6 Critical Facilities

6.1 INTRODUCTION

Critical facilities are buildings and facilities that are important in the community response to a natural hazard event. They differ from other lifelines in that they tend to be discrete points rather than extensive networks. The Wairarapa critical facilities considered in this report include fire stations, police stations, the Masterton Hospital, civil defence headquarters, emergency broadcasting facilities and the Ruamahanga River flood gauging site. Results of the broadcasting facilities checks can be found in Chapter 5.

These facilities have been checked using the assessment procedure detailed in WELA Note 12. This checklist has been developed to enable critical facilities to be screened for their vulnerability to life safety and loss of function when subjected to natural hazards. The outcomes of these assessments are summarised in table form below. In each case suggested mitigation measures have been provided for each facility and progress has been made in many cases on implementing these tasks.

The Masterton Hospital was the largest of the facilities screened and the results are presented in **Table 6.1** below. All other critical facilities are presented in **Table 6.2** under their own headings.

Inadequately restrained gas cylinders at A & E (see Table 6.1)

Unrestrained surgical supplies thrown to the ground at Whakatane Hospital during the March 1987 Edgecumbe Earthquake.

Unstable racking of theatre supplies (see Table 6.1)

6.2 RESULTS OF CRITICAL FACILITIES HAZARD SCREENINGS

Masterton Hospital - Structural, non structural, building services and lifelines – summary of vulnerable elements (Inspection carried out October 1997 - April 1998)			
Item/element		Vulnerable element	Suggested mitigation
1.	**THREE STOREY BLOCK BUILDING SERVICES** - Structural score: 30 (three story block building)		
a	Lift	Lift machinery and controllers old (1960's) and appear to have inadequate fixing and restraint against overturning. Also lift and counterweight guides (not seen) and fixing may be inadequate.	Check lift installation against current codes.
b	Air conditioning units on roof	Appear to have inadequate fixings.	Check in more detail.
c	Water tanks on roof	Tanks held only by vertical rods and could move about. Tank stand does not appear adequate for seismic loads. Access hatches not fixed down and could allow water to escape due to hydrodynamic effects. Penetrations through roof slab not sealed.	A Look at alternatives to storing water on the roof. B If storage on the roof cannot be avoided check on suitability of tanks and supporting structures, provide flexible connections and 'tank' the water storage area and provide separation from air handling equipment.
d	Aerials etc.	All items mounted on roof including fixings and base structure.	Check against wind loading in NZS4203.
e	Oxygen and medical gases	Full and empty cylinders are inadequately restrained at A&E and Ambulance.	If possible choose a less critical storage and supply station and/or provide robust storage brackets and fixings to restrain full and empty cylinders.
f	Patient information services	Patient files in the shelving units could be thrown out in an earthquake and become mixed.	Provide a shelving bar or restraint which allows files to be retrieved in normal use but prevents them being dislodged. Computerise all files.
g	Chlorine mixing area for orthopaedic pool	Chlorine storage and mixing area - accident or earthquake could result in the discharge of toxic fumes into the three-storey block forcing evacuation. Chlorine drums and controls not restrained.	Mix in more suitable area - discuss with OSH or Fire Service.
h	PABX	Telephone equipment, computer, emergency batteries and battery charger, fire alarms, computer network controller, loose equipment stored in PABX room all inadequately fixed.	Provide adequate support fixings and restraint to all equipment.. Provide trunking or support to fire alarm wiring.. Remove all unnecessary equipment and furniture stored in PABX room.
i	Building services lines and medical gas lines	See services tunnel.	
j	Basement, services tunnel drainage	Drainage of basement and services tunnel. Capacity of sump pump.	Make sure equipment or vulnerable items are mounted above possible flood level. Check on capacity of sump pump and whether connected to emergency power system. Investigate basement services and possible drainage outlets at boilerhouse end and elsewhere.
2	**THEATRE BLOCK** - Structural score: 35		
a	Recovery Room	Monitors not restrained.	Provide fixings for monitors, pivotech stands and restraints.
b	Theatre 3 Ante room	Steriliser not restrained.	Provide fixings and restraint.
c	Equipment room and adjacent area	Stored equipment not restrained. Could 'walk' around and overturn causing damage to equipment, building fittings and fixtures.	Provide restraint and means of preventing equipment moving around such as 'pens' if practicable.
d	Theatre supplies storage	Racking is unstable and could move around and with high 'aspect ratio' would easily overturn. Theatre supplies would spill and become mixed up and unusable.	Provide restraining system and shelf bars which do not constrain normal usage.
e	Stock Room	Cabinets/shelving not fixed. Contents can spill.	Fix units to walls and provide shelf bars or grills which do not constrain normal usage.
f	Theatres	Monitors on equipment trolleys not secured. Equipment not secured or restrained from overturning apart from service lines. Equipment trolleys can move around and overturn. Fixings for Theatre lighting?	Secure monitors to equipment trolleys. Tether/restrain trolleys and portable equipment when not in use. Provide fixings and restraint to non-portable equipment. Check fixings and support structure for theatre lights in terms of NZS4203 and NZS4219.

Table 6.1.(page 1 of 4) Summary of findings from Masterton Hospital critical facilities screening

Masterton Hospital - Structural, non structural, building services and lifelines – summary of vulnerable elements			
Item/element		Vulnerable element	Suggested mitigation
2	**THEATRE BLOCK** - Continued		
g	Roof 180L Water tank	Tank stand and securing not clear.	Check restraint provided including wind when part . full
h	Egress stair structure	Cooling tower not restrained or secured Stair structure flexible and needs review.	Secure cooling tower. Check stability of egress stair structure and brace if necessary.
i	Ceiling space services	Medical Gas lines and hot water lines to heat exchangers of AC system are not adequately secured. Rectifier for the theatre lighting appears unrestrained. Batteries to emergency lighting secured to stand but stand suspect.	Restrain medical gas and hot water lines in accordance with NZS4203 and NZS4219 Install flexible connections at fittings and valves to ducts if necessary.Restrain rectifier and check out emergency battery stand.
j	Basement services	Anti-vibration mountings to air handlers/fans have no limits on movement. Service lines are not restrained. Fixings and restraint to free standing switchboard do not appear adequate. Loose equipment stored in same alcove as switchboard.	Install snubbers to limit travel and avoid collapse of anti-vibration mountings. Restrain service lines in accordance with NZS4203 and NZS4219. Remove loose equipment.
3	**RADIOLOGY-** Structural score: Timber section 32, Masonry section 100		
a	Building	The earthquake prone section of the building is the brickwork portion enclosing the reception area. It was given a replacement period of 8 years in the October report by GM Evans of Newton King O'Dea, Gibson & Evans.	As suggested in the Evans report, replace the concrete tile roof with galvanised iron and provide additional roof bracing. Either strengthen brickwork portion of the building or demolish and replace with timber framing.
b	Computers	CPU's and monitors (apart from one) not restrained or secured.	Restrain or service all CPU's and monitors.
c	Records	Shelving fixed top and bottom but files could be spilt and become mixed.	Place files on computer or provide shelving bar or restraint which prevents spillage but allows normal usage.
d	X-ray 2 Lead Shield Equipment	Lead shield on castors could move and overturn. Loose equipment, wheelchair, units on castors stored in room could move about and damage equipment.	Lead shield could be fixed in position according to adiologist. Keep stored equipment to a minimum or place in pen.
e	Ultrasound	Unit mounted on castors. Video and CPU installed on monitor could slide off.	Secure on trolley, park in pen or tether when not in use to reduce risk.
f	Mobile X-ray Unit	Can move around and damage unit or other equipment. Has significant mass.	Park in suitable pen in main block as access through EQ prone front part of building after EQ could be difficult.
4	**LABORATORY-** Structural score: Timber section 32, Masonry section 100		
a	Building	The centre section of the building housing the blood bank and mortuary is of cavity brick and is EQ prone. The section was given a replacement period of 8 yrs in the October 1990 report by GM Evans of Newton King, O'Dea Gibson & Evans.	The Evans report suggests that the earthquake resistance could be improved by bracing/strengthening the roof. Additional fixings to the brickwork would also be required. The alternative is to demolish the brickwork and replace it with timber framing.
b	Bloodbank	Items not restrained include the refrigerator, centrifuge, cell washer and computers.	Fix and restrain equipment.
c	Laboratory Equipment	Items not restrained or secured include incubators, analysers, computers, printers, photocopiers, medical freezer. Wires retain chemicals in shelves. Spillage could force evacuation.	Fix and restrain equipment where practicable. Review means for presenting chemicals from falling out of racks, shelves etc.
d	Air Conditioning Units	Compressor and AC motor.	Provide snubbers to compressor and AC motor.
e	Light Fittings	Light fitting and fixings.	Check fixings to light fittings.

Table 6.1.(page 2 of 4) Summary of findings from Masterton Hospital critical facilities screening

Masterton Hospital - Structural, non structural, building services and lifelines – summary of vulnerable elements			
Item/element		Vulnerable element	Suggested mitigation
5	**AMBULANCE SERVICES & COMMUNITY HEALTH** - Structural score: 75		
a	Building accommodation	Two-storey building (old nurses' home) suffered severe damage in 1942 earthquake and substantially rebuilt and strengthened after the earthquake. Cavity brickwalls ground to first floor with RC buttresses and beams added in 1942. First floor to roof timber framing (stucco) replaced brick walls which were demolished to first floor level in 1942. Roof part tiled, part CGI.	Given a replacement life of 20 years (normal occupancy), 6 years (essential service) in 1990 structural assessment. Seek alternative for Ambulance Service as an essential service.
b	Building Services Light fittings	Suspended light fittings.	Need checking out for integrity of suspension and restraint.
	Equipment Communications and computers	Some securing and restraint provided for items of equipment.	Review securing and restraint and augment where necessary.
	Ambulance spares	Racks for ambulance spares not secured and contents restrained. Equipment could be damaged. Equipment stored on top of cupboards could cause injuries.	Secure shelves and restrain contents. Remove equipment from tops of cupboards.
	Ambulance Stores	Racking not secure and contents not restrained. Medical supplies could be spilled.	Secure racking and restrain contents.
	General		All equipment should be secured and restrained and redundant gear should be stored out of operational areas or disposed of.
6	**ESSENTIAL SOURCES/LIFELINES**		
a	Power & emergency generator	Redundancy of supply? Not clear. Emergency generator anti-vibration mountings have no limits on movement and could collapse. Fuel tank has a capacity of about 2250 litres but is 20 years old.	Investigate redundancy of supply. Install snubbers to limit movement and protect anti-vibration mountings. Check whether fuel tank needs replacing. Determine maximum fuel consumption and refuelling internal.
b	Water storage	The water tower adjacent to the laundry with 4 No. 4000l tanks is suspect and the concrete tanks are not secured. The water tanks on the roof of the three-storey block should be dispensed with if at all possible.	Look at alternative to storage such as a dedicated supply from the two reservoirs on the hill above Lansdowne and an additional connection using MDPE from the 100 mm main in Colombo Road to the 150 or 100 mm ring mains.
	Mains	100 mm & 150 mm ring mains supplied from Te Ore Ore Road. 80% cast iron and 20% steel. Likely failures at hard points and at joints due to ground shaking. No liquefaction potential.	All new reticulation and replacements should be in ductile materials e.g. MDPE or HDPE. Provide flexible connections at 'hard points' where relative movement can occur.
c	Sewerage	Reticulation in glazed earthenware up to 150 mm. Likely to be damaged due to ground shaking at joints and 'hard points' where relative movement occurs. Direct discharge to the Waipoua River may be necessary in extreme emergency.	Investigate connecting up the two sections to allow alternate discharge to sewer along Colombo Road. All repairs and extensions to reticulation should be in ductile materials with welded joints. An emergency discharge for the MDC sewerage system with bar screen is located on the left bank of the Waipoua River adjacent to the Colombo Road bridge.
d	Communications		
e	Boilers, steam & hot water lines	Boiler securing and restraint subject to regular review.	Carry out seismic review of boiler installation and steam and hot water lines reticulation. In terms of current codes including NZS 4219.
f	Services tunnel	Services lines and mains and medical gases lines are inadequately secured and restrained and without regard to relative movement at 'hard points'.	Secure and restrain lines, mains and bring in accordance with NZS 4203 & NZS 4219.
7	**KITCHEN**		
a	Building	RC walls timber trusses appear OK.	
b	Chillers & freezers & dry store	Shelving and racks not restrained. Contents can fall out. Heavy items stored high on shelves. Items can fall to floor and become mixed and unusable.	Restrain and fix shelving and racks. Provide lip or upstand to prevent items sliding off shelves. Store heavy items low down in racks.

Table 6.1.(page 3 of 4) Summary of findings from Masterton Hospital critical facilities screening

Masterton Hospital - Structural, non structural, building services and lifelines – summary of vulnerable elements			
Item/element		Vulnerable element	Suggested mitigation
7	**KITCHEN** - Continued		
c	Equipment Fat fryer, ovens, electric & steam chests, steam jacketed pans, hobart mixer	Unrestrained and not fixed in position. Some units could move around floor and overturn; danger to staff.	Restrain and fix in position where practicable. Provide umbilical cord to restrain movement and prevent overturning where hygiene and/or working requirements prevent fixing.
d	Building Services Electric fly trap*	Lack restraint and adequate fixings. *& Chiller & freezers compressors & condensers. Air handlers & ducting including ducting over kitchen in the basement. Distribution boards and cabinets (including theatre and ward ring mains).Clairifiers & heat exchanger units.	Provide adequate fixings and restraint.
8	**WARD 4** - Structural score: 27		
a	Building services Light fittings	All light fittings including heavier fittings supported on gib board ceiling lining. Ceiling joists and ceiling battens have been cut to allow flush fitting of lights.	Heavier fittings should be supported directly from ceiling joists.
	Water storage tanks In tank room	3000 litre tank restrained for gross movement but smaller tanks can move around on tank stand over large distances.	Provide for movement of tanks including deformations of thin wall tanks under hydro dynamic effects by use of flexible connections at inlets and outlets.
	Sprinkler pipes necessary to NZS 4219.	Unrestrained fixings at some points.	Check out and provide adequate fixings where
9	**SELENA SUTHERLAND**		
a	Building	Old brick portion strengthened with RC buttresses and RC bands, bracing in frame of ceiling and ties at floor and ceiling work done in 1942.	Securing and strengthening appears satisfactory but does not meet modern code requirements for a Class 1 structure.
b	Fittings Central filing cabinets	Central filing cabinet is free standing.	Provide fixing and restraint to shelving and upstand to prevent spilling of files.
	TV sets to patient rooms	TV sets not fixed to brackets; danger to patients.	Provide fixings and restraint to TV sets.
10	**LAUNDRY**		
a	Building services Water tanks	4 No.3000 litre tanks on tank stand unrestrained. Tank stand suspect.	If possible find alternative to water from tanks such as direct connection to water main along Colombo Road. See item 6b above. If not possible, check tank stand and secure tanks.
	Light fittings	Suspension and restraint systems for Malide lamps not apparent.	Check adequacy of suspension and restraint.
b	Equipment	Dryers 2, 3, and 4 not anchored to floor; could move about and fracture steam lines.	Anchor dryers and restrain.
c	Chemicals	Sanitisers, bleaches and oxidisers etc stored.	Provide containers and storage to prevent spillage and mixing.
11	**COMPUTER FACILITIES** - Structural score: 100		
a	Financial services Building	Single storey cavity brick with timber roof trusses and heavy tile roof built 1912; not secured or strengthened.	Investigate alternative accommodation in secure building on hospital campus.
b	Equipment	No alternative hardware available but spare hubs available in network if one falls over. Monitor and CD tower not secured or restrained. Lightning strike and interference. Physical security - vulnerable.	Review securing and restraint for whole computer network. Investigate risk. Seek alternative accommodation.

Table 6.1.(page 4 of 4) Summary of findings from Masterton Hospital critical facilities screening

WELA hazard screening assessment of critical facilities – summary of main elements, vulnerable elements and suggested mitigation measures

MASTERTON FIRE STATION (SCREENED MARCH 2000)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1967. Single storey. Appliance Bay is structural steel portals and reinforced concrete walls and floor slab. Offices and ancillary rooms are timber framed with brick and concrete masonry veneer on a reinforced concrete floor slab. Roofing is longrun corrugated iron. A detailed check of the Appliance Bay is recommended. Hose tower is connected to building. Torsional effects could cause damage in moderate to large earthquake. Structural advice is recommended ($5000). 	ApplianceBay 100 Offices/ Amenities 27	Generator - GM diesel capacity 50kW. Tank and batteries not secured. Provide restraint for fuel tank ($400) and secure battery racks to walls ($400). Fire extinguishers need quick release straps ($50). Switch room should not be used for storage. HAZCHEM suits and compressed air cylinders should be removed. Hot water cylinder in laundry is not restrained. Provide brackets and strap cylinder to wall ($50). Fix radio to top of cabinet with Velcro ($20) and cabinet to wall with metal brackets ($50). Fix radio, CPSU, and paging transmitter to top of cabinet with Velcro ($20). Some rust on an aerial on the tower roof. Maintenance required to control rust ($50). Provide slack in coax cables to allow movement ($50).	Lockers in locker room need securing to wall ($100). Attach computer, fax, and printer to desks with Velcro. Attach photocopier to floor and/or wall with brackets ($50). Install catches on desk drawers ($50). Heavy plaster tiles and suspended ceiling grid in lunchroom are inadequately restrained and tiles could fall during ground shaking. Adequately brace and secure grid to restrain tiles or provide light weight tiles ($500). Lights in appliance bays and lunchroom are fixed only to the plaster ceilings and could fall with the tiles. Provide independent suspension for light fittings ($500).

CARTERTON FIRE STATION (SCREENED AUGUST 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1946. Single storey. Appliance bay has structural steel portals, RC floor slab and concrete masonry and timber framed walls, capable of housing two fire engines. Offices, stores, kitchen and social areas are timber framed with some concrete masonary walls, a stucco or plaster external finish and RC and timber floors. The hose tower is approximately 2.2 m2 square and 12 m high and appears to be in good condition.	Appliance Bay 43 Offices/ Amenities 36	There is no emergency generator installation. Standby power for the alarms and control panel is provided by 12 V dry cell batteries Radio installation appears to be well secured. 	The trolley should be fixed to the wall with quick release straps and the computer etc restrained on the trolley with industrial velcro

Table 6.2. Summary of results from the critical facilities screening of Wairarapa fire stations, police stations, civil defence headquarters and the Wardell's river gauging site. **(page 1 of 9)**

GREYTOWN FIRE STATION (SCREENED JANUARY 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1962. Single storey. Appliance bay has structural steel portals with timber lining and metal cladding on the outside. Roof is corrugated iron. The hose tower is approximately 2.0 m square and 11.3 m high of galvanised steel angle. The steel is in good condition. The tower is secured to four concrete pads containing approximately 1 m^3 of concrete each. The tower carries a communications aerial at about 6 m. The social room is also used as the Greytown civil defence headquaters. It is 11 m x 6.2 m, has timber floors, gib on the walls and ceiling and aluminium windows. An annex, with a low angle roof and concrete slab floor extends out from the social room and is 8.4 m x 4.6 m.	Appliance Bay 45 Office/ Amenities 36	A 7.5 kVA emergency generator in the appliance bay is capable of powering 5 emergency lights. The 20 litre fuel tank and battery needs securing to the ground.	Secure computer, printer, copier and fax to desks with Velcro and secure desks to walls. Secure breathing cylinders to racks on wall or place on floor and secure.

FEATHERSTON FIRE STATION (SCREENED JANUARY 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Single storey concrete block, steel frame structure with concrete slab foundation. Low angle roof with colour steel or similar. Appliance Bay is 10.2 m x 9.9 m and houses two fire engines and one fire police van. Storage shed at back of property is a timber frame structure with metal cladding and a concrete slab foundation. The roof is corrugated iron. Approximately two thirds of the building is used for storage and acts as a civil defence headquarters. The generator shed, underneath the hose tower, houses the emergency power supply and is 2.8 m x 3.7 m. It has a light steel frame construction, timber frame roof, metal cladding and a low angle corrugated iron roof. A flat is attached to the south end of the social room and is not part of the fire station operation. The hose tower consists of an electricity pylon, 4.4 m square at the base and 15 m high.	Appliance Bay 40 Office / Amenities 47	Generator is a Start-o-matic, 2.5 KVA. Built 1944? A 40 litre fuel tank is secured to the wall and a 20 litre tank is stored in reserve. The battery is loose and needs securing to the floor. The storage shed needs to be cleared of unnecessary equipment to allow for the normal use of the civil defence communication equipment in this area.	Lockers in the appliance bay, hallway and CFO office need to be secured to prevent movement ($140). Computer, scanner and printer need to be secured to the desk with Velcro ($60). Provide independent suspension for ceiling light fittings in social room ($500).

Table 6.2.(page 2 of 9)

MARTINBOROUGH FIRE STATION (SCREENED JANUARY 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built mid 1970's. The building is single storey, timber framed with timber trusses and stucco cladding on outside with colour steel roof. The floor is concrete slab. The appliance bay is 10.7 x 8.0 m and houses two appliances. The watchroom is timber framed. The social room and kitchen is 11.0 m x 8.0 m. and has a timber floor on timber piles. 	15	There is no emergency generator. A 5HP Honda portable generator can be used to power a few lights. Two 20 litre cans of diesel are currently held. Switchboard needs to be secured to the wall to prevent overturning ($100).	The computer, phone, fax and scanner in the watch room need to be secured to prevent movement ($60). Items on the high shelf in the watch room need to be removed. The bookcases need to be removed from the watchroom and stored elsewhere and secured. The filing cabinet drawers need to be secured and the cabinet removed from the watchroom. Lockers in the appliance bay and hall need to be fixed to the wall ($50) and any non-operational items removed. The fluorescent light in the watchroom needs re-fixing to the ceiling joists.

Table 6.2.(page 3 of 9)

MASTERTON POLICE STATION (SCREENED SEPTEMBER 2000)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1967/8. The station is three storeys and consists of a main block which is a three storey reinforced concrete shear wall structure. There is a single storey cell block also in reinforced concrete to the rear of the main block, and an a adjacent timber framed single storey building to the east which is leased. A single storey garage block, also in reinforced concrete wall construction is located at the rear of the site. The cell block was upgraded in 1998. The main block has pad footings to the columns, strip footings to the walls, and piles to the timber ground floor. The cell block has strip footings to the walls and a reinforced concrete floor slab. The adjacent leased block is timber framed with a slab on-the-ground. All blocks have timber framed roofs and galvanised iron roofing with some structural steel support beams where necessary. 	HQ 25 Cell Block 25	Emergency generator is an external stand-alone 48 kW unit. There is an underground, 5000 litre diesel tank shared with the hot water boiler. There is sufficient fuel to run for 24 hours on full load. External boiler room with diesel hot water boiler and large hot water cylinder 2.2 m high and 900 diameter. Restraint for HWC appears to be inadequate and should be checked out. The HD arrangement and restraint for the hot water boiler is not apparent and should be checked out. The 1351 HW cylinder in the cell block requires adequate restraint. The HW header tank appears to be adequately restrained. The AC unit on the wall of the typist's room needs fixing to the wall to provide restraint. Telephone components are well restrained but it is not possible to close the door which in an earthquake could swing and damage leads and impact components. It could also break and impact the Mainframe. Computer server towers (three boxes) are unrestrained and could move around the floor and impact other equipment. They should be penned in. Computer monitors should be restrained with industrial Velcro CLEAR box and modem shelves need proper fixings and the components restrained. Critical spares should not be stored on a shelf above the equipment where they can cause or suffer impact damage. The fixings of the radio aerial guys to the ribs of the large profile longrun galvanised iron roofing should be checked out.	The arms safe needs restraining and the cabinets fixed to the walls ($200). Loose items stored on the top of cabinets should be removed. If kitchen is required in the response phase following an earthquake, kitchen equipment should be fixed or restrained and cupboards fitted with suitable door catches ($100). If computer equipment in offices is essential for operations in the response phase following an earthquake, desks should be restrained and monitors fixed to desks with industrial Velcro ($100).

Table 6.2.(page 4 of 9)

CARTERTON POLICE STATION (SCREENED APRIL 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1979. Single storey building of concrete block construction with a RC foundation. All walls are concrete block except for a small wooden 'kick out' section in the main office to allow for future extensions if required. 	47	Fire extinguisher in the northeast office requires a quick release strap ($20). The hot water cylinder in the cellblock needs to be better restrained to avoid damage in an earthquake ($50). The radio in the main office needs securing to the desk ($20).	The computers in both offices need to be fixed to the desks ($40). The printer and the items on the high shelf above the desk in the main office should also be secured ($30). The pigeonhole unit in the main office needs to be secured with brackets to prevent it from toppling over ($20). Any unnecessary items should be removed from the main office and stored elsewhere as the efficient operation of this area will be important during an emergency. Fluorescent lights are hanging from hooks in the two offices. These need to be fixed securely to the beams or underlying structure, or with eye hooks to prevent them from becoming detached and falling during an earthquake.

GREYTOWN POLICE STATION (SCREENED APRIL 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 2000. Single storey timber frame construction with stucco cladding. Butinol roof. 	22	Radio needs securing to desk ($20).	Computer and printer in main office and pigeonhole unit in hallway need securing ($100).

Table 6.2.(page 5 of 9)

FEATHERSTON POLICE STATION (SCREENED MARCH 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1950's. Single storey brick veneer with strip footings and a low angle roof. 	36	No emergency generator. All fire extinguishers need to be secured with quick release straps. The radio unit in the watchroom needs to be fixed to the desk to avoid movement and damage during an earthquake.	All computer equipment, including the printers need to be secured to the desks using either Velcro or screws ($100). All items that are not necessary to operate the watchroom should be removed and stored elsewhere. Restraint needs to be provided for items stored on the bookshelves to prevent them from falling during an earthquake. The free standing storage in the two offices on the southeast side of the building needs to be fixed to the wall to prevent them from overturning in an earthquake. The filing cabinets also need some form of restraint in these rooms. The safe in the southeast office also needs securing ($200). The video unit and cupboard underneath need securing to prevent the unit from toppling over ($50).

MARTINBOROUGH POLICE STATION (SCREENED APRIL 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1970's. The building is of single storey timber frame construction and is clad in weather boards. A steep angle roof covers the main office, entrance and toilet, while a low angle roof covers a storage area at the back of the building. There is a concrete slab foundation under the rear storage area. 	22	Fire extinguishers need to be secured to the wall using quick release straps ($40). The radio in the main office needs fixing to the desk with Velcro to prevent the unit from falling ($20).	The safe and cabinets in the main office need securing to the wall ($50). The tall lockers in the storage room and entranceway need fixing to the wall to prevent them from toppling over in an earthquake ($50). Items on the high shelf above the computer desk need securing to prevent them from falling ($50) Any unnecessary items should be removed from the main office and stored elsewhere.

Table 6.2.(page 6 of 9)

WELLINGTON REGIONAL COUNCIL BUILDING (STRUCTURAL SCREENING UNDERTAKEN 1999)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1966. Two, two storey linked reinforced concrete structures. Main building and smaller (annex) connected by enclosed walkway. Buildings have brick veneer external cladding. Annex was enclosed in 1990. Full engineers building report and structural assessment has been undertaken as a result of the WELA assessment and recommendations. Strengthening measures suggested have been completed (See photos opposite). The total cost of this work was $39 500.	Offices 53 (before strengthening)	Internal and external bracing systems added to the Wellington Regional Council building on Chapel Street, Masterton, to solve potential problems of a soft story mechanism. Photos George Butcher.  	

Table 6.2.(page 7 of 9)

MASTERTON DISTRICT COUNCIL CIVIL DEFENCE HEADQUARTERS (SCREENED SEPTEMBER 1999)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Built 1984. Two storey reinforced concrete structure with RC frames and deep exterior spandrels and tilt-up panels at 45 degrees to the southeast and northeast faces. The civil defence headquarters are seismically separated from the rest of the building. The headquarters would have been designed for the higher class loads for class 1 structures specified in NZS 4203 using an importance factor of 1.6. A capacity design approach would have been required by the code. The risk of loss of function of the headquarters is low, however, the WRC building can be used as an alternative site if necessary. 	50	Standby generator has a fuel tank with a capacity of approximately 90 litres and a 12 hour running capacity. Underground 5000 litre diesel tank can be used to extend to at least 3 days running time. A hand held pump is available for refuelling. The standby generator needs additional restraint to prevent torsion ($100). The individual batteries require partitions for restraint ($100). The timber doors between the storage area and switchroom/standby generator should be replaced with fire rated doors ($1500). Restraint needs to be provided to hot water lines, other water lines and drainage lines not restrained ($1000). Additional restraint needs to be provided to PABX ($1000).	Suspended ceiling elements need checking for fixing deficiencies ($200). Light fittings need separate suspension system ($500). The half height partitions to Treasury Offices are likely to be used during a civil defence emergency but are unstable. Fixings need to be provided to prevent overturning ($500). The vulnerability of the computer installation from earthquake and water damage needs assessing. Restraint and protection should be provided if warranted ($5000). Fire extinguishers need to be provided with quick release straps in the civil defence area and MDC offices ($100).

Table 6.2.(page 8 of 9)

CARTERTON DISTRICT COUNCIL CIVIL DEFENCE HEADQUARTERS (SCREENED OCTOBER 2002)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Timber framed construction with exterior stucco finish. Council chamber added 1975. The addition was a structurally independent RC masonry building. Second extension carried out latter and there are no structural details. Third extension was Mayor's office in 1999? The lack of structural details for the second addition, the form of the extension with the short returns to the ends of the masonry walls, the resilience on dowels into the masonry walls of existing structures, and the removal of considerable lengths of external bracing walls to the original office building are matters of concern. A report from a structural engineer is recommended on the structural integrity of the building under seismic loads. In the interim, shifting the CD headquarters to the nearby timber framed Works Offices and yard or the Carterton Fire Station is recommended.	62		

WARDELL'S RIVER GAUGING SITE (SCREENED JANUARY 2001)

Building	Structural score	Building services and communication equipment	Furniture and contents and architectural elements
Round (1-1.5 m diam), RC two story tower housing water level recorders and telemetry. Provides the WRC river information at the key sites on the Ruamahanga River. The building is founded in river gravels at least 2 m below ground level. Design of foundation should be checked by an engineer for its ability to resist earthquake shaking.	Not checked	Power supply is via mains power ducted through underground cable. Switchboard is adequately bolted to wall. Power supply converter box and radio unit should be restrained to the shelf using straps or Velcro, or a lip placed on the shelf ($50).	The radio unit is located at top of access bank and is vulnerable too damage from bank erosion or landslide. Aerial could be moved further inland to reduce vulnerability ($100). 

Table 6.2.(page 9 of 9)