



ABN 12 115 961 487  
PO Box 88  
Bacchus Marsh Vic 3340  
Phone: (03) 5366 6900  
Email:



**Site Address:**

**Client Name:**

**Phone #:**

**Email:**

<b>Dwelling type:</b>	House and Garage.
<b>Dwelling configuration:</b>	Double Storey
<b>Nature of works:</b>	New Building.
<b>Stage of inspection:</b>	Pre Pour.
<b>Construction Type:</b>	Brick Veneer.
<b>Garage:</b>	Attached.
<b>Foundations:</b>	Slab.

## **Client Brief**

I was instructed to inspect the client's new home to write a report as to the overall installation of all items required to construct a new home to completion stage. Our role is to assist the clients in outlining any issues that may be identified as being within the scope of the builder to ensure that all construction items are correctly constructed and completed in a workman like manner and meet with all relevant codes and industry practises. As such the client has engaged our services to assist with this report.

## **Inspection and Report**

Our Inspection is a visual inspection of the overall finishes and the quality of those finishes presented by the Builder. This Report is a list of items that in our judgement do not reach an acceptable standard of quality, level of building practice, or have not been built in a proper workmanlike manner, in relation to the Building Code of Australia, (BCA's) the Building Regulations, any relevant Australian Standards and the acceptable standards and tolerances as set down by the Building Commission.

## **Access**

Access was gained to all required areas of the residence.

## **Report Conditions**

The terms and conditions that our site inspection and this report are carried out and supplied under are listed on the last page of this report.

The building process is progressive and items in this report may or may not be covered during the build by materials installed over a documented defect. We recommend that all clients book a reinspection and state that the builder must present all defects rectified prior to moving forward with the build. All items that we are unable to look at from a previous report will not be included in any future reports. We will use all endeavours to ensure rectification, however we are limited to non-destructive method of detection.

## Summary

The results of our inspection have been fully detailed in the attached schedule of Building Defects.

Should the reader of this report have any additional queries or questions in relation to the items set out within it, please do not hesitate to contact the writer via any of the methods detailed at the top of the cover page.

Please note: **A fee of \$350.00 per hour**, or part thereof, plus GST will be charged for any clarification required by the builder, or any of the builders' employees, and a purchase order for same will be required prior to any contact between Darbecca Pty Ltd and the builder.

An inspection was conducted at the above address on 16/04/2021 for the purpose of a general home inspection, requested by the 'client'.

The inspection was conducted without the 'client' present, and details exterior and interior.

The weather was overcast at the time of the inspection.

Entry to site was obtained under the Building Act, 1993, section 240 and the Domestic Building Contracts Act, 1995, part 2, **section 17** and 19. We act and make limited representations under the direction of the dwelling's owners under these two acts.

## **Schedule of Defects:**

**Note;** the concreters must ensure the correct concrete cover to all steel reinforcement during the pour.

### **Defects, observations and other related comments from the Pre Pour Inspection on the 16/04/2021:**

***The following defects are to be addressed prior to the concrete pour.***

**1.**

**NCC 3.2.2.1:** - Gaps between the formwork and the ground may result in concrete overpour. The concreter needs to either add additional boards or vigilantly trim the concrete excesses whilst wet to create vertical sides that will not add to the bearing area of the edge beam and won't interfere with future landscaping and paths. Non vertical sides of slab edge beams do not comply with the NCC.

#### **3.2.2.1 Excavation for footings**

- (a) Excavation for footings, including thickenings for slabs and pads must be clean cut with vertical sides, wherever possible.



2.

**NCC 2019, 3.2.3.2(f):** - Reinforcement is designed to be in a particular place so as to add strength or to control cracking of the concrete.

The sagging mesh noted to the external corners of the dwelling shows that this requirement has not been met.

### 3.2.3.2 Steel reinforcement

(f) Reinforcement must be placed as follows:

- (i) All reinforcement must be firmly fixed in place to prevent it moving during concreting operations.
- (ii) Reinforcement must be supported off the ground or the forms by bar chairs made from wire, concrete or plastic.
- (iii) When using wire chairs the minimum concrete cover (see 3.2.3.2(d)) to the uncoated portion of the chair must be obtained.
- (iv) Wire chairs on soft ground or plastic membrane must be placed on flat bases.
- (v) Bar chairs must be spaced at not more than 800 mm centres for steel fabric.

#### Explanatory information:

Reinforcement is designed to be in a particular place so as to add strength or to control cracking of the concrete. A displacement from its intended location could make a significant difference to the life or serviceability of the structure. Supports for fabric reinforcement are provided to prevent the fabric distorting when workers walk on top of it to place the concrete and maintain the correct concrete cover to the fabric.

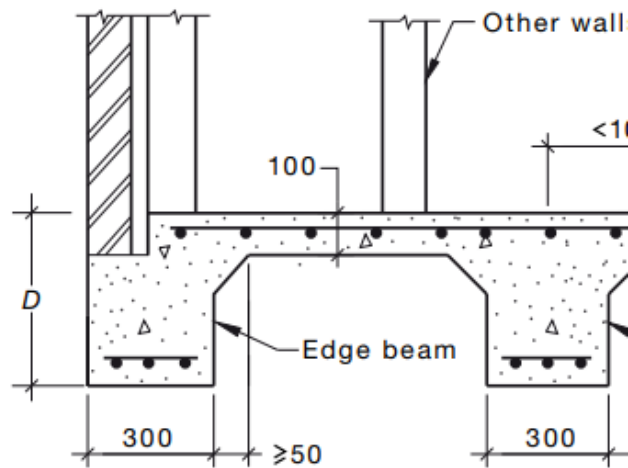
**AS 2870, 5.3.2(b):** - The slab mesh shall be placed towards the top of the raft or slab.

### 5.3.2 Reinforcement

Reinforcement in rafts and slabs shall be placed in accordance with the following:

- (a) Minimum concrete cover for the reinforcement shall be 40 mm to unprotected ground, 40 mm to external exposure, 30 mm to a membrane in contact with the ground, and 20 mm to an internal surface.
- (b) The slab mesh shall be placed towards the top of the raft or slab (see also Clause 5.5).





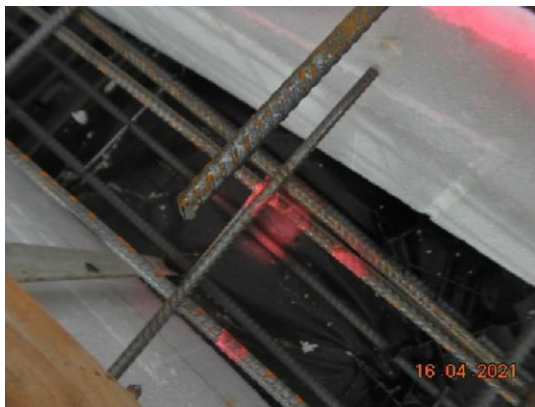
### 3.

**NCC 2019, 3.2.3.2 (d):** - The minimum distance from the outer edge of reinforcement bars and a vapour barrier in contact with the ground is 30mm.

Areas of reinforcement steel to this dwelling do not comply with this minimum requirement.

#### 3.2.3.2 Steel reinforcement

- (d) Footings and slabs-on-ground must have concrete cover between the outermost edge of the reinforcement (including ligatures, tie wire etc.) and the surface of the concrete of not less than the following:
- (i) 40 mm to unprotected ground.
  - (ii) → 30 mm to a membrane in contact with the ground.
  - (iii) 20 mm to an internal surface.
  - (iv) 40 mm to external exposure.



All areas to comply



#### 4.

**NCC 2019, 3.2.3.2 (d):** - The minimum distance from the outer edge of reinforcement bars to an internal surface (such as a plumbing pipe, waffle pod, or the like) is 20mm.

Areas of reinforcement steel to this dwelling do not comply with this minimum requirement.

##### 3.2.3.2 Steel reinforcement

(d) Footings and slabs-on-ground must have concrete cover between the outermost edge of the reinforcement (including ligatures, tie wire etc.) and the surface of the concrete of not less than the following:

- (i) 40 mm to unprotected ground.
- (ii) 30 mm to a membrane in contact with the ground.
- (iii) 20 mm to an internal surface.
- (iv) 40 mm to external exposure.

#### Examples





5.

**NCC 2019, 3.2.3.2 (f)(i):** - A number of pod spacers have not been installed. Pod spacers are designed to help prevent the pods and the mesh from moving before and during the pour, thus helping to maintain correct concrete coverage. All reinforcement must be firmly fixed in place to prevent it moving during the pour.

Areas of reinforcement have not been firmly secured and therefore do not comply with the NCC.

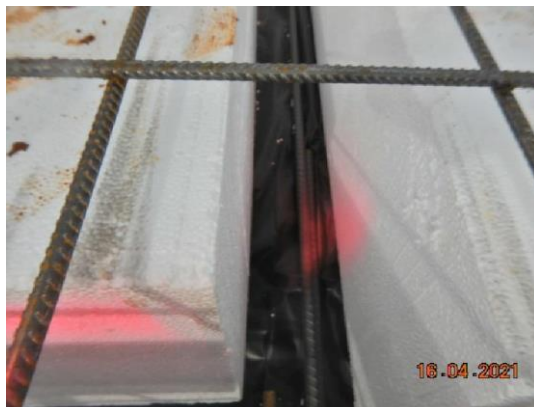
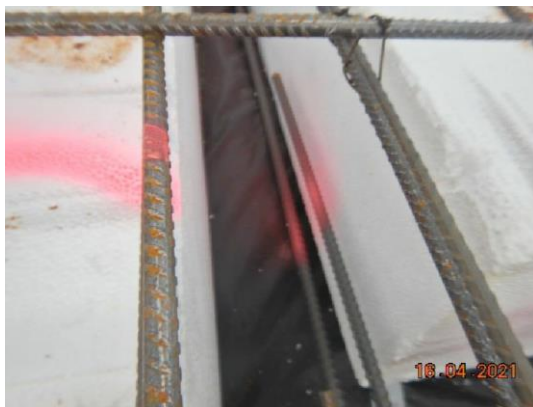
### 3.2.3.2 Steel reinforcement



(f) Reinforcement must be placed as follows:

- (i) All reinforcement must be firmly fixed in place to prevent it moving during concreting operations.
- (ii) Reinforcement must be supported off the ground or the forms by bar chairs made from wire, concrete or plastic.
- (iii) When using wire chairs the minimum concrete cover (see 3.2.3.2(d)) to the uncoated portion of the chair must be obtained.
- (iv) Wire chairs on soft ground or plastic membrane must be placed on flat bases.
- (v) Bar chairs must be spaced at not more than 800 mm centres for steel fabric.

### Step down locations



### 6.

**NCC 2019, 3.2.3.2 (d):** - Pod debris and steel offcuts can potentially compromise the minimum concrete cover to reinforcement. The minimum distance from the outer edge of reinforcement bars to an internal surface is 20mm.

This dwelling's ribs and edge beams contain excessive amounts pod debris and / or steel offcuts.

### 3.2.3.2 Steel reinforcement

- (d) Footings and slabs-on-ground must have concrete cover between the outermost edge of the reinforcement (including ligatures, tie wire etc.) and the surface of the concrete of not less than the following:

- (i) 40 mm to unprotected ground.
- (ii) 30 mm to a membrane in contact with the ground.
- (iii) 20 mm to an internal surface.
- (iv) 40 mm to external exposure.



7.

**AS 2870, 5.3.2(e) & NCC 2019, 3.2.3.2:** - Reinforcement bars shall have a lap length at splices of not less than 500mm up to a bar diameter of 12mm, and not less than 700mm up to a bar diameter of 16mm.

This item was addressed during my inspection.

**AS 2870**

### 5.3.2 Reinforcement

- (e) Reinforcing bars shall have a lap length at splices not less than 500 mm up to a bar diameter of 12 mm, and not less than 700 mm up to a bar diameter of 16 mm. At T- and L-intersections, the bars shall be continued across the full width of the intersection. At L-intersections, one outer bar shall be bent and continued 500 mm, or a bent lap bar 500 mm long shall be provided on each leg.

**NCC 2019**

#### 3.2.3.2 Steel reinforcement

- (c) Minimum laps for reinforcement as shown in [Table 3.2.3.1](#) and [Figure 3.2.3.1](#) must be provided where reinforcing is used.

**Table 3.2.3.1 Minimum lap for reinforcement**

Reinforcement	Minimum splice	Minimum Lap at "T" intersections	Minimum Lap at "L" intersections
Steel reinforcing bars	500 mm	Full width across the junction	One outer bar must be bent and continue 500 mm (min) around corner
Trench mesh	500 mm	Full width across the junction	Full width across the junction
Square and Rectangular Mesh	The two outermost transverse wires of one sheet must overlap the two outermost transverse wires of the other	Not applicable	Not applicable



Garage

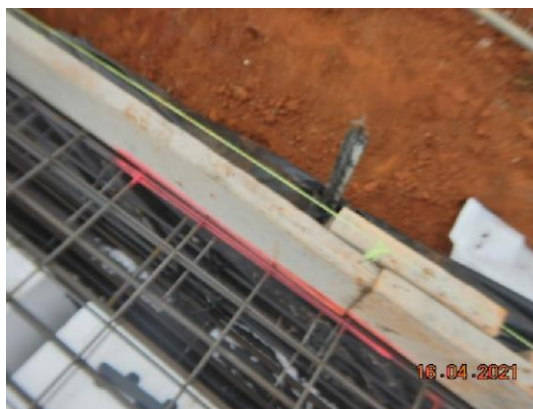
## 8.

**NCC 2019, 3.2.3.2 (d):** - The minimum distance from the outer edge of reinforcement bars to the formwork is 30mm.

Areas of reinforcement steel to this dwelling do not comply with this minimum requirement.

### 3.2.3.2 Steel reinforcement

- (d) Footings and slabs-on-ground must have concrete cover between the outermost edge of the reinforcement (including ligatures, tie wire etc.) and the surface of the concrete of not less than the following:
- (i) 40 mm to unprotected ground.
  - (ii) → 30 mm to a membrane in contact with the ground.
  - (iii) 20 mm to an internal surface.
  - (iv) 40 mm to external exposure.



## 9.

**NCC 2019; 3.2.2.6 (b):** - The vapour barrier must be taped or fitted with a close-fitting sleeve around all service penetrations. Cuts and punctures must be sealed with additional polyethylene film and tape.

This dwelling has not met the requirements of the NCC.



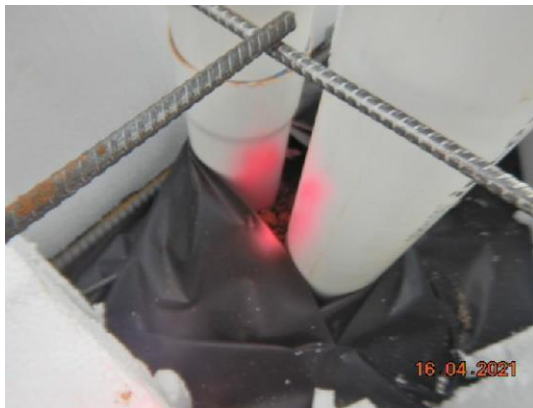
### 3.2.2.6 Vapour barriers

A vapour barrier must be installed under slab-on-ground construction for all Class 1 buildings and for Class 10 buildings where the slab is continuous with the slab of a Class 1 building as follows—

(b) Installation

A vapour barrier must be installed as follows—

- (i) lap not less than 200 mm at all joints; and
- (ii) tape or seal with a close fitting sleeve around all service penetrations; and
- (iii) fully seal where punctured (unless for service penetrations) with additional polyethylene film and tape.



**10.**

**The NCC part 3.2.2.6:** - Mandates that a Vapour Barrier is installed to both the Class 1 and Class 10 parts of the slab edge. The current installation will not allow this as the vapour barrier has been installed short at slab stage.

This dwelling has not met this requirement.

### 3.2.2.6 Vapour barriers

A vapour barrier must be installed under slab-on-ground construction for all Class 1 buildings and for Class 10 buildings where the slab is continuous with the slab of a Class 1 building as follows—

(a) Materials

A vapour barrier must be—

- (i) 0.2 mm nominal thickness polyethylene film; and
- (ii) medium impact resistant, determined in accordance with criteria specified in clause 5.3.3.3 of AS 2870; and
- (iii) be branded continuously "AS 2870 Concrete underlay, 0.2 mm Medium impact resistance".

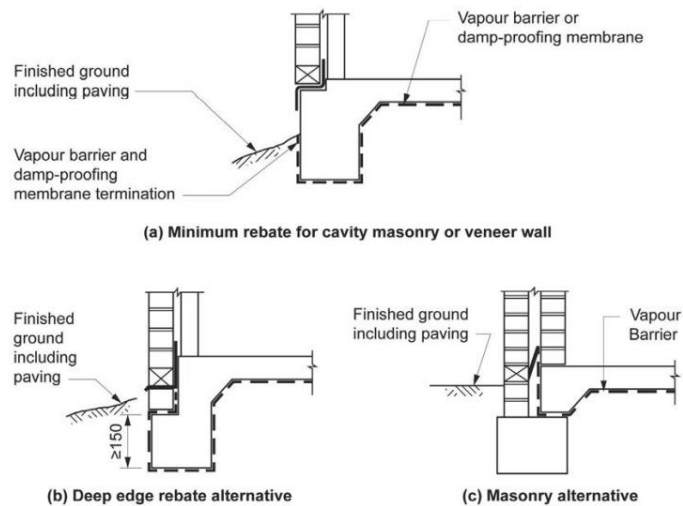
(b) Installation

A vapour barrier must be installed as follows—

- (i) lap not less than 200 mm at all joints; and
- (ii) tape or seal with a close fitting sleeve around all service penetrations; and
- (iii) fully seal where punctured (unless for service penetrations) with additional polyethylene film and tape.

- (c) The vapour barrier must be placed beneath the slab so that the bottom surface of the slab is entirely underlaid and extends under edge beams to finish at ground level in accordance with Figure 3.2.2.3.

Figure 3.2.2.3 Acceptable vapour barrier and damp-proofing membrane location



### 11.

NCC 2019, 3.2.3.2 & AS 2870, 5.3.2 (f): - Where reinforcement has been cut to accommodate service (pipe) penetrations, the effect shall be taken into account by the

provision of extra reinforcement. Laps of extra reinforcement shall be 500mm minimum.

This slab preparation has not met these requirements.

**AS 2870:**

### 5.3.2 Reinforcement

Reinforcement in rafts and slabs shall be placed in accordance with the following:

- (f) Service penetrations are permitted through the middle third of the depth of edge and stiffening beams. The effect of other service penetrations shall be taken into account by the provision of extra concrete depth or reinforcement.

**NCC 2019:**

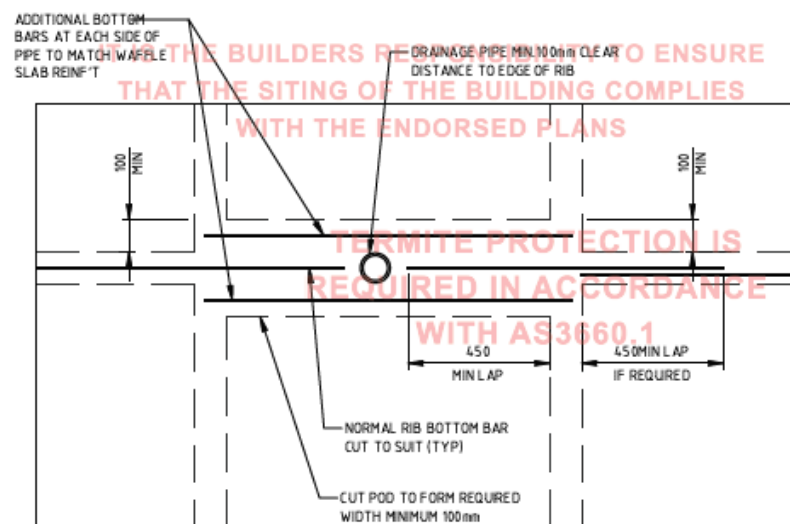
#### 3.2.3.2 Steel reinforcement

- (c) Minimum laps for reinforcement as shown in [Table 3.2.3.1](#) and [Figure 3.2.3.1](#) must be provided where reinforcing is used.

**Table 3.2.3.1 Minimum lap for reinforcement**

Reinforcement	Minimum splice	Minimum Lap at "T" inter-sections	Minimum Lap at "L" inter-sections
Steel reinforcing bars	500 mm	Full width across the junction	One outer bar must be bent and continue 500 mm (min) around corner
Trench mesh	500 mm	Full width across the junction	Full width across the junction
Square and Rectangular Mesh	The two outermost transverse wires of one sheet must overlap the two outermost transverse wires of the other	Not applicable	Not applicable

**As per the dwellings engineering-**



**TYPICAL PIPE THROUGH WAFFLE RIB PLAN VIEW**  
SCALE = 1:20





## 12.

**NCC 2019, 3.2.3.2 (d):** - Trench mesh is protruding under the formwork. The minimum distance from the outer edge of reinforcement bars to the formwork is 30mm.

Areas of reinforcement steel to this dwelling do not comply with this minimum requirement.

### 3.2.3.2 Steel reinforcement

- (d) Footings and slabs-on-ground must have concrete cover between the outermost edge of the reinforcement (including ligatures, tie wire etc.) and the surface of the concrete of not less than the following:
- (i) 40 mm to unprotected ground.
  - (ii) → 30 mm to a membrane in contact with the ground.
  - (iii) 20 mm to an internal surface.
  - (iv) 40 mm to external exposure.

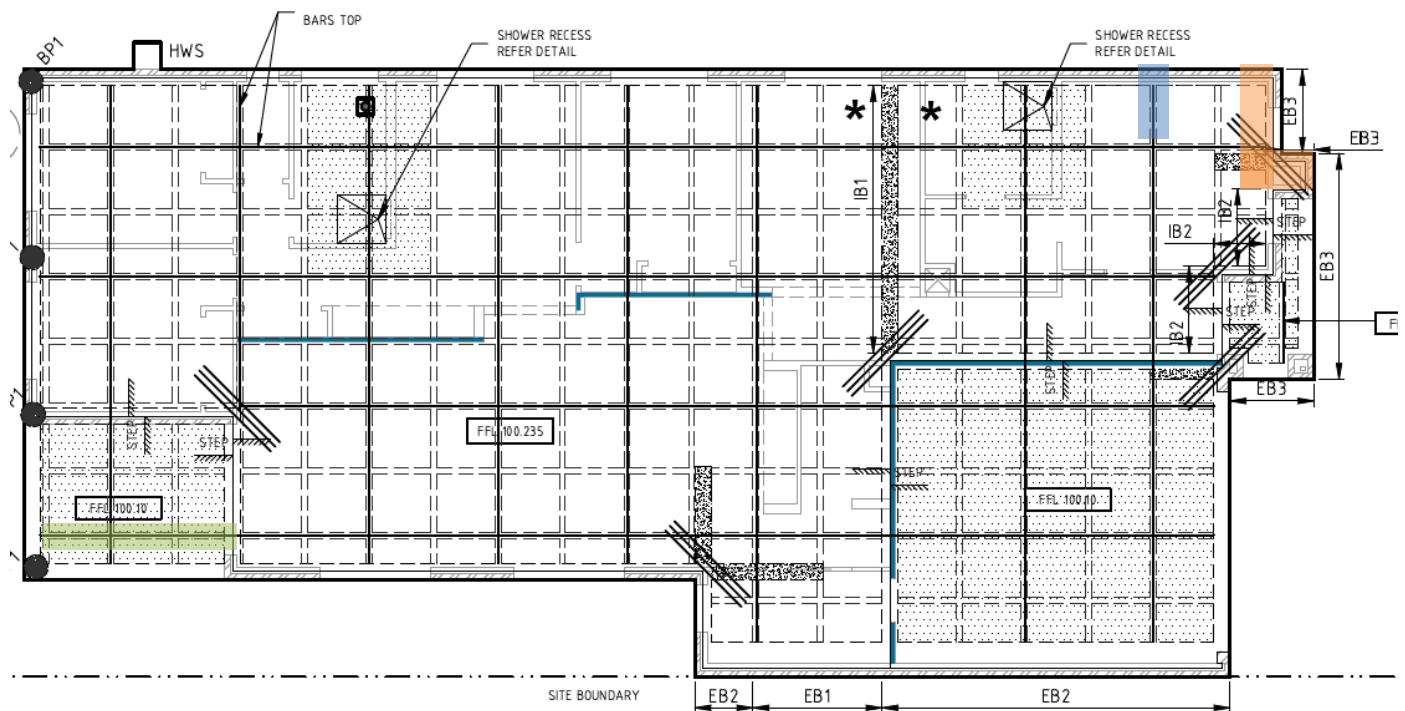




### 13.

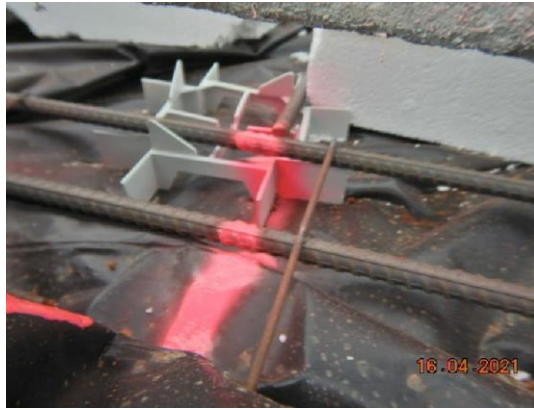
We noted to a number of areas where the installation of steel reinforcement has not been installed in accordance with the approved engineering.

We have provided locations of these areas on the plan below.





**Short 1-N16 bar bottom internal rib**



**Missing N12 bar to internal top of rib**



**3-N16 Bars top & bottom to edge beam EB3**



#### 14.

**NCC 2019, 3.2.3.2 (f)(i):** - All reinforcement must be firmly fixed in place to prevent it moving during the pour

Areas of reinforcement have not been tied and therefore do not comply with the NCC.

#### **3.2.3.2 Steel reinforcement**

(f) Reinforcement must be placed as follows:

- (i) All reinforcement must be firmly fixed in place to prevent it moving during concreting operations.
- (ii) Reinforcement must be supported off the ground or the forms by bar chairs made from wire, concrete or plastic.
- (iii) When using wire chairs the minimum concrete cover (see 3.2.3.2(d)) to the uncoated portion of the chair must be obtained.
- (iv) Wire chairs on soft ground or plastic membrane must be placed on flat bases.
- (v) Bar chairs must be spaced at not more than 800 mm centres for steel fabric.

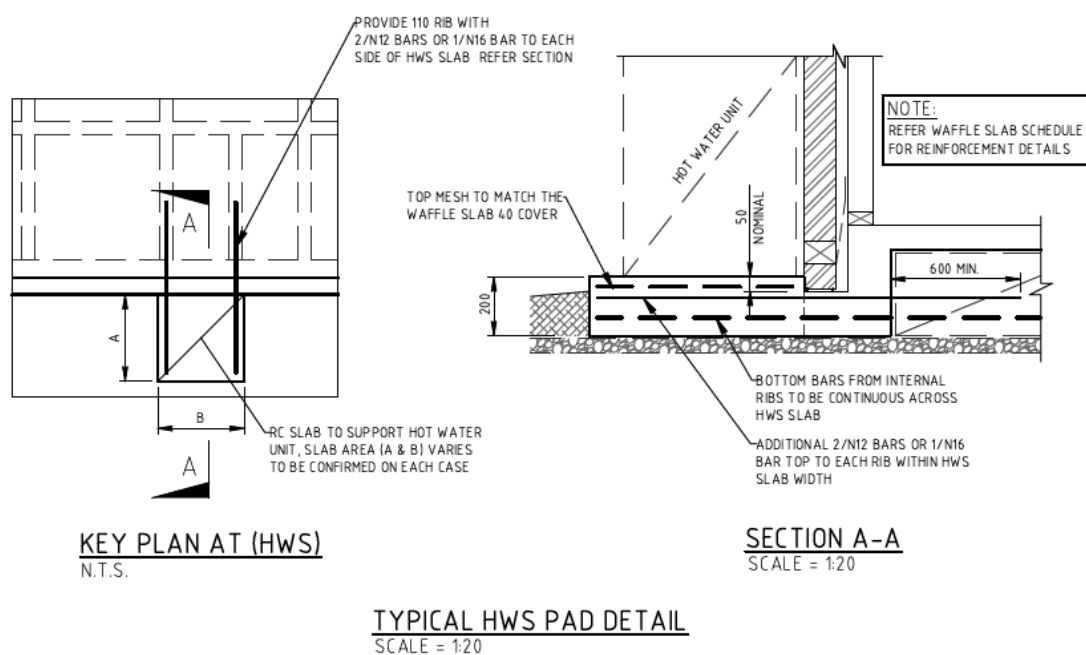




15.

The HWS rebate extension is yet to be completed. Rectification is required in accordance with the approved engineering.

We refer all to the following detail.





16.

**NCC 3.2.3.2:** - Bar chairs must be spaced at 800 mm centres.

Bar chairs exceed the maximums and as such do not satisfy this requirement.

### 3.2.3.2 Steel reinforcement

(f) Reinforcement must be placed as follows:

- (i) All reinforcement must be firmly fixed in place to prevent it moving during concreting operations.
- (ii) Reinforcement must be supported off the ground or the forms by bar chairs made from wire, concrete or plastic.
- (iii) When using wire chairs the minimum concrete cover (see 3.2.3.2(d)) to the uncoated portion of the chair must be obtained.
- (iv) Wire chairs on soft ground or plastic membrane must be placed on flat bases.
- (v) Bar chairs must be spaced at not more than 800 mm centres for steel fabric.

#### Explanatory information:

In order to obtain a good bond between concrete and reinforcement, the reinforcement should be free of contamination by mud, paint, oils, etc. It is not necessary for the reinforcement to be completely free of rust. Some rusting is beneficial in promoting a good bond as it roughens the surface of the steel. Loose rust, however, must be removed from the reinforcement.



17.

**AS 2870; 3.4.1:** - The minimum widths for edge beams and internal ribs shall be in accordance with Figure 3.4 (below).

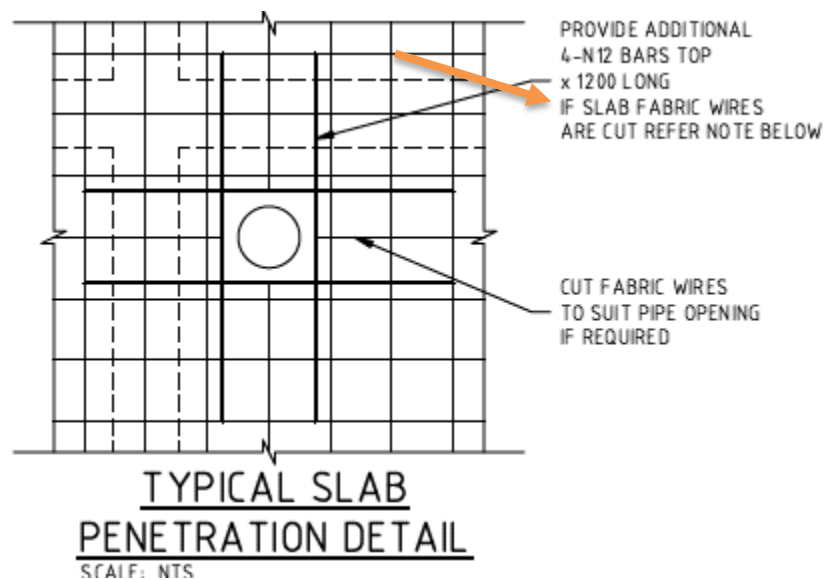






# 18.

There are a small number of pipe penetrations that have not been complimented with the required steel as per the attached engineering extract.





**19.**

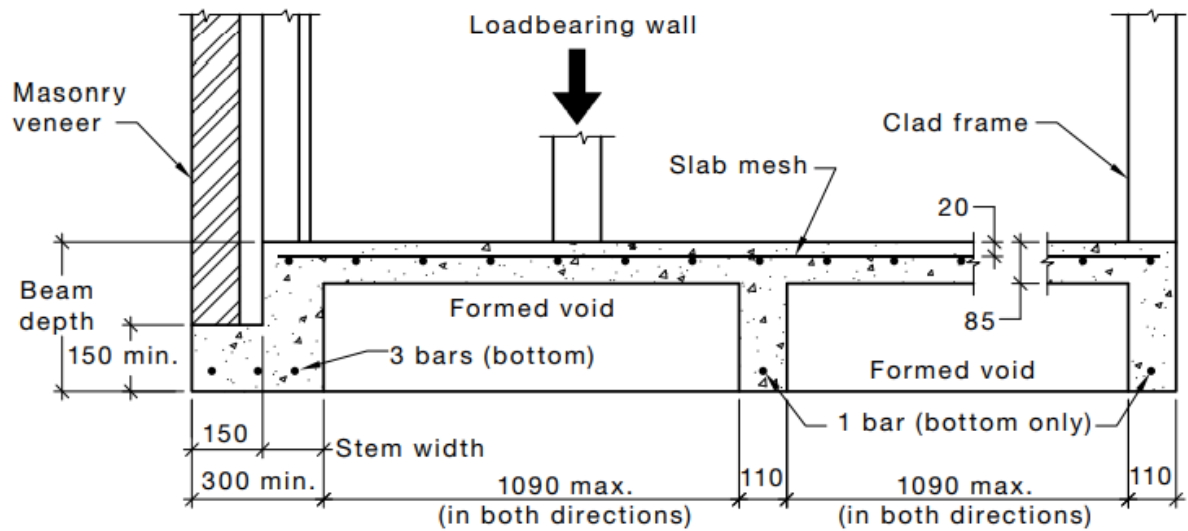
**AS 2870; 3.4.3:** - Pods have been deleted resulting in widening of the designed beam width. The missing pods need to be installed or additional reinforcing bars are required to be installed in accordance with the following.

The current installation does not meet this requirement.

### **3.4.3 Reinforcement**

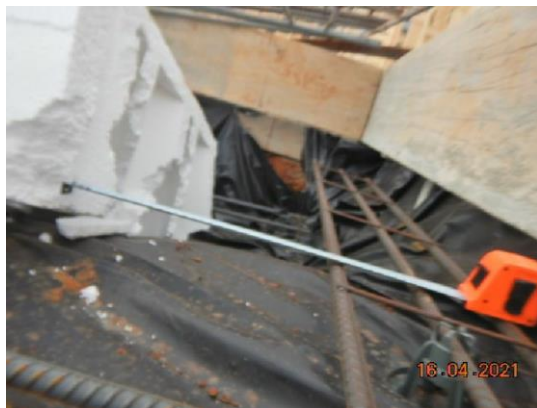
Additional reinforcement shall be provided for all beams where the stem width exceeds 150 mm. The size and specification of top bars shall be the same as bottom bars except as specified in Figure 3.4. The total number of reinforcement bars in beams shall be as follows:

Stem width mm	Top bars (additional to slab mesh)	Beam base width mm	Bottom steel
110 to 150	0	110 to 150	1
151 to 220	1	151 to 220	2
221 to 330	2	221 to 330	3
331 to 440	3	331 to 440	4



DIMENSIONS IN MILLILMETRES

FIGURE 3.4 (in part) WAFFLE RAFT



20.

**AS 2870; 5.6.4, 6.6 & C5.6.4:** - All sewer connections running through beams or footings must be fully lagged in accordance with the soil rating. As per the soil rating 40mm lagging is required.

Plumbing drainage to this dwelling has not met this requirement.



#### 5.6.4 Plumbing requirements

Buildings on highly or extremely reactive sites shall be provided with a system of plumbing detailed in accordance with the following:

- (a) Penetrations of the edge beams of a raft and perimeter strip footings shall be avoided where practicable, but where necessary shall be detailed to allow for movement.

Closed-cell polyethylene lagging shall be used around all stormwater and sanitary plumbing drain pipe penetrations through footings. The lagging shall be a minimum of 20 mm thick on Class H1 sites and 40 mm thick on Class H2 and Class E sites. Vertical penetrations do not require lagging.

NOTE: Sleeves allowing equivalent movements may be used as an alternative to the lagging.

#### 6.6 ADDITIONAL REQUIREMENTS FOR MODERATELY, HIGHLY AND EXTREMELY REACTIVE SITES

For stiffened rafts, waffle rafts, or strip footings on moderately, highly and extremely reactive sites, the following requirements apply to the building services and footing system in addition to the requirements of Clauses 6.4 and 6.5:

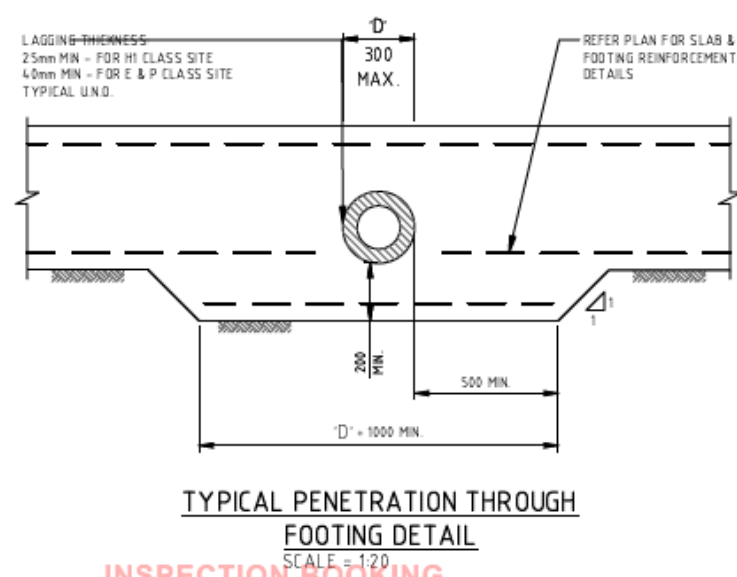
- (b) Penetrations of the edge beam and footing by drain pipes shall be sleeved using closed-cell polyethylene lagging or similar.

#### C5.6.4 Plumbing requirements

Drains that pass through footings are required to be wrapped with closed cell foam so as to allow movement between the pipe and the footing. Particular care and vigilance is required to ensure that the lagging is arranged to ensure that concrete, as it is poured, cannot creep around the ends of the lagged section and thereby form a close fitting collar around the pipe, which defeats the purpose of the lagging.

Plumbing and drainage under the slab should be avoided where possible.

As per the approved engineering- must be lagged 40mm.





## **Rectification Required: YES**

### **TERMS & CONDITIONS OF Darbecca Pty Ltd SITE INSPECTION AND REPORT**

#### **1. Purpose**

The purpose of our inspection is to identify any defects in the finishes and the quality of those finishes presented by the builder at the stage of works nominated on the front of this report. This report contains a schedule of building defects that in the writer's judgement do not reach an acceptable standard of quality, level of building practice, or have not been built in a proper workmanlike manner relative to the Building Code of Australia, the relevant Australian Standards or the acceptable standards and tolerances as set down by the Building Control Commission.

#### **2. Scope**

Our engagement is confined to that of a Building Consultant and not that of a Building Surveyor as defined in the Building Act, of 1993. We therefore have not checked and make no comment on the structural integrity of the building, nor have we checked the title boundaries, location of any easements, boundary setbacks, room dimensions, height limitations and or datum's, glazing, alpine and bush-fire code compliance, or any other requirements that is the responsibility of the Relevant Building Surveyor, unless otherwise specifically noted within this report.

#### **3. Assumed Finishes**

Our inspection was carried out on the quality of the fixtures and finishes as installed, and no investigation of any documentation or statutory requirements was carried out to verify their correctness.

#### **4. Documentation**

Unless otherwise noted any contractual documentation made available to us during our inspection is only viewed on an informal basis and we make no certification that the building has been constructed in accordance with them.

#### **5. Non-Destructive Inspection**

Unless otherwise noted our inspection was carried out on a non-destructive basis and exclude anything that would have require the removal of any fixtures, fittings, cladding, insulation, sisalation, roofing, lining materials, excavated of any soil or the removal of any part of the plastic membrane.

#### **6. Measurements/Levels**

Unless otherwise noted all measurements have been taken with a standard ruler, and levels with either a 900 or 2100mm long spirit level.

## **7. Services, Appliances, Plants and Equipment**

Unless otherwise noted, we did not test or check for appropriateness, capacity, correct installation or certification of any service, appliances, plant and equipment, i.e., heaters, hot water units, air conditioners, ovens, hotplates, dishwashers, range hoods, spa pump, electrical wiring, gas lines, electricity and water supply, sewer, stormwater and agricultural drains.

## **8. Client Use**

This report has been prepared for the exclusive use of the client/s whose name/s appear/s on the front of this report as supplied by Darbecca ABN 12 115 961 487. Any other person who uses or relies on this report without the authors written consent does so at his or her own risk and no responsibility is accepted by Darbecca Pty Ltd or the author of this report for such use and or reliance.

## **9. Report Reproduction**

This report cannot be reproduced in part; it must only be done so in full.

## **10. Reference**

Any reference contained within this report to the Building Code of Australian, an Australian Standard, a manufacturers technical data sheet or installation instruction is neither exhaustive nor a substitute for the original document and are provided as a guidance only. Darbecca Pty Ltd or the author of this report for the use or reliance upon of the part references contained within this report will accept no responsibility.

## **11. Report Exclusions**

- a) Defects in inaccessible parts of the building including, but not limited to, the roof space and or the sub-floor area unless otherwise noted,
- b) Defects not apparent by visual inspection, or only apparent in different weather or environmental conditions as to those prevailing at the time of the inspection,
- c) Defects that we did not consider significant enough to warrant any rectification work at the time of our inspection,
- d) Defects outside the scope of the client brief
- e) Check measure of rooms, walls, and the overall building, for size, parallel and squareness unless otherwise noted,
- f) Landscaping, retaining wall/s, or any structures outside the roofline of the main building unless otherwise noted,
- g) Enquiries of Council or any other Authorities,
- h) Investigation for asbestos and or soil contamination,
- i) Investigation for the presence of any termites or borers and for the correct installation of any termite barriers and or other risk management procedures or devices.
- j) Defects in relation to PVC sewage and storm water pipes are not covered in this inspection. Clients must seek the services of a licenced plumber to check all sewage and storm water pipes.

## **12. VCAT Suitability**

**Unless specifically noted this report has not been prepared in-line with the requirements of Practice Note VCAT 2.**