurisdiction over the project site.

☒

**For office use only** Receiving Officer:

## 2. CHANGE OF USE

Complete for all existing buildings where the proposal involves forming a household unit where one did not exist before

*Example: the conversion of a garage or shed into a residential unit*

☐

### a. Assessment of the building for compliance with the building code

☐

Section 115(a) of the Building Act 2004 requires that the building, in its new use, complies fully with all clauses of the building code.

☒

### b. Reasonably practicable

☐

The above assessment must relate to all building code clauses. If the proposal is for the project to meet anything less than full compliance with any clauses, your application must clearly state your reasoning, with supporting documentation, and show how you will meet the highest level of compliance that can be considered reasonably practicable.

## 3. FOUNDATIONS / FLOOR

Complete for all new buildings, for existing buildings where the footprint of the building will change or where an additional storey is being added.

☒

### a. Foundation Plan (1:100 / 1:50) showing:

☒

- Dimensions of all new foundations
- Sub-floor, including bracing
- Footing details
- If a concrete slab, show basic details including reinforcing and contractions joints
- Piles and footing
- If the addition is an upper storey show details on upgrading existing foundations, joints, piles etc
- Indicate ventilation to sub floor spaces

☒

### b. Subfloor bracing

☐

Provide subfloor bracing plan and calculations for all piled structures. Where the structure is specifically engineered, this should be included with the structural calculations.  
Subfloor bracing plan and calculations are required where an additional storey is to be added.

## 4. CONSTRUCTION

Complete for all new structures or alterations to existing structures.

☐

### a. Existing floor plan (1:100 / 1:50) showing:

☐

(For additions and alterations only)

- All levels
- All designated spaces
- All removals
- Sanitary fixtures
- Smoke detectors



**b. Proposed floor plans (1:100 / 1:50) showing:**

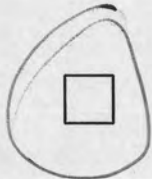


- Room dimensions
- Location of partitions
- All designated spaces
- All floors (new or altered)
- Location of sanitary fixtures
- Stairs, barriers, handrails, floor joists and beams
- Floor joist layout for each level with timber floors
- Smoke detectors
- Note where wall will form part of the swimming pool fence



**c. Pre-nail Truss and Frames:**

*To be emailed*



- Specific design wall framing requires clarification
- Truss layout must be supported by design certification and design of fixing details, including consideration of load paths to ground
- Lintels carrying point loads, such as from girder trusses, require specific engineering design



**d. Wall bracing plan (1:100 / 1:50) showing:**



- Bracing details and calculations for wall bracing (also required for existing lower storeys where an additional storey is being added)
- Sub-floor bracing for decks projecting more than 2m from the house
- Location, type and number of bracing elements to indicate compliance with NZS 3604:1999 (include calculations)
- If the bracing was specifically designed by a structural engineer, provide calculations (required for specific design wind zones and lateral distribution of upper floor loads where lower storey bracing is provided in walls beyond the upper storey footprint)



**e. Sections and details (1:50 / 1:20 / 1:10) showing:**



- Foundation details involving reinforcing and connections
- Stairs, handrails, decks and decking
- Insulation systems and materials to floors, walls and roof
- Barriers providing safety from falling. Specific engineering design required where detail does not comply with NZBC B1/AS2
- Framing sizes, beams, lintels
- Roof cladding, eaves, fascias, gutters
- Flashings to openings
- Fire rated systems on all walls – closer than 1 metre to boundary
- Stud heights of rooms and total height from lowest ground floor level to top of ridge
- Window and door installation details
- Retaining wall details e.g. type, height of retained ground, relationship to boundary, waterproof membrane and proposed drainage

☐ **f. Fire Report:** ☐

For domestic dwellings of 4 storeys or more, or buildings providing more than one household unit

**5. EXTERNAL**

Complete for new buildings or existing buildings with alternations to the external shell

☒ **a. Elevations (1:100 / 1:50) showing:** ☒

Accurate lines form boundary to boundary on each elevation, relevant District Plan daylight control lines, the maximum height on each elevation, location of door and window openings, fixed and opening sashes, sill heights, floor levels in relation to ground levels, exterior cladding nominated to all elevations, down pipes and spouting, ventilators to sub-floor area (suspended floors only)

☒ **b. Risk assessment** ☒

*(Risk matrix in E2/AS1 may be used for buildings within scope)*

Consider exposure, design and detailing to support appropriate selection of cladding

☒ **c. Cladding details (1:50 / 1:20 / 1:10)** ☒

Provide details around all penetrations, joinery and other junctions at a level appropriate to the level of risk e.g. roof/wall, balcony/wall, junction of different types of cladding, back flashing details for cavity systems

☐ **d. Production certification** ☐

Supply copies of product certificates relied on as compliance documents

☐ **e. Alternative solutions** ☐

If the proposal uses products or systems that are not covered in the Acceptable Solutions of clause E2 of the building code provide supporting current information including test results (fully signed reports), case studies, expert opinion (including evidence of experience/qualification, basis for forming opinion and statement of independence) etc to demonstrate compliance.

**6. SERVICES**

Complete for all projects with new installations or alteration of plumbing or drainage services

☒ **a. Plumbing and Drainage plan 1:100 / 1:50) showing:** ☒

*Note: if you have supplied drainage details for surface water disposal on the site plan, no drainage plan is required.*

- Sizes of pipe work and drains
- Fixtures and fittings, hot water system(s)
- If the building is more than one storey with sanitary fittings on upper floors, provide an isometric layout showing wastes, pipes and falls
- Drainage layout with inspection bends and junctions indicated for both sewer and storm water
- Any other drainage on site including council mains and retaining wall field drains
- Ventilation of sanitary rooms
- Calculations for sizing of down pipes
- Gully traps including overflow relief gullies

## 7. STRUCTURAL

Complete for all projects incorporating specific structural design

☒

### a. Structural calculations

☒

If any design work required the services of a structural engineer, attach 2 copies of the calculations with this. The calculations must be prefaced with information explaining the design philosophy and justification of assumptions and methodologies used in analysis

☒

### b. Expert Opinion (Producer Statements):

☒

If this application for consent relies on any expert opinion including producer statements certifying compliance with the New Zealand Building Code, a copy must be attached with this application. (Note all structural producer statements are required to have accompanying calculations)

## 8. SPECIFICATIONS

Complete for all applications

*Note: the specification must be specific to the project and cover all aspects of the proposed work.*

☒

### a. Specification: General

☒

- Elements of structure (size, spacing, timber treatment)
- Finish or fixings to meet durability requirements
- Plumbing and drainage materials and design that installation is to comply with
- Wet area surfaces
- Ventilation systems
- Flooring slip resistance for access routes
- Glazing
- Type of smoke detectors (including existing smoke detectors where they will remain)

☒

### b. External claddings

☒

For each of the following claddings provide details of the product name, manufacturer, maintenance requirements and warranties offered

- Building wraps
- Wall claddings
- Roof claddings
- Membranes (roof and decks)
- Tanking
- Joinery

## 9. DEMOLITION / REMOVAL

Complete for all projects involving demolition of significant parts of buildings or the demolition or removal of whole buildings.

☐

### a. Means of barricading the site

☐

Provide details of temporary barriers, gates which swing inwards or other means of restricting public access to the area

☐

### b. Proposed tipping location for demolition materials (address/landfill)

☐

- |                          |                                                                                                                                                                        |                          |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <input type="checkbox"/> | <b>c. <u>Hazardous building material</u></b><br>Provide safety plan detailing the safe handling and disposal of hazardous materials                                    | <input type="checkbox"/> |
| <input type="checkbox"/> | <b>d. <u>Site management plan covering</u></b><br>Management to control silt runoff, noise and dust                                                                    | <input type="checkbox"/> |
| <input type="checkbox"/> | <b>e. <u>Proposed destination for relocate building</u></b>                                                                                                            | <input type="checkbox"/> |
| <input type="checkbox"/> | <b>f. <u>Access to and from the site including (use of kerb crossings)</u></b>                                                                                         | <input type="checkbox"/> |
| <input type="checkbox"/> | <b>g. <u>Specify termination of existing services</u></b> <ul style="list-style-type: none"> <li>• Water</li> <li>• Sewer</li> <li>• Storm water</li> </ul>            | <input type="checkbox"/> |
| <input type="checkbox"/> | <b>h. <u>Details about the building such as:</u></b><br>Number of storeys, type of materials the building is constructed (Photographs of the building would be useful) | <input type="checkbox"/> |

**Note**

You will need to contact the relevant service authorities specified below to advise them of the extent of your work:

Electricity, gas, drainage, water, transport, telecommunications, cable television or any other services that may be affected.

**Transportation of relocated building**

You will be required to contact and provide details to Councils Transportation and Traffic Department.

## 10. OTHER APPROVALS

Please check territorial authority regarding the requirement for other approvals required and fees payable. These may include:

- Consents under the Resource Management Act
- Approvals under bylaws including earthworks, vehicle crossings, road openings and water connections.

Show the location of swimming or spa pools on the property and describe how compliance with the fencing of Swimming Pools Act will be achieved.

**The issue of a building consent does not relieve the owner of any duty or responsibility under any other act.**

The following Councils developed this checklist in partnership: Kapiti Coast District, Porirua City, Wellington City, Hutt City, and Upper Hutt City.

## Checklist for Water Demand Management Declaration of Compliance

The Kapiti Coast District Council now requires any new or relocated homes in residentially zoned areas that have access to full reticulated water supplies to install water saving devices.

As part of these requirements, the applicant needs to complete and submit the Water Demand Management Declaration of Compliance document with their Project Information Memorandum (PIM)/Building consent.

Please note that the applicant's manifold or toby may need replacing with a new manifold restrictor unit. This will be at the applicant's expense and the Council will invoice the applicant.

CUSTOMER USE



Please complete the following

☒

- a. **Water Demand Management Declaration of Compliance form** (1 copy) completed and signed by the owner or by the agent on behalf of the owner

☐

- b. If your section has an existing water connection, this may need to be modified to accommodate the rainwater tank top-up connection. The cost will be invoiced to the home owner.

KCDC USE

☒☒

**Processing Check Sheet  
for  
Project Information Memorandum (PIM)**

Property Address: 22 FAIRWAY OAKS DRIVE, WAIKANAE  
 Legal Description: Lot: 3 DP: 348205  
 Building Project: NEW DWELLING  
 Building Consent/PIM Number: BC 100044  
 Zone: RESIDENTIAL

| Items to check            | Yes | No | Action reqd                                   | Actioned       | Date & Signature |
|---------------------------|-----|----|-----------------------------------------------|----------------|------------------|
| Certificate of Title      | ✓   |    |                                               |                |                  |
| Easements                 |     | ✓  | LAND COVENANT FOR MIDDEN.                     |                |                  |
| Section 221               | ✓   |    | Include copy of S221                          | SEE ATTACHED.  |                  |
| Section 72                |     | ✓  | Advise Approvals Team of S72 reqd             |                |                  |
| Existing Resource Consent |     | ✓  | Include copy                                  |                |                  |
| District Plan features    | ✓   |    | AIRPORT CONICAL SURFACE                       |                |                  |
| Designations              |     | ✓  |                                               |                |                  |
| Heritage register         |     | ✓  |                                               |                |                  |
| Flood hazards             |     | ✓  |                                               |                |                  |
| Min floor level reqd      |     | ✓  | Advise F.F.level                              |                |                  |
| Other hazards             |     | ✓  |                                               |                |                  |
| EQ faults                 |     | ✓  |                                               |                |                  |
| Services                  | ✓   |    |                                               |                |                  |
| ECO sites                 |     | ✓  |                                               |                |                  |
| Yards                     |     | ✓  | Neighbours approval for one yard encroachment |                |                  |
| HIRB                      |     |    |                                               |                |                  |
| Maximum height            |     | ✓  |                                               |                |                  |
| Site coverage             |     | ✓  |                                               |                |                  |
| Earthworks                |     | ✓  |                                               |                |                  |
| Permeable surface area    |     | ✓  |                                               |                |                  |
| Onsite parking            |     | ✓  |                                               |                |                  |
| DIF fees                  |     | ✓  | Calculate fees                                | PAID ON SUBDN. |                  |
| Recourse Consent reqd     |     | ✓  | Apply Section 37                              |                |                  |

**Decision:** (delete items that don't apply)

Application complies and PIM can be issued.

~~PIM can be issued subject to section 37 Certificate~~

~~PIM is refused~~

*J. Burt* 19.2.10.



Project Information Memorandum No...100044P.

Building Project...

New Dwelling  
22 Fairway Oaks Dr  
WAIKANAE

\* (ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH RMO40167 & SECTION 221c CONSENT NOTICE) \*

FOR OFFICE USE ONLY

|                   |             |            |
|-------------------|-------------|------------|
| FEES              | PIM Fee     | \$.....    |
| \$.....           | RECEIPT NO. | DATE ..... |
| \$.....           |             |            |
| \$.....           | INVOICE NO  | DATE ..... |
| \$.....           |             |            |
| \$.....           | RECEIPT NO  | DATE ..... |
| SUBTOTAL          |             |            |
| \$.....           |             |            |
| Less Deposit Paid |             |            |
| \$.....           |             |            |
| TOTAL             |             |            |
| \$.....           |             |            |
| GST INCLUDED      |             |            |
| \$.....           |             |            |

# PROJECT INFORMATION MEMORANDUM

Section 34, Building Act 2004

**Building Consent Number:** BC100044P  
**Applicant Name:** Mulholland Constructions Ltd  
**Applicant Address:** 3 Fairway Oaks Drive  
WAIKANAЕ  
**Application Date:** 2010-01-20  
**Pim Decision Issued:** 2010-02-19  
  
**Project:** New Residential Dwelling  
**Intended Use:** 99  
**Estimated Value:** 200000  
**Legal:** LOT 3 DP 348205 C/T 197932  
**Location:** 22 Fairway Oaks Drive, Waikanae  
**Valuation No:** 1492062503

This project information memorandum is confirmation that the proposed building work may be undertaken, subject to the provisions of the Building Act 2004, and any requirements of the building consent.

This project information memorandum includes:

- ☐ Information identifying special features of the land concerned
- ☐ Details of relevant utility systems
- ☐ Details of authorisations which have been granted

**Signed for and on behalf of the Council:**

**Name:** Angela Smith

**Date:** \_\_\_\_\_

## General

|                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Use permitted:</b>                           | Permitted activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Resource Consent granted:</b>                | Yes - RM040167 Subdivision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Designations on property:</b>                | Airport Conical Surface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Easements:</b>                               | Land Covenant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Site subject to inundation:</b>              | Not known to be                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Coastal building line restriction:</b>       | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Relocatable zone:</b>                        | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Minimum floor level:<br/>(50 year event)</b> | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Floor level:<br/>(100 year event)</b>        | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Yard and height requirements:</b>            | Comply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Tree/building preservation:</b>              | None listed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Other comments:</b>                          | <p>All work to be carried out in accordance with Resource Consent RM040167 and Section 221 Consent Notice. Consent notices, covenants, and like listings registered on the title are the responsibility of the applicant. Search this property title for any impediments to this proposal. Should a waahi tapu or other cultural site be unearthed during earthworks, the operator and/or owner shall:</p> <ol style="list-style-type: none"> <li>1) Cease operations;</li> <li>2) Inform local Iwi;</li> <li>3) Inform the New Zealand Historic Places Trust (NZHPT) and apply for an appropriate authority is required; and</li> <li>4) Take appropriate action, after discussion with NZHPT, Council and Tangata Whenua, to remedy damage and/or restore the site.</li> </ol> <p>NB: In accordance with the Historic Places Act 1983, where an archaeological site is present (or uncovered), authority from the NZHPT is required if the site is to be modified in anyway.</p> |

## Planning

|                           |                 |
|---------------------------|-----------------|
| <b>Potential erosion:</b> | Not known to be |
|---------------------------|-----------------|

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Potential avulsion:</b>                 | Not known to be                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Potential subsidence:</b>               | Not known to be                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Potential slippage:</b>                 | Not known to be                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Potential alluvion:</b>                 | Not known to be                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Potential inundation:</b>               | Not known to be                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Presence of hazardous contaminants:</b> | Not known to be                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Other features:</b>                     | There was an Section 221 Consent Notice imposed as part of this subdivision which requires certain conditions to be complied with on an ongoing basis (see attachments). This property is located within the Conical Surface, Airport Operations Area of the Operative District Plan 1999. The Site is subject to a Land Covenant shown as Area C on DP348205, (Archaeological Site). See attached. |

## Plumbing & Drainage

|                                                     |                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Sewer available / connected:</b>                 | Available                                                                                                                                                                                                                                                                                                                   |
| <b>Water available / connected:</b>                 | Available                                                                                                                                                                                                                                                                                                                   |
| <b>Site plan of existing services:<br/>(if any)</b> | Not supplied                                                                                                                                                                                                                                                                                                                |
| <b>Location of sewer lateral:</b>                   | shown                                                                                                                                                                                                                                                                                                                       |
| <b>Location and size of water toby:</b>             | 20mm shown                                                                                                                                                                                                                                                                                                                  |
| <b>Location of easements:<br/>(if any)</b>          | midden                                                                                                                                                                                                                                                                                                                      |
| <b>Location of public drains:<br/>(if any)</b>      | N/A                                                                                                                                                                                                                                                                                                                         |
| <b>Stormwater disposal to:</b>                      | Water tank                                                                                                                                                                                                                                                                                                                  |
| <b>Plumbing and drainage notes:</b>                 | specifically designed soakpit required for this lot .All stormwater run off is to be intercepted and run to a soak pit.The Council water toby is to be modified to allow a restricted top up to the water storage tank.(600lt per day) The cost of this modification is to be paid for by the Agent or Owner when invoiced. |
| <b>Rain Water System:</b>                           | Yes                                                                                                                                                                                                                                                                                                                         |



**CONSENT NOTICE PURSUANT TO SECTION 221  
OF THE RESOURCE MANAGEMENT ACT 1991**

**IN THE MATTER OF A PLAN LODGED FOR DEPOSIT UNDER  
NUMBER 348205  
AND RESOURCE CONSENT NO. RM 040167**

**(BEING THE SUBDIVISION OF LOT 3 DP 88177 and LOTS 3 & 4 DP12787),  
AT 90 TE MOANA ROAD, WAIKANAE  
FOR MC<sup>2</sup> GROUP LIMITED**

**The Regional Regulatory Titles Officer at Wellington**

PURSUANT to Section 221 of the Resource Management Act 1991 the Kapiti Coast District Council hereby gives notice that it has consented to the subdivision and that the following conditions are to be complied with on a continuing basis:

1. **With respect to all Lots:** Foundation design and construction for any new building or additions and alterations to any building shall take into account the recommendations within the document titled "Statement of Professional Opinion as to Suitability of Land for Building Purposes" prepared by Graeme D Walker of Samcon Civil Engineers and submitted to Council in relation to application No. RM040167. A copy of the document is available in Council's Office at any time the office is open to the public.
2. **With respect to Lots 1 to 10:** There shall not be any discharge of stormwater onto the road or into systems that will be taken over by the Council. Specific design for stormwater disposal shall be required for each lot. This design shall accompany any building consent or future subdivision resource consent applications. As a minimum stormwater from roof areas, right-of-ways and impermeable yards shall be disposed of on site.
3. **With respect to Lots 11 to 18:** There shall not be any discharge of unattenuated stormwater flows directly onto the road or directly into systems that will be taken over by the Council. Specific design for stormwater attenuation shall be required for each lot. This design shall accompany any building consent or future subdivision resource consent applications. As a minimum stormwater from roof areas and impermeable yards shall be attenuated on site.

**Kapiti Coast District Council**

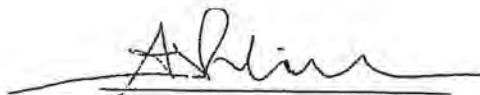
Phone (04) 904 5700, Fax (04) 904 5830 175 Rimu Road, Private Bag 601, Paraparaumu. Website [www.kcdc.govt.nz](http://www.kcdc.govt.nz)

4. With respect to Lots 12 – 17: The minimum floor level, measured from the underside of the floor joist or the base of any concrete slab (as the case maybe) for all habitable buildings shall be at or above a level of 4.0 metres above mean sea level.
5. With respect to Lots 11, 12 & 13: The area of the stormwater swale contained in areas D, E and F as shown on DP348205 shall not be filled and no building or structure, or part of a building or structure shall be erected within the swale formation. No internal fence that is to be erected across the swale shall be of a solid structure or design which may dam water or trap debris. No planting that would inhibit the operation of the swale shall be established.
6. With respect to Lots 14 and 15: That part of the land contained within area G on Lot 14 and area H on Lot 15 is set aside as a stormwater attenuation ponding area and is subject to the following restrictions:
- Planting shall be suitable for periodic inundation due to stormwater runoff;
  - The ground level shall be maintained at or below RL 3.4 metres above mean sea level;
  - In order to ensure that the area can continue to accommodate the increased stormwater runoff resulting from the residential development of the land, no earth filling will be permitted without specific written consent from the Kapiti Coast District Council Stormwater Engineer.
7. With respect to Lot 3: Area C within Lot 3 of DP348205 is a "Building and Earthworks Exclusion Zone" because the midden located within area C is considered to be a heritage site for the purposes of the residential zone protection of heritage sites. Accordingly the following are prohibited within the area identified as area C on DP348205:
- The erection or establishment of any building or any structure; and
  - Earthworks of any nature, except that work to establish and maintain vegetation may be carried out.

Issued in respect of application No. RM 040167 on this 6<sup>th</sup> day of April 2005.



Wayne Gair  
AUTHORISED OFFICER



Aidan Robinson  
AUTHORISED OFFICER



# COMPUTER FREEHOLD REGISTER UNDER LAND TRANSFER ACT 1952



Search Copy

  
R.W. Muir  
Registrar-General  
of Land

**Identifier** 197932  
**Land Registration District** Wellington  
**Date Issued** 21 June 2005

**Prior References**  
WN55C/951

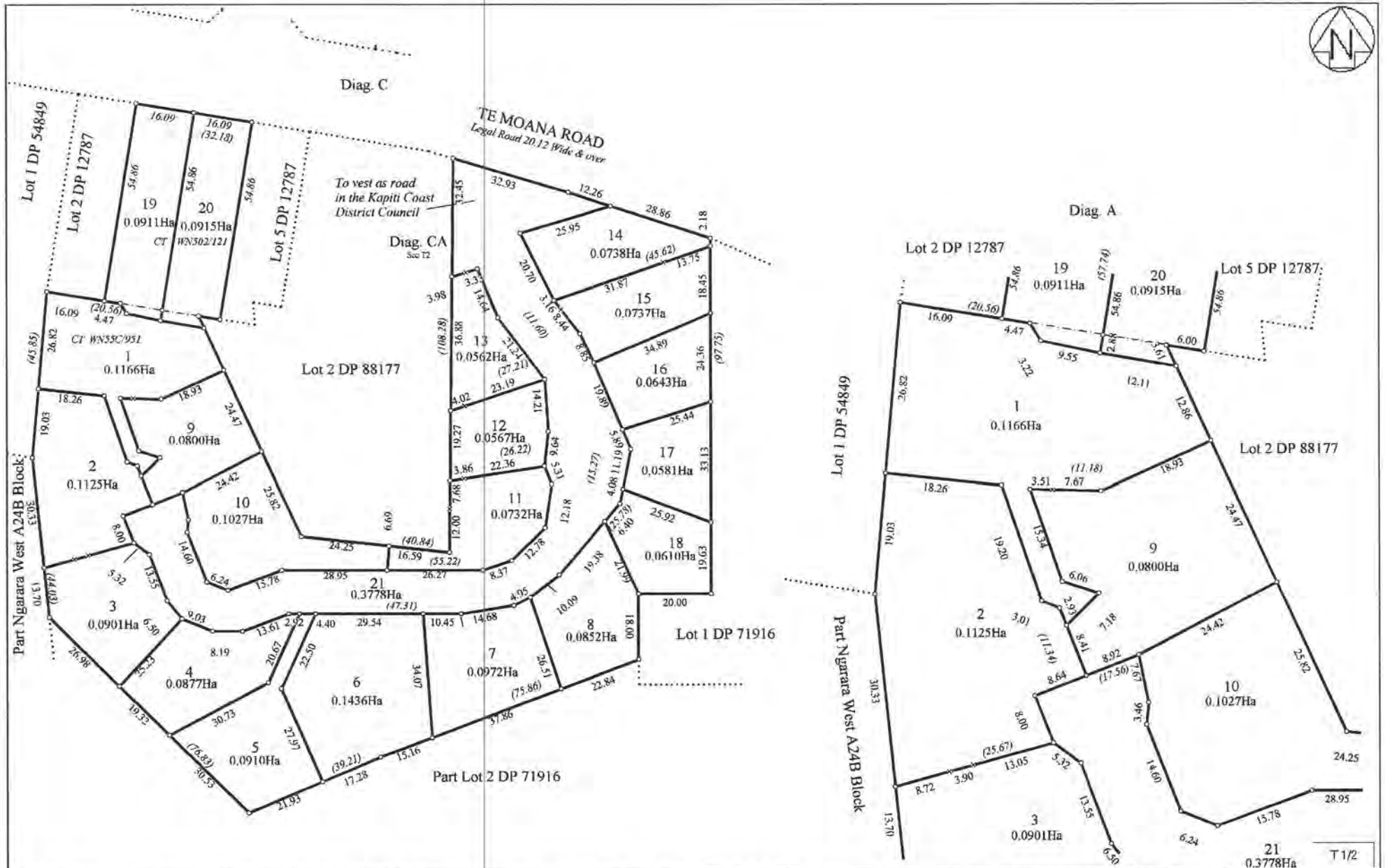
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**Estate** Fee Simple  
**Area** 901 square metres more or less  
**Legal Description** Lot 3 Deposited Plan 348205

**Proprietors**  
Brent Mulholland and Briget Mulholland

---

**Interests**  
6466827.5 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 21.6.2005 at 9:00 am  
Land Covenant in Easement Instrument 6466827.9 - 21.6.2005 at 9:00 am  
8385345.3 Mortgage to ANZ National Bank Limited - 11.1.2010 at 2:57 pm



Deposited on: 21/06/2005



Land District: Wellington

Lots 1-21 being a subdivision of Lot 3 DP 88177 and Lots 3 & 4 DP 12787

Surveyor: Nicola Kate McHutchon  
Firm: Landlink Ltd

Digital Title Plan  
DP 348205

Deposited on: 21/06/2005

Digitally Generated Plan  
Generated on: 01/07/2005 09:10am Page 5 of 5

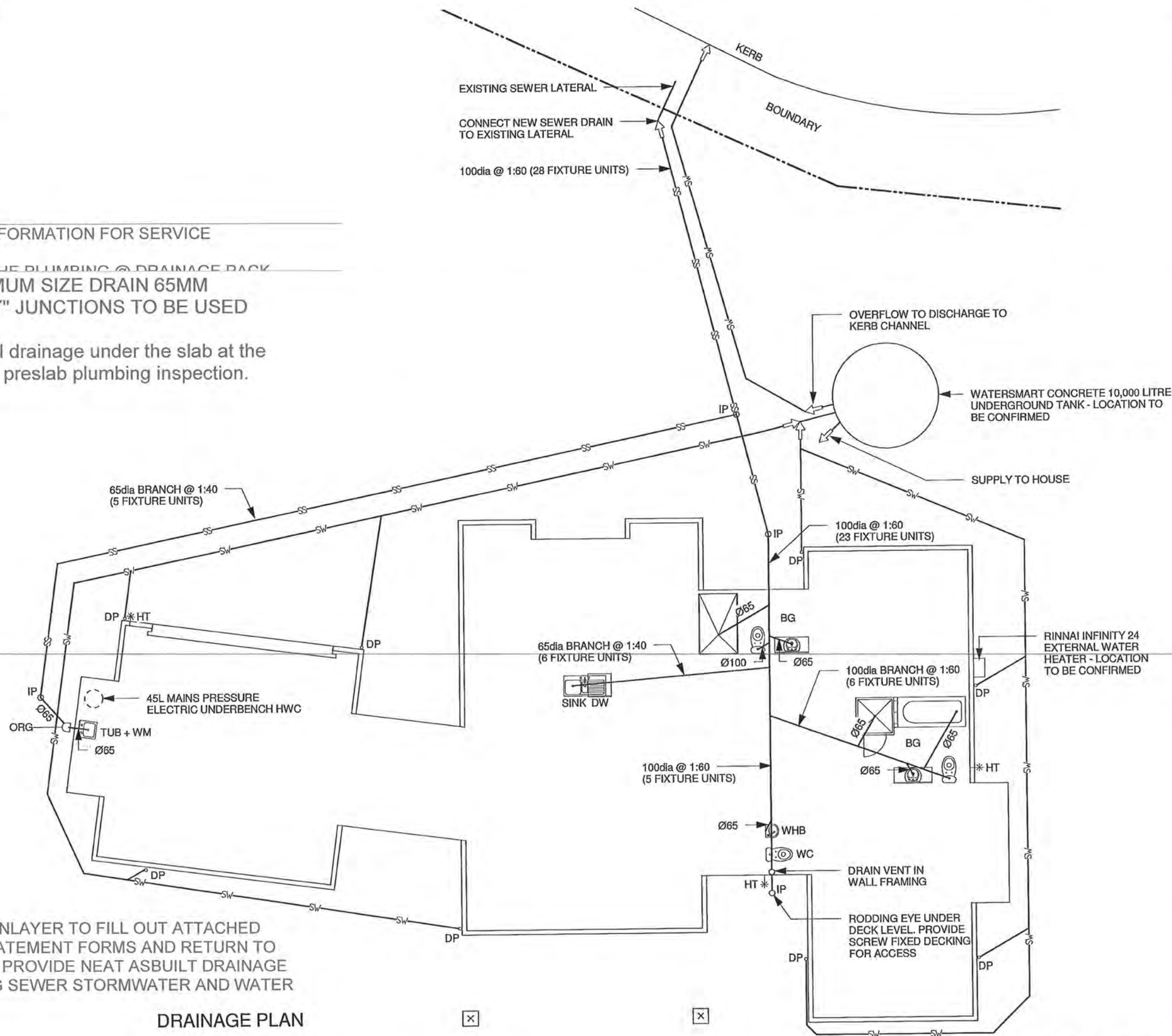
APPROVED  
BY  
PLUMBING  
AND  
DRAINAGE  
Simon C  
12/2/2010

strip drain to intercept driveway run off, to run to a soakpit

2/03/2010

CHECK P.I.M INFORMATION FOR SERVICE  
CONNECTIONS  
PROVIDED IN THE PLUMBING & DRAINAGE BACK  
MINIMUM SIZE DRAIN 65MM  
SWEPT "Y" JUNCTIONS TO BE USED

Water test all drainage under the slab at the  
time of the preslab plumbing inspection.



DRAINAGE PLAN  
1 : 100

#### PLUMBING KEY

BG = BATHROOM GROUP = 6FU  
DW = DISHWASHER = 3FU  
SINK = SINK = 3FU  
TUB = LAUNDRY TUB = 5FU  
WC = TOILET = 4FU  
WHB = WASH HAND BASIN = 1FU  
WM = WASHING MACHINE = 5FU

DP = DOWNPIPE  
DV = DRAIN VENT  
HT = HOSE TAP  
HWC = HOT WATER CYLINDER  
IP = INSPECTION POINT  
ORG = OVERFLOW RELIEF GULLY

MAXIMUM NUMBER FIXTURE UNITS FOR VENTED  
100Ø DRAIN LAID 1 IN 60 = 165 = REFER TO  
TABLE 4.3 AS/NZS 3500.5:2000 FOR OTHER  
GRADIENTS.

#### PIPE GRADIENTS

MINIMUM GRADES FOR DRAINS & DISCHARGE  
PIPES:

65Ø & LESS = 1 IN 40  
80Ø & 100Ø = 1 IN 60

#### PLUMBING & DRAINAGE NOTES:

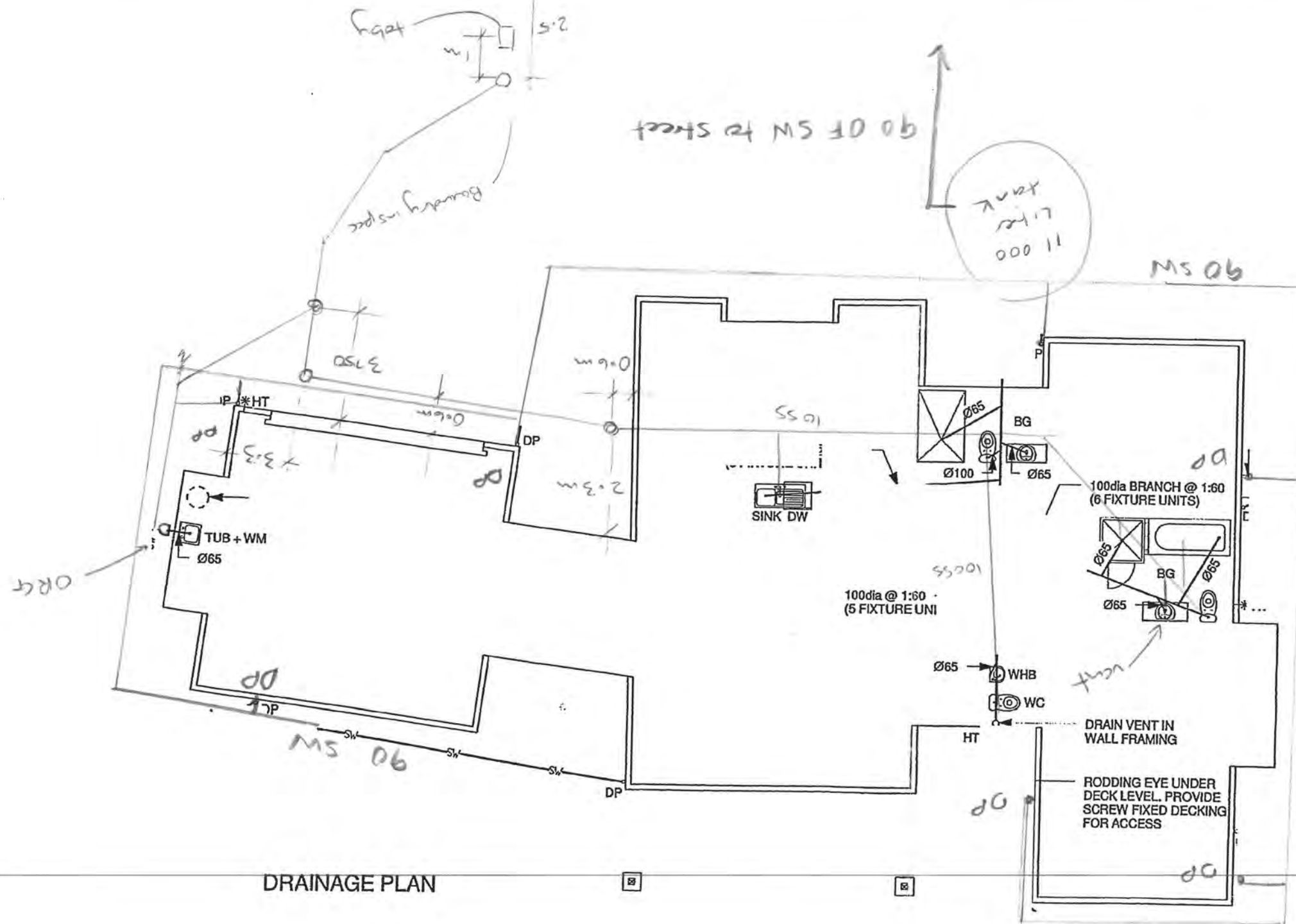
- THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH BRANZ PLUMBING AND DRAINAGE GUIDE SECTION D AS/NZS 3500 PART 2 FOR GROUND FLOOR SYSTEMS AND SECTION F DRAINAGE REQUIREMENTS
- CONFIRM POSITION OF LATERALS & MAINS ON SITE
- PROVIDE 10000 L WATER STORAGE TANK WITH PUMP SUPPLY TO WC CISTERNS AND EXTERIOR HOSE TAPS - LOCATION TO BE CONFIRMED BY CLIENT
- INSTALL WATER SUPPLY TOP UP TO WATER TANK FROM TOWN WATER MAIN
- ALL PIPES FROM WATER TANK SUPPLYING WC AND EXTERIOR TAPS TO BE CLEARLY LABELED AS SUCH
- INSTALL SIGNS AT EXTERIOR TAPS TO SHOW WATER NOT FIT FOR DRINKING
- PROVIDE SEISMIC RESTRAINTS TO HOT WATER CYLINDERS
- HOT WATER SERVICE TO HAVE TEMPERING VALVE
- WATER PIPES TO BE TESTED TO 1500 KPA

#### GRAPHIC KEY

SS SANITARY SEWER  
SW STORMWATER

| 1                                                                                                                                                             | 18-01-2010 | Revision 1  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|
| Rev                                                                                                                                                           | Date       | Description |
| Proposed House<br>Mulholland Const.<br>22 Fairway Oaks Drive, Waikanae<br>Lot 3 DP 348205                                                                     |            |             |
| <b>A.D</b><br>architecture<br>LTD<br>Ph: 04 298 5662 Fax: 04 298 5663<br>Info@adarchitecture.co.nz www.adarchitecture.co.nz<br>PO Box 1585, Paraparaumu Beach |            |             |
| DRAINAGE PLAN                                                                                                                                                 |            |             |
| BUILDING CONSENT                                                                                                                                              |            |             |
| DO NOT SCALE DRAWING                                                                                                                                          |            |             |
| Job                                                                                                                                                           | Date       | Rev         |
| 09043                                                                                                                                                         | 30-10-2009 | 1           |
| Sheet                                                                                                                                                         | (A3) 04    |             |

BC 100044



| Rev                             | Date       | Description |
|---------------------------------|------------|-------------|
| 1                               | 10-01-2010 | PROVISION 1 |
| Proposed House                  |            |             |
| Mulholland Const.               |            |             |
| 22 Fairway Oaks Drive, Waikanae |            |             |
| Lot 3                           | DP 348205  |             |

John Kelly 12-1-11  
Reg. 14785

# REVISED INFORMATION

APPROVED  
BY  
PLUMBING  
AND  
DRAINAGE  
Simon C  
12/2/2010

12/2/2010

BC 100044

2/03/2010

11-2-2010

Drainage  
channel to  
catch stormwater  
run-off from  
driveway.

EXISTING SEWER LATERAL

CONNECT NEW SEWER DRAIN  
TO EXISTING LATERAL

100dia @ 1:60 (28 FIXTURE UNITS)

Strip drain to intercept driveway run off, to run to a soakpit

BOUNDARY

SOAK  
PIT confirm  
location on site  
4m x 3m x 1.5m  
Deep

OVERFLOW TO DISCHARGE TO  
KERB CHANNEL

WATERSMART CONCRETE 10,000 LITRE  
UNDERGROUND TANK - LOCATION TO  
BE CONFIRMED

SUPPLY TO HOUSE

100dia @ 1:60  
(23 FIXTURE UNITS)

65dia BRANCH @ 1:40  
(6 FIXTURE UNITS)

SINK DW

100dia BRANCH @ 1:60  
(6 FIXTURE UNITS)

RINNAI INFINITY 24  
EXTERNAL WATER  
HEATER - LOCATION  
TO BE CONFIRMED

100dia @ 1:60  
(5 FIXTURE UNITS)

WMB

WC

HT

IP

DRAIN VENT IN  
WALL FRAMING

RODDING EYE UNDER  
DECK LEVEL. PROVIDE  
SCREW FIXED DECKING  
FOR ACCESS

BC 100044

Note: Vent required on the  
drain branch to Laundry

65dia BRANCH @ 1:40  
(5 FIXTURE UNITS)

DP

45L MAINS PRESSURE  
ELECTRIC UNDERBENCH HWC

TUB + WM

Ø65

CHECK P.I.M INFORMATION FOR SERVICE CONNECTIONS  
PROVIDED IN THE PLUMBING @ DRAINAGE PACK.

MINIMUM SIZE DRAIN 65MM  
SWEPT "Y" JUNCTIONS TO BE USED

Water test all drainage under the slab at the  
time of the preslab plumbing inspection.

PLUMBER/DRAINLAYER TO FILL DRAINAGE PLAN  
PRODUCER STATEMENT FORMS AND RETURN TO  
COUNCIL ALSO PROVIDE NEAT ASBUILT DRAINAGE  
PLAN SHOWING SEWER STORMWATER AND WATER

## PLUMBING KEY

BG = BATHROOM GROUP = 6FU  
DW = DISHWASHER = 3FU  
SINK = SINK = 3FU  
TUB = LAUNDRY TUB = 5FU  
WC = TOILET = 4FU  
WHB = WASH HAND BASIN = 1FU  
WM = WASHING MACHINE = 5FU

DP = DOWNPIPE  
DV = DRAIN VENT  
HT = HOSE TAP  
HWC = HOT WATER CYLINDER  
IP = INSPECTION POINT  
ORG = OVERFLOW RELIEF GULLY

MAXIMUM NUMBER FIXTURE UNITS FOR VENTED  
100Ø DRAIN LAID 1 IN 60 = 165 = REFER TO  
TABLE 4.3 AS/NZS 3500.5:2000 FOR OTHER  
GRADIENTS.

PIPE GRADIENTS  
MINIMUM GRADES FOR DRAINS & DISCHARGE  
PIPES:

65Ø & LESS = 1 IN 40  
80Ø & 100Ø = 1 IN 60

## PLUMBING & DRAINAGE NOTES:

- THIS PLAN HAS BEEN DESIGNED IN  
ACCORDANCE WITH BRANZ PLUMBING AND  
DRAINAGE GUIDE SECTION D AS/NZS 3500  
PART 2 FOR GROUND FLOOR SYSTEMS AND  
SECTION F DRAINAGE REQUIREMENTS
- CONFIRM POSITION OF LATERALS & MAINS  
ON SITE
- PROVIDE 10000 L WATER STORAGE TANK  
WITH PUMP SUPPLY TO WC CISTERNS AND  
EXTERIOR HOSE TAPS - LOCATION TO BE  
CONFIRMED BY CLIENT
- INSTALL WATER SUPPLY TOP UP TO  
WATER TANK FROM TOWN WATER MAIN
- ALL PIPES FROM WATER TANK SUPPLYING  
WC AND EXTERIOR TAPS TO BE CLEARLY  
LABELED AS SUCH
- INSTALL SIGNS AT EXTERIOR TAPS TO  
SHOW WATER NOT FIT FOR DRINKING
- PROVIDE SEISMIC RESTRAINTS TO HOT  
WATER CYLINDERS
- HOT WATER SERVICE TO HAVE  
TEMPERING VALVE
- WATER PIPES TO BE TESTED TO 1500 KPA

## GRAPHIC KEY

SS SANITARY SEWER  
SW STORMWATER

| Rev                                                                                                                      | Date       | Description |
|--------------------------------------------------------------------------------------------------------------------------|------------|-------------|
| 1                                                                                                                        | 18-01-2010 | Revision 1  |
| Proposed House<br>Mulholland Const.<br>22 Fairway Oaks Drive, Waikanae                                                   |            |             |
| Lot 3 DP 348205                                                                                                          |            |             |
| <b>A.D</b><br><b>architecture</b>                                                                                        |            |             |
| Ph: 04 298 5662 Fax: 04 298 5663<br>info@adarchitecture.co.nz www.adarchitecture.co.nz<br>PO Box 1585, Paraparaumu Beach |            |             |
| DRAINAGE PLAN                                                                                                            |            |             |
| BUILDING CONSENT                                                                                                         |            |             |
| DO NOT SCALE DRAWING                                                                                                     |            |             |
| Job                                                                                                                      | Date       | Rev         |
| 09043                                                                                                                    | 30-10-2009 | 1           |
| Sheet                                                                                                                    | (A3) 04    |             |

gas fitter to provide a compliance certificate to council

BC 100044

A 20MM copper TPR drain is run from the tundish to the discharge point at low level outside of the building at low level

**CONSTRUCTION NOTES** 2/03/2010

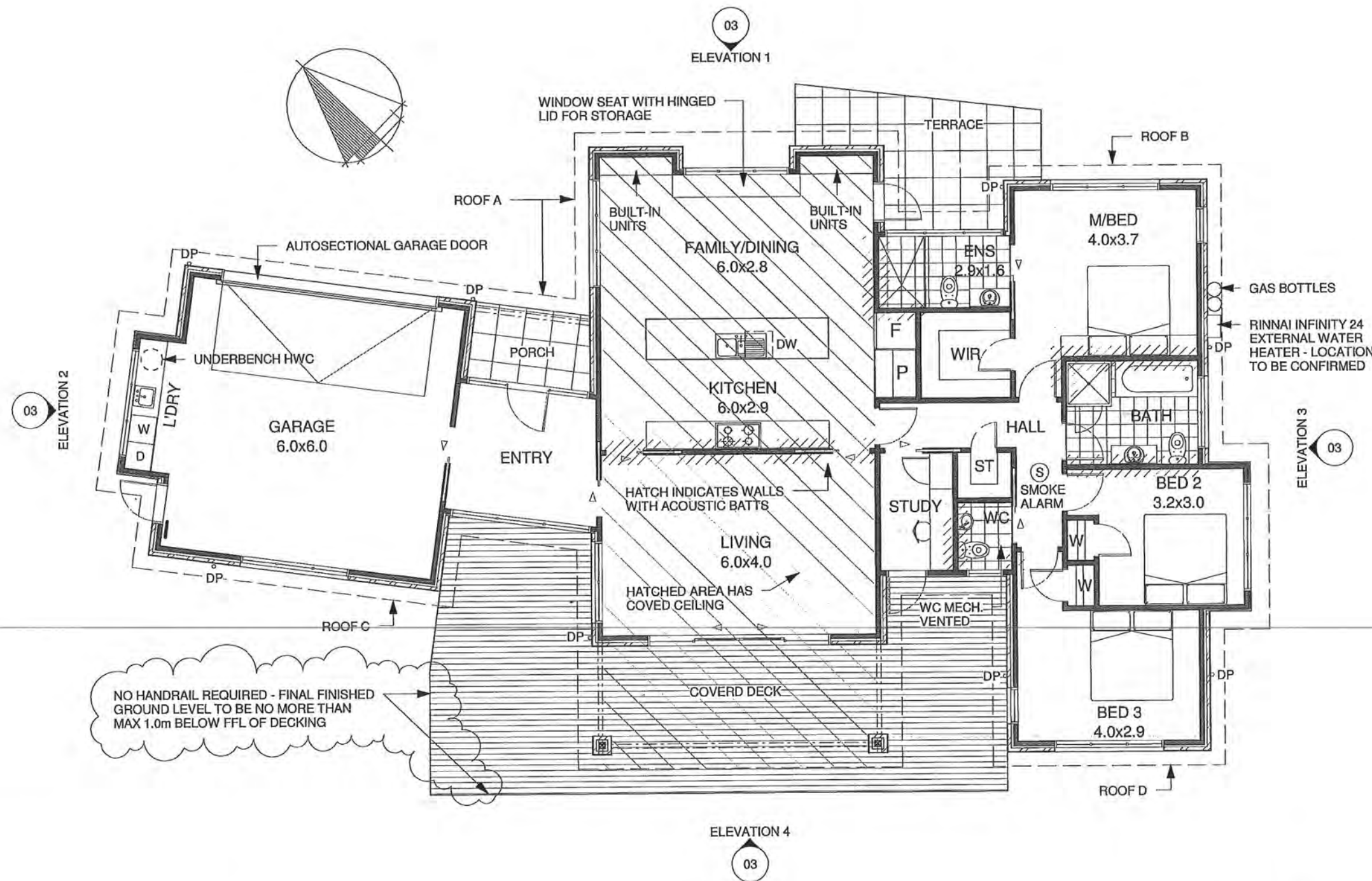
- 13mm GIB ULTRALINE CEILINGS ON 70x35 TIMBER BATTENS (AQUALINE TO BATHROOM)
- 10mm WALL LININGS (AQUALINE TO BATHROOM)
- 75mm GIB CLASSIC COVE SCOTIA DETAIL THROUGHOUT
- BULLNOSED TAPE-ON CORNERS TO ALL EXTERNAL GIB CORNERS
- 60x10mm BULLNOSED FINGERJOINTED PINE SKIRTINGS THROUGHOUT (PAINT FINISH)
- 60x10mm BULLNOSED FINGERJOINTED PINE ARCHITRAVES TO WINDOWS AND DOORS (PAINT FINISH)
- ALL SHELVEING TO CUPBOARDS AND WARDROBES TO BE PRE-FINISHED MELAMINE
- SELECTED VINYL FLOORING TO LAUNDRY, BATH, ENSUITE AND KITCHEN
- FLOORING TO COMPLY WITH NZBC D1 FOR SLIP RESISTANCE

**INSULATION "R" VALUES**

- COMPLY WITH NZBC H1 AS1 & NZS 4218
- REFER TO SPEC FOR INSULATION TYPES
- REFER TO H1 CALCULATION SHEET

EXTERIOR WALLS (EXCEPT GARAGE) = R2.6 MIN  
GARAGE INTERIOR WALLS = R2.6 MIN  
CEILINGS = R3.2 MIN

ALL INTERNAL WALLS AS INDICATED ON SHEET2 TO HAVE R2.3 ACOUSTIC BATTS



NO HANDRAIL REQUIRED - FINAL FINISHED GROUND LEVEL TO BE NO MORE THAN MAX 1.0m BELOW FFL OF DECKING

**FLOOR PLAN**  
1 : 100  
FLOOR AREA = 204.1m<sup>2</sup>

**P&D**  
checked  
10/2/2010

preline plumbing inspection required.

frost prone water pipes are to be lagged with a rubber type insulation.

|                                                                                                                                                                         |            |             |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|---------|
| B                                                                                                                                                                       | 24-02-10   | RFI - KCDC  |         |
| 1                                                                                                                                                                       | 18-01-2010 | Revision 1  |         |
| Rev                                                                                                                                                                     | Date       | Description |         |
| Proposed House<br>Mulholland Const.<br>22 Fairway Oaks Drive, Waikanae<br>Lot 3 DP 348205                                                                               |            |             |         |
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| FLOOR PLAN                                                                                                                                                              |            |             |         |
| BUILDING CONSENT                                                                                                                                                        |            |             |         |
| DO NOT SCALE DRAWING                                                                                                                                                    |            |             |         |
| Job                                                                                                                                                                     | Date       | Rev         | Sheet   |
| 09043                                                                                                                                                                   | 30-10-2009 | B           | (A3) 02 |