Section 5: Response – managing buildings once an emergency occurs

This section is for territorial authorities to help you manage buildings in an emergency in accordance with your plans; in particular, if rapid building assessments are required. It contains steps for managing the response including activating a building assessment plan, mobilising key people, and managing the ongoing operation.

Helpful tools include:

- response checklist for activating a building assessment operation – Appendix 4
- cordoning checklist, barricading guidelines – Appendix 5
- health and safety information – Appendix 6
- memorandum of understanding for engaging assessors – Appendix 7.

Response – what is required

Under the National CDEM Plan (section 80) each territorial authority is, as necessary, to:

- lead rapid building assessments
- take steps to manage the safety of people in and near a building, either in accordance with directions of the Controller during a state of emergency or Recovery Manager during a transition period, or in line with its functions under the Building Act in any other emergency, including, as applicable:
  - cordoning
  - carrying out stabilisation work and barricading
  - carrying out demolitions and setting up partial demolition cordoning
  - requiring the mandatory evacuation of a building or the area around a building when necessary.

Steps to achieve this

To manage buildings in response to an emergency, territorial authorities need to:

- establish and manage a rapid building assessment operation when required, including mobilising and managing volunteer assessors
- carry out placarding and other activities (eg cordoning, stabilising/demolition) as needed
- seek further information from building owners as necessary.

MBIE helps by:

- supporting CDEM Groups and territorial authorities as needed following an emergency
- leading rapid building assessments if a state of national emergency has been declared.

5.1 Managing buildings to help protect life and property

5.1.1 Mobilising the response

Immediately following a damaging hazard event a response management structure will be activated by agencies using the Coordinated Incident Management System (CIMS). Standard early response tasks include:

- territorial authorities and, if necessary, CDEM Groups, activating Emergency Operations Centre (EOC) and Emergency Coordination Centre (ECC) facilities respectively[6]
- emergency services mobilising and carrying out rapid impact assessments to determine the impact and extent of damage
- at the national level, activating the National Crisis Management Centre (NCMC) to coordinate the central government response
- deciding whether to declare a state of local or national emergency[7], or to give notice of a local or national transition period[8].

The Building Response Manager for the territorial authority should liaise with others as quickly as possible to get a preliminary picture of building damage in the district – its geographic extent, the type of buildings affected, and likely effects on public safety. He or she should seek input from local structural and geotechnical engineers and senior building officials, convening a specialist operational panel to discuss as necessary.

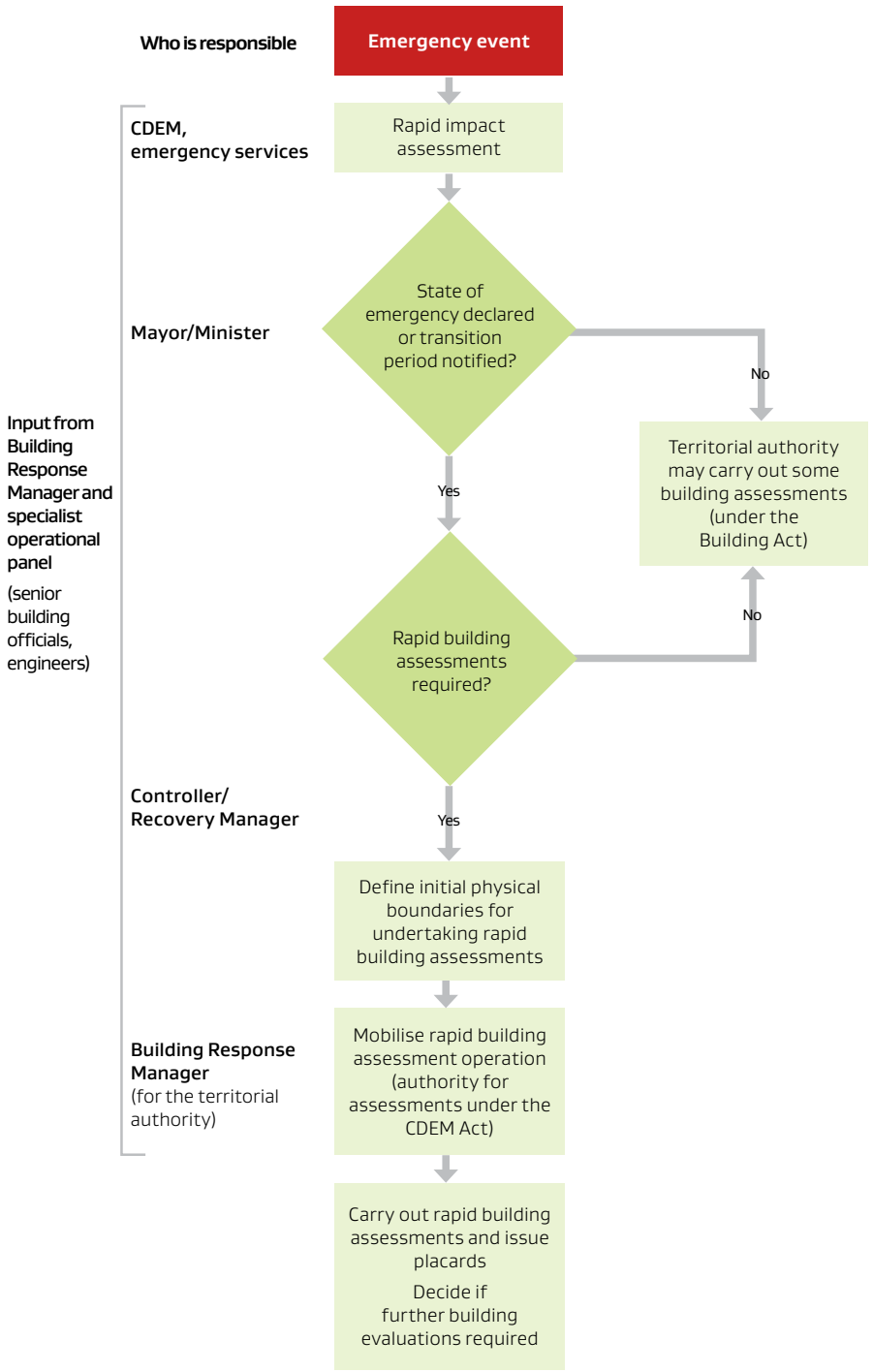
The Building Response Manager provides this information to the Controller to help the mayor (or other authorised person) when deciding whether or not to declare a state of emergency or notify a transition period under the CDEM Group.

A specialist operational panel then provides ongoing technical and regulatory oversight to the subsequent response and recovery activities relating to buildings.

Figure 5-1 outlines the process.

6 These centres are usually called Emergency Coordination Centres (ECCs) at the CDEM Group level
7 CDEM Act sections 66-73
8 CDEM Act sections 94A-94F

Figure 5-1: *Determine nature of building assessments*



5.1.2 Controller decides if rapid building assessments should go ahead

The relevant CDEM Controller (in the response phase/a state of emergency) or Recovery Manager (in the recovery phase/a transition period) will decide if there is a need for a rapid building assessment operation to assess risks to public safety posed by damaged buildings and/or land instability.

The Controller will make this decision based on feedback from the rapid impact assessment and advice from the Building Response Manager, using the local specialist operational panel. The Controller will also need to decide the initial physical extent of any rapid building assessment operation, taking into account where cordons are being placed and key public access routes. Further information may alter the extent of the rapid building assessment operation.

In all cases the Controller, in consultation with the assembled response team, determines what specific duties are assigned to the Building Response Manager.

Key point

In any emergency the first priority is public safety. Building occupiers in the affected community will usually have made an immediate assessment of the life safety risk.

If necessary, emergency services personnel will establish search and rescue functions. If people require rescue, Urban Search and Rescue (USAR) task forces may be deployed.

Any rapid building assessments may be delayed until search and rescue operations are complete.

CDEM officials and territorial authorities should consider the questions in Table 5–1 when considering whether rapid building assessments are needed.

Table 5–1: *Considerations for activating rapid building assessments*

Issue	Questions
Response considerations	Is a state of emergency declared or transition period notified? Is resource coordination required because of limited local resources and/or a need for significant outside resources?
People affected	Are a significant number of people at risk from building damage or land instability?
Building damage	Is building assessment required because of a large or widespread event and damage to buildings?
Hazard events(s)	Are conditions uncertain? Could the event escalate? Is the extent of damage unknown?

5.1.3 Responding if no state of emergency is declared or transition period notified

Key point

If no state of emergency or transition period is in force, territorial authorities will use the Building Act to manage the restrictions on building access.

If there is no state of emergency or transition period, territorial authorities have more limited powers to assess buildings and gain access:

- Under section 222 of the Building Act the territorial authority has the power to undertake inspections to identify dangerous, earthquake-prone or insanitary buildings. In the case of a household unit the territorial authority must apply to the District Court for an order, and must provide the occupant with 10 days' notice before doing so.
- There is also a power of entry without notice in section 173 of the Local Government Act where either:
  - there has been a sudden emergency resulting in loss of life or injury to a person, damage to property, or damage to the environment; or
  - there is danger to any works or adjoining property.
- Buildings that have been assessed will not receive placards (as they do under a state of emergency or transition period). The territorial authority can issue a notice under the Building Act if it finds that a building is dangerous, earthquake prone or insanitary.
- Assessments may be limited to an external inspection if the owner (or the occupier of residential premises) does not give permission to enter, and section 173 of the Local Government Act does not apply.

Appendix 1 has more details of relevant Building Act powers and notices.

5.2 Managing a rapid building assessment operation

If the CDEM Controller decides rapid building assessments are required, the Building Response Manager will then implement the assessment operation on behalf of the territorial authority. He or she will work to the Controller, or to another appropriate role as tasked by the Controller such as an Operations Manager (refer section 4, Figure 4-1).

Key steps for activating and managing a rapid building assessment operation are as follows.

Response step	Actions
1. Building Response Manager activates the building assessment plan	Controller directs Building Response Manager, who then implements the assessment operation on behalf of the territorial authority
2. Mobilise key people to manage the assessments	Consider the nature and extent of the emergency; decide suitable structure and key roles
3. Plan the rapid building assessment operation	Decide the approach; seek advice on hazards and geotechnical risks; decide assessment priorities; estimate the number of buildings within the initial boundaries and deduce the approximate number of Tier 2 assessors and support personnel required
4. Establish supporting services	Provide a data collection system for assessment results; gather material for assessors and establish field support; consider responsibilities for health and safety; provide legal and communications support; liaison with Heritage New Zealand Pouhere Taonga and other stakeholders
5. Mobilise rapid building assessors	Locate and engage assessors; enlist extra help if needed
6. Get the building assessments underway	Establish assessment teams and assign areas; provide induction; organise daily briefings and debriefings; take steps to minimise risk in the field; consider team member wellbeing; start the assessments and then record and collate the results and provide to the EOC
7. Manage the ongoing operation	Manage cordons and barricades; issue placards/notices; consider any urgent stabilising/demolition of buildings required; identify indicator buildings if appropriate; monitor the operation
8. Manage communications	Communicate progress to the Controller; help public information management/communications teams prepare key messages for media and the public; provide appropriate information to building owners and occupants

Key point

The objective of managing buildings in an emergency includes helping to protect life and property, and to restore building functions and services as soon as possible (National CDEM Plan, section 77). Carrying out a successful assessment operation is central to this as it: coordinates these assessments with the wider response operation; manages communications with owners, occupiers and the public (in conjunction with the Public Information Management function); and provides feedback to CDEM to aid situation awareness.

5.3 Response step one: Building Response Manager activates the building assessment plan

The Building Response Manager's first step is to activate the building assessment plan developed during the readiness phase (as described in section 4). This plan should be changed as needed to address the nature of the emergency and the Controller's requirements.

The Building Response Manager should also set up an operations log for recording all key decisions and briefing/debriefing times.

Appendix 4 gives a checklist for activating a building assessment operation, following the steps described in this guide. The actual process will depend on the operation's scale and the local building management plan.

Key point

Rapid building assessments are likely to get underway anywhere from 12 to 48 hours after an emergency. This is because it takes time to assess the resources needed and mobilise key people.

5.4 Response step two: mobilise key people to manage the assessments

5.4.1 Consider the nature and extent of the emergency

The Building Response Manager will consider the type and extent of the emergency in order to mobilise appropriate resources for a rapid building assessment operation. This should take into account:

- whether there are trained staff available locally who are able to fill key roles
- the type and extent of the event:
  - Has it affected buildings within the commercial district and/or important community facilities, eg schools, medical facilities, supermarkets?
  - Has it seriously affected residential housing?
  - Are there geotechnical land instability concerns?
  - What is the scale and impact on buildings, and how long is the rapid assessment operation likely to take?

These considerations will determine the nature and amount of external support to ask for, and the structure and key roles needed to support the assessment operation.

Key point

In a state of emergency, on request through the Controller, MBIE will coordinate the provision of Tier 1 personnel capable of leading an assessment operation and/or provide other support requested.

Rapid building assessors should be Tier 2 trained. MBIE maintains a national register of trained building assessors.

5.4.2 Confirm and implement suitable structure and key roles

All emergencies are different and will require differing skills. The nature of activities will change with time as issues arise, so the operating structure should be flexible.

The territorial authority's plan for managing buildings in an emergency should address these issues and be the first point of contact for filling the key roles (refer section 4).

Functions that may need people to lead them include:

- recruiting and rotating Tier 2 rapid building assessors
- inducting, registering and warranting assessors. These will mainly be from the Tier 2 list, but additional people with specific skills, eg geotechnical engineers, may also need inducting.
- daily briefing and debriefing sessions
- data capture and IT support
- coordinating assessment teams, eg CBD buildings, residential, geotechnical
- a critical buildings team – assessing and advising on stabilising/demolishing of complex damaged buildings
- wellbeing support for assessment teams to address issues of health and safety, fatigue and stress.

Refer section 4 Figure 4-2 for a generic example of an operating structure. You could use this as a starting point and adapt it to suit the particular emergency and context.

5.5 Response step three: plan the rapid building assessment operation

5.5.1 Decide the approach

Planning a rapid building assessment operation will depend on: the nature of the emergency; its impact on the community, its people, buildings and land; and the extent of the affected area.

The Building Response Manager will need to decide on the overall priorities, with guidance from the Controller and community leaders.

Separate operations may be required to concentrate on:

- buildings within the central business district
- critical buildings needing to be stabilised
- community facilities: eg schools, medical facilities, shops
- land instability: eg slips, rockfall
- residential suburbs.

5.5.2 Seek advice on hazards and geotechnical risks

The Building Response Manager will need to seek advice on the likely ongoing nature of hazards and risks. This may include an understanding of any elevated risk of aftershocks following an earthquake, or the weather forecast for flooding events. GNS Science and NIWA can provide advice. MBIE may also be able to assist.

An area or areas affected by significant geotechnical risk may require a location or sector based approach. This will depend on the:

- geographic extent of the event and its impacts
- geotechnical assessor resource available and their skillsets and experience
- number and complexity of the geotechnical issues (for example, landslide, mass movement, landslide dam, cliff collapse, boulder roll).

In cases of major land damage the situation is often highly dynamic. Ensuing aftershocks or storm events may require ongoing monitoring and further assessments.

The extent of the area and risk from land instability will influence the response. For example, if there is an actual or potential threat to life from land instability USAR will be directly involved in rescue operations.

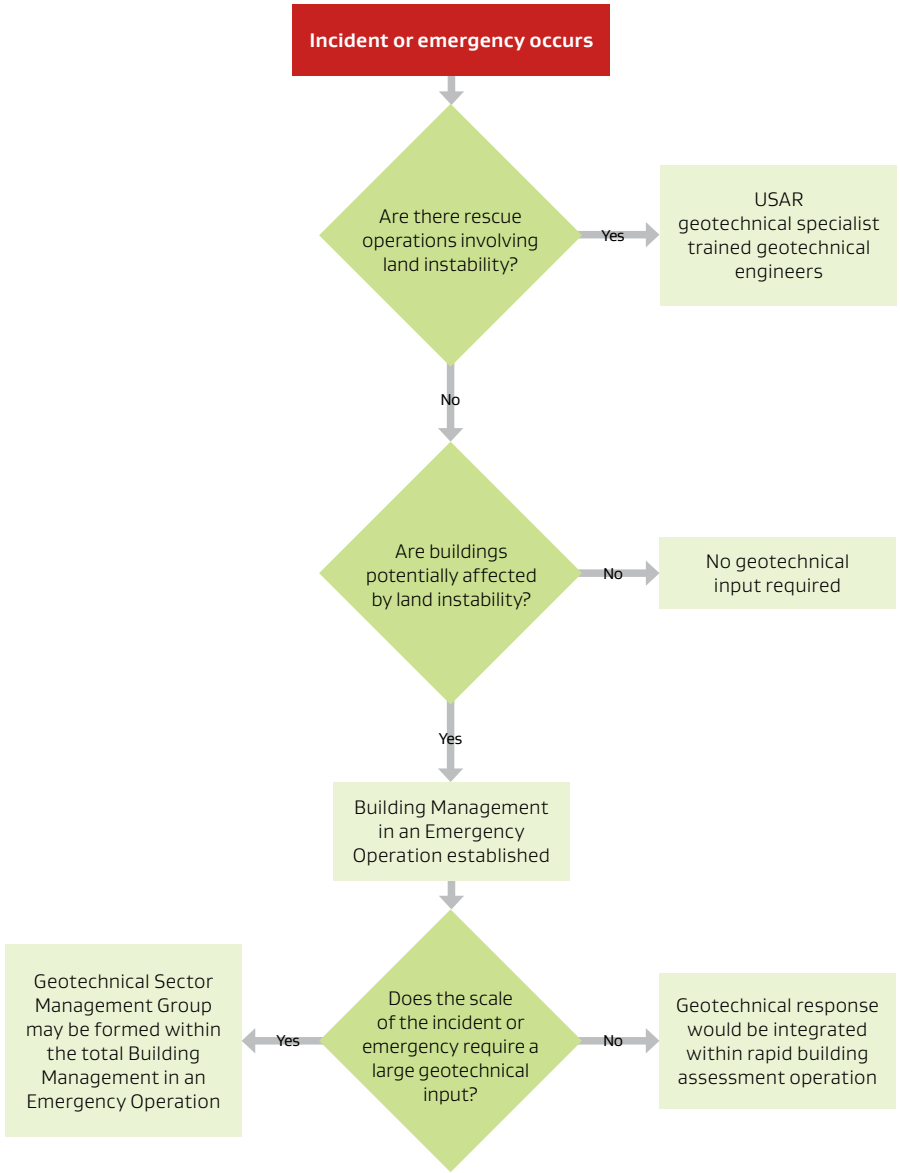
Following rescue, if an area-wide or hazard-specific response is required a specialist geotechnical group with a designated leader should be established. Refer to the field guide: *Rapid post disaster building usability assessment – geotechnical*, section A10.1 Appendix 10, for more information.

Figure 5-2 (based on Figure 1 from the geotechnical field guide) outlines the decisions for geotechnical professional involvement during a state of emergency.

Key point

In some cases buildings may not be damaged but can still be exposed to unacceptable life safety risk from a geotechnical hazard. Access to, and use of, these buildings needs to be managed.

Figure 5-2: *Process for geotechnical professional involvement during a state of emergency*



5.5.3 Decide which buildings to assess first

The rapid building assessment operation should follow the priorities established by the Building Response Manager. This should be informed by:

- the pre-prepared list of prioritised buildings completed as part of the building assessment plan (refer section 4.3), and
- rapid impact assessment information gathered by first responders (Fire and Emergency New Zealand, Urban Search and Rescue, New Zealand Police, etc).

Table 5-2 gives criteria for prioritising buildings for assessment. These priorities may need adjusting once the operation is underway.

If there has been an earthquake and you are expecting large repeated aftershocks, it is also useful to identify a range of indicator buildings to help monitor the rapid assessment operation. Refer section 5.9.3 for details.

Table 5-2: *Building assessment priorities*

Commercial and industrial areas	Residential areas
Prioritise the rapid building assessment of commercial and industrial buildings using criteria such as: • how close buildings are to arterial routes • how many pedestrians pass the buildings • whether hazardous substances are present and the potential for explosion, conflagration, contamination leak, or spill (eg chemicals, fuel) • whether the building has a specific role in the emergency or recovery phase as identified by the Controller's incident management team • how important the business operation or service is to the response or the community (eg building supplies, pharmacy) • whether essential supplies are stored or produced in the building (eg food, fuel) • how many people live or work in or near the building • whether the building contains key infrastructure (eg transformers, cell phone towers) • construction type (eg unreinforced masonry).	Prioritise rapid building assessments in community and residential areas using criteria such as: • buildings housing vulnerable, or less mobile, residents (eg rest homes) • essential services (eg supermarkets) • buildings that serve large numbers of people (eg schools and apartment blocks) • buildings used as Civil Defence Centres.

5.5.4 Make a preliminary estimate of the number of assessors required

Use the preliminary boundaries that have been identified for the rapid building assessment operation to estimate the number of buildings needing assessment. Use this number to estimate how many Tier 2 and support personnel may be needed.

While this will inevitably change as you receive better information, it is a good starting point for mobilising the necessary resources.

5.5.5 Determine the level of assessment

A Level 1 assessment operation (external inspection of about 20 minutes) will generally cover most damaged buildings. However, it may be more appropriate to start with a Level 2 assessment (which includes internal inspections and takes two to four hours) for some key buildings (eg hospitals), infrastructure (eg water, power) and more complex structures (eg a stadium or railway station).

Figure 5-3 describes the process for determining the extent of building assessments likely to be required during the response phase. Figure 5-4 summarises further evaluations or actions that may be necessary during response and recovery: these are a mix of territorial authority and building owner responsibilities.

Refer to Table 2-1 earlier for more about the building assessment types, and also to MBIE's field guides.

Figure 6-1 Section 6 has more details of actions in the recovery phase.

Figure 5–3: *Determining the extent of building assessments*

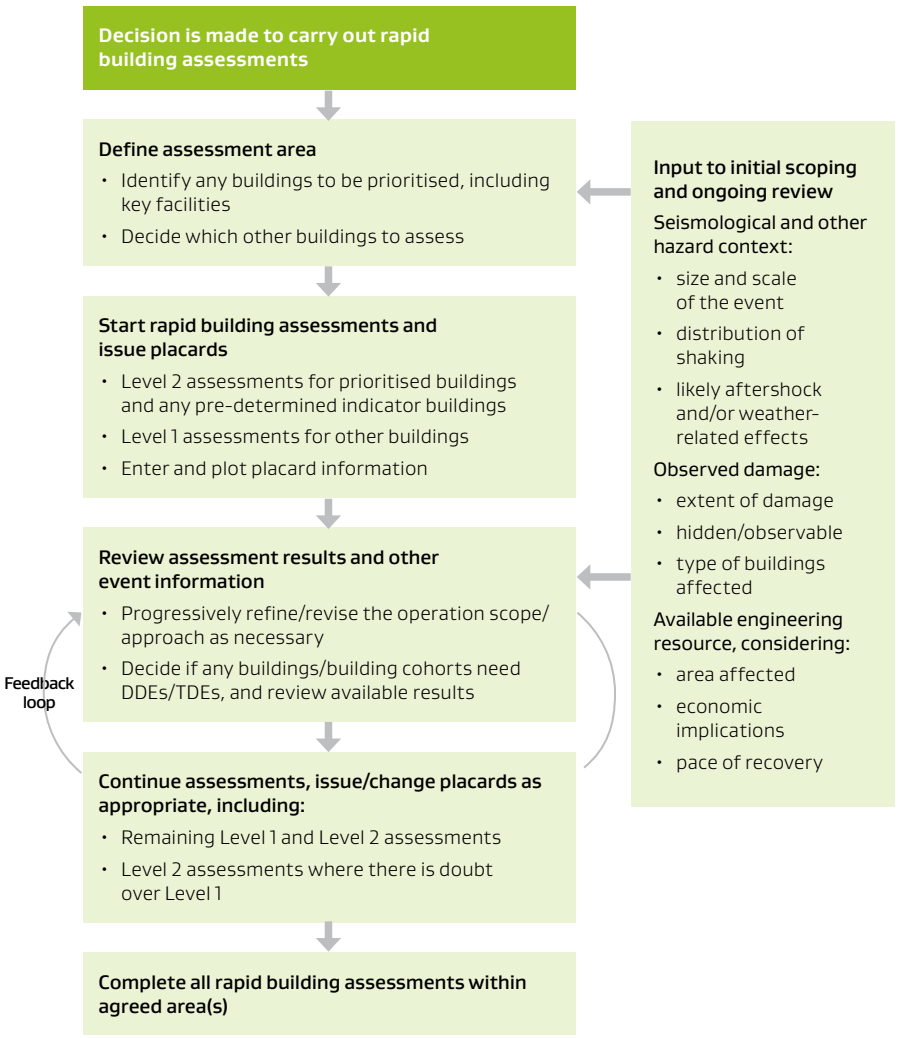
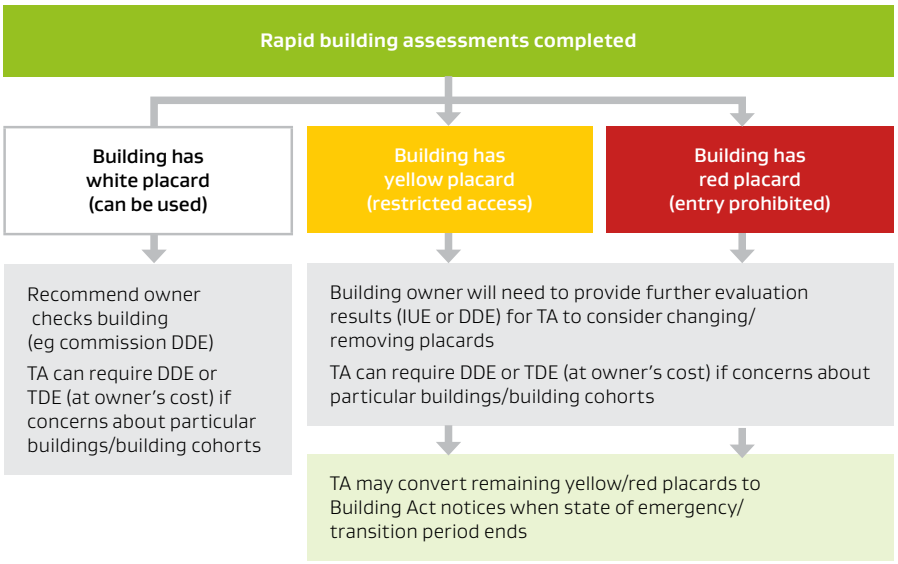


Figure 5-4: *Further building assessments and actions during response/recovery*



5.6 Response step four: establish supporting services

5.6.1 Provide a data collection system for assessment results

Access to building records within the territorial authority database will be necessary to generate building forms and then enter the data captured during the assessments. The Building Response Manager will then need to report aggregate information to the Controller or other decision makers.

Refer Readiness step four, section 4.4.1 'Provide a suitable technology platform'. If systems have not been established in advance, this will require close liaison with the territorial authority IT Manager.

As described in the Readiness section, the two main methods for recording assessments are:

1. **Printed rapid building assessment forms** (available at www.building.govt.nz/managing-buildings/post-emergency-building-assessment/) for building assessment following floods and earthquakes, and for geotechnical emergency response assessments. These forms can also be used for other types of emergency.

OR

2. **A rapid building assessment app** that assessors use in the field via a tablet or mobile phone. If the territorial authority has established this option, it should lead to the faster collation and supply of assessment results to those managing the emergency response.

5.6.2 Gather material for assessors and establish field support

Make sure there are enough arrangements and logistical support to provide assessors with the necessary resources. This will include food and drink as appropriate, field guides, personal protective equipment (PPE), maps, and placards.

5.6.3 Consider health and safety

Assessors, team leaders, and territorial authorities have health and safety responsibilities.

The Health and Safety at Work Act 2015 governs health and safety in workplaces. As an employer, territorial authorities have a duty to take all practicable steps to ensure the health and safety of assessors while at work. The assessors also have a responsibility under the Act. The Act also places duties on employers, employees, and others who are in a position to manage or control hazards.

You need to:

- use assessors who are trained in managing their own safety in the field and the safety of their team
- advise assessors of the hazards they will face out in the field.

The work environment will have new, and initially unknown, local hazards that pose risks to assessors and to the public. Many buildings may be hazardous because of potential collapse or falling debris.

This will add to any existing environmental risks and hazards such as hazardous substances, construction or demolition sites, slope stability and excavations. Hazard risks may have been aggravated, or their management compromised, by the emergency.

- At the deployment briefings, alert all staff and volunteers to the hazard risks.
- Refer to the field guides for information for rapid building assessors on field safety and first aid.
- Make psychological services available for assessors and others involved in the rapid building assessment operation as needed.
- Make sure there are systems in place for recording who has been assigned to which area, and that assessors log in and out each day so everyone can be accounted for.

Appendix 6 has more detailed health and safety information.

5.6.4 Access legal, communications support

Establish access to legal advice: this is likely to be needed to check issues about notifying building owners, privacy concerns, and so on.

Liaise with communications staff within the territorial authority. Key messages will need to be developed to inform building owners and the public, maintain public confidence and, as necessary, request public cooperation and assistance. Some material such as factsheets may have been pre-prepared. Refer to Readiness step six, section 4.6 for tips and resources, and to Response step eight for more on managing communications once assessments are underway.

5.6.5 Liaison with Heritage New Zealand Pouhere Taonga

Liaising with Heritage New Zealand Pouhere Taonga is important as its functions include providing advice on heritage matters in the event of a national or local emergency. Refer to section 5.9.6 for information about its involvement if a heritage-listed building is identified for urgent demolition, and to the Guide to the National CDEM Plan section 15.5 for more about its role in an emergency.

In the event that a state of emergency is declared, Heritage New Zealand Pouhere Taonga expert advisors are available to assist with:

- rapid assessment of the risk to and from heritage buildings
- identifying heritage buildings sites and areas
- assessing heritage values of buildings, sites and areas, and/or
- securing of heritage places.

The Heritage New Zealand Pouhere Taonga website contains a list of all places on the New Zealand Heritage List. It provides hard copies of this list to local authorities annually and an electronic update quarterly. It also maintains building files and copies of many conservation plans.

5.6.6 Liaison with other stakeholders

There will be a need for significant liaison with other people, organisations and teams outside the rapid building assessment operational team. This includes liaison regarding:

- cordons and barricades – coordinating with the Operations Manager for the response on the location of any cordons and provision of barricades to protect the public in fall zones (refer section 5.9)
- stabilising or urgent demolition (section 5.9.6).

It also includes liaison with:

- commercial building owners – warranting engineers commissioned by commercial building clients
- the professional engineering community – seeking advice on technical issues and providing direction on priorities and timeframes. In significant events, the technical societies will set up clearing houses to provide the latest information to all engineers involved in assessing buildings and land.
- Heritage New Zealand Pouhere Taonga, as discussed above.

5.7 Response step five: mobilise rapid building assessors

5.7.1 Locate and engage assessors

Estimate the number of trained assessors and the necessary skillsets to carry out rapid building assessments in the affected area. (You may have already made an initial estimate – refer section 5.5.4.)

Mobilise the required number of assessors. Source these primarily from MBIE's Tier 2 list. Call on Tier 3 (awareness trained) people for extra support. Seek local resources, and those from neighbouring territorial authorities and other regions if needed.

It has been normal for Tier 2 rapid building assessors to volunteer for up to three days to support the operation. However, they will need to be protected from liability.

Accordingly, before a rapid building assessor starts work, the territorial authority needs to enter into a written agreement with the assessor via a memorandum of understanding (see Appendix 7). This is especially important for any assessors who are not employed by the territorial authority at the time of the response; typically a person volunteering their skills. This provides the warrant for assessors to undertake rapid building assessments.

The memorandum of understanding addresses liability concerns, outlines expectations about the scope and duration of the role, and explains which entity the assessor will report to.

If an assessor's services are needed for more than three days, the territorial authority will need to engage them under a professional services contract and arrange funding for this service. Note that termination and rotation of specialist assessors after three days to minimise costs is not encouraged if this is likely to jeopardise a timely and effective response. This is especially the case if specialist local knowledge is needed; eg with land stability geotechnical assessment.

Key point

An authorised rapid building assessor is generally protected from liability during a state of emergency or transition period under Section 110 of the CDEM Act unless an act or failure to act constitutes bad faith or gross negligence.

5.7.2 Enlist extra help if needed

MBIE can help to identify appropriate Tier 2 assessors, or provide additional induction resources if not enough Tier 2 assessors are available to support the operation.

If necessary, the Building Response Manager can ask the Controller to request additional support from MBIE. If a state of national emergency has been declared, MBIE will support the operations without request, using Tier 1 personnel.

5.8 Response step six: get the building assessments underway

5.8.1 Establish assessment teams, induct assessors and assign areas

Establish assessment teams. A trained rapid building assessor (Tier 1 or Tier 2) should lead each assessment team.

Each team will ideally have two technical field staff, and one person (who may be non-technical) to interact with building occupants. Teams should be expanded to include geotechnical expertise if there are geotechnical hazards threatening buildings and/or life safety. For assessing large commercial buildings, a CPEng registered engineer must be a member of the assessment team.

Set up a standard induction process to be delivered by the Induction and Technical Coordinator. This should cover aspects such as: the situation operational command arrangements and key points of contact; the rapid building assessment procedures; field guides and forms; posting placards; and health and safety issues.

Check and provide suitable identification for assessors going in the field where necessary. Tier 1 and Tier 2 trained assessors should already have MBIE-issued identity cards.

Key point

Before deploying assessors, the Building Response Manager should have determined:

- what information is required from the field operation
- what actions need to be taken (for example, isolating severely damaged properties), and
- how assessors should report issues such as life safety hazards, the need for cordons, barricades, shoring, or demolition.

In the deployment briefing, mark the area allocated to each team on a map. Ideally, building assessment teams should be allocated buildings on a block-by-block basis as this lets them see each building from multiple sides. As assessments are completed, the assessors should mark off those areas on the map and transfer the information to master maps maintained by the building assessment coordination centre. This mapping information will help to identify areas that have suffered significant property damage and prioritise further assessments or cordoning.

If possible, provide each assessment team with city block maps so they can indicate the extent of cordoning they believe may be required.

5.8.2 Organise daily briefings and debriefings

Provide ongoing direction to assessors in daily (morning) briefings. When determining the content of these briefings, take into account that conditions can change rapidly during an emergency. Table 5-3 outlines key topics to cover at the daily briefings and operational requirements such as priorities and tasking.

The Building Response Manager should emphasise that:

- determining the life safety risk posed by buildings is the overriding priority of the assessment operation
- assessors should allow continued use of buildings that are not severely damaged as far as is practicable. This is because continued use of buildings that do not pose a major safety hazard avoids relocating the community, which minimises the impact of the emergency and allows faster recovery.

Also hold daily (afternoon/evening) debriefings. This gives assessors the chance to share any issues experienced during the day and to get mutual support. It also helps the management team make any changes needed to future plans and activities.

Table 5 3: *Daily briefing topics for rapid building assessors*

Topic	Description
Health and safety	• Brief assessors on known safety risks. • Encourage assessors to look after their own wellbeing and know what support is available to them. • Provide safety equipment needed to carry out assessments. • Provide for the safety of assessors.
Information collection	• Make sure assessors know they need to accurately and clearly identify each building (using maps or plans showing the building's location and description where necessary). • Brief assessors on local resources (maps, photographs, and building numbering systems).
Public safety and building usability	• Instruct assessors to recommend further actions following an assessment if appropriate (eg the need for completing detailed follow-up inspections or assessments) and show them how to record this on the forms. • Instruct assessors to place barrier tape around unsafe areas. • Make sure assessors understand that a red placard effectively prevents access to a building, so does not require barrier tape. • Remind assessors that they may need to place barrier tape around an external fall zone, or prevent access within part of a yellow-placarded building.
Communication	• Give assessors an information sheet describing the building assessment operation and the placard system to give to building owners. This could be prepared in advance. • Reiterate key messages and protocols, especially if the response period is extended.

5.8.3 Minimise risks in the field, consider team member wellbeing

Risks must be minimised by following appropriate work practices. Table 5-4 highlights elements of safe fieldwork.

MBIE's field guides provide guidance on entry into damaged buildings. They also cover practices such as teamwork, personal safety responsibilities and hazard awareness.

Also consider that stress and fatigue can affect anyone involved in a rapid building assessment operation. This will need constant monitoring and attention. Make sure the assessors are rotated adequately and that they are taking breaks. The daily debriefings will also help, as will providing access to psychological services if required.

Make sure all assessors log in and out each day and record the area to which they have been assigned. This will enable oversight of assessors for their own safety and make sure all are accounted for.

Table 5-4: *Elements of safe fieldwork*

Issue	Action
Teamwork	• Make sure assessors understand they must look after other team members (two assessors should enter the building and one person should remain outside). • Make sure there is adequate knowledge of an assessor's location at any time by requiring them to log in and out of the affected area.
Personal responsibility	• Make sure assessors wear personal protective equipment (PPE), including hard hats, high-visibility vests, appropriate footwear, and identification. Facemasks should be worn if there are asbestos risks. • Make sure assessors maintain personal hygiene, including treating cuts and grazes.
Hazard awareness	• Make sure assessors know how to identify potential hazards. This includes the following actions: – Check a building from the outside for risks before entry, including risks from above. – When entering a building, stay in pairs and have at least one team member outside to watch for new risks and signal evacuation if needed. – Be alert to the presence of hazardous substances and live electrical circuits. – Document and report all hazards as they are discovered.

5.8.4 Start the assessments, record and collate the results

Direct assessor teams into the field to undertake Level 1 assessments of buildings within scope, and Level 2 assessments where appropriate. The field guides for rapid building assessments describe the process assessors should follow and recommended observations.

Key point

In areas where geotechnical hazards threaten buildings and/or life safety, the assessment teams should include geotechnical expertise. If the geotechnical and structural assessments are completed separately, coordinate the results so that the placarding decision reflects the highest risk level assessed between the two (but also records less critical hazards, so these are not lost).

Assessors will record their assessments in the field using assessment forms or apps (refer Response step four, section 5.6.1). They will issue placards for buildings they have assessed, as described in the next Response step (section 5.9.2).

To manage the assessment results, allocate specific people for data collation and manual database entry where necessary, and set up systems to enable this. Checking the quality of this data before uploading is important to verify that a consistent approach to building assessment has been taken across the teams. This would normally be done by the Building Response Manager or a delegated technical person.

5.9 Response step seven: manage the ongoing operation

Ongoing activities include:

- managing cordons and barricades for public safety
- issuing placards to manage building access; changing or removing these placards as necessary; issuing Building Act notices as required (eg for dangerous buildings) outside a state of emergency or transition period
- identifying and using indicator buildings if further damage is likely; eg from large aftershocks
- monitoring the assessment operation and, where necessary, seeking more detailed building evaluations
- considering the stabilising or demolition of severely damaged buildings.

5.9.1 Manage cordons and barricades

In a state of emergency the Controller is responsible for:

- the broad assessment of life safety hazards in the affected area, such as gas leaks and sink holes unrelated to buildings, and
- applying appropriate interim or protective measures, such as installing robust cordons or barricades.

Cordons block off an entire area, whereas barricades block off a building or part of a building. They can range from simple barriers, such as hazard tape, through to complex barriers, such as a wall of shipping containers (refer Table 5-5). Their purpose is to prevent people from going into areas, buildings or parts of a building that are not safe because of land instability or building damage.

Table 5-5: *Cordons, barricades and barrier tape*

	Cordoning	Barricading	Barrier tape
Defined as. . .	Ordinarily a larger area where access is prohibited, whether for a short/fixed period or on a more permanent basis	A fence-like structure to protect people from collapse of a building (or part of a building) or other structure	Temporary warning or lower risk (eg chimney or flooded room)
Who makes the decision?	Controller	Building Response Manager	Rapid building assessor
Role of the rapid building assessor	Possibly involved in making recommendations to the Building Response Manager that support the Controller's cordoning decisions	Makes recommendations about where barricades should be set	Possibly sets out barrier tape, or specifies this if others are tasked with setting it out

Cordons and barricades may be put up shortly after the emergency and will need to be managed as building assessments continue. The Building Response Manager should support the Controller during the response period by providing advice and information collected from building assessments. Collapsed buildings will require a cordon without the need for information from rapid building assessments.

Emergency services will take charge of cordoning off collapsed buildings that have trapped, seriously injured, or killed people. This is to protect the site to allow for rescue. Thereafter, cordoning for forensic building investigation is MBIE's responsibility.

Collapsed buildings or buildings that USAR teams are searching through should **NOT** be assessed or placarded until the USAR team has completed its work.

For buildings and structures that pose an immediate life safety risk, the territorial authority may also take responsibility for directing propping, bracing or demolition ('making safe') in part or in full. The New Zealand Police and the New Zealand Defence Force may also have a role in managing building security and access.

Key point

Before reducing the cordoned area for public access, the Controller may authorise a 'street sweep' by the Sector Coordinator, the lead assessing engineers and emergency services. This street sweep will confirm that all hazards have been addressed and all agency requirements have been met before full access to the street is granted. Barricading may still be required in some isolated sites to mitigate the risk of building failure.

Also refer to:

- Appendix 5 for a cordoning activity checklist and barricading guidelines
- *Emergency Movement Control Director's Guideline* (DGL 18/15) on the MCDEM website www.civildefence.govt.nz for information on cordon supply and management.

5.9.2 Manage placards and notices

Issuing placards

If a state of emergency or transition period is in force, assessors:

- can 'mark' (issue a placard for) a building
- have powers of entry, and
- can examine buildings.

These are three distinct powers under the CDEM Act.

Assessors will issue either white, yellow or red placards to buildings they have inspected. The placard details are recorded on the assessment form (refer Part A, Table 2-2).

The field guides contain guidance for assessors on posting, changing and removing placards. These processes come under the jurisdiction of the Controller during a state of emergency or the Recovery Manager in a transition period.

Building owners, their contracted engineers and building occupiers cannot remove or change placards, or alter the status of a building during a state of emergency or transition period.

Before placing a placard, rapid building assessors delegated by a Controller or Recovery Manager (as appropriate) may encounter a building that already has a Building Act notice placed by the territorial authority. Assessors should use any existing Building Act notices to guide their assessment decisions, noting that the Building Act thresholds are high.

In a transition period, the CDEM Act (section 94G) requires that the Recovery Manager, or an assessor acting under such authority, must be satisfied on matters of interest, necessity and proportionality in using any power (as specified in Part 5B of the Act). This applies to all stages of the building assessment process and any consequential management steps.

Key point

Placards issued under the authority of the CDEM Act are not the same as Building Act notices such as a dangerous or insanitary building notice, an earthquake-prone building notice or a 'notice to fix'.

However, the placards may occasionally fulfil the purpose of warning notices under s124 (2) (b) of the Building Act.

Placard templates are available at MBIE's website: www.building.govt.nz/managing-buildings/post-emergency-building-assessment/

Changing or removing a placard

The outcome of a rapid building assessment may require a change to the original placard.

For example:

- A Level 2 assessment could change the status of a building set by a Level 1 assessment.
- An assessment of one building could change the status of adjacent buildings if it poses a collapse hazard.

Any change to a placard means taking the old placard(s) down from the building, installing new placards at every entrance, and updating the assessment database.

During a state of emergency or transition period only a Controller or Recovery Manager (as appropriate) can authorise changing or removing a placard. It may be appropriate to consider delegating these powers; for example:

- A field decision to upgrade a placard could be approved by the Building Response Manager on the advice of the field team, or delegated to a person on the field team by these positions.
- A decision to downgrade a placard could be referred to the Building Response Manager for advice.

Building owners wanting a placard changed or removed must provide further evidence about their building's safety: refer to section 6.2.

Issuing Building Act notices when the state of emergency or transition period ends

When a state of emergency or transition period is terminated or expires, any placards placed on buildings under the CDEM Act will expire.

Before this happens, the territorial authority should carry out a 'stocktake' of the placards and then decide, for each placarded building, whether or not to issue a notice for a dangerous, affected, or insanitary building under section 124 of the Building Act (a section 124 notice). This should be done with particular reference to buildings that received yellow (restricted access) or red (entry prohibited) placards.

The status of the building as reflected by the most detailed assessment should be added to the property file.

Enacting the section 124 process is time- and effort-intensive, especially if there are a large number of sites to consider and building owners/occupiers to inform. Therefore, a substantial lead-time will be required before the end of the emergency/transition period so there is a seamless transition from expired placards to section 124 notices.

Where red or yellow placards have been issued because geotechnical or ground stability issues could affect the structure of or access to the building, it is suggested that there is a further review using geotechnical experts before the territorial authority makes a decision to issue a section 124 notice. There may be some situations where the territorial authority (and its technical experts) considers that the elevated risk level is not as high as initially thought, or where the risk level is not substantially different from that existing before the event (based on the performance of the site in question during the emergency period). In these situations, the territorial authority would take no further action regarding restricting access to the building.

However, there will inevitably be situations where serious concerns remain about some sites and the safety of the area in the immediate vicinity of geotechnical hazards that were identified during the emergency period. In these situations the territorial authority may take a view, based on a duty of care to its residents, that ongoing restriction of access is required by issuing a section 124 notice. This notice will restrict access to the building, but not to the land immediately adjacent to it.

For guidance on the level of risk that would trigger a section 124 notice due to a geotechnical hazard, it is suggested that the approaches adopted by Christchurch City Council in the Canterbury Port Hills (2011/12), and in the Kaikōura and Hurunui Council districts following the November 2016 earthquake, are considered.

5.9.3 Identify and use indicator buildings

Use indicator buildings to provide systematic monitoring

If there has been an earthquake and you expect large repeated aftershocks, it is useful to identify a set of indicator buildings to monitor the rapid assessment operation.

These buildings can be identified after the first day of rapid building assessments when the hazard driver and damage characteristics are evident. Take reference photos and reassess these buildings regularly to check for any further damage.

The extent of new damage provides a basis for deciding whether or not to continue with the planned building assessment operation, revisit it, or even to restart following a significant aftershock.

A similar process can be developed for indicator sites to provide support for geotechnical hazards, such as boulder roll or cliff collapse.

Key point

The indicator building procedure does not remove the responsibility of building owners to monitor their own structures and make sure they remain safe to use.

Choose a suitable set of buildings

The selected set of indicator buildings could include representative examples of certain building types, as appropriate to the event. For example, it could include:

- unreinforced masonry buildings
- pre-1976 multi-storey buildings
- low-rise tilt-panel construction (retail and industrial) constructed between 1976 and 1995
- any particular building type for which the event has been especially damaging.

Using buildings with detailed seismic assessments and building plans can be helpful. Including any instrumented buildings (ones with systems for measuring how much shaking they undergo) can also be helpful.

The chosen indicator buildings:

- should have structural elements damaged during the main event
- should be drawn from both white placarded and yellow placarded buildings
- must show damage but not be close to collapse, and preferably should not be in the shadow of a structure likely to collapse
- could include similarly constructed buildings built on different ground conditions, which may cause them to behave differently in an aftershock.

Refine the assessment operation as needed

In general terms, if indicator buildings of a particular type sustain enough additional damage to warrant changing white placards to yellow or red placards (and/or yellow placards to red placards), reassessments of buildings in this category of structure and/or with similar characteristics would be necessary. It could be that the assessment operation needs to start over.

If unexpected structural deterioration has occurred in one or more indicator buildings, the Building Response Manager should meet with the Technical Coordinators and relevant Sector Coordinators to make these decisions.

Input should also be sought from hazard advisors as appropriate; eg seismological or meteorological experts.

Collect data to support the use of indicator buildings

Data collected during the rapid building assessment operation needs to address the likely structural types of indicator buildings. Assessments should target the correct structural performance for each building group. This will ensure that revisits to particular types of building can be scheduled quickly on an area-wide basis if structural deterioration to an indicator building becomes obvious.

Depending on the nature and scale of buildings affected by the main event, the Building Response Manager may recommend that the owner of an indicator building commissions a more detailed assessment to document the damage it has suffered.

5.9.4 Monitor the assessment operation

Use feedback from completed assessments

The Building Response Manager should use feedback from completed assessments and any indicator buildings to review the approach outlined in the response plan. This review should be ongoing, as new information comes to hand.

For example:

- The Building Response Manager can use information from the Level 1 assessments to decide on the extent of Level 2 assessments required. If there is a lack of structural damage identified in Level 1 assessments in one area or building type, this could change the priority for directing where further rapid building assessments are carried out.
- If Level 2 assessments identify extensive structural damage this may require building owners in the affected areas to carry out Detailed Damage Evaluations during the recovery phase.

The extent of the assessment may vary across geographical locations, depending on the scale of the event and damage observed in different areas.

Maintain quality assurance

To ensure consistency, carry out random checks of placarding decisions and the associated geotechnical assessments where relevant. One way to do this is by using a different team to make a Level 2 assessment of a building following another team's Level 1 assessment. Alternatively, use the Tier 1 expertise to review and discuss results.

5.9.5 Plan for more detailed building assessments

After rapid building assessments have been carried out it is usually up to the building owner to commission any subsequent Interim Use Evaluation or more Detailed Damage Evaluations during the recovery phase (section 6 describes the process and these different evaluation types). Even if an owner's building received a white placard it is good practice to carry out further assessment to make sure there is no increased health and safety risk.

In some circumstances, territorial authorities (or the Local Controller) may seek a Detailed Damage Evaluation from an owner if their building is a hazard that impacts critically on recovery (eg to decide if it needs urgent demolition). They could also seek a Targeted Damage Evaluation from owners of particular type of building (as occurred in Wellington after the 2016 Hurunui/Kaikōura earthquake).

The territorial authority will need to commission expert advice to determine which buildings need closer scrutiny (see also 'Stabilising or demolishing damaged buildings' below). It will then need to satisfy itself whether further remedial building work is needed and whether to issue a notice to fix under the Building Act.

5.9.6 Stabilising or demolishing damaged buildings

Get expert advice

If buildings have been severely damaged in the emergency, it may be necessary to establish a separate critical buildings team of highly skilled experts to advise the Controller and decision makers whether these buildings need urgent stabilising or demolition.

The Building Response Manager can direct urgent stabilising or demolition work under the authority of the Controller/Recovery Manager. Typically, this involves liaising with affected building owners who then carry out this work. In some cases, the territorial authority may need to commission the stabilising or demolition. This will depend on a combination of factors including its urgency and whether the building owners are unable to do this.

A severely damaged building may need to be stabilised before any decision can be made about its demolition or repair.

Urgent demolition of part or all of a severely damaged building may be necessary if it is an immediate risk to life safety. Buildings that cannot be adequately barricaded without cordoning off the street may need to be demolished urgently; eg if cordoning would prevent access to the only route to a hospital. Barricading or cordoning may also significantly disrupt neighbouring homes and businesses, and could unreasonably impede the recovery activity.

Key point

Demolition is a last resort. Wherever practical, this decision should be held over until the building owner can be involved. It is important to consider all the external factors before a decision is made to demolish, and the reasons for making this decision must be documented.

Note that any stabilising or demolition work will be done on behalf of, and will be paid for by, the building owner.

Heritage listed buildings

The Heritage New Zealand Pouhere Taonga Act prohibits the modification or destruction of a protected site unless authority is obtained from Heritage New Zealand Pouhere Taonga. However, this Act also provides for a fast track decision-making process during or after a state of emergency. This is in recognition of the broader considerations during a significant response and recovery operation. Refer Appendix 1 for more details.

If a heritage listed building is identified for urgent demolition, the Building Response Manager will need to escalate the circumstances to the Controller for further discussion with the Mayor or nominated representative.

5.10 Response step eight: manage communications

The Building Response Manager will need to communicate progress throughout the operation. A crucial aspect of this is providing status reports to the Controller on the results from, and progress of, building assessments.

The Building Response Manager will also need to:

- help communications/public information management teams with key messages for media and the public, drawing on any pre-prepared material such as factsheets (refer section 4.6.2) and providing any event-specific details required
- be ready to address periodic clearing house meetings by the relevant technical societies to understand particular issues and help provide greater understanding of the impact on buildings.

Key point

Good communication between all affected parties is vital to the success of building assessment during an emergency. Building assessors and others involved in the process are key communicators, both in creating and passing on agreed messages.

5.10.1 Communicating with building owners, occupants and the public

The assessor role is mainly to inspect and assess a building's usability. However, assessors may be the first 'official' contact for building owners and occupants following an emergency. They may need to deal with people under stress. They may also need to give information and referral to support services, and determine whether the building needs to be evacuated.

- The Building Response Manager should connect with the Welfare Manager, who will have connection/oversight of the psychosocial support sub-function (focused on the psychological and social interventions that will support community recovery for people affected by an emergency). It may be that the support agencies of the psychosocial support sub-function can deploy trained people with rapid building assessors to provide psychosocial support to affected people.
- Pre-deployment briefings of assessors should cover the territorial authority's referral system or resources for building occupants who are under stress or need more information. Support may include brochures, or having trained personnel on hand to work alongside the building assessors.
- To make sure information is consistent, use communication resources (such as factsheets) and any public information templates developed by the Welfare and/or Public Information Management functions. Provide these resources to assessors. Also cover topics such as food and water supply, social and medical services, sanitary facilities and requirements, and contact details for a call centre to answer other queries.

In an emergency, people may show shock or confusion, and lack a clear or common purpose. This may last for weeks. Affected building owners and occupants will be dealing with their feelings about the event and the impact on them and their communities. They may have been injured. They may have lost family members or friends. Loss of access to their home or business will add more pressure.

Assessors should:

- give clear and concise information on the building assessment. For example, when explaining how placarding works, they should make sure this information explains the purpose of the placarding, the implications for building owners, and the process for changing the building's status.
- explain the likely levels of damage to be expected, what this means for the building's safety or for health issues, and what to do
- remain rational in their decisions while showing empathy. This means showing concern and understanding, but it should not detract from performing objective assessments. Assessors should avoid yielding to any pressure to re-prioritise the order of building assessments or to classify a building in a particular way. It can be effective to divide roles between team colleagues, with one focusing more on the technical assessment while the other talks to the people involved.

5.10.2 Directing media enquiries

Building assessors should not give any information to the media. If approached, they should refer them to the Public Information Manager in the Emergency Operations Centre or, where appropriate (in larger scale responses), the relevant CDEM Group Emergency Coordination Centre.