The 2011 Canterbury Earthquakes caused significant damage. Most of the damage was in areas surrounding the epicentres. The centre of Christchurch City and the eastern suburbs were badly affected.

The Canterbury Earthquakes caused a lot of damage, mostly in the city centre and eastern suburbs.

**State of national emergency**

The Canterbury earthquakes are not the largest earthquakes in New Zealand's history, but the February quake has lead to more costly damage than for any other natural disaster in New Zealand.

After the first Canterbury earthquake the National Crisis Management Centre in the basement of the Beehive in Wellington was activated. Civil Defence declared a state of emergency for Christchurch, the Selwyn District and the Waimakariri District. The February earthquake led to a state of national emergency. This meant that trained people from many different organisations from across the country could work on making the area safe again by:

- inspecting buildings
- placing cordons and making sure people did not enter unsafe areas where parts of buildings could collapse
- stabilising buildings
- getting water trucks to areas with no water supply
- removing silt and sand from roads and properties where liquefaction had occurred
- repairing water and sewage pipes
- repairing roads and diverting traffic
- providing 'port-a-loos' to suburbs with no sewage or water
- working on restoring electricity to homes and businesses
- closing all schools so buildings could be inspected.

The New Zealand Army was sent to the worst affected areas within Canterbury. Cordons were set up to protect people from falling debris near damaged buildings. All schools were closed so buildings could be inspected. International agencies also came to the aid of Christchurch.

**Effects in Christchurch**

Electricity to 75 per cent of the city was cut in the September quake. In February
most of the city was without power. Most households had power within two to three
days, but some regions took much longer. Several buildings caught fire after the
earthquake.

Damage to buried pipes allowed sewage to contaminate the water supply so people
had to boil their tap water. Beaches and waterways were polluted and closed to
swimming for many months.

Christchurch airport was closed until runways had been checked.

Four hundred thousand tonnes of silt from liquefaction had to be removed from
streets and properties.

Many of the most badly-affected structures in both Christchurch and the
surrounding districts were older buildings with brick frontages, or buildings in areas
where liquefaction occurred. A fund was set up to try and repair damaged historic
buildings.

Many roads were closed and traffic diverted, making it difficult to reach certain
parts of the city. Businesses lost income as damaged buildings were closed.
Customers found it difficult to get to certain shops due to cordons and road
closures. Many businesses have had to relocate, some for the second time since the
first earthquake back in September 2010.

Over 5000 properties were classified as being in the red zone, meaning the land
was not suitable for building on. Over 10,000 homes needed to be demolished and
rebuilt. Hundreds of buildings in the centre of the city have been demolished.

The disaster is estimated to cost insurers 10-20 billion dollars.

**Liquefaction**

(Pronounced “lick-wi-fack-shin”)

Liquefaction occurs when soil loses strength and stiffness due to earthquake
shaking. Loose, sandy soils behave like a liquid as water is forced up to the surface.

Liquefaction affected large areas of Christchurch because many suburbs are built on
soft soils or sand. Damage from liquefaction may have been worsened by the high
water table from a wet winter.
Liquefaction caused:

- drains and pipes to float upwards, sometimes breaking through concrete paths and roads
- structural damage to buildings
- flooding
- sand volcanoes [6].

Read the Environment Canterbury (ECan) fact sheet on liquefaction [7] to find out more (2Mb).

**Schools**

One hundred and sixty three primary and secondary schools were affected by the earthquake, most of which were closed for three weeks. Ninety schools had full structural clearance and were able to reopen. Twenty four had reports indicating further assessment and 11 were seriously damaged.

Due to the damage of a number of secondary schools, many were forced to share with others. One school used the ground in the morning and the other in the afternoon. Nine "learning hubs" were established throughout the city to provide resources and support for students needing to work from home. Some students relocated to other centres - by 5 March, a total of 4879 Christchurch students had enrolled in other schools across New Zealand.

**When 2 becomes 1**

In September 2012, Minister of Education Hekia Parata announced plans to permanently close and/or merge a number of schools due to falling roll numbers
and quake damage.

One school that was created from this decision is Waitākiri School. Waitākiri School was created through the merger of Burwood and Windsor Schools. Both schools were affected by the 2010 and 2011 Christchurch earthquakes. Burwood was one of the hardest hit areas with over 50 per cent of the school zone designated "Red Zone" and a loss to the school roll in excess of 200 children.

The first year for the new school was 2014, but there were many challenges:

- There were two separate school sites
- Families and staff were still suffering the effects of the earthquake
- The new school was large – 800 pupils
- There were new ways of doing things for many
- Some staff jobs were uncertain
- Planning for the new school was very challenging
- There was higher than normal staff sickness
- Major roadworks in the surrounding area was taking place.

Waitākiri School is where this field trip will be based.

State of national emergency

After the first Canterbury earthquake [4] the Civil Defence declared a state of emergency for Christchurch, the Selwyn District and the Waimakariri District. The February earthquake lead to a state of national emergency. This meant that trained people from many different organisations could help make the area safe again by:

- checking that buildings were safe
- making sure people did not enter unsafe areas
- repairing buildings
- working on power lines
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- fixing water and sewage pipes
- working on damaged roads
- getting water trucks to areas where there was no water supply
- taking away silt and sand from roads and properties
- providing 'port-a-loos' to areas where sewage pipes had broken
- closing all schools so buildings could be checked

The New Zealand Army was sent to the worst affected areas in Christchurch.

Effects in Christchurch

- Electricity to 75% of the city was cut in the September earthquake. In February most of the city was without power, some for much longer than others.
- Some buildings caught fire after the February earthquake.
- Damage to buried pipes allowed sewage to enter the water so people had to boil their tap water. Beaches and waterways were polluted for many months.
- Christchurch airport was closed until runways had been checked.
- Four hundred thousand tonnes of silt had to be removed from streets and properties.
- Buildings were damaged, especially older ones. Some fell down.
- Many roads were closed, making it difficult to reach parts of the city.
- Many businesses had to relocate.
- People lost income.

Liquefaction

(Pronounced “lick-wi-fack-shin”)

Liquefaction is when soil loses strength because of earthquake shaking. Loose sandy soils act like a liquid as water is forced up to the surface.
Liquefaction affected large areas of Christchurch because many suburbs are built on soft soils or sand.

Liquefaction caused:

- drains and pipes to float upwards, sometimes breaking through concrete paths and roads
- structural damage to buildings
- flooding
- sand volcanoes [6].

Read the Environment Canterbury (ECan) fact sheet on liquefaction [7] to find out more (2Mb).
163 primary and secondary schools were affected by the earthquake. Most of these were closed for three weeks. Some were very badly damaged.

Many schools had to share with others. One school used the ground in the morning and the other in the afternoon. Some students had to work from home. By 5 March, a total of 4879 Christchurch students had enrolled in

other schools across New Zealand.

When 2 becomes 1

In September 2012, the Ministry of Education said it would close and/or merge some schools due to falling roll numbers and quake damage.

One school that came about from this decision is Waitākiri School. Waitākiri School was created through the merger of Burwood and Windsor Schools. Both schools were affected by the 2010 and 2011 Christchurch earthquakes. Burwood was one of the hardest hit areas.

The first year for the new school was 2014, but there were many challenges:
There were two separate school sites.

Families and staff were still suffering the effects of the earthquake.

The new school was large – 800 pupils.

There were new ways of doing things for many.

Some staff jobs were uncertain.

Planning for the new school was very challenging.

There was higher than normal staff sickness.

Major roadworks in the surrounding area was taking place.

Waitākiri School is where this field trip will be based.

Māori keywords:

| [8]  |
| [9]  |

Audio Māori keywords:

- pakaru, broken [10]
- tapi - repair [12]
- hangatanga - construction, building [13]
- tāoro - demolish [14]
- parahanga - pollution [15]
- mōrearea - emergency/in a crisis [16]
- whakauruuru - merge [17]

Samoan keywords:

| leaga | broken |
| iloilo | inspect |
| fa’aalelei | repair |
| faatulagaina | construction/building |
| tu’u i lalo | demolish |
| fa’aelleleaina | pollution |
| fa’alavelave | emergency/in a crisis |

Tongan keywords:

<p>| mafesi/mapaki | broken |</p>
<table>
<thead>
<tr>
<th>Cook Islands Maori keywords:</th>
<th>Niuean keywords:</th>
</tr>
</thead>
<tbody>
<tr>
<td>fati / pararī broken</td>
<td>malona/ broken</td>
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<tr>
<td>mātakitaki / ranga inspect</td>
<td>mapaki/Malolo/ Fati</td>
</tr>
<tr>
<td>akafoū repair</td>
<td>kumikumi/ fuafua inspect</td>
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<tr>
<td>ma’ani construction/building</td>
<td>taute repair</td>
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<tr>
<td>po’aki / pereti demolish</td>
<td>ta/ talaga construction/building</td>
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<tr>
<td>touturu rapurapu emergency/in a crisis</td>
<td>moumou/ uulu demolish</td>
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<tr>
<td>fuinga / pa’u’anga merge (join)</td>
<td>kiva (dirty) pollution</td>
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<tr>
<td>fakalelei repair</td>
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<td>fa’u/ langa (build)</td>
<td>vakai inspect</td>
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<td>fakatu’unga’a</td>
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<tr>
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<td>fakatu’unga’a</td>
<td>fale</td>
</tr>
</tbody>
</table>

How do you think the effects of the Canterbury earthquakes could have been reduced?

How do you think the effects of the Canterbury earthquakes could have been reduced?
The fronts of some Christchurch city buildings collapsed during the first September 2010 earthquake. Image: LEARNZ.

This bridge across the Avon River was buckled during the first Canterbury earthquake. Image: LEARNZ.
Liquefaction caused widespread damage in eastern suburbs as water was forced to the surface during the shaking. This is Porritt Park where the hockey turf was buckled by liquefaction. Image: LEARNZ.

Large areas of central Christchurch were cordoned off following the quakes. Image: LEARNZ.

Even modern buildings which did not collapse during the earthquakes need to be demolished as they are not able to be repaired. Image: LEARNZ.
Liquefaction produced 'mini sand volcanoes' as water, sand and silt were forced to the surface. Liquefaction caused some buildings to sink Image: LEARNZ.

Some Christchurch schools were closed or merged. Waitākiri School was created through the merger of Burwood and Windsor Schools. Image: Darren Scott.

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