

# Amenity Condition Manual (ACM-200)

The condition and functionality standard for Housing New Zealand building components

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VERSION 4

Note:

Changes since last edition shown in brown.

All previous Scoping Guides, Specifications and drawings are superseded.

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# 1 GENERAL

## 11 Introduction

The *Housing New Zealand Amenity Condition Manual (ACM-200)* describes and establishes the acceptable standard of amenity in Housing New Zealand's rental properties.

The amenity is the value, purpose or service a component in the property is intended to provide.

A component is assessed on the degree of degradation for the condition and functionality for how it performs. For example, an amenity of a roof is to provide weather protection for a property. The condition and functionality of the roof will affect its ability to provide its intended or designed amenity. A component is assessed against the standard of amenity presented in this document.

### Amenity Condition Manual Standard

The *Amenity Condition Manual (ACM-200)* standard for condition and functionality, that each component is required to meet, is derived from, and consistent with, the principles and criteria contained in,

**Housing New Zealand Housing Standard** four key attributes:

- **Dry** – weathertight and durable, protection from internal moisture and mould
- **Warm** – thermal performance and effective heating
- **Safe** – security, driveway safety, early fire warning systems, protection from incidental injury
- **Essential Amenity** – energy efficient, healthy, sustainable and adaptable for a range of user needs.

### Layout of the Amenity Condition Manual

The *Amenity Condition Manual (ACM-200)* contains an Index, Introduction, Glossary and Component Sheets.

The Component Sheets are grouped in seven sections of the Construction Industry Co-Ordinated Building Information Groups and Classes: **Site, Structure, Enclosure, Interior, Finish, Services and External**.

Additional information relating to components in these sections is contained in,

**Housing New Zealand Maintenance & Programmed Work Specification (M-215)**.

### Component Sheets

A component sheet is provided for each of the main components found in a property. The component sheets provide the information required to assess whether a component is acceptable or unacceptable in terms of its condition and functionality standard.

Each sheet includes a description of the component and in some cases additional specific information to help determine if a component meets the amenity standard. In all cases it is important to read the descriptive notes to gain a fuller understanding of the intent of the standard. Sheets also contain statements and photos defining the acceptable and unacceptable standard for condition and functionality.

Some sheets contain a **Hazard** warning where there is a health and safety risk associated with the component.

The *Amenity Condition Manual (ACM-200)* does not cover every possible situation and exceptions are acceptable in some cases with approval from the Asset Manager. The information provided within the *Amenity Condition Manual (ACM-200)* should be sufficient to enable users of *Amenity Condition Manual (ACM-200)* to apply the overall intent of the Housing New Zealand standard on property condition and functionality.

## CRITICALITY

Criticality relates to the Habitability, Quality of Life and Health and Safety aspects of the property and components being assessed. The four categories of criticality define a situation resulting from a component that is deemed 'unacceptable' and the recommended response time.

This requires an assessor or user of the *Amenity Condition Manual (ACM-200)* to make a judgement on the category of criticality, resulting from an unacceptable component, and respond accordingly. The property Asset Manager and Tenancy Manager should be contacted immediately for any situations judged High Critical or High Risk.

<b>Critical Risk:</b>	Immediate and Sustained Impact on Continuing Occupancy of Property (URG Response – within 4 hours)
<b>High Risk:</b>	Impacts Person's Safe & Healthy Use of Property (URG / GEN Response – within 4 hours to 10 days depending on situation and isolation of hazard)
<b>Moderate Risk:</b>	Impacts on the Daily Function of Property (GEN / Programmed Response – within 10 days or programmed repairs)
<b>Low Risk:</b>	Impacts on the Quiet & Peaceful Enjoyment of Property (Programmed Response)

## Intended Users

Performance Based Maintenance Contractors (PBMC) are to use the *Amenity Condition Manual (ACM-200)* as the standard to which all scoping required in Housing New Zealand properties is to be carried out, unless instructed otherwise by Housing New Zealand.

Quality Auditors are to audit properties that have undergone maintenance work to the *Amenity Condition Manual (ACM-200)* standard unless instructed otherwise by Housing New Zealand.

All Housing New Zealand staff, including the Customer Service Centre staff, the Lease Team, the Acquisitions Team and Tenancy Services Group are to use the *Amenity Condition Manual (ACM-200)* to determine whether components in Housing New Zealand properties, including potential acquisitions meet the required standard for condition and functionality.

Home Lease Programme participants lease properties are required to be maintained to the standard defined in the *Amenity Condition Manual (ACM-200)*.

## 12 Glossary for the Amenity Condition Manual

### **Accessible**

Having features to permit use by all users including people with disabilities.

### **Access Route**

A continuous route that permits movement to and from the apron of the building to the spaces within the building interior.

### **Access Point**

A place where access may be made to a drain or discharge pipe, for inspection, cleaning or maintenance.

### **Building**

Includes all structural and nonstructural components, fixtures, services, drains, permanent mechanical installations, glazing, partitions, ceilings and temporary supports.

### **Building Interior**

The inside of the house / building.

### **Building Envelope**

The construction of the building itself, effectively serving as the separation between the interior and the exterior environments.

### **Property Exterior**

The section including ancillary buildings and exterior amenities.

### **Cavity Wall**

A term used to describe a wall that incorporates a drained cavity.

### **Cladding**

The exterior weather-resistant surface of a building.

### **Cladding System**

The weatherproof enclosure of a building, including; building wraps, claddings and their fixings, windows, doors and all penetrations, flashings, seals, joints and junctions.

### **Contaminant**

Includes any substance (including gases, liquids, solids, microorganisms, energy or heat) that is likely to taint, pollute and affect the performance of a component.

### **Damage**

To render something either wholly or partly inoperable or ineffective, the loss of functionality performance or appearance.

### **Drain**

Pipes, fittings and equipment intended to convey waste water, foul water or surface water to an outfall.

### **Floor Waste**

An outlet located at the low point of a graded floor or at a level floor designed to receive accidental or intentional discharges.



**Fixture**

An article intended to remain permanently attached to and form part of a building.

**Foul Water**

The discharge or effluent from any sanitary fixture or sanitary appliance.

**Framing**

Structural members to which lining, cladding, flooring, or decking is attached, or which are depended upon for supporting the structure, or for resisting forces applied to it.

**Habitable Space**

A space used for activities normally associated with domestic living. Excludes bathrooms, laundry, toilets, pantry, walk-in wardrobe, corridor, hallway, lobby, or space unoccupied for extended periods.

**House**

Any house, unit, flat or dwelling in which people are housed.

**Hygiene**

Personal and domestic preventative measures to reduce the incidence and spreading of disease.

**Hygienic**

In a condition that reduces the incidence and spread of disease.

**Impervious**

A surface or material that does not allow the passage of moisture.

**Performance**

A measurement of some output or behavior.

**Performance Criteria**

What is expected to be delivered or provided, the standard to be measured against for compliance.

**Potable**

Water that is suitable for human consumption.

**Property**

The house and section, including boundaries, entries and all that is enclosed in the defined area.

**R-value**

The common abbreviation for describing the values of both thermal resistance and total thermal resistance.

**Sanitary Appliance**

An appliance which is intended to be used for sanitation like a washing machine or dish washer.

**Sanitary Fixture**

Any fixture which is intended to be used for sanitation like a toilet, bath or shower.

**Sanitary Waste**

The discharge or effluent from any sanitary fixture or sanitary appliance.

**Sewer**

A drain that is under the control of or maintained by a Local Authority or network utility operator.

**Sound Condition**

Being in a condition that is intact, having no defects that impact on appearance or intended function.

**Storage Water Heater**

A water tank with an integral water heater for the heating and storage of hot water.

**Surface Water**

All naturally occurring water, other than sub-surface water, which results from rainfall on the site or water flowing onto the site.

**Weather tightness and Weathertight**

Terms used to describe the resistance of a building to the weather - to limit moisture ingress, prevent undue dampness inside the building and damage to building elements.

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## 2 SITE

### 22 Groundwork

#### 22.1 Retaining Walls

Purpose: To provide ground stability between differing ground levels.

##### Description

A retaining wall is a structure that stabilises banks and provides ground stability between differing ground levels.

Retaining walls can be constructed from masonry, stone, brick, concrete, or timber.

Retaining walls require good drainage from behind, such as being partially back filled with metal/gravel, drainage holes and/or drainage coil in the base of the structure.

##### Acceptable Figure 1

- All retaining walls are structurally sound
- Sufficient drainage is in place.



Figure 1

##### Unacceptable Figure 2 and Figure3

- Retaining wall is unstable, has moved out of place, is substantially cracked, is leaning outwards
- Ground is unstable or slipping and requires a retaining wall
- There is no drainage for the retaining wall.



Figure 2



Figure 3

## 23 Foundations

### 23.1 Piles

**Purpose:** To provide solid, stable and level support for the house construction and for the floor.

#### Description

Pile foundations can be either concrete or timber piles embedded in concrete, or driven round timber poles. The floor structure (joists and bearers) are fastened 'tied' to the piles.

Types of piles include anchor piles and cantilever piles which resist lateral loads, braced piles which are restrained with diagonal braces and ordinary piles that carry gravity loads only.

#### Acceptable

- Floor and foundations are structurally sound
- Piles provide adequate support for the house
- Piles provide for a flat floor.

#### Unacceptable

Figure 1, Figure 2 and Figure 3

- Piles have moved
- Piles have dropped from subsidence
- Piles are in poor condition, split, broken, cracked
- Piles are missing
- Piles are not fixed in place in the ground, or not tied to the bearers
- Floor structure is incomplete
- Soil around the piles has eroded or cracked
- Pile bracing is missing or damaged.



Figure 1



Figure 2



Figure 3

### 3 STRUCTURE

#### 31 Concrete

##### 31.1 Walls and Floors

**Purpose:** To provide a solid, stable and level foundation to support the building structure, and to provide a floor.

#### Description

Perimeter foundation walls and floor slabs are constructed of reinforced concrete with construction joints to control cracking.

Concrete floors are normally constructed with reinforced poured concrete footings, a foundation perimeter wall, then a concrete slab poured and 'floated' smooth to form the interior floor.

Some floors use a 'slab-on-grade' process where the solid poured floor also forms the footings.

#### Acceptable Figure 1 and Figure 2

- Concrete floor and foundations are structurally sound
- Concrete floor is smooth and level
- Concrete floor level or perimeter foundation wall achieves adequate ground clearance to control ground water from entering the building or subfloor
- Concrete perimeter foundation wall provides adequate subfloor natural ventilation.



Figure 1



Figure 2

#### Unacceptable Figure 3

- Concrete floor or perimeter foundation wall has sunk from subsidence
- Concrete floor or perimeter foundation wall has excessive cracking or structural cracks
- Concrete floor or perimeter foundation wall has displaced from the building structure
- Concrete has degraded, is crumbling or spalling
- There is the presence of moisture in the floor or sub floor
- Unfinished or painted floor that is not slip resistant.



Figure 3

## 31.2 Paving

**Purpose:** To provide a sealed hard surface for safe movement to and around the building.

### Description

Hard surfaces are concrete paths, driveways, patios, stairs, ramps, landings and parking areas. Concrete paving is a permanent, low maintenance surface that provides for ease of access to and around the property, while protecting the area from erosion.

Concrete surfaces are generally poured on site and shaped to falls to allow surface water drainage.

### Acceptable Figure 1 and Figure 2

- Concrete steps, ramps and landings are structurally sound
- Concrete surface is laid to fall water away from the building
- Concrete surface is safe
- Steps and ramps have a uniform and safe rise and adequate landings.



Figure 1



Figure 2

### Unacceptable Figure 3

- Surface presents a tripping or slipping hazard (e.g. greater than 15mm)
- There is ponding, or excess water on the surface
- Surface is damaged, broken up or cracked
- There are weeds growing through the surface
- There is moss or lichen growth on the surface.



Figure 3

## 38 Timber

### 38.1 Roof Framing

Purpose: To provide structural support for the roof covering and ceiling lining.

#### Description

The framing that forms the structure to support the roof is referred to as the rafter or truss.

In hipped or gabled roof structures the roof framing forms a space above the ceiling.

In skillion roof structures the ceiling lining is usually fixed to the bottom of the rafters forming a sloping ceiling and there is no space above the ceiling.

#### Acceptable Figure 1

- Roof structural system is complete and structurally sound
- Roofing is fully supported
- Ceiling is fully supported.

#### Unacceptable Figure 2, Figure 3 and Figure 4

- Roof structural system has failed
- There is environmental, wind or earthquake damage
- Rafter or truss is split, rotten or warped
- Rafter or truss is heat damaged
- Fixings are missing or deteriorated
- Bracing is damaged
- Ceilings are sagging
- Substrate is wet.



Figure 1



Figure 2



Figure 3



Figure 4

## 4 ENCLOSURE

### 41 Tanking and pre-cladding

#### 41.1 Underlays and Barriers

Purpose: To provide a durable and protective.

##### Description

Ground Vapour Barriers consisting of polyethylene film installed under the building on to the ground surface provides a protective barrier from ground dampness.

Single Reflective Foil consisting of foil is either draped over joists, hanging between them, or is stapled to the underside of joists, strapped for support and tape-sealed at the edges. Any holes or gaps in the foil render it ineffective, as it relies on a still air layer to provide an effective barrier. Draped foils are usually perforated.

Wall underlays are usually synthetic wraps used as a vapour barrier located on the exterior of the framing.

##### Acceptable Figure 1 and Figure 2

- Single Reflective Foil in good condition with support strapping and taped joints
- Ground Vapour Barrier in good condition with sealed laps and cuttings around foundations and piles.



Figure 1



Figure 2

##### Unacceptable Figure 3 and Figure 4

- No ground vapour barrier to exposed ground subfloor
- Vapour barrier is torn or is not sealed at laps or cuttings.



Figure 3



Figure 4



## 42 Wall Cladding

### 42.1 Timber Weatherboard

Purpose: To provide a durable and protective exterior wall surface.

#### Description

Timber weatherboard is vertical or horizontal profiled timber that is overlapped and fixed to the framing. The weatherboard joints are usually concealed with a metal soaker. The timber weatherboard system is completed with a paint finish.

#### Acceptable Figure 1

- Timber board cladding system is complete and sound.

#### Unacceptable Figure 2, Figure 3 and Figure 4

- Timber board cladding is not weathertight
- Soakers or jointers are missing or broken
- Soakers, jointers or fixings are rusting
- There is rot, end-grain splitting or holes in the weatherboard
- Timber board cladding is not securely fixed to the wall framing
- Coating system has failed.



Figure 1



Figure 2



Figure 3



Figure 4

## 42.2 Plywood Cladding

Purpose: To provide a durable and protective exterior wall surface.

### Description

Plywood cladding are panels of plywood or sheeting fixed to the framing. Panels may be interlocking, joined with jointers or may have trim over the joint for weather tightness.

Plywood is completed with a paint finish.

Sheeting is manufactured with an Aluminium, PVC or Vinyl cover finish.

### Acceptable Figure 1 and Figure 2

- Plywood cladding system is complete and sound
- There is adequate ground clearance to control ground water from entering the cladding system
- Coating system is in good condition.



Figure 1



Figure 2

### Unacceptable Figure 3

- Plywood cladding is not weathertight
- There is the presence of ground moisture 'wicking' into the plywood cladding
- Joints are open for moisture to enter behind the cladding system
- Soakers or jointers are missing, damaged or not securely fixed
- Plywood cladding is warped, delaminated or has edge splitting
- Plywood cladding is not securely fixed to the wall framing
- There are missing, cracked or broken panels
- Coating system has failed or the cover finish is damaged exposing the substrate.



Figure 3

## 42.3 Subfloor Cover Boards

Purpose: To protect the subfloor structure and secure the area from uncontrolled access.

### Description

Timber cover boards are the trim fixed to the building sub floor framing. Cover boards are spaced to allow for air flow under the house. Timber cover boards are completed with a paint finish.

### Acceptable

Figure 1

- Cover boards close-in the subfloor area and are sound
- Cover boards provide adequate subfloor natural ventilation
- Coating system is in good condition.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Subfloor is not fully enclosed
- Cover boards are not securely fixed
- There is rot in the cover boards
- There is the presence of moisture in the sub floor.



Figure 2



Figure 3

## 42.4 Fascia Boards

Purpose: To provide a durable and protective edge to the roof surface.

### Description

Timber fascia board is the trim which runs along the edge of the roof at the eaves. Spouting is usually attached to the timber fascia board.

Barge boards are the exposed board that finishes the end of a projecting roof.

### Acceptable

Figure 1

- Fascia or barge board finish to the roof edge is sound
- Coating system is in good condition.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Fascia is not weathertight
- Fascia or barge board is not securely fixed to the roof structure
- Fascia is split, warped, rotting, or the joints have come apart.



Figure 2



Figure 3

## 42.5 Fibre Cement Cladding

**Purpose:** To provide a durable and protective exterior wall cladding.

### Description

Fibre cement cladding can be either a weather-board or panel sheet form. The substrate is made from cement mixed with ground sand, cellulose fibre, and other additives.

It is important to maintain a good waterproof or paint coating on all fibre cement cladding. It is also critical to ensure there is a gap between the bottom of the cladding and the ground. Fibre-cement can act as a moisture 'reservoir', resulting in dampness in the home and an increase in moisture loadings levels within the wall. This can cause swelling, delamination and eventual failure of the material.

### Hazard

Cement claddings at properties constructed prior to 01 January 2000 may contain asbestos. This product maybe reinforced with asbestos fibres. If the building was constructed prior to 01 January 2000 follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)* before maintenance activities are carried out.

### Acceptable

Figure 1 and Figure 2

- Fibre cement cladding system is complete and sound
- There is adequate ground clearance to control ground water from entering the cladding system
- Coating system is in good condition.



Figure 1



Figure 2

### Unacceptable

Figure 3 and Figure 4

- Fibre cement cladding is not weathertight
- There is the presence of ground moisture 'wicking' into the fibre cement cladding
- Soakers or jointers are missing, damaged or not securely fixed
- Fibre cement cladding is warped or has delaminated edges
- Fibre cement cladding is not securely fixed to the wall framing
- There are missing, cracked or broken panels
- Coating system has failed or the surface is not sealed.



Figure 3



Figure 4

## 42.6 Cement Asbestos Cladding

Purpose: To provide a durable and weather protective exterior wall surface.

### Description

Duroc siding is cement/asbestos based cladding system with direct fix to framing/battens. Duroc siding can be painted or left unpainted.

### Hazard

Refer to and follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)*.

### Acceptable Figure 1

- Asbestos cladding system is complete and sound
- There is adequate ground clearance to control ground water from entering the cladding system.



Figure 1

### Unacceptable Figure 2

- Asbestos cladding is not weathertight
- There is the presence of ground moisture 'wicking' into the asbestos cladding
- Joints and cracks are open for moisture to enter behind the cladding system
- Asbestos cladding is not securely fixed to the wall framing
- There are missing, cracked or broken panels
- Coating system has failed or the surface is not sealed.



Figure 2

## 42.7 Soffit Cladding

**Purpose:** To provide a lining to the underside of the roof eave or barge overhang.

### Description

Soffit is the lining on the underside of a roof eave or barge overhang. Soffit may also be referred to as eaves lining.

Eaves linings may be boxed flat or sloping over the framing or the linings may be laid behind exposed rafters.

The soffit may be clad with sheet material or timber boarding.

Soffits, in some earlier buildings, may have ventilation slots or vents and or be constructed of perforated hardboard (peg board).

### Hazard

Soffit sheet linings at properties constructed prior to 01 January 2000 may contain asbestos. This product may be reinforced with asbestos fibres. If the building was constructed prior to 01 January 2000 follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)* before maintenance activities are carried out.

### Acceptable Figure 1

- Soffit cladding system is complete and sound
- Coating system is in good condition.



Figure 1

### Unacceptable Figure 2

- Soffit is not weathertight
- There is rot or mould on the soffit
- Eaves lining is not securely fixed to the framing
- There are holes in the soffit, panels are missing or broken
- Joint strips or trims are missing, damaged or not securely fixed
- There is the presence of moisture, vermin or birds entering the soffit
- Coating system is flaking, peeling or damaged.



Figure 2

## 42.8 Profiled Metal Cladding

Purpose: To provide a durable and protective exterior wall surface.

### Description

Profiled metal cladding is vertical or horizontal profiled steel sheets which are lapped and fixed to framing. They are most commonly used on garages and sheds.

Profiled steel can be pre-painted or zinc/aluminium coated or galvanized.

### Acceptable Figure 1

- Metal cladding system is complete and sound.



Figure 1

### Unacceptable Figure 2

- Metal cladding is not weathertight
- There are broken, missing or damaged sheets
- Metal cladding is not securely fixed to the wall structure, sheets are lifting, moving or loose
- Soakers or flashings are missing, not securely fixed or in poor condition
- Coating system has failed.



Figure 2



## 42.9 Brick Veneer Cladding

Purpose: To provide a durable and protective exterior wall surface.

### Description

Brick veneer wall consists of a single non-structural external layer of masonry, typically brick, tied back to the building structure, timber or metal framing. The wall has a ventilated cavity.

Bricks are usually left in natural state but can also have a paint finish.

### Acceptable Figure 1

- Brick veneer cladding is complete and sound
- Brick veneer forms part of a ventilated moisture-draining cladding system
- Brick veneer surface or coating system is in good condition.

### Unacceptable Figure 2 and Figure 3

- Brick veneer cladding system is not weather resistant
- There are cracks in the brick veneer
- Cavity ventilation is obstructed or blocked
- Brick veneer is not securely fixed to the wall framing
- There is the presence of efflorescence, or 'mineral salts', on the surface, or coating system has failed.



Figure 1



Figure 2



Figure 3

## 42.10 Concrete Veneer Cladding

**Purpose:** To provide a structural element as well as durable and protective exterior wall.

### Description

Concrete block and precast concrete panel claddings generally provide a structural system for the building as well as the substrate for the waterproof coating. They often form the sub floor of the house.

Pre-cast concrete walls are cast in sections/panels, either on site or in a precast factory, and are lifted into place and bolted together. The sections are sealed, typically with gaskets or caulk.

Concrete block masonry walls are made from hollow concrete blocks, laid like bricks, with steel reinforcing and filled with concrete. Some early block systems may be hollow.

### Acceptable

Figure 1

- Concrete block and panels are complete and structurally sound
- Concrete block perimeter foundation wall provides adequate subfloor natural ventilation
- Coating system is in good condition.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Concrete veneer cladding system is not weathertight
- There are cracks in the concrete block or panels
- There is the presence of moisture in the sub floor
- There is the presence of efflorescence, or 'mineral salts', on the surface, or coming through the coating
- Coating system has failed or the surface is not sealed.



Figure 2



Figure 3

## 42.11 Stucco Cladding

Purpose: To provide a durable and protective exterior wall.

### Description

Stucco is concrete plaster applied in several layers to a rigid or flexible backer. It is reinforced with galvanised meshed wire and then surface coated. The appearance is of a continuous, seamless finish with no junctions to the exterior walls.

### Acceptable

Figure 1

- Stucco cladding system is complete and structurally sound
- There is adequate ground clearance to control ground water from entering the cladding system
- Coating system is in good condition.



Figure 1

### Unacceptable

Figure 2

- Stucco cladding is not weathertight
- There is the presence of ground moisture 'wicking' into the stucco cladding
- There are cracks or damage to the cladding
- Stucco cladding is not securely fixed to the wall structure
- Coating system has failed.



Figure 2

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## 43 Roofing and decking

### 43.1 Profiled Metal Roofing

Purpose: To provide a durable and weathertight roof cover.

#### Description

Iron or steel roofing is cold rolled and formed into various profiles.

The roofing sheets can be galvanised or zincalume coated or pre-coated.

#### Acceptable Figure 1

- Metal roofing system is complete and sound
- Roof profile has adequate fall to control rainwater flow towards gutters and spouting
- Coating system is in good condition.



Figure 1

#### Unacceptable Figure 2 and Figure 3

- Metal roofing system is not weathertight
- Roof profile has been flattened or misshapen and inhibits rainwater shedding
- There is evidence of water ponding
- Metal roofing sheets are not securely fixed to the roof structure
- Roof accessories, such as hip, valley flashings and ridging are missing, not securely fixed, corroded or blocked
- There is accumulation of debris, moss or lichen growth on the surface
- There is damage caused by the installation of equipment such as TV aerials
- Metal roofing sheets are corroded (red or white rust)
- Coating system has failed.



Figure 2



Figure 3

## 43.2 Masonry Tile Roofing

**Purpose:** To provide a durable and weathertight roof cover.

### Description

Clay or concrete interlocking roof tiles laid over roof battens are fixed with tie wires or nails. Ridges and caps are pointed to the tiles for a weathertight system.

### Hazard:

Do not walk on masonry tiles as they may be brittle and break.

### Acceptable

Figure 1

- Masonry tile roofing system is complete and sound
- Roof structure is adequate for the weight of the masonry tile roofing
- Roof profile has adequate fall to control rainwater flow towards gutters and spouting
- Minimal moss and lichen growth
- Masonry tile surface or coating system is in good condition.

### Unacceptable

Figure 2, Figure 3 and Figure 4

- Masonry tile roofing system is not weathertight
- Roof profile has sagging or tile displacement
- Masonry tiles are missing, loose or broken
- Pointing is missing, loose or cracked
- Erosion of tile surface, cracking or chipping that will cause the tile to leak or become porous
- Roof accessories, such as ridging are missing or not securely fixed
- Excessive accumulation of debris, moss or lichen growth
- There is damage caused by the installation of equipment such as TV aerials.



Figure 1



Figure 2



Figure 3



Figure 4

### 43.3 Cement Asbestos Roofing

Purpose: To provide a durable and weather protective roof surface.

#### Description

Fibre cement roofs (Super 6, Super 8 and corrugate profiles) are fibrous asbestos product.

Refer to and follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)*.

#### Acceptable

Figure 1.

- Asbestos roofing surface appears intact and is sound
- Minimal debris, moss and lichen growth.



Figure 1

#### Unacceptable

Figure 2

- Asbestos roof is not weathertight
- Asbestos roofing is extremely weathered, has deteriorated to expose the asbestos fibre or has a 'fluffy' appearance
- Asbestos roofing is brittle, broken or can be crushed by hand
- Roof accessories, such as metal hip or valley flashings ridging are corroded, blocked or not weather tight
- Accumulation of debris, moss or lichen growth.



Figure 2

## 43.4 Pressed Steel Tile Roofing

Purpose: To provide a durable and weathertight roof cover.

### Description

Pressed metal or alloy roof tiles are fixed to battens that are fixed onto rafters or trusses. Pressed metal tiles may be pressed into long-run sheets.

Pressed steel tile roofing system can withstand a lower pitch than masonry tiles and are typically supplied with purpose made flashings for hips, ridges and gables.

Pressed metal and alloy roof tiles may have a stone chip coating bound in acrylic glue.

Early pressed stone chip metal roofs are prone to lose chips but these can be resurfaced or repainted by professionals if in otherwise good condition.

Roofs are prone to being damaged by moss and mould and people walking on them as well as corrosion in coastal environments.

### Acceptable Figure 1 and Figure 2

- Pressed steel tile roofing system is complete and sound
- Roof profile has adequate fall to control rainwater flow towards gutters and spouting
- Pressed steel tile surface or coating system is in good condition.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Pressed steel tile roofing system is not weathertight
- Pressed steel tiles are dented or depressed to a degree where it allows water to 'pool', or in a way that opens up joints or overlays
- Roof accessories, such as metal hip or valley flashings, ridging are corroded or blocked
- Accumulation of debris, moss or lichen growth
- Delamination of surface coating or corrosion of metal tile
- Significant loss of stone chips.



Figure 3



Figure 4

## 43.5 Decks

Purpose: To provide an outdoor living area and a landing at entrance ways.

### Description

A timber deck is an open platform suspended over the ground on piles and attached to the exterior of a house. Timber decking is laid over the timber structure.

### Acceptable

Figure 1

- Timber deck system is complete and structurally sound
- Timber deck forms part of a ventilated moisture-draining system
- Timber decking surface is safe.



Figure 1

### Unacceptable

Figure 2, Figure 3 and Figure 4

- Timber deck structural system does not meet building code
- There is excessive structural movement
- There is water draining into the building where the deck is attached to the building
- Timber deck has rot, mould, splitting or deterioration to decking, bearers, joists or piles
- Joist hangers or bolts or other structural connectors are missing or loose or corroded
- There are hazards such as slippery or warped decking, nonslip coating or protruding nails
- Access to services such as a gully trap or subfloor is restricted
- Coating system to the structure or surface is in a deteriorated condition.



Figure 2



Figure 3



Figure 4



## 43.6 Steps, Ramps and Landings

Purpose: To provide access between differing levels exterior to the building.

### Description

Stairs, landings and ramps constructed of timber.

### Acceptable Figure 1

- Timber steps, ramps and landings are complete and structurally sound
- Timber steps and ramps have a uniform and safe rise and adequate landings
- Timber steps, ramp and landing surface is safe.



Figure 1

### Unacceptable Figure 2, Figure 3 and Figure 4

- Support structure has rot, rust or deterioration
- There is water draining into the building where the steps, ramp or landing is attached to the building.
- There are hazards such as slippery or warped decking, nonslip coating or protruding nails, missing or uneven steps or landing
- Access to services such as a gully trap or subfloor is restricted
- Coating system to the structure or surface is in a deteriorated condition.



Figure 2



Figure 3



Figure 4

## 44 Membrane Roofing

### 44.1 Rubber Sheet Membrane

**Purpose:** To provide a durable and water resistant cover to a roof, deck or gutters.

#### Description

Membrane roofing is usually laid over plywood to achieve a continuous water resistant cover to low slope roofs, decks or gutters.

The membrane consists of one layer of glue fixed synthetic rubber and may have an applied protective coating or decking laid over the membrane, such as for trafficable areas over an interior space.

Membrane roofing is also used to form internal gutters and parapet wall up stands. The base and sides of the gutter are lined with the membrane to form a continuous finish.

#### Hazard

Bitumen at properties constructed prior to 01 January 2000 may contain asbestos. This product maybe reinforced with asbestos fibres. If the building was constructed prior to 01 January 2000 follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)* before maintenance activities are carried out.

#### Acceptable

Figure 1

- Membrane roofing system is complete and sound
- Roof or deck profile, parapet or gutter has adequate fall to control rainwater flow away from entering the building
- Membrane surface or protective coating system is in good condition.



Figure 1

#### Unacceptable

Figure 2

- Roof is not weather tight
- Hardening, cracking or cuts are allowing moisture to penetrate the membrane
- Movement between the membrane and the substrate or the substrate is damaged
- Fall to drain water is ineffective or ponding has occurred
- Joints or flashings are lifting, are not sealed or are missing
- Accumulation of debris, moss or lichen growth
- Coating system to the surface is in a deteriorated condition.



Figure 2

## 45 Windows and doors

### 45.1 Exterior Windows

Purpose: To provide for natural light and ventilation into the indoor environment.

#### Description

Window joinery is most commonly timber or aluminium.

Timber joinery normally uses putty to seal the glazing, while aluminium joinery uses a rubber bead.

Exterior timber facings and scribes, head, jamb and sill flashings all form part of the weather tight system around window joinery by closing the gaps between joinery and claddings.

External joinery requires assessment from both sides for condition of the joinery, beads, putty, flashings, facings, finish and function of the hardware to prevent intrusion and injury reduction.

#### Acceptable Figure 1.

- Exterior window joinery system is complete and sound
- Window system has opening sashes for adequate air flow
- All opening sashes are operational and have the appropriate security and safety stays
- Coating system to joinery, facings, flashings and glazing seal are in good condition.



Figure 1

#### Unacceptable Figure 2, Figure 3 and Figure 4

- Window joinery system is not weather tight
- There is rot, rust or decay
- Flashings or scribes are missing, broken or damaged
- Opening sash does not seal or cannot be opened or closed
- Glazing seals or putty are missing, damaged or not securely holding the glass
- There is access through louvres to locks or handles on an external door or window
- Security or safety stays are missing, damaged or ineffective
- Air flow to remove moisture is ineffective
- Coating system is in a deteriorated condition, flaking, peeling or bubbling.



Figure 2

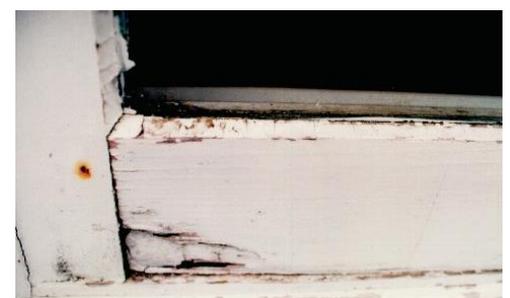


Figure 3



Figure 4

## 45.2 Exterior Doors

Purpose: To allow the building to be secured and to have a weather protected point of entry.

### Description

Exterior doors are most commonly solid timber, timber frame or aluminium and may be sliding, bi-folding or hinged.

Exterior doors provide direct egress from the building in an emergency without the use of a key and prevent intrusion.

### Acceptable Figure 1 and Figure 2

- Exterior door system is complete and sound
- Fully operational and secure with keyless egress
- Coating system is in good condition.



Figure 1



Figure 2

### Unacceptable Figure 3

- Exterior door system is not weathertight
- There is rot, rust or decay
- Exterior door cannot be freely opened or closed
- Exterior door requires a key to exit
- Coating system is in a deteriorated condition.



Figure 3

## 45.3 Skylights

Purpose: To direct natural light and ventilation from the roof into the indoor environment.

### Description

Tube skylights are a roof-mounted dome that directs natural light into a highly reflective tube that extends from the roof level to the ceiling level, terminating in a ceiling-mounted diffuser.

The roof dome system may provide passive or mechanical ventilation.

### Acceptable Figure 1

- Tube skylight system is complete and sound
- Roof mounted dome is in good condition and moderately clean
- Ceiling mounted diffuser is in good condition and moderately clean.

### Unacceptable

- Tube skylight system is not weather-tight
- Roofing or flashing supporting the tube dome is damaged
- Roof mounted dome is missing, broken or very dirty
- Ceiling mounted diffuser is missing, broken or very dirty
- Reflective tube from the roof to ceiling is damaged, has holes or tears, is not adequately supported or securely fixed at either end.



Figure 1

## 45.4 Garage Door

Purpose: To allow the vehicle storage area to be secured.

### Description

Garage doors are generally of lightweight prefinished metal over a structural frame. Garage doors are most commonly a roller door on a drum located above the opening, or door that lift up and run on tracks such as the tilting door with one rigid panel or the sectional door with horizontal hinged sections.

### Acceptable

Figure 1 and Figure 2

- Garage door has no holes and seals along all edges when closed
- Garage door is easy and safe to operate and secure
- Garage door is in good condition with only minor surface damage.

### Unacceptable

Figure 3 and Figure 4

- Garage door has a gap at the top, bottom or sides
- Door panels are damaged
- Faulty runners or tracks
- Faulty automatic door opener
- Locking or latching mechanism is not working.



Figure 1



Figure 2



Figure 3



Figure 4

## 46 Glazing

### 46.1 Glazing

**Purpose:** To allow natural light and thermal energy into the indoor environment and allow visibility to the outdoor environment while providing a weather tight surface.

#### Description

Glass fitted to windows or doors is referred to as 'glazing'. A single piece of glazing is called a pane of glass.

Glazing is available in a number of thicknesses, colours and opacity and can be single glazed or double glazed. Double glazing has two panes of glass separated by a spacer and sealed together in an integrated glass unit. The space between panes is air or gas filled and may contain desiccant crystals to absorb moisture in the space. Double glazing reduces heat loss or heat gain through windows.

Glazing has specific characteristics for sound attenuation (acoustic glass), reduced light transmission (tinted, opaque or frosted glass), increased strength and durability (toughened, safety glass) or standard annealed glass that will splinter and shatter when damaged.

#### Acceptable

Figure 1

- Glazing is complete and sound
- Glazing is safe for the location.
- Glazing has minor cracks <140mm.

#### Unacceptable

Figure 2 and Figure 3

- Glazing has cracks longer than 140mm across the corner of a window/door.
- Glazing is broken or missing or cracked
- Glazing has an edge that can catch or cut occupants or object
- Glazing is not secure (loose or rattling)
- Glazing is not safe (annealed glass where toughened is required)
- Glazing is laminated glass.



*A typical mark showing it is safety glass. The licence number is for third-party certification*

Figure 1



Figure 2



Figure 3

## 47 Insulation

### 47.1 Ceiling Insulation

Purpose: To reduce heat lost through the ceiling.

#### Description

Ceiling insulation is available as loose fill, segments and blanket. The most common forms of ceiling insulation are polyester, wool or fibreglass blanket

Blanket is draped over the ceiling joists which limits the thermal bridging through the timber.

Segmented ceiling insulation is most effective when placed between the ceiling joists.

Loose fill insulations include macerated paper (Insulfluff), loose sheep's wool, Rockwool and chopped fibreglass. Fibreglass loses effectiveness in damp conditions.

#### Hazard

Inhaling glass or rockwool fibres from ceiling insulation.

#### Acceptable

- Insulation is dry and safe
- Insulation is installed throughout the entire available ceiling space
- There is a label with insulation and installation details clearly visible near the ceiling access point.

#### Unacceptable

Figure 1 and Figure 2

- There is no insulation
- Insulation has gaps
- There is the presence of compression within the installed layer of insulation
- Insulation does not have adequate clearance from a down light
- Insulation does not have adequate clearance from a chimney
- There is the presence of moisture in the insulation or ceiling cavity.



Figure 1



Figure 2



## 47.2 Floor Insulation

Purpose: To reduce heat loss through the floor.

### Description

Under floor insulation is available as low density bulk insulation, semi rigid polyester insulation and polystyrene sheets.

Polystyrene Sheets are friction fitted between joists, supported by small brackets, to maintain a gap between the underside of floor and the top of the sheet. Edge joints against framing and butt joints between sheets are glued continuously with no gaps.

Semi-rigid polyester insulation is friction fitted between joists. To be effective it must have no gaps, no compression points, be hard against the underside of the floor.

Bulk Insulation is a light weight low density polyester or fibre-glass, stapled between joists. It comes in a range of colours, usually white, grey or light green. To be effective it must have no gaps, no compression points, be hard against the underside of the floor.

**Acceptable** Figure 1, Figure 2 and Figure 3

- Insulation covers the entire available floor area and is sound
- There are visible labels indicating live wires
- There is a label with insulation and installation details clearly visible near the subfloor access point
- Polystyrene Sheet Insulation is securely fitted to the underfloor and supported with brackets
- Semi-rigid Polyester Insulation is friction fitted between joists
- Bulk insulation is stapled between joists.



Figure 1



Figure 2



Figure 3

**Unacceptable** Figure 4

- There is no under floor insulation to the subfloor
- Floor insulation does not cover the complete floor area where there is adequate space
- Insulation is dislodged, sagging, damaged, has holes or gaps
- There are no visible labels indicating live wire
- Insulation is stapled to the floor.



Figure 4

## 47.3 Wall Insulation

Purpose: To reduce heat loss through the walls.

### Description

The most effective wall insulation are semi-rigid polyester segments. Softer forms of blanket insulation including fibre-glass will slump over time. Even small creases and minor gaps in insulation decrease thermal performance significantly.

#### Acceptable Figure 1

- Insulation is dry
- Insulation is fitted complete to the wall area it covers.



Figure 1

#### Unacceptable Figure 2

- There is the presence of moisture in the insulation or wall
- Insulation has gaps around the perimeter or between segments
- There is no building wrap or gap there is no between the insulation and the external cladding
- Insulation is compressed and tucking.



Figure 2

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## 48 Enclosure sundries

### 48.1 Exterior Handrails and Balustrades

**Purpose:** To prevent an accidental fall from the building or spaces associated with a building.

#### Description

A barrier to prevent an accidental fall should be rigid, of sufficient strength to withstand the pressure of users leaning against it, and of a design that prevents head entrapment and climbing by children.

A balustrade is the infill parts of a barrier and can have a handrail attached to it.

Handrails are fixed to a wall or barrier at a fixed height to provide support for users to safely navigate stairs or ramps. Handrails are typically timber or steel with a profile suitable for grasping by the hand.

#### Acceptable

Figure 1

- Barriers are structurally sound and safe
- Handrails are adequately supported, smooth and graspable.



Figure 1

#### Unacceptable

Figure 2 and Figure 3

- Balustrade or handrail does not meet building code
- Balustrade, handrail, support structure or fixings has rot, rust or deterioration
- There is no handrail
- There is water draining into the building where the barrier is attached to the building.
- There is structural movement
- There are hazards such as protruding nails
- Coating system is in a deteriorated condition.



Figure 2



Figure 3

## 48.2 Fire Escape Ladder and Stairs

Purpose: To assist emergency evacuation of multi-level buildings.

### Description

Fire escape ladder and stairs are attached to the exterior of the building, with access from an upper floor, such as a window or door, and generally constructed of timber or steel.

### Acceptable

Figure 1

- Fire escape stairs are structurally sound and safe.



Figure 1

### Unacceptable

Figure 2

- Fire escape ladders.
- Stairs are not firmly secured
- Stairs, support structure or fixings has rot, rust or deterioration
- There is water draining into the building where the stair is attached to the building
- There is structural movement
- There are hazards such as protruding nails
- Coating system is in a deteriorated condition.



Figure 2

## 48.3 Subfloor Door

**Purpose:** To provide secure access to the subfloor area under the building.

### Description

Subfloor door in the subfloor cladding provides access to the subfloor area to allow maintenance under the building.

Access to the subfloor may be through an access hatch within the building if not from the outside.

### Acceptable

Figure 1 and Figure 2

- Subfloor door is easily opened and large enough for a person to access the subfloor area
- Subfloor door is easily secured in the closed position.



Figure 1



Figure 2

### Unacceptable

Figure 3 and Figure 4

- There is no subfloor access
- Opening is too small or obstructed
- Subfloor door has come off its hinges or is not easy to open
- Subfloor area is being used to store rubbish
- Pad-bolt is damaged, missing or miss-aligned.



Figure 3



Figure 4

## 5 INTERIOR

### 51 Wall and ceiling linings

#### 51.1 Ceiling Access Panel

Purpose: To provide access to the roof space.

##### Description

Ceiling access panel is provided to access the roof space.

##### Acceptable Figure 1

- Location and a size of the ceiling access panel allows unimpeded access for maintenance
- Ceiling access panel is safe to operate and secure
- Ceiling access panel and trim is in good condition.

##### Unacceptable

- There is no access to the ceiling cavity
- Ceiling cavity access has no cover
- Ceiling access panel is difficult to open or does not stay open or does not provide easy access for maintenance
- Ceiling access is unrestricted
- Ceiling access panel or trim is damaged or loose
- Ceiling access panel is uninsulated.



## 51.2 Wet Wall Linings

**Purpose:** To provide a durable, hygienic and easy to clean wall surface in wet areas.

### Description

Wet wall linings have a durable high gloss pre-finished surface that is impervious to water and easy to clean.

Jointing systems at sheet edges and junctions with other components prevent water ingress to walls, the ceiling and floor and effectively drain water off the wall surface without pooling along joints or recesses. Drained joints prevent capillary attraction between the wet wall lining and sanitary fixtures or flooring.

### Hazard

Wet area walls and ceilings may contain lead-based paint. This may present a hazard when paint is removed, or paintwork is in an advanced state of deterioration.

Refer to the *Housing New Zealand Lead-based Paint Management & Control Policy (HS-214)* before any maintenance activities are carried out.

### Acceptable Figure 1.

- Wet wall lining system is complete and sound
- Surface finish and joints are in good condition, is easily cleaned with only minor surface mould.



Figure 1

### Unacceptable Figure 2 and Figure 3

- There is no wet wall lining above the shower rose, shower tray, bath or basin.
- There is no drained joint between the bottom edge of wet wall lining and the shower tray, bath, basin or coved flooring
- Wet wall lining is bowing, has delamination or deterioration
- There is the presence of water pooling along joints
- Joints and cracks are open for moisture to enter behind the wet wall lining system.
- There is moderate to heavy mould.



Figure 2



Figure 3

## 51.3 Trim

Purpose: To provide a decorative and functional junction between surfaces and materials.

### Description

Timber trim is used to cover joints and gaps at wall, ceiling and floor junctions and finished with paint or polyurethane.

Scotia or cornice trim occurs at the junction of the wall and ceiling. Skirting trim occurs at the junction of the wall and the floor. Architrave trim surrounds a door or window opening. Wall batten trim is a bead generally used to cover a joint between two sheets of wall or ceiling lining.

### Acceptable

Figure 1

- Timber trim is complete across its entire length
- Timber trim is fixed firmly to the wall, ceiling or floor surface
- Timber trim is in good condition with only minor surface mould.

### Unacceptable

Figure 2

- Loose, missing or broken pieces
- Significant gaps at corners and joins
- Visible gaps between the trim and the wall, ceiling or floor surface
- There is the presence of water damage
- Mould to more than 20% of trim surface or thick and concentrated in a localised area
- There is borer damage
- Surface finish is flaking or peeling over food preparation, eating or sleeping areas or to more than 20% of the trim length
- Skirting or architrave is medium density fibre board.



Figure



Figure 2



## 52 Doors

### 52.1 Interior Doors

Purpose: To enclose and connect spaces.

#### Description

Interior doors are hollow core, flush panel doors with a paint or polyurethane finish. Doors can be hinged or sliding.

Flush doors have an outer skin on each face of ply or medium density fibre board. The skins are separated by a cardboard honey-comb lattice or a polystyrene foam core.

#### Acceptable Figure 1

- Door opens and closes freely
- Door has clashing strips firmly attached
- Door is operational and has the appropriate hardware
- Door and frame is in good condition with only minor surface scuffs and scratches.



Figure 1

#### Unacceptable Figure 2 and Figure 3

- Door frame is missing a door
- Door or frame is damaged
- Door clashing strips are loose or missing
- Door cannot be freely opened or closed
- Hardware is missing or damaged
- Significant scuffs or scratches to more than 20% of the door area
- Door patches not flush or finish not matching with the surface
- Surface finish is in a deteriorated condition.

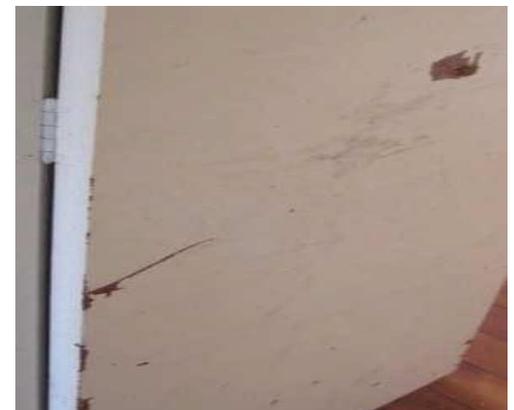


Figure 2



Figure 3

## 54 Floors

### 54.1 Timber Floor

Purpose: To provide a level base to the building.

#### Description

Solid timber floors are made from dressed profiled timber laid together. The timber comes in two styles, square-edged boards and a tongue & groove system. The floor is generally sealed with a clear finish.

#### Acceptable

Figure 1

- Timber floor is complete and sound
- Timber floor is securely fixed to the subfloor structure, nails are countersunk
- There is adequate ground clearance and subfloor ventilation
- Borer damage is superficial and can be treated
- Floor finish is in good condition.



Figure 1

#### Unacceptable

Figure 2 and Figure 3 and Figure 4

- Timber floor has significant spring
- Timber floor, support structure or fixings has rot, rust or deterioration
- Timber floor has holes, water or mould damage
- Nails are 'popping' or protruding through the timber floor
- Floor has significant borer damage
- Coating system is in a deteriorated condition.



Figure 2



Figure 3



Figure 4

## 54.2 Plywood Sheet and Particle Board

Purpose: To provide a level base to the building.

### Description

Plywood sheet flooring is made of multiple layers of wood veneer bonded together.

Particle board flooring is made of wood chips or particles bonded together with an adhesive under high pressure. It may have a protective coating on one side to prevent moisture ingress from the ground.

### Acceptable

Figure 1

- Wood based sheet or board floor is complete and sound
- Wood based floor is securely fixed to the subfloor structure, nails are countersunk
- There is adequate ground clearance and subfloor ventilation
- Floor finish is in good condition.

### Unacceptable

Figure 2 and Figure 3 and Figure 4

- There is separation between sheets or joints are not tight
- Wood based floor has significant spring
- Wood based floor, support structure or fixings has rot, rust, delamination or deterioration
- Wood based floor has holes, water or mould damage
- Nails are 'popping' or protruding through the wood based floor
- Coating system is in a deteriorated condition.



Figure 1



Figure 2



Figure 3



Figure 4

## 55 Joinery and proprietary fixtures

### 55.1 Benchtops

Purpose: To provide a durable, hygienic, water resistant surface for food preparation.

#### Description

Benchtops provide smooth level kitchen work surface that is durable, hygienic and water resistant. Benchtops can be acrylic, stainless steel, or timber with a hard durable surface such as polyurethane or laminate.

Benchtops with and an integrated or inset sink have either an integrated up-stand or protective watertight lining finished against adjacent surfaces.

#### Acceptable Figure 1 and Figure 2

- Benchtop is level, impervious to liquids and hygienic
- Benchtop is securely fixed in place and is fixed to the cabinet carcass
- Benchtop with sink has an up-stand or protective lining to adjacent surfaces
- Junctions between the bench top and adjacent surfaces are sealed.



Figure 1



Figure 2

#### Unacceptable Figure 3 and Figure 4

- Bench top is loose or not in the correct position
- Bench top surface is pitted, worn or scratched, delaminating or not easily cleaned
- Adjacent surface is damaged or not easily cleaned
- Junctions between the bench top and adjacent surfaces are not watertight.



Figure 3



Figure 4

## 55.2 Kitchen Cabinets

**Purpose:** To provide hygienic and secure storage for food, crockery and utensils in the kitchen.

### Description

Cupboards, drawers and pantries are made from timber with a paint finish or Melamine, Custom-board, Plywood or Medium Density Fibre Board with a serviceable veneer or laminate finish.

Doors on hinges are fitted with latches. Drawers on runners and rollers are fitted with stops to prevent them from being easily pulled out of the cabinet. There is a child proof restrictor fitted to a door.

Pantry and cupboard doors, drawer fronts, sides and tops have a durable surface that is free from holes and damage, protects the cabinet structure and provides a cleanable surface that can be kept hygienic.

### Acceptable

Figure 1

- Kitchen cabinetry is complete and securely fixed in place
- Drawers and doors are easy and safe to operate and fitted with the appropriate hardware
- Drawers are removable to allow for cleaning
- Doors are hung securely
- Surface finishes are hygienic.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Kitchen cabinetry has moved, is not fixed in place
- Drawers and doors are difficult to open or do not close fully
- Door or drawer hardware is missing or damaged
- Cabinet fronts, sides or tops has holes, gaps, rot, delamination or deterioration
- There is the presence of water, mould, insects or rodents
- Interior surfaces of cupboards and drawers are not easily cleaned
- Cabinet fronts, sides or tops are not easily cleaned.



Figure 2



Figure 3

## 55.3 Laundry Cabinet

Purpose: To provide secure storage in the laundry.

### Description

Laundry cabinets support the laundry tub and provide storage. The cabinet can be manufactured from prefinished steel with integrated tub and taps, or a timber cabinet with a paint finish. The finish is water resistant and easy to clean and keep hygienic.

The laundry cabinet is securely fixed to the wall and has an integrated up-stand or protective watertight lining finished against adjacent surfaces.

Laundry cabinets have a child proof restrictor fitted to the door.

### Acceptable Figure 1 and Figure 2

- Laundry cabinet is in good condition, securely fixed to the wall
- Laundry cabinet interior is dry and has only minor mould
- Cupboard door is easy and safe to operate and has the appropriate hardware.



Figure 1



Figure 2

### Unacceptable Figure 3

- Laundry cabinet has moved, is not fixed in place
- Door is difficult to open, is not fitted with a functioning child proof restrictor or does not latch in the closed position
- Cabinet has holes, gaps, rot, delamination or deterioration
- Interior surface has moderate or significant mould
- Adjacent surface is damaged or not easily cleaned
- Junctions between the cabinet and adjacent surfaces are not watertight
- Cabinet finish is in poor condition and not easy to clean.



Figure 3

## 55.4 Vanity Cabinet

Purpose: To provide adequate storage in the bathroom.

### Description

Vanity cabinet with integral hand basins is securely fixed to the wall and sealed to a water resistant splash-back behind the basin. Cabinets can be wall or floor mounted. The finish is water resistant and easy to clean and keep hygienic.

### Acceptable

Figure 1

- Vanity cabinet is in good condition, securely fixed to the wall
- Vanity surface is hygienic and has only minor cracking
- Vanity cabinet interior is dry and has only very minor mould
- There is a water resistant splash lining behind the cabinet and the basin is sealed to the lining.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Vanity cabinet has moved, is not fixed in place
- Door or drawer is difficult to open or does not close fully
- Door or drawer hardware is missing or damaged
- Surface has significant cracks, scratches, holes, gaps, rot, delamination or deterioration
- Interior surface has moderate or significant mould
- Adjacent surface is damaged or not easily cleaned
- Junctions between the cabinet and adjacent surfaces are not watertight
- Cabinet finish is in poor condition and is not easy to clean.



Figure 2



Figure 3

## 55.5 Medicine Cabinet

Purpose: To provide secure storage in the bathroom.

### Description

Bathroom medicine cabinet is securely fixed in or on the wall, typically above or near the basin or vanity. The cabinet is typically of timber construction with a paint finish. The door on hinges has an operable latch and is fitted with a child proof restrictor. The door typically has a mirror front. The finish is water resistant and easy to keep clean and hygienic.

### Acceptable

Figure 1

- Bathroom medicine cabinet is in good condition, securely fixed in or on the wall
- Surface finish is hygienic and has only minor surface mould
- Door is easy and safe to operate and has the appropriate hardware
- Mirror is securely fixed and has only minor reflective surface defects.



Figure 1

### Unacceptable Figure 2 and Figure 3

- Bathroom medicine cabinet has moved, is not fixed in place
- There is mould over more than 20% of the surface
- Door is missing, difficult to open or does not close fully
- Door hardware is missing or damaged
- Mirror is not securely fixed, is cracked or broken
- Mirror reflective surface has more than 10% defective area
- Cabinet finish is in poor condition and is not easy to clean.



Figure 2



Figure 3



## 55.6 Cupboards

Purpose: To provide adequate storage for clothes in a bedroom.

### Description

Cupboards can be 'built in' or a free standing unit. Free standing storage cupboards are securely fixed to the wall structure. Interior walls and doors are paint finish unless a prefinished lining material is used. Timber shelving may be unfinished.

Wardrobe can be 'built in' or a free standing unit with doors and a paint finish.

Storage cupboard for the purpose of hanging coats and boots is typically open storage closet referred to as the Hall Recess, generally found in the hall or entrance lobby.

Linen cupboard for the storage of linen has shelving and a door.

Hot water cylinder cupboard to accommodate the hot water cylinder has a door.

### Acceptable Figure 1 and Figure 2

- Cupboard is complete and structurally sound
- Cupboard has clean, dry interior linings, floor and shelves
- Door or hardware is easy and safe to operate.



Figure 1



Figure 2

### Unacceptable Figure 3

- Cupboard has displaced from the building structure or is not fixed in place
- There is the presence of holes, moisture or mould to interior linings, floor or shelves
- Door or hardware is missing or damaged
- Cupboard finish is in poor condition.

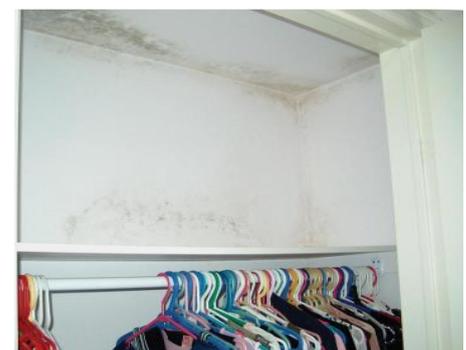


Figure 3

## 55.7 Door Hardware

Purpose: To enable the safe and effective operation of a door.

### Description

Door hardware includes hinges, locks, latches, knobs handles and strike plates housed into the door jamb.

Doors have hardware for the door to function safely. Door closers close the door slowly and firmly with just sufficient pressure to latch the door. Privacy latches have emergency release from the outside. Door stops protect wall linings.

### Acceptable

Figure 1

- Door hardware is complete and functional
- Door has the appropriate hardware is easy and safe to operate
- Exterior doors have a secure door lock, can be unlocked from the inside without a key
- Interior doors have a latch, can be opened from the inside and cannot be locked.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Door hardware is missing or damaged
- Exterior door cannot be locked or requires a key to unlock from the inside
- Interior doors can be locked
- Privacy lock cannot be released from the outside in an emergency
- Door stop is missing or ineffective.



Figure 2



Figure 3

## 55.8 Window Hardware

**Purpose:** To enable the safe and secure operation of window sashes.

### Description

Window hardware includes hinges, stays, passive vents, fasteners and catches. Window hardware is to ensure a closed window forms a good seal.

Window security stays protect occupants from falling or secure the building.

### Acceptable Figure 1 and Figure 2

- Window hardware is complete and appropriate, is easy and safe to operate
- Closed sash is secure and forms a good seal
- Open sash is safe and secure.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Hinges, fasteners, catches, restrictors or security stays are missing or damaged
- Sash cannot be securely closed
- Sash cannot be secured in an open position or does not prevent access where fall height is over 2m
- There is the presence of gaps around the sash when closed
- Window fire escape sash with a security stay has the pin in the locked position.



Figure 3



Figure 4

## 55.9 Subfloor Grill

**Purpose:** To provide adequate ventilation to the subfloor area underneath the building.

### Description

Subfloor ventilation grills provide ventilation to the sub-floor cladding or perimeter wall.

To test there is adequate ventilation to the subfloor area, get some dirt from under the house and rub it firmly in your hands. If the dirt stains like a mud stain there is too much moisture and the subfloor ventilation is inadequate.

### Acceptable Figure 1 and Figure 2

- Subfloor ventilation grills are sound, secure and complete
- Subfloor is dry and secure.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Subfloor ventilation grill is broken, missing or loose
- Subfloor ventilation grill is part or fully obstructed
- There is the presence of too much moisture in the sub floor.



Figure 3



Figure 4

## 55.10 Joinery Hardware

Purpose: To enable the safe and secure operation of joinery and storage.

### Description

Joinery and furniture hardware includes cabinet handles, child proof restrictor, range anti tipping device, coat hooks, wardrobe rails, towel rails, grab rails, toilet roll holder.

**Acceptable** Figure 1, Figure 2 and Figure 3

- Joinery and furniture hardware is complete and appropriate, is easy and safe to operate
- Joinery and furniture hardware is securely fixed in place.



Figure 1



Figure 2



Figure 3

**Unacceptable** Figure 4

- Joinery and furniture hardware is missing or damaged or not securely fixed in place
- Toilet roll holder cannot be easily reached
- Towel rail is positioned so towels touch the floor or fixed with a toggle bolt or plastic plug
- Grab rail cannot be easily reached.



Figure 4

## 55.11 Smoke Alarms

Purpose: To provide smoke detection warning.

### Description

Battery smoke alarms provide an early smoke detection warning by emitting a high pitched sound, once smoke is detected. Smoke cannot be detected in dead air space.

Smoke Alarms have a test button and a hush button to allow nuisance alarms to be silenced without removing the battery. Some alarms may have long life sealed batteries.

### Acceptable Figure 1

- Smoke alarm is securely mounted and is clean
- Smoke alarm is fully operational.

### Unacceptable Figure 2 and Figure 3

- Smoke alarm is missing
- There is a wall or other obstruction within 300 mm of the smoke alarm
- Smoke alarm is not firmly fixed to the ceiling, has broken or missing cover
- There is no working battery
- There is no response to the test button
- There is dirt or paint on the surface or under the cover.



Figure 1



Figure 2



Figure 3

## 55.12 Curtains

**Purpose:** To provide privacy, to control heat loss or to control water discharge.

### Description

Curtains are hung on a curtain track system or a curtain rod system, fixed to the wall or ceiling. Curtain track system supports a track and sliding eyelets. Curtain rod system supports a rod and glides.

### Acceptable

Figure 1

- Curtains are easy to open clear of the window or opening, are safe and adequately supported
- Curtain track or rod system is securely mounted and extends the full length of the window or opening.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- There is no curtain track or rod system
- Curtain track or rod is bowing or twisting or too short
- Curtain track fixings are loose or missing
- Curtain does not seal along the top at the wall.
- Curtain does not fully open, there are too many sliding eyelets or they are damaged or worn or missing
- Curtain is missing, excessively dirty
- There is a flammable surface within 1 metre of the curtain
- Shower curtain does not discharge water into the bath or shower tray.



Figure 2



Figure 3

## 6 FINISH

### 62 Tiling

#### 62.1 Wall Tiles

Purpose: To provide a durable, hygienic and easy to clean wall surface.

#### Description

Wall tiles are a hard decorative lining, normally made of ceramic that are adhered to the wall surface and jointed by grouting. Tiles surface finish provides protection to the wall from heat and water ingress.

Sealed grout provides a joint that is impervious to water and resistant to dirt, grease and mould.

#### Acceptable Figure 1 and Figure 2

- Tiles are complete and sound
- Tiles are sealed around fittings
- Joints are easily cleaned with only minor surface mould
- Tiles have only minor mismatching.



Figure 1



Figure 2

#### Unacceptable Figure 3 and Figure 4

- There is the presence of water pooling on joints, sills or in recesses
- There is water or heat damage to adjacent surfaces
- Missing, cracked or damaged tiles
- Grout has absorbed dirt, is missing or has moderate to heavy mould
- Tiles are porous or have surface deterioration
- Significantly mismatched tiles.



Figure 3



Figure 4



## 62.2 Floor Tiles

**Purpose:** To provide a durable, hygienic and easy to clean floor surface.

### Description

Floor tiles are a hard decorative flooring, normally made of ceramic, slate, terra-cotta or marble that are adhered to the floor surface and jointed by grouting.

Sealed grout provides a joint that is impervious to water and resistant to dirt, grease and mould.

Threshold strip provides a smooth joint between different floor finishes.

### Acceptable

Figure 1

- Tiles are complete, sound and safe
- Tiles are sealed around fittings and along edges
- Tiles and joints are easily cleaned.

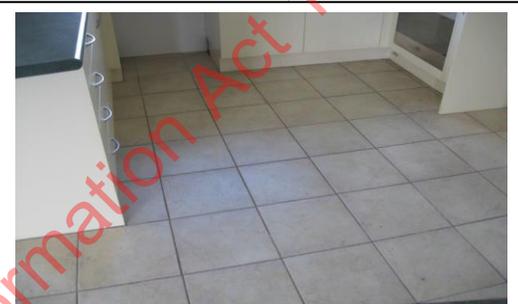


Figure 1

### Unacceptable

Figure 2 and Figure 3

- There is the presence of water pooling on joints or edges
- Missing, cracked or damaged tiles
- Grout has absorbed dirt, is missing or has mould
- Tiles are porous or have surface deterioration
- There are sharp edges
- Threshold strips are missing or a hazard
- Tile surface is not slip-resistant.



Figure 2



Figure 3

## 64 Resilient surfacing

### 64.1 Vinyl

**Purpose:** To provide a durable, water resistant, hygienic and easy to clean floor surface.

#### Description

Vinyl flooring is available in sheet and tile form, and is fixed to the floor or ply underlay, with adhesive. The seams on vinyl flooring are heat welded. Seams on tiles and linoleum are butted (not welded).

Vinyl has a water resistant surface.

Threshold strip provides a smooth joint between different floor finishes.

#### Hazard

The backing on some Vinyl or Linoleum flooring, and the adhesives used for installing some vinyl floor tile at properties constructed prior to 01 January 2000 may contain asbestos. If the building was constructed prior to 01 January 2000 follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)* before maintenance activities are carried out.

#### Acceptable Figure 1

- Vinyl is in good condition, securely fixed and safe
- Vinyl is sealed to edges or trims
- Joins are water tight
- Water resistant surface is easy to clean.

#### Unacceptable Figure 2 and Figure 3

- Vinyl is damaged, cracked or torn
- Vinyl is not fixed in place
- Vinyl is not continuous under the edges of fixtures
- Joins are not water tight
- Threshold strips are missing or a hazard
- Vinyl surface is worn thin or heavily marked over more than 20% of the floor area or through the main traffic area.



Figure 1



Figure 2



Figure 3

## 65 Carpeting

### 65.1 Carpet

Purpose: To provide a durable and comfortable floor covering.

#### Description

Carpet is a nylon, wool or blended floor covering that provides a durable and comfortable finish to interior floor surfaces. Carpet can be glue fixed or stretched over an underlay onto perimeter carpet grippers.

#### Acceptable

Figure 1

- Carpet is securely fitted and safe
- Carpet has only minor wear, staining or discoloration.



Figure 1

#### Unacceptable

Figure 2, Figure 3 and Figure 4

- Carpet is loose or a trip hazard
- Carpet is badly stained or discoloured
- Carpet is threadbare over more than 20% of the floor area or through the main traffic area
- Carpet has an unpleasant odour, is water damaged or has mould.



Figure 2



Figure 3



Figure 4

## 67 Painting, decoration and coating

### 67.1 Exterior Paint

Purpose: To provide a durable and protective exterior surface.

#### Description

The exterior surface of the building usually has a paint finish, unless it is a veneer or a prefinished coating, such as Aluminium, PVC or Vinyl.

#### Hazard

Exterior surface may contain lead-based paint. This may present a hazard when paint is removed, or paintwork is in an advanced state of deterioration.

The *Housing New Zealand Lead-based Paint Management & Control Policy (HS-214)* provides detailed procedures and should be read and complied with before any maintenance activities are carried out.

#### Acceptable Figure 1

- Paint finish protects the substrate from rain, wind and sun
- Paint finish has a reasonable appearance.



Figure 1

#### Unacceptable Figure 2 and Figure 3

- Paint is flaking, peeling, bubbling or deteriorated
- Surface does not have an adequate coverage of paint, or has not received a top coat of paint
- There is the presence of water damage to the substrate
- There is organic growth or mould on the surface
- Glazing compound is unpainted.



Figure 2



Figure 3

## 67.2 Interior Paint

Purpose: To seal and decorate the interior surface.

### Description

Paint is an aesthetic and protective covering applied to the surface of the ceiling, walls, windows, doors, trims and cabinetry. All surfaces are painted unless previously polyurethane or a prefinished product.

Surface mould is acceptable if it can be cleaned without damaging the surface. Surface mould is a light to moderate covering of mould that has not penetrated or damaged the finished surface and is cleanable with common household products.

### Hazard

Interior surfaces in properties constructed prior to 1980 may contain lead-based paint. This may present a hazard when paint is removed, or paintwork is in poor condition. If the building was constructed prior to 1980 follow the *Housing New Zealand Lead-based Paint Management & Control Policy (HS-214)*.

Textured ceilings at properties constructed prior to 01 January 2000 may contain asbestos. If the building was constructed prior to 01 January 2000 follow the *Housing New Zealand Asbestos Management & Control Policy (HS-213)* before maintenance activities are carried out.

### Acceptable

Figure 1

- Paint finish covers all the surface
- Paint finish has a reasonable appearance
- Painted surface has only minor pin or nail holes, markings, stains or flaking.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- There are significant cracks in the surface finish
- There is the presence of sagging or bowing substrate
- There are more than 20 pin holes within a square metre of the surface area
- There are more than 5 nail holes within a square metre of the surface area
- There is flaking paint above food preparation, dining or sleeping areas
- Mould, stains, or flaking paint over more than 20% of the surface area
- There is heavy, thick or concentrated mould in a localised area
- Significantly mismatched patches of paint.



Figure 2



Figure 3

## 67.3 Polyurethane

Purpose: To clear seal the interior surface.

### Description

Polyurethane is a hard durable water resistant protective covering applied to the surface of doors, cabinetry, benchtops and trims.

Polyurethane is used to finish repairs on existing polyurethane finish surfaces only.

### Acceptable Figure 1

- Polyurethane finish covers all the surface
- Polyurethane finish is water resistant and has a reasonable appearance
- Polyurethane surface has only minor markings, scratches or wear.



Figure 1



Figure 2

### Unacceptable Figure 2 and Figure 3 and Figure 4

- There is the presence of moisture damage to the substrate
- Flooring is damaged, has significant defects or there is significantly mismatched patches of flooring
- Polyurethane surface is worn thin or heavily scratched or marked over more than 20% of the floor area.



Figure 3



Figure 4

## 67.4 Wallpaper

Purpose: To seal and decorate wall linings.

### Description

Wallpaper is an aesthetic and protective covering applied to the surface of an interior wall.

Wallpaper is used to finish repairs on existing wallpapered walls only. Changing to a paint finish from a wallpaper finish can be done one wall at a time depending on the condition of each wall in the room.

Localised areas of damage may be patch-repaired by regluing or re-paper using a full drop of wallpaper to match the existing wall paper colour.

### Acceptable

Figure 1

- Wall paper finish covers all the surface
- Wall paper finish has a reasonable appearance.

### Unacceptable

Figure 2 and Figure 3

- There are significant cracks in the surface finish
- There is the presence of sagging or bowing substrate
- There are more than 20 pin holes within a square metre of the surface area
- There are more than 5 nail holes within a square metre of the surface area
- Mould, stains, markings, torn or lifting wall paper over more than 20% of a single drop
- Mould, stains, markings, torn or lifting wall paper over more than 20% of the majority of drops on a wall
- There is heavy, thick or concentrated mould in a localised area
- Significantly mismatched patches of wall paper.



Figure 1



Figure 2



Figure 3

## 7 SERVICES

### 71 Liquid supply

#### 71.1 Local Water Supply

**Purpose:** To provide a potable water supply for sanitary and hygiene requirements, consumption, food preparation, utensil washing and laundering.

#### Description

The majority of water supply is reticulated water provided by a Local Authority water-main. The property is connected to the water-main via a mains connection at the Toby on the property.

The Toby is a mains isolating tap, normally located on the property boundary in a Toby box in the ground. In apartments and flats the toby may be found where the water pipe first enters the unit, or in a common riser cupboard.

Local Authority water supply for potable water meets the '*Drinking-water Standards for New Zealand 2005 (Revised 2008) (DWSNZ)*'.

Leaks can occur in the buried water supply line between the meter and the building. These leaks are often difficult to detect because the supply pipe is usually buried at least 600mm below the ground surface. If the Toby box contains water, and the water is not due to rain or irrigation run-off, this may indicate a leak.

#### Acceptable

Figure 1

- There is an adequate reticulated supply of potable water
- Toby is fully operational and sound.



Figure 1

#### Unacceptable

Figure 2

- There is the presence of water in or around the toby box
- There is insufficient potable water
- Non potable water supply is not clearly labelled
- Toby cannot be easily reached or is damaged.



Figure 2



## 71.2 Artesian Rain Water Supply

**Purpose:** To provide a potable water supply for sanitary and hygiene requirements, consumption, food preparation, utensil washing and laundering.

### Description

Potable water is free of contaminants that may cause illness, is visually clear and not offensive in appearance odour or taste. Artesian/Groundwater and rain water collection are alternatives to a reticulated Local Authority supply.

Artesian water or ground bore water is drawn from underground by a pump, it can be stored in a tank or pumped to a pressurised vessel and supplied on demand.

Rain water is collected from the roof and stored in a holding tank, then piped to the house and pressurised for supply. Storage tanks have a cover lid to protect water from heat and sunlight. Sediment may accumulate below the outlet of the tank.

Water supplies intended to be used for human consumption, food preparation, utensil washing, oral hygiene or personal hygiene is to meet the '*Drinking-water Standards for New Zealand 2005 (Revised 2008) (DWSNZ)*'.

### Acceptable Figure 1

- There is an adequate potable water supply
- Supply and storage systems are complete, fully operational, safe, secure and sound.



Figure 1

### Unacceptable Figure 2 and Figure 3

- There is insufficient potable water supply or water storage capacity
- Supply or storage systems are damaged, degraded or not water tight
- Pipe work has contaminants or sediment is accumulating
- Rain water collection for potable water supply is in contact with contaminants such as preservative-treated wood or lead paint
- Tank has sediment accumulating above the storage tank outlet
- Tank cover is not removable to allow inspection or cannot be secured
- Tank stand is not structurally sound
- There is the presence of vermin in the tank.



Figure 2



Figure 3

## 71.3 Header Tank

**Purpose:** To hygienically and efficiently pressurise open vented hot water systems.

### Description

Header tank provides gravity fed water pressure to a hot water open vented system often known as low pressure system.

The header tank is fed from mains water supply and the water level is regulated by a ballcock or float valve. Water is fed from the header tank to the bottom of the hot water cylinder.

The water pressure available in the unit is determined by the height of the water level in the tank above the water outlets.

Header tanks are normally located in the ceiling roof cavity and can also be externally located on top of the roof.

Internal header tanks have a drip or overflow tray to collect and divert overflow water to a drain on the exterior of the building.

### Acceptable

Figure 1

- There is an adequate supply of hot water pressure to ensure the adequate flow of water
- Header tank is safe, secure and sound.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Tank, ballcock or pipe work is leaking or damaged
- Tank is overflowing
- There is no overflow tray or overflow does not flow to exterior drain
- No cover or lid on the tank
- Header tank seismic restraint does not meet building code.



Figure 2



Figure 3

## 71.4 Water Pipe System

Purpose: To deliver and distribute water.

### Description

Hot and cold water pipes distribute pressurised water from the water supply to sinks, toilets, laundries, bathtubs, and related fixtures.

Supply pipes can be made of copper or polybutylene. Galvanised water pipes deteriorate as they age and can contaminate the water with rust.

Water pipe system has hot water delivery temperature between 45 to 50 degrees Celsius. Hot water temperature at the closest tap is 50°C. Water delivery temperature is set to 45 degrees Celsius at the shower. A temperature limiting valve is designed to mix cold water into the discharging hot water so that the water delivered from the hot water cylinder to the taps never exceeds a set temperature.

Water flow rate is maximum 10 litres per minute and minimum 6 litres per minute at the shower.

### Acceptable Figure 1

- Water pipe system is safe and sound
- There is adequate flow of water in the water pipes
- Water pipes and connections are appropriately sized, fitted and protected
- Water volume can be measured and shut off for maintenance.

### Unacceptable Figure 2 and Figure 3

- Water supply, back flow or cross connection are not potable or are contaminated
- Water storage or hot water supply is inadequate
- Water supply does not have mechanisms to prevent scalding, electric shock or explosion
- Water pipes and connections are too small, loose, corroded or leaking, are vulnerable to freezing or cause noise transmission within the building
- Hot water pipe is not insulated for the first 1m from the HWC
- There is no tempering valve fitted or it is not adjusted to deliver the correct outlet temperature
- Isolating valve is not provided to each separate unit or a shut off valve is not provided at the boundary
- Water meter is not supplied, does not function or is not easy for the meter reader to access.



Figure 1



Figure 2



Figure 3

## 71.5 Solar Hot Water

**Purpose:** To provide an energy efficient supplementary water heating system.

### Description

Solar hot water systems can be used to supplement the normal hot water system, or installed to replace less efficient water heating systems.

Water or glycol is circulated through a collector, normally located on a north facing roof surface to maximise solar input. This harnesses energy from the sun to heat the fluid, which in turn is transferred to a heat exchanger in the Hot Water Cylinder.

Passive solar system (also called a thermosiphon system) has no control or pumps and relies on thermosiphoning for its heat transfer.

Active solar system (also known as forced circulation) uses an electronic controller and an electric pump to circulate the fluid or the storage water. Tanks can be located in attics, basements or even outside the building at ground level.

Repairs and maintenance of a solar hot water system should always be carried out by a qualified solar hot water specialist.

### Acceptable Figure 1.

- There is an adequate supply of hot water
- Structural support for the solar hot water system and components is sound
- Solar water heater and all components are complete, secure, safe, sound and protected.

### Unacceptable Figure 2 and Figure 3 and Figure 4 and Figure 5

- There is not an adequate supply of hot water
- There is the presence of structural failure in the building not able to support the load of the solar hot water system and components
- Solar water heater, pipework, collector panels, cylinder, controller or safety devices are damaged, loose, corroded or leaking
- Bleaching of the absorber surface
- Hot water pipe work is not fully lagged
- Roof penetrations are not sealed or incompatible materials have been used causing degeneration of roofing or adjacent materials
- Panels not oriented or angled appropriately
- Water from an installed system discharges to the roof
- System does not provide protection from Legionella bacteria.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

## 71.6 Sanitary Fixtures

**Purpose:** To provide a durable, hygienic, water resistant surface.

### Description

Sanitary fixtures includes kitchen sinks, laundry tubs, shower trays, wash hand basins, bathtubs, toilet suites and accessories.

Kitchen sinks are made of stainless steel, and can be integrated or inset into the benchtop. The sink has a sink plug and is positioned under the taps, any water or liquid on the sink benchtop and in the sink drains to the sink waste. The sink is earth bonded.

Laundry tubs are made of stainless steel, and can be bracket mounted or supported on a tub cabinet. The tub has a waste connection with a built in overflow and a plug and a separate washing machine discharge pipe. The tub is earth bonded.

Shower tray made of stainless steel may have a stainless steel threshold, and is earth bonded. Accessible showers may have a shower hose hand piece, slide, wall rail and brackets.

Wash hand basins are made of vitreous or acrylic, and can be wall mounted or integral with vanity cabinets. The basin has a waste connection with a built in overflow and a plug.

Bathtub may have a high lip edge and overflow, has a waste connection and a plug.

Toilets are made of vitreous toilet pan, plastic two flap seat and cistern. Most cisterns are plastic with an internal water flushing mechanism. The cistern overflow exits by a pipe either through the wall in older cisterns or directly into the pan with modern cisterns.

### Acceptable

Figure 1

- Sanitary fixture effectively manages water
- Sanitary fixture is safe, easy to clean, securely fixed in place and sound
- There are effective water resistant splash linings.

### Unacceptable

Figure 2 and Figure 3

- Sanitary fixture is not secured in place or is unstable
- Sanitary fixture is not sealed to adjacent surfaces or penetrations are not adequately sealed
- Sanitary fixture is leaking or there is the presence of water damage in adjacent surfaces
- There is no plug or the plug is not secured
- Surface is damaged, cracked or is not easy to clean
- There is the presence of rust more than 50mm x 50 mm within a localised area
- Stainless steel fixture is not earth bonded
- Waste connection leaks or is blocked
- Sanitary fixture has broken, or loose or missing components
- Laundry tub is concrete or has no separate washing machine discharge pipe
- Shower is excessively slippery or does not effectively retain water
- Toilet is not flushing fully or is overflowing
- Cistern overflow pipe is not draining clear of the building.



Figure 1



Figure 2



Figure 3

## 71.7 Tapware

Purpose: To provide an outlet for water delivery.

### Description

Tapware includes bath taps and mixers, shower heads and mixers, hand basin taps and mixers, kitchen taps and mixers, laundry taps and exterior taps.

Exterior taps are potable (unless marked otherwise) made of brass with screwed thread outlet for the connection of a hose fitting.

Taps are clearly identified as hot (red) or cold (blue) and may have level handles.

### Acceptable

Figure 1 and Figure 2

- Tapware is complete, secure and in a serviceable condition
- Taps are easy to operate and completely shut off the water supply when in the closed position
- Water is delivered unobstructed when tap is fully open
- There is hot and cold running water over the kitchen sink and in the laundry over the laundry tub
- Hot and cold running water is supplied in bathrooms separately for hand basin, bath and shower
- Laundry has separately controlled hot and cold tap outlets for the washing machine hose connection.



Figure 1



Figure 2

### Unacceptable

Figure 3

- Taps and mixers are not clearly labelled as hot or cold
- Hot water delivery temperature is not safe
- Outlet or part of it is missing, broken or damaged
- Outlet is loose or not securely screwed back to the wall, splash-back or fixture
- Outlet is dripping or leaking
- Outlet is difficult to operate
- Water flow and pressure are too high or too low.



Figure 3

## 72 Gas

### 72.1 Gas Supply

**Purpose:** To provide gas for cooking appliances, hot water or space heating.

#### Description

Reticulated gas is piped into the property via a mains supply pipe, to a shut off valve and meter installed and owned by the gas supplier. Gas meter and isolation valves are mounted at ground level on an external wall, within 3 metres of the front of the building in a straight line from a gas main. Metering equipment for apartment buildings may be located in a room on an external wall of the building, with vents and opening doors that can be accessed from the street.

Bottled gas is supplied to the property via bottled Liquefied Petroleum Gas, connected to a regulator and condensate trap. Bottles or cylinders are located so gas delivery can be made safely by one person without excessive manual handling or risk. Bottles are sized for the number of appliances installed in the building. All bottles/cylinders have a LAB number allocated by OSH when a cylinder is approved, and tested and certified every ten years, recorded on the bottle.

Gas is reticulated from the gas meter or gas bottle regulator through the building gas pipe work system to the various appliances.

#### Hazard

When gas has been turned off at the meter, only a suitably qualified gasfitter is to turn the gas on, as the piping system may be filled with air and the gasfitter is trained to purge the system safely.

#### Acceptable Figure 1

- Gas supply system is complete, fully operational, safe, secure, sound
- Gas isolation valve and handle are clearly identifiable and operational

#### Unacceptable Figure 2 and Figure 3

- There is inadequate gas supply for the number of appliances
- Gas isolation valve cannot be turned off or the open and closed positions are not clearly visible
- There is a leak in the gas system or a strong smell of gas
- Gas mains, meter or cover are not securely fixed
- Gas bottles seismic restraint does not meet building code
- Gas bottle does not have a LAB number or is out of test date
- Flexible connection hoses have cracks or deterioration or have not been replaced for more than 5 years
- Residue in condensate trap exceeds 2ml to 3 ml or has not been drained for more than 2 years
- Changeover valves and regulators have not been checked for more than 10 years
- Gas bottle is located in a poorly ventilated area, under stairs, in the subfloor, adjacent to doors, windows, air vents, flue terminals
- Combustible material is within 1 meter of the gas bottle
- Gas bottle is not easy for a person to access for gas delivery.



Figure 1



Figure 2



Figure 3

## 72.2 Gas Water Heater

Purpose: To provide a hot water system.

### Description

Gas continuous flow hot water systems heat the water on demand using a gas burner as the water passes through the heater coil, this allows for an endless supply of hot water. The unit is typically mounted on an exterior wall which allows for open ventilation, the hot water delivery pipe-work on the exterior and underfloor of the house needs to be lagged.

Gas hot water storage cylinders use a gas flame to heat water and can run on Natural Gas or Liquefied Petroleum Gas. Hot water is retained within an insulated cylinder and is thermostatically controlled to maintain the set temperature. Gas hot water cylinders can be located internally or externally, are required to be externally flued or ventilated if within a confined area and suitably seismically restrained.

### Acceptable

Figure 1 and Figure 2

- Isolation valves are fitted to hot and cold supply pipes
- Well ventilated and securely fixed unit.



Figure 1



Figure 2

### Unacceptable

Figure 3

- There is leaking pipework, valve or cylinder
- Unit seismic restraint does not meet building code
- There is no tempering valve fitted or it is not adjusted to deliver the correct outlet temperature
- Hot water pipe not lagged
- Isolation valves missing or not working
- Cylinder not externally venting.



Figure 3



## 72.3 Gas Space Heater

Purpose: To provide space heating.

### Description

A gas heater can run on Natural Gas or Liquefied Petroleum Gas. Gas heaters typically require electricity for ignition, to run the fan and for electronic controls, are flued to the building exterior and have suitable heat shields to protect adjacent surfaces.

### Hazard

Gas heaters that are unflued or have flues that leak may exhaust poisonous gases such as carbon monoxide into the property interior. This can occur during operation or when not in use.

### Acceptable Figure 1

- Gas heater is complete, fully operational, easy to use, safe, secure, sound
- Gas heater is flued externally
- Element flame is crisp, quiet and blue.



Figure 1

### Unacceptable Figure 2 and Figure 3

- There is leaking pipework, a smell of unburnt gas
- Heater is not easy to operate
- Combustible material is within 1 metre of the gas heater
- Heater is not fixed securely in place
- Heater is not flued externally or the flue is leaking or obstructed
- Heater electrical supply is not hard-wired
- Heater ignition or controls are not labelled, are damaged or missing
- Heater burn element is damaged
- There is a yellow coloured flame or black soot
- Heat shields are damaged or missing.



Figure 2



Figure 3

## 72.4 Gas Range

**Purpose:** To provide cooking and grill functions for food preparation.

### Description

A gas range is a free standing appliance with a gas element cook top and gas element oven, and can have an electrical supply for ignition and oven light or an inbuilt piezo ignition system. The gas range is supplied with two oven racks, a grill tray, an oven tray and is fitted with an anti-tip safety device and a safety chain.

A gas hob is a surface mounted cook top with gas fired heating elements, pot holders and controls. Any wall or other surface next to the gas range or gas hob is protected from heat and cooking residue.

### Acceptable Figure 1

- Gas range or hob is complete, fully operational, safe and secure
- Gas range or hob is clean and in good condition
- Flame is blue, crisp and quiet.



Figure 1

### Unacceptable Figure 2 and Figure 3

- Ignition or gas elements faulty or not working
- Control knobs faulty or not labelled or no heat indicators
- Cooktop pot holders or burner plates missing or damaged
- Oven door not closing or does not seal when closed
- Oven door handle is missing or not easy to operate safely
- Anti-tip device or pin is missing or does not prevent the range from falling over
- Safety chain is missing or does not prevent damage to the gas supply line
- Oven racks or trays are missing or do not fit
- Surface oven lining cannot be easily cleaned or is corroded
- There is a yellow coloured flame or black soot
- Heat shields to the wall are damaged or missing.



Figure 2



Figure 3

## 74 Liquid disposal

### 74.1 Rainwater Spouting

**Purpose:** To manage rainwater shed from the roof, and to direct it to a rain water storage system, soak pit or local storm-water system.

#### Description

Spouting or guttering is a channel which collects and diverts rainwater shed from the roof.

External gutters suspended from the eaves below the edge of the roofing material are made of galvanised steel, copper, painted aluminium or PVC.

Concealed gutters located between the fascia and the rafter ends and are not visible, have lower falls and a higher risk of water entering the building if a blockage occurs.

Valley gutters manage water between intersecting roof planes, are made of steel or butynol.

Internal gutters where the roof planes intersect over an internal part of the building are made of butynol over plywood and fall towards a rainwater head on the perimeter of the building. The gradient and capacity of the gutter is critical as heavy rainwater flows or blockages will cause water to flow inside the building. A rainwater head and scupper is used to connect an internal gutter to the downpipe.

Downpipes collect rain water from the gutter and direct it into a disposal or catchment system.

#### Acceptable Figure 1

- Gutters and downpipes are secure and sealed
- Gutters and downpipes have adequate fall to effectively manage rainwater disposal.



Figure 1

#### Unacceptable Figure 2 and Figure 3

- Gutters or downpipes are warped, corroded, have holes, are leaking or blocked
- Outer edge of the gutter is higher than the inner edge
- Gutters do not fall towards the down pipe or gradient is insufficient
- There is evidence of water ponding
- Gutter and downpipes are not securely fixed to the fascia or building
- There is accumulation of debris, leaves, balls or other rubbish.



Figure 2



Figure 3

## 74.2 Vent Pipe

Purpose: To manage the intake of air into and out of the sanitary system.

### Description

The vent for the soil pipe allows air to pass through the drainage system to prevent a vacuum building up when the toilet is flushed.

The vent is typically a PVC stack that extends from the drain connection up past the roof. Some older homes have an external 4" Cast Iron stack.

Some vent pipes are concealed in the wall and can only be seen where they connect by the discharge pipe, directly behind the toilet and where they exit on the roof.

An acceptable alternative is an air admittance valve, generally installed 800mm above ground level.

**Acceptable** Figure 1 and Figure 2

- Vent pipe is secure and sealed
- Vent pipe effectively manages sewerage odour.



Figure 1



Figure 2

**Unacceptable** Figure 3

- There is a detectable sewerage odour from sewer pipes
- Vent pipe penetration is not weathertight or too short
- Cast iron pipes are excessively rusted
- Vent pipe joints are not secure or leak
- Vent pipes are not securely fixed in place.



Figure 3

## 74.3 Gully Trap

**Purpose:** To manage the discharge of waste water from sanitary fixtures.

### Description

A gully trap receives the discharge from waste water fixtures such as the bath, shower, hand basin, kitchen sink and laundry tub. It connects to a suitable sewerage or septic system. Gully trap has an air trap to block the venting of foul air from the sewer system to the atmosphere.

Gully traps are made of concrete with iron grate, or PVC with a matching grate. The gully trap provides a point at which the foul water can overflow and the drain can be unblocked in the event of a drain blockage.

### Acceptable Figure 1 and Figure 2

- Gully trap and grate lid are intact and sound
- Gully trap effectively manages sewerage odour.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Gully trap or grate is missing or damaged
- Grate or lid does not fit snugly onto the gully trap
- Gully trap or grating is obstructed or blocked
- Foul odours or gases are emanating from the gully trap
- Gully trap is not sitting above ground level.



Figure 3



Figure 4

## 74.4 Sewerage

Purpose: To manage the disposal of foul water.

### Description

The internal plumbing sanitary system connects to a sewerage system.

A mains sanitary sewer discharges to the Local Authority mains sewerage system, where waste is reticulated back to waste treatment plants. Materials used for pipes include cast iron, concrete, steel, uPVC, cement-lined ductile iron and copper. Components may include vents, access points for inspection and maintenance, rodding and larger access chambers.

A Septic tank is a waste management system, used where there is no public foul water connection available. Domestic wastewater is discharged to a septic tank where suspended matter and solid waste settles and is decomposed by anaerobic bacterial action within the sludge. An outlet from the septic tank discharges the treated water to a soakage field. A septic tank is pumped and cleaned when the total depth of sludge and scum exceeds one third of the liquid depth of the tank.

### Acceptable

- Sewerage system is secure and effectively manages foul water disposal
- Septic tank system is intact, stable and in good condition.

### Unacceptable

Figure 1 and Figure 2

- Gully traps or toilets 'backing-up' or not flushing clear
- There is the presence of moist, soggy ground or a consistent foul water smell
- Access points, hatches or lids are broken or missing or cannot be secured
- Septic tank is full or sludge and scum solids fill the tank and overflow to the soakage field
- Septic tank is damaged, cracked or leaking
- Septic tank outlet filter or pipe work is clogged, damaged or missing
- Septic tank system has biological failure from chemical poisoning
- Septic tank system has power outage causing cessation of pumps or aerators
- Septic tank system alarm, blower or control box is not functioning
- Septic tank irrigation system is damaged or has uneven distribution
- There is stormwater entering the septic tank system.



Figure 1



Figure 2

## 74.5 Drainage

Purpose: To manage the disposal of stormwater and groundwater.

### Description

Water runoff from the roof and hard surfaces is collected and directed to soak holes, rainwater storage tanks, or to the local authority stormwater system directly or from the road side curb.

### Acceptable Figure 1 and Figure 2

- Drainage system effectively manages stormwater runoff from the roof
- Drainage system effectively manages groundwater runoff from the driveway and pavement.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Overflowing pipes, tanks or drainage systems
- Broken pipes or disconnected joints, cracked and broken traps
- Down pipes discharge directly on to the ground or hard surface
- There is water collecting or being discharged under the building
- There is the presence of erosion or ponding.



Figure 3



Figure 4

## 75 Solid Fuel Heating

### 75.1 Solid Fuel Heater

Purpose: To provide space heating.

#### Description

A Solid Fuel Heater can use wood or coal or pellets as its fuel and can be a free standing unit or inserted into an existing open fire cavity. The firebox is lined with firebricks and fitted with a stainless steel flue, a sealable door, a panel surround and a controllable vent operated by a lever on the front of the unit to regulate air entering and leaving the firebox. The unit and flue is seismically restrained and sits on a fire proof plinth or hearth surrounding or protruding from the front of the unit.

Wood burners are designed to use wood only. Wood burners use combustion air from the top with the wood fuel burning from the top downwards. Wood fuel can sit and burn effectively on a flat base, hence wood burners will have a small grate or no grate at all.

Multi-fuel burners are designed to use wood or coal, which burns at a higher temperature than wood. Multi-fuel burners require combustion air from underneath the fuel load, hence have an open grate feature to let the air through to the fuel.

Pellet burners are designed to use specially manufactured pellets, made from recycled waste such as wood shavings and sawdust. The pellets are loaded into a hopper in the unit and automatically screw fed into the fire. There is a heating element, electronic controls, suction and convection fans and a combustion chamber and exhaust flue. Heat output is controlled by a thermostat.

#### Acceptable Figure 1

- Solid Fuel Heater is complete, fully operational, easy to use, safe, secure, sound
- Solid Fuel Heater is flued externally
- Solid Fuel Heater is clean and in good condition.



Figure 1

#### Unacceptable Figure 2 and Figure 3

- Solid Fuel Heater does not meet Local Authority emission standards
- Seismic restraint does not meet building code
- Combustible material is within 1 meter of the Solid Fuel Heater
- Heat shields or guards are damaged or missing
- Fire proof plinth or hearth is damaged or there is the presence of heat damage to adjacent surfaces
- Fire box is dirty, cracked, split or corroded
- Door does not close fully or door seal is missing
- Damper controls or door handles are not insulated or not easy to operate
- Screw feed system is not functioning
- Glass in the door is cracked, missing or broken
- Flue is dirty, loose, damaged, leaking or blocked
- There is corrosion on the flue cowl or fastenings.



Figure 2



Figure 3



## 75.2 Solid Fuel Brick Fire Place

Purpose: To provide space heating.

### Description

A brick fireplace is a masonry structure that contains a firebox open to the room, and a chimney. The firebox is lined with fire bricks, has a fire-grate and an ash-pan. Wood and coal are the usual fuels.

### Acceptable

- Firebricks and mortar are complete, safe, sound
- Fireplace and chimney are clean and in good condition.

### Unacceptable

Figure 1 and Figure 2 and Figure 3

- Brick fireplace does not meet Local Authority emission standard
- Chimney is dirty or blocked or is not braced
- Firebricks are missing, damaged, cracked or loose
- Mortar is missing or deteriorated
- Facia or lintel is damaged or separating from the front of the fire place cavity
- Chimney or hearth is damaged or there is the presence of heat damage to adjacent surfaces
- Grate or ash pan is damaged or missing.



Figure 1



Figure 2

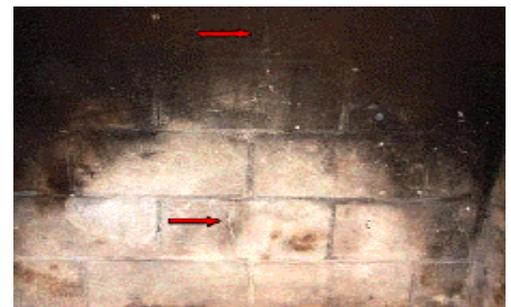


Figure 3

## 75.3 Wetback

**Purpose:** To supplement the heating of water in the hot water system.

### Description

Wetback water heaters are integrated into a solid fuel heater and connected to the hot water cylinder. Heat from the combustion process is used to heat water jackets installed within the firebox and the heated water circulates to the hot water cylinder. Pipework between the cylinder and the wetback is lagged.

### Hazard

Wetback end connections should not be capped off under any circumstances.

### Acceptable

Figure 1

- Wetback water booster and pipe work is fully operational and safe
- Wetback provides adequate hot water supply.



Figure 1

### Unacceptable

Figure 2

- Hot water supply is inadequate
- Wetback or pipework is leaking or damaged
- Pipework is not lagged
- There are valves or constraints in the inlet or outlet path between the wetback and the hot water cylinder.



Figure 2

## 76 Ventilation and air-conditioning

### 76.1 Heat Pump

Purpose: To provide space heating.

#### Description

Heat pumps utilize refrigeration technology to extract heat from the outside air and transfer it inside. They can be used for cooling and heating. They are a 2-part or split system with an indoor inverter and an outdoor compressor, both requiring electrical supply.

The inverter unit is typically wall mounted, has controls, heating coils and fan for distributing heat and an air-filter to keep dust off the heating coil fins. When in cooling mode condensation may form. The inverter unit is fitted with a condensate tray to remove excess moisture and safely discharge it outside to the ground.

The compressor unit contains a compressor, motor and a fan and cooling/heating coils. It is secured to a concrete pad outside, with anti-vibration mounts. The compressor unit requires good air movement in, out and around the unit. The compressor unit is fitted with a condensate drain to safely discharge excess moisture to the ground.

#### Hazard

Although the likelihood is low, air borne water droplets from condensate or overflow pipes may contain legionella bacteria which if inhaled via drops or mist can cause legionellosis, a serious respiratory illness.

#### Acceptable Figure 1

- Compressor unit and inverter unit are secure, fully operational and safe
- Condensate drains discharge to ground safely
- Filters are clean
- Wall penetrations for piping are sealed.

#### Unacceptable Figure 2

- Compressor unit is loose or does not have adequate anti-vibration mounts or is damaged
- Compressor unit is not mounted on a hard level surface
- Compressor unit air intake/exhaust is dirty or does not have 500mm clearance from obstruction
- Inverter unit is loose or is damaged
- Inverter unit is covered or does not have 150mm clearance from obstruction
- Filters are clogged or dirty
- Inverter unit condensate tray is missing or does not drain
- Condensate drain is able to form air-borne droplets or discharges over a path
- Capping for pipe work is missing or damaged, or pipe work is not protected
- Wall penetrations for piping are not weathertight
- Electrical supply to compressor or inverter is damaged.



Figure 1



Figure 2

## 76.2 Bathroom Extract

Purpose: To extract moisture, odours and stale air.

### Description

An extract fan system comprises an intake grille, extractor fan, ducting and exterior louvres or cowling.

An integrated unit mounted through an exterior wall or window has automatic gravity louvres or fixed louvres to prevent rain and wildlife entering the building. Ducted fans have ducting from the intake point to the exterior and typically use flexible aluminium duct.

### Acceptable

Figure 1 and Figure 2

- Extract fan effectively manages the removal of water vapour from the room
- Extract fan is complete, fully operational, easy to use, safe, secure, sound
- Extract fan is sealed at wall penetrations
- Extract fan is clean and in good condition.



Figure 1



Figure 2

### Unacceptable

Figure 3

- Extract fan is dirty or damaged
- Extract fan is vented into the roof cavity or the subfloor or is not vented to the exterior
- Ducting is loose, damaged or compressed
- Switch is not easy to operate
- Extract fan, louvres or cowling are loose or not weathertight
- Exterior grilles that are dirty, obstructed, damaged.



Figure 3

## 76.3 Rangehood Extract

Purpose: To extract moisture and cooking odours.

### Description

A rangehood is mounted over a stove and consists of an extractor fan, filters, ducting and a light. There are two types of kitchen rangehoods, external venting and re-circulating type.

External Venting Type draws air through a washable filter and exhausts it outside.

Re-circulating Type draws air through a washable filter then a carbon filter that absorbs odours, before it is re-circulated into the kitchen. Carbon filters can be cleaned or replaced when they no longer function.

### Acceptable Figure 1

- Rangehood extract effectively manages the removal of moisture and odours from the room
- Rangehood is complete, fully operational, easy to use, safe, secure, sound
- Filters are clean and washable.



Figure 1

### Unacceptable Figure 2 and Figure 3

- Rangehood is loose or mounted height is a head hazard
- Rangehood is not vented to the exterior
- Filter is dirty, obstructed, damaged
- Isolation switch, lights or switches are missing, damaged or not easy to reach or operate safely.



Figure 2



Figure 3

## 76.4 Trickle Extract

Purpose: To extract condensation.

### Description

Trickle extract is a passive ventilation system with purpose-made adjustable window vents, grilles or louvres or a vertical duct from the ceiling space to the exterior typically through the roof.

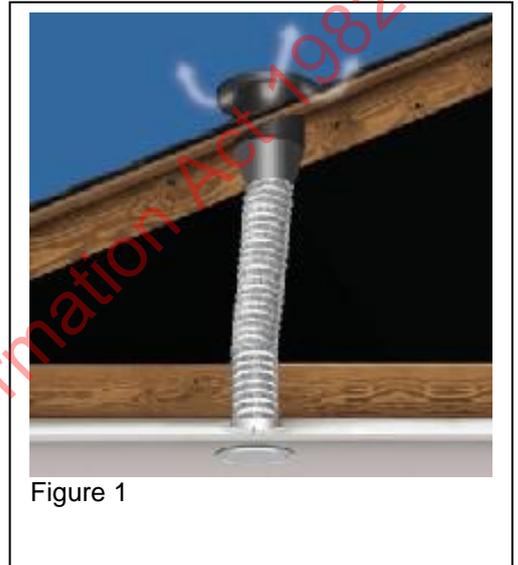
### Acceptable

Figure 1

- Trickle extract system effectively manages the removal of moisture from the room
- Trickle extract intakes, vents, grilles or louvres are fully operational, secure and sound
- Trickle extract system is clean and in good condition.

### Unacceptable

- There is no secure passive ventilation
- Trickle ventilation intakes, vents, grilles or louvres are dirty, loose, damaged, obstructed or not weathertight.



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## 77 Electrical

### 77.1 Mains

**Purpose:** To provide a safe power supply connection to the property.

#### Description

Electricity is supplied to the property via an underground or overhead mains supply cable. The supply cable has an insulated anchor attached to the building and the cable is connected in a junction box.

#### Acceptable Figure 1 and Figure 2

- Cable is firmly attached at each end
- Overhead cable is insulated and safe
- Insulated anchor and covered junction box
- Clearly visible “live wires” signage.



Figure 1



Figure 2

#### Unacceptable Figure 3

- Overhead cable is under 5 meters above ground or is not clear of trees or other obstruction
- Underground cable is not protected above ground by conduit
- Cable insulation is degraded
- Anchor has degraded insulation, is loose or cover is rusted
- Cable is not clearly marked at entry or exit points
- Cable is exposed at the junction box
- Junction box is damaged, loose or open.



Figure 3

## 77.2 Meter Box

**Purpose:** To maintain a safe and metered power supply to the property.

### Description

The Main Meter Box is commonly mounted on an external wall, with a cover and a vision panel for meter reading. It is the first point of connection for the mains supply cable, and houses the main supply meters and main isolating switch for the building.

The Main Meter Box contains the main isolating fuse and switch to the house. It can be separate to the main distribution board or combined with an external distribution board.

### Acceptable

Figure 1

- Meter box is secure, electrically safe and sound
- Meter box has a clear vision panel.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- Meter box is not firmly fixed to the wall
- Meter box is not weathertight
- Meter box cover is damaged or loose
- Cover is missing or cannot be secured
- Vision panel is missing, damaged or the meter is not legible through the panel.



Figure 2



Figure 3



## 77.3 Distribution Board

Purpose: To provide an isolation point for all electrical outlets.

### Description

Distribution boards can be separate or combined with the meter box. The distribution board divides the main electrical supply into sub-circuits for lighting, power points, hot water heating, and the range.

The distribution board protects individual sub-circuits with fuses, circuit breakers, residual current devices or miniature current breakers. The board also provides an isolating point for circuits, and earth and neutral connection points.

### Acceptable Figure 1

- Distribution board is complete, easy to use, electrically safe and secure
- Clearly labelled circuits
- Distribution board is in good condition.

### Unacceptable Figure 2 and Figure 3

- Distribution board cannot be easily reached or is damaged
- Cover is missing or cannot be secured
- Fuses, circuit breakers, residual current devices or miniature current breakers are not labelled
- Distribution board is fitted with over capacity fuses or circuit breakers.



Figure 1



Figure 2



Figure 3

## 77.4 Earth Electrode

Purpose: To provide a low resistance path from the metal body of an appliance to the earth.

### Description

Connection to earth is achieved by driving an earth electrode into the ground. All non-current-carrying metal parts of equipment are connected to a common earth at the main board. The main board is connected to an earth electrode, which will provide a return path for electrical fault currents.

Earth electrode types are non-ferrous or stainless steel 12mm rod, galvanised steel 16mm rod and galvanised iron 20mm pipe.

The electrode will have an earth wire clamped to it by using a suitable brass clamp and a permanent label is securely fitted at the connection point.

### Acceptable

Figure 1

- Earth electrode and cable is secure and sound
- Clearly labelled EARTHING CONDUCTOR-DO NOT DISCONNECT.



Figure 1

### Unacceptable

Figure 2

- Cable and earth electrode connection is not continuous
- Label at electrode is missing or not legible
- Pipes conveying water, gas or flammable liquids or materials used as earth electrodes.



Figure 2

## 77.5 Earth Bonds

Purpose: To provide protection from electric shocks.

### Description

Earth bonding reduces the risk of electrocution from fault currents by connecting all exposed metal fittings in the property to a common earth at the main distribution board.

Earth bonding consists of a green or yellow and green cable that is connected with a metal clamp to the metal surfaces. Metal sinks and bench tops, metal hand-basins, metal water and gas pipe work conduct electricity and are connected to earth by a bonding system. If a piece of plastic replaces a section of metal pipe, a permanent earth conductor connects the two sections of metal pipe to fully isolate and earth both live parts.

### Hazard

Earth wire is disconnected or a section of metal pipe is not earthed.

### Acceptable

Figure 1

- Earth bonding system connects all metal components to earth.

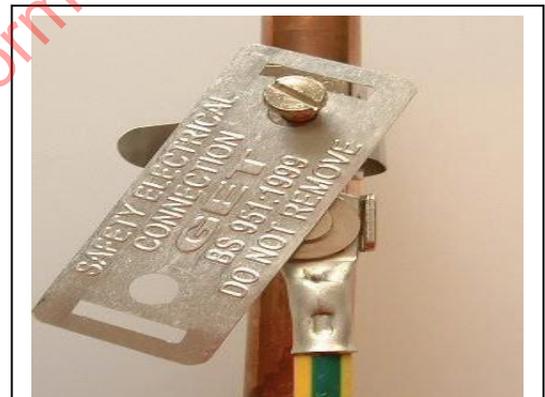


Figure 1

### Unacceptable

Figure 2

- Metal component is not isolated from live parts
- Metal component is not connected to an earth bond
- Earth bond is not continuous.



Figure 2

## 77.6 Electric Water Heater

Purpose: To heat and store hot water.

### Description

Electric hot water cylinders use an electric element to heat the water. Heated water is stored in the hot water cylinder at a thermostatically controlled temperature set to 60°C to prevent the growth of legionella bacteria. The thermostat and element are contained behind a sealed anti-tamper access panel cover. Electric hot water cylinders have an open ended vent pipe and for mains supplied systems a pressure relief safety valve can be fitted in conjunction with a cold water expansion valve.

Hot water cylinders marked as 'A grade' or 'MEPS Approved' are insulated. All other hot water cylinders are 'wrapped' for extra insulation. Hot water cylinders are seismically restrained.

### Acceptable

Figure 1

- Electric hot water cylinder is fully operational, electrically safe, secure and sound
- Electric hot water cylinder provides adequate hot water supply.



Figure 1

### Unacceptable

Figure 2 and Figure 3

- There is no hot water or inadequate supply
- Hot water cylinder, valve or pipework is leaking or damaged
- There is water overflowing from the vent pipe on the roof or from the pressure relief valve
- Hot water cylinder not externally venting
- Hot water cylinder seismic restraint does not meet building code
- Electric access panel cover is missing or not sealed
- Hot water cylinder is not insulated
- There is no tempering valve fitted or it is not adjusted to deliver the correct outlet temperature
- Hot water pipe not lagged
- There is no overflow tray or overflow does not flow to exterior drain.



Figure 2



Figure 3

## 7.7 Electric Space Heater

Purpose: To provide space heating.

### Description

Electric panel heaters have a thermostat, an on/off switch, a light indicating on/off, and a heat setting control. Control features are clearly labelled and can be integrated as a single control.

The heater is securely fixed to a wall and the electrical supply is hard-wired.

Electric panel heaters that produce radiant heat are typically located on the coldest wall in the living room. Electric panel heaters that produce convective heat are typically located such that the heat is directed towards the coldest wall.

### Acceptable Figure 1

- Electric panel heater is fully operational, easy to use, electrically safe, secure and sound
- Clearly labelled controls
- Electric panel heater is clean and is in good condition.



Figure 1

### Unacceptable Figure 2 and Figure 3

- Heater is not firmly fixed to the wall
- Combustible material is in contact with heater
- Controls are not easy to reach or operate safely, or not clearly labelled
- Heater air grills are obstructed or dirty
- Electrical cable or power supply has been damaged or is not hard-wired
- There is the presence of scorching or heat damage.



Figure 2



Figure 3

## 77.8 Electric Range

**Purpose:** To provide cooking and grill functions for food preparation.

### Description

An electric range is a free standing appliance with electric cook top elements and electric element oven. The range is connected to the electrical supply, typically with a 32 amp plug complete with 1.5m long lead.

An electric wall oven is a joinery cavity mounted electric element oven.

An electric hob is a surface mounted cook top with radiant, tubular or solid heating elements, pot holders and controls.

An oven has cooking and grill functions, an oven light and heat indicators on the control switches.

An electric range or electric wall oven is supplied with two oven racks, a grill tray, an oven tray and is fitted with an anti-tip safety device and a safety chain.

Any wall or other surface next to the electric range or electric hob is protected from heat and cooking residue.

### Acceptable Figure 1 and Figure 2

- Electric range or oven or hob is complete, fully operational, electrically safe, secure
- Electric range or oven or hob is clean and in good condition.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Elements are faulty
- Control knobs faulty or not labelled or no heat indicators
- Cooktop pot holders or plates missing or damaged
- Oven door not closing or does not seal when closed
- Oven door handle is missing or not easy to operate safely
- Wall oven is not firmly fixed into the joinery cabinet
- Anti-tip device or pin is missing or does not prevent the range from falling over
- Oven racks or trays are missing or do not fit
- Surface or oven lining cannot be easily cleaned or is corroded
- Heat shields to the wall are damaged or missing
- Wiring is exposed or damaged.



Figure 3



Figure 4

## 77.9 Light Fitting

Purpose: To provide and control artificial light.

### Description

Artificial lighting is to enable safe movement in the absence of natural light.

### Hazard

Old fluorescent fittings may contain polychlorinated biphenyls in capacitors and ballasts. Any fitting with suspected polychlorinated biphenyls is to be disposed of in accordance with Ministry of Health guidelines. Compact Fluorescent Lights contain mercury.

### Acceptable Figure 1 and Figure 2

- Light fittings are fully operational, secure and electrically safe
- Illumination levels are safe.



Figure 1



Figure 2

### Unacceptable Figure 3 and Figure 4

- Light fittings are faulty or damaged
- Light fitting is not firmly fixed in place
- Switches are faulty or loose or cracked
- Wiring is exposed or damaged
- Light levels are inadequate for safe path
- Emergency exit signs are not illuminated
- There are polychlorinated biphenyls in fittings.



Figure 3



Figure 4

## 77.10 Power Point

**Purpose:** To provide switched electrical outlets for the connection of appliances.

### Description

Power points connect the electrical distribution system to fixed and portable electrical appliances.

Power points are typically single or double switch units. Wet areas have a residual current device outlet or residual current operated circuit breaker with over current protection outlet and test button.

### Acceptable

Figure 1

- Power points are fully operational, secure and electrically safe
- Power points are safe to use.



Figure 1

### Unacceptable

Figure 2 and Figure 3 and Figure 4

- Power point is faulty or damaged
- Power point not firmly fixed to the wall
- Electrical appliances are not easy to operate safely
- Power leads are an electric shock or trip hazard
- Residual current outlet test button does not disconnect the power when pressed
- There is the presence of scorching.



Figure 2



Figure 3



Figure 4



## 77.11 Data Outlet

**Purpose:** To provide a telecommunications point for the connection of a telephone or other telecommunications devices.

### Description

Data outlet is the point that provides connection to a telephone or other telecommunications device inside the building.

### Acceptable Figure 1 and Figure 2

- Data outlets are fully operational, secure and electrically safe
- Data outlets are safe to use.

### Unacceptable Figure 3 and Figure 4

- There is no data outlet
- Data outlet is faulty or damaged
- Data outlet is not firmly fixed to the wall
- Data outlet is not easy to access safely
- Cabling is exposed or loose or damaged.



Figure 1



Figure 2



Figure 3

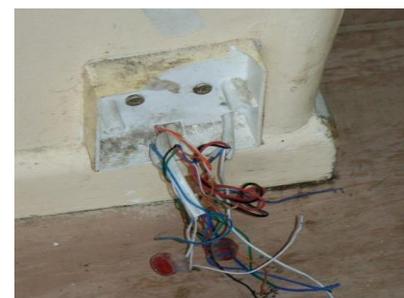


Figure 4

## 77.12 Hardwired Smoke Alarm

Purpose: To provide smoke detection warning.

### Description

Hardwired Smoke Alarms are mains powered and provide an early smoke detection warning to occupants by emitting a high pitched sound once smoke is detected. Smoke cannot be detected in dead air space.

Hardwired smoke alarms may have a backup battery in the control panel. Smoke Alarms have a test button and a hush button to allow nuisance alarms to be silenced.

### Acceptable

Figure 1

- Smoke alarm is securely mounted and is clean
- Smoke alarm is fully operational.

### Unacceptable

- Smoke alarm is faulty or missing
- There is a wall or other obstruction within 300 mm of the smoke alarm
- Smoke alarm is not firmly fixed to the ceiling or is damaged
- There is no response to the test button
- There is dirt or paint on the surface or inside the fitting
- Back up battery in the control panel is faulty or missing.



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## 77.13 Telecommunications Supply

Purpose: To provide a connection to the New Zealand telecommunications network.

### Description

A telecommunications connection for telephone and data may consist of a standard copper connection or an ultrafast broadband fibre connection or a combination of both.

The telecommunications supply from the street is a low voltage cable via an existing pole or underground duct to the property. This is connected to an External Termination Point which is a small junction box on the exterior of the building and is typically the demarcation point between Telecom's ownership and the Housing New Zealand's responsibility.

From the External Termination Point, the copper network connects to a master jack point in the building and the fibre network connects to an Optical Network Terminal or Internal Network terminal, the starting point for the phone and broadband services.

### Acceptable

Figure 1

- Data and telephone connection is fully operational, secure and sound.

### Unacceptable

- There is no data and telephone connection
- Line or connection points are faulty
- Junction box is damaged, loose or open.



Figure 1

## 8 EXTERNAL

### 82 Asphaltic Paving

#### 82.1 Asphalt

Purpose: To provide a sealed hard surface.

#### Description

Hard surfaces are paths, driveways, patios and parking areas around the property. Asphalt, tarmac and hot mix are terms for hard surfaces sealed with a bituminous continuous cover.

#### Acceptable Figure 1

- Path is easy to use and safe
- Driveway is safe and structurally sound.

#### Unacceptable Figure 2, Figure 3 and Figure 4

- Driveway or path hard surface is missing or inadequate
- Surface presents a tripping or slipping hazard (e.g. greater than 15mm)
- There is ponding or excess water on the surface
- Surface is damaged, broken up or cracked
- There is the presence of erosion of the substrate
- There are weeds growing through the surface
- There is moss or lichen growth on the surface.



Figure 1



Figure 2



Figure 3



Figure 4

## 83 Landscaping

### 83.1 Lawns, Planting and Trees

Purpose: To provide improvement of the natural features of a property.

#### Description

Lawns are easy to cut and planting is free of noxious weeds such as privet. Planting and trees are located for roots and foliage to be clear to buildings, foundations, footpaths, driveways and fences.

#### Acceptable

Figure 1

- Lawns, planting and trees are safe and easy to maintain.



Figure 1

#### Unacceptable

Figure 2, Figure 3 and Figure 4

- Lawn is damaged or uneven
- Planting is over grown
- There is the presence of spines, thorns, poisonous or noxious weeds
- There is planting covering the building
- There is a large tree shading the building or clothes line
- Trees or planting blocks out light from windows
- Paths or driveway obstructed by planting.



Figure 2



Figure 3



Figure 4

## 84 Fencing

### 84.1 Fences

Purpose: To define property boundaries, to provide privacy and a secure area for children.

#### Description

Fencing can be timber or metal or post and wire. Fences erected with palings typically have the palings facing the public side of the fence. Wing fencing is used when only the rear of the section is fenced.

#### Acceptable Figure 1

- Fencing is complete and structurally sound
- Fencing is safe and in good condition.



Figure 1

#### Unacceptable Figure 2 and Figure 3 and Figure 4

- Fence is not stable or upright
- Fence has deteriorated from rot or rust
- Fence structure or infill panels are damaged or missing
- Fence has sharp tops or spikes or verticals that protrude above the top rail
- There is excessive moss or lichen.



Figure 2



Figure 3



Figure 4

## 84.2 Gates

Purpose: To control access to secure the property.

### Description

Gates can be single hinged gates or split gates and can be located along boundaries or within the property when used to create secure areas. Gates used to create secure areas have a self-closing gate with a self-latching mechanism.

### Acceptable

Figure 1 and Figure 2

- Gates are structurally sound, easy to operate and secure
- Gate posts are structurally sound.



Figure 1



Figure 2

### Unacceptable

Figure 3 and Figure 4

- Gates do not open and close easily
- Gates or hinges are damaged, misaligned or missing
- Gates do not latch closed
- Gates are rusty or rotten
- Latches are not safely positioned.



Figure 3



Figure 4

## 84.3 Clothesline

Purpose: To provide for drying washing outdoors.

### Description

Clotheslines can be Rotary or Pull out or Retractable or T bar type. Clotheslines are mounted on independent posts with a hardstand and hard surface from the building to the clothesline. Clotheslines are positioned for clothes drying.

### Acceptable

Figure 1 and Figure 2

- Clothesline is fully operational, safe and structurally sound
- Clothesline effectively manages the drying of washing.



Figure 1



Figure 2

### Unacceptable

Figure 3 and Figure 4

- Line is inadequate for the wash load
- Clothesline is shaded by planting, fences or buildings
- Clothesline is not firmly fixed in place
- Clothesline is damaged or not easy and safe to use
- Lines are loose, frayed, rusty, or leave marks
- Hardstand or path are missing or inadequate.



Figure 3



Figure 4



## 84.4 Letter Box

Purpose: To identify the property and for mail delivery.

### Description

The letter box is a weathertight receptacle to receive mail up to the size of A4. The letter box can be freestanding, mounted on a fence or wall, or a door slot. The letter box is lockable.

Where there are multiple dwelling units at a property location each unit is individually numbered as close as practical to the front door. Property identification is legible from the street for emergency responders, postal staff and members of the public.

### Acceptable

Figure 1

- Letter box is fully operational, secure and sound
- Property number is easy to identify from the street.



Figure 1

### Unacceptable

Figure 2 and Figure 3 and Figure 4

- Letter box is not firmly fixed to a post or fence
- Letter box is not weathertight
- Property identification number is missing or illegible
- Letter box is too small or too big
- Letter box or support is damaged, rusty or rotten
- Letter box has protruding sharp edges or over length screws or bolts
- Letter box cannot be padlocked.



Figure 2



Figure 3



Figure 4