



# Model School Name

## Block M1 – Classrooms

### Weathertightness Remediation Inspection Report



*Note regarding Model Report – This Model Report is based on an actual Remediation Inspection Report prepared in June 2019 following the preparation of a DT report in 2015. The original report has been modified to be suitable as a Model Report. Explanations are also given where this report could be improved. Accordingly, it should not be relied on in any way to represent the actual recommended remediation for any school having similarities to the school used in preparing this model report.*

**March 2022**

**Prepared by AB Building Surveyors Ltd  
for the Ministry of Education**

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# Document Control Records

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Action	Name	Signed	Date
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# Executive Summary

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The recommended remediation for this building is focused on the weathertightness failures and consequential damage as described below and as shown in supporting photographs in Appendix B – Elevations showing recommended remediation.

## Weathertightness Remediation

### Claddings

#### Claddings - North, South and West Elevations

Critical junctions between the stucco cladding and window junctions are not adequately flashed or sealed and a lack of clearance at the base of the cladding where the stucco cladding sits on the foundation, have allowed moisture ingress, resulting in corroded reinforcing mesh and decayed timber framing. It is recommended the stucco elevations are reclad including associated timber framing replacement, reuse of existing joinery (renovated as necessary), and the installation of integrated flashings.

#### Claddings - East Elevation

No remediation is required to the brick veneer clad east elevation.

### Roof areas

#### Main Roof

Leaks at the valley gutter have been remediated by replacement of this gutter since the DT investigation in 2015. The associated water damaged ceiling tiles need replacement. Refer Table 3.6 Maintenance work identified.

#### Entry Canopy

Water ingress has occurred through vertical penetrations in the canopy roof due to poor membrane detailing and inadequate falls, resulting in the membrane lifting, damaged soffit linings and likely decayed timber framing. It is recommended the membrane roof is replaced over new substrates with increased falls and associated timber framing replacement.

## Maintenance Observations

The maintenance observation items for both end of life and routine maintenance are listed in Table 3.6 Maintenance work identified, of this report. The Ministry may wish to consider end of life maintenance items as part of developing the scope of the remediation works and other works that the Ministry wishes to undertake as part of the next stage of the Ministry's processes.

**Note regarding Health and Safety items being included in the Executive Summary** – It is recommended that any health and safety issues that are separately reported to the Ministry's representative as soon as identified, should also be recorded in the Executive Summary.

# 1 Introduction

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## 1.1 Purpose of Report

The primary purpose of this report is to identify the *weathertightness failures* that are causing *consequential damage* to the building and, in turn, to recommend proposals for *weathertightness repair*, *damage repair* and *adjacent work*. To support the *weathertightness failure* conclusions, photos and observations, including *observed damage*, are included. These inclusions also link the *weathertightness failure* to the *remedial work*. The Ministry of Education (Ministry) can then make an informed decision with respect to what building work, including *remedial work*, it may choose to carry out on this school building after considering this report alongside other factors associated with the building.

Although not the primary focus, the report may also contain information to assist the Ministry with its role as a long-term building asset manager. This includes information on recommended maintenance issues such as cladding material end of life issues, and routine maintenance items such as cleaning out gutters etc.

This report will become part of the briefing information for the parties for the next stage that includes undertaking the design and documentation for the *remedial* and other work that the Ministry decides to carry out.

## 1.2 Context

Since 2012 the Ministry of Education's Building Improvement Programme has carried out weathertightness remediation work based on Destructive Testing (DT) reports. These *DT reports* were focused on the Ministry's policy of identifying factors that might lead to *weathertightness failure of building elements* at some stage, as well as actual *weathertightness failures* and *consequential damage*.

In many cases the *DT report* identified a specific and localised *weathertightness failure* but the remediation work carried out was often a "re-roof" or "re-clad" in order to address risk factors that might lead to *weathertightness failure of building elements* in the future.

The Ministry has changed the focus of future *remedial work* to fix actual and proven *weathertightness failures*, along with addressing the *consequential damage*.

The Ministry has decided that factors that might lead to *weathertightness failure of building elements* at some stage in the future will not be included in the *remedial work* scope unless the factor is considered to be likely to cause *imminent failure*. Supporting observational and photographic evidence is included in the report in such cases.

*DT reports* have evolved over time. This means not all *DT reports* adequately differentiate between actual and potential *weathertightness failures* when providing their repair proposals. As a consequence, some reports are unable to be used to establish the necessary and often reduced scope of *remedial works* for actual *weathertightness failure* alone. The Ministry has therefore instituted a remediation inspection regime, as set out in the Ministry's Weathertightness Remediation and Regulatory Strategy dated July 2018, utilising this remediation inspection report template, to identify the actual *weathertightness failures*, the *consequential damage* and the necessary *remedial work*.

It is also noted that for some buildings, a DT report may not have been prepared or may not be available.

### 1.3 Remediation Inspection Methodology

The relevant Ministry property person is responsible for providing all relevant and up to date information for this school building to the building surveyor prior to the surveyor commencing work. A desktop review of the *DT report* (where available) is undertaken by the building surveyor, prior to the site visit), to extract the damage observed, failures identified and the repair recommendations provided by the previous consultant.

Where a *DT report* is not available, appropriate adjustments have been made to this report, particularly in relation to Table 3.1.

Prior to the site visit, an appointment is made to meet school staff that have knowledge and experience of the weathertightness issues. These conversations, noted in section 2.4, and typically held at the beginning of the site visit, further inform the required scope of the remediation inspection.

A remediation inspection of the building is undertaken to review the repair recommendations in the *DT report* (when available) as to whether they are actual *weathertightness failures*, or a response to factors that might lead to *weathertightness failure of building elements* at some stage in the future. The areas of damage recorded in the *DT reports* are visually re-inspected to assess, if possible, whether there has been any change in the extent of damage. The *DT report* analysis, combined with the information obtained from staff, Ministry and observations of the as-built construction and any *consequential damage* items form the basis of the conclusions regarding the *weathertightness failures* and *consequential damage* recorded in Table 3.1, column 7.

Where a *DT report* is not available, destructive testing is usually required. This will often be limited DT work using selected drilling to allow moisture readings and assessment of drilling observations.

For both situations when the *DT report* is available and when one is not available, the *recommended remedial work* is summarised in the relevant Table 3.1 column 7, by reference to the *weathertightness failures* and *consequential damage* identified in Table 3.1, column 6 to provide an overview of the problems faced and requiring attention. Table 3.1, column 7 also includes repairs associated with the *adjacent works* that will have to be carried out to give effect to the *weathertightness repairs* and *damage repairs*.

In cases where additional destructive testing investigations are undertaken, the results are included in the relevant sections of this report including the tables in section 3, the photos in Appendix A, the elevations showing the recommended remediation in Appendix B and the Executive Summary.

Appendix C is used to record the results of further investigations that do not logically fit into other sections of this report. Examples are moisture content readings, timber sample test results etc. If not required Appendix C is deleted from this report.

Further investigations are undertaken to provide sufficient information for the Ministry to be able to make an informed decision regarding the scope of the *remedial work* with an understanding of the *weathertightness failure* and *consequential damage*. Table 3.2 Rough order of cost, is to assist the Ministry with initial cost planning of any *remedial work* and accordingly the cost bands are wide.

Table 3.3 Other moisture related and/or ventilation causes, is completed where the damage observed could be construed as being due to *weathertightness failure*, but is in fact likely to be due to other moisture related causes such as condensation, aggravated thermal bridging or lack of adequate ventilation. Where there are no such causes Table 3.3 has been left blank and labelled - Not Applicable.

The recommended *remedial work* noted in Table 3.1, column 7 are the building works (*remedial works*) required to return the *building element* to its condition “*as when it was new*” using comparable current materials and construction techniques. Where it is believed that “*as when it was new*” is not code compliant, the additional or alternative building work required for code compliance is recorded in Table 3.4 Additional or alternative building work.

Table 3.5 Imminent failure associated building work, records as-built features or factors where there is expected to be *imminent failure*, and that have supporting observational and photographic evidence.

Table 3.6 Maintenance work identified, records any maintenance items noticed. This is divided into two categories, end of life maintenance and routine maintenance.

Table 3.7 Subfloor and ceiling space observations, records observations of these areas where access is available.

The main focus of the survey is upon the exterior of the building and is typically a visual survey covering roofs, walls, joinery and other exterior envelope elements. Internal access and inspection includes surveying of accessible areas, including the ceiling space, to provide visual evidence of *weathertightness failure* and/or *consequential damage*, with any areas recorded where access was not available. Experience is that in a relatively small number of cases when a *DT report* is available or when no *DT report* is available, destructive testing is undertaken and the results recorded in this report as described above.

Digital photographs are taken during the survey, selected copies of which are included in Appendix A. The photos are annotated to identify the *weathertightness failures* and/or *consequential damage* that the photo represents, or the *weathertightness failure* conclusions supported.

Appendix B consists of elevation and roof drawings or photographs, marked up showing the extent of the recommended *remedial work*. Appendix B is consistent with the recommended *remedial work* described in the Executive Summary.

## 2 General Information

### 2.1 Building Overview

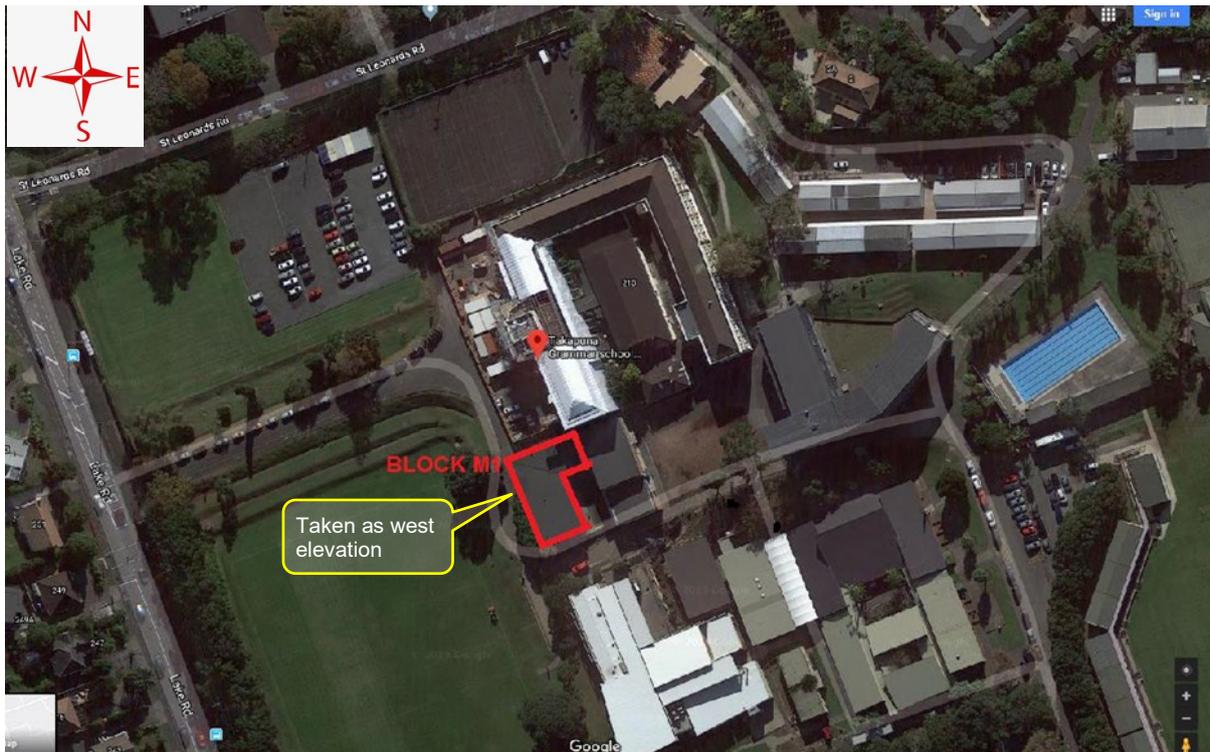
Building	
School Block and street address	Model School, Block M1 123 College Road, Longville 1234.
Ministry's Block Name/Description and storeys	Block M1, one storey building containing classrooms.
Building function	Classrooms, toilets, and ancillary spaces.
Known Standard Design	Non-standard.
Year of design (approx.) and year of construction	1999, as stated in DT report for design and construction.
Asbestos report	Advised by School that no report is available
Translucent sheeting and/or skylights	Translucent veranda roof sheeting in poor condition and galvanised safety netting severely corroded.
Construction	
Foundation/flooring system	Load-bearing concrete floor slab.
Wall/cladding system	Conventional timber frame, with a combination of direct fixed stucco plaster and brick veneer claddings.
Roof system	Metal profiled sheet.
Parapet/gutter system	Gutters are mounted externally. There are no parapets.
Roof slope	Between 5-6 degrees.
Exterior joinery material	Anodised aluminium single glazed joinery.
Other construction details	Entry canopy to north elevation.
Site	
Wind & exposure zones	High wind zone, C: Medium exposure zone (from BRANZ Maps)

### 2.2

#### Inspection Background

Assessment Information	
Report commissioned by	John Smith, Project Delivery Manager, Ministry of Education.
Source documents	Destructive Testing (DT) Report, dated 11 March 2015.
Previous DT Consultant	XY Building Surveyors Ltd.
Building less than 10 years old at time of first (DT) inspection	No.
Reinspection date(s)	5 December 2021.
School personnel interviewed	Principal and classroom teacher.
Weather at inspection date and previous day	Fine and overcast on both days.
Areas not accessed	Roof voids.

## 2.3 Building Location



## 2.4 Notes from meetings with relevant school staff

During our on-site inspection, discussions with school staff have provided the following information;

- The Principal advised there have been no further leak events below the valley gutter since repairs were carried out approximately 1 year ago. He noted the ceiling below the valley gutter remained discoloured due to the previous leakage.
- The Room 1 classroom teacher also confirmed that no further leak events have been observed since the previous repairs were completed (refer photos 23 and 24). She also confirmed there had been no further damage to the Room 1 carpet since the valley gutter was repaired.

### 3 Inspection Findings and Remedial Work

**Table 3.1 Weathertightness failures and remedial work summary**

*It is noted this model report uses option 1 of the template where a DT report is available. Accordingly, Option 2 of the template, where a DT report is not available, is deleted.*

This table summarises the information relating to the *weathertightness failures* and *observed damage* from the *DT report*, information supplied by the Ministry and school staff, and this Remediation Inspection report’s site inspection.

The repairs (*remedial work*) are shown on an elevation (or part elevation) and/or *building element* (eg roof type, cladding type etc) basis in Appendix B Elevations showing recommended remediation.

Col 1	Column 2	Column 3			Column 4	Col 5	Column 6	Column 7
DT report information:					Inspection Information:		Conclusions	
DT report item <sup>1</sup>	Weathertightness failure and damage <sup>1</sup>	DT references			Observations, including observed damage	Photo Refs	Weathertightness failures that have caused DT report damage and/or consequential damage	Recommended remedial work
		Page & Para Refs	Photo Refs	Locations				
	<b>Wall Claddings</b>							
1	<b>Inadequately sealed window junctions</b> Water is entering the stucco cladding at the junction between the aluminium windows and adjacent stucco plaster cladding due to defective/omitted flashings. Damage includes cracking to stucco cladding, deterioration to building wrap with fungal growths, corrosion of the embedded mesh and decayed timber framing.	Page 6, Section 6.3.1	1.2-1.6, 1.9, 1.11, 1.13, 1.14, 1.17, 1.20, 1.21	North, west (part) and south elevations.	The window joinery is recessed into the stucco cladding. The recess is flat, allowing water to pond on the sill adjacent to unsealed junctions with the stucco cladding. Cracks in the stucco are radiating out from the joinery junctions. There are no visible control joints. The DT photos show corrosion of the embedded mesh and decayed timber framing.	6-12, 15-16	Critical junctions between the cladding and window junctions are not flashed or sealed, allowing water to enter behind the cladding, exacerbated by water ponding on flat sill recesses. The moisture entry combined with incorrect placement of the embedded mesh has resulted in timber decay and corrosion.	Reclad all stucco elevations, replace damaged framing and apply preservative treatment to balance. Replace damaged insulation and interior linings. Reinstate renovated windows with new flashings.
2	<b>Lack of base clearances</b> The stucco cladding system has no provision for drainage at the bottom of the plaster, or any provision for movement, resulting in decayed timber	Page 6, Section 6.3.2	1.3-1.4, 1.5, 1.7, 1.8, 1.18, 1.24	North, west (part) and south elevations.	The stucco cladding is hard down onto the raised plinth to the north, west (part) and south elevations. The DT report photos confirm the	13-18	Due to the stucco cladding being installed hard down onto the horizontal plinth, water is held on this flat surface, and allows water transfer via absorption & capillary action to the wall framing. In addition, any water behind the cladding is trapped and	Reclad all walls with stucco cladding, including installing integrated flashings and associated framing replacement. This includes the north and south

Col 1	Column 2	Column 3			Column 4	Col 5	Column 6	Column 7
<b>DT report information:</b>					<b>Inspection Information:</b>		<b>Conclusions</b>	
DT report item <sup>1</sup>	Weathertightness failure and damage <sup>1</sup>	DT references			Observations, including observed damage	Photo Refs	Weathertightness failures that have caused DT report damage and/or consequential damage	Recommended remedial work
		Page & Para Refs	Photo Refs	Locations				
	framing				associated damage to the building wrap and decayed framing.		unable to drain resulting in the observed damage.	elevations; and the part of the west elevation that is not cavity brick veneer.
3	<b>Inadequate flashings/seals between cladding types</b> Deterioration of building wrap observed.	Page 6, Section 6.3.5	1.23	South elevation	Junctions between brick veneer and stucco cladding were observed without flashings or seals between different cladding types. No back flashing visible in DT report photos.	22	No confirmed damage other than deteriorating building wrap as noted in the DT report. However, defect will be remedied as part of the recladding required on this elevation.	As part of the above stucco cladding replacement, install suitable back flashings at all brick/stucco cladding junctions.
	<b>Roof and canopies</b>							
4	The butyl rubber membrane to the canopy over the front entrance and inadequate detailing around the fitted fascia is permitting moisture ingress into the canopy framing. The roof underlay is deteriorating.	Page 6, Section 6.3.4	2.1-2.5	North elevation	Water is ponding due to inadequate cross-fall and there is moss and lichen growth to the canopy membrane. The drain outlet is minimal in size and subject to blockage, with no overflow. Membrane upstands to steel post junctions are poorly detailed with lack of membrane adhesion. Fascia is faced fixed against the canopy, trapping moisture and there are vertical fixings through top edge of the canopy. The membrane is lifting and exposing the substrate and the soffit lining is water damaged.	19-21	Vertical membrane fixings, inadequate falls, and poor membrane detailing have allowed water entry into the canopy, resulting in damaged soffit linings and likely decay to the timber framed structure.	Uplift butyl rubber membrane and substrate, replace any damaged timber framing, install new membrane and plywood substrate over fillets to provide falls, install new drain and overflow, and replace damaged soffit linings.

Onsite observations in addition to DT report Information:				Inspection Information:		Conclusions	
Item No.	Item/Description	Locations		Observations, including observed damage	Photo Refs	Weathertightness failures that have caused consequential damage	Recommended remedial work
No items in addition to the DT report items							

<sup>1</sup>DT report items have been summarised wherever possible to reduce duplication

**Table 3.2 Rough order of cost**

<b>Indicative cost range</b>	<input type="checkbox"/> \$0 - \$100k	<input checked="" type="checkbox"/> \$100k - \$250k	<input type="checkbox"/> \$250k - \$500k	<input type="checkbox"/> \$500k - \$1m	<input type="checkbox"/> > \$1m
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**Table 3.3 Other moisture related and/or ventilation causes**

Damage observed	Other moisture related or ventilation cause	Further investigation recommendations
Nil		

**Table 3.4 Additional or alternative building work**

Building work	Table 3.1 item, or location	Description of building work and justification
Replace stucco cladding	North, west (part) and south elevations	Good practice to replace direct fixed cladding on a cavity

**Table 3.5 Imminent failure associated building work**

Item	Table 3.1 item (if relevant), location	Reason for classification and description of remediation
Nil		

**Table 3.6 Maintenance work identified**

Item	Onsite observations and recommendations	Photo ref	End of life (EoL) or routine (RM)
Damaged ceiling tiles in classroom 1	Water damaged tiles from previous leak due to defective valley gutter (now repaired) should be replaced	23, 24	RM
Corroded roof fixings generally over roof	Some roof fixings are corroded and/or raised and should be replaced	25, 26	RM
Poorly flashed roof vent on west wing of building	Crude flashing and sealant installation is causing ponding at roof vent. Sealant repairs appear to be working satisfactorily but should be monitored for future maintenance	27, 28	RM

**Table 3.7 Subfloor and ceiling space observations**

Reference	Onsite observations and recommendations	Photo ref
<b>Subfloor</b>	There is no subfloor space as the ground floor is a concrete slab	
<b>Ceiling space</b>	Access was not available to the ceiling space (skillion roof)	

## 4 Scope Limitations

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1. This report has been prepared under the following conditions of engagement:
  - a) This report is based primarily on a visual survey of the subject building in order to comment upon confirmed *weathertightness failure*.
  - b) This report is provided for the use of the Ministry and its legal representatives, and may not be used by others without written permission. The Consultant accepts no liability to third parties who may act on the contents of this report.
  - c) The Consultant is using the template provided by the Ministry, and the inspection methodology advised by the Ministry in order to undertake these reports.
2. The report does not provide guarantees, assurances or certification that the original construction, or later alterations, has been completed in accordance with Building Consent documentation or the New Zealand Building Code.
3. This report does not warrant that the building is free of decay and water ingress from defective roofs, claddings, rainwater goods, rising damp or the like, unless visibly evident at the time of the Consultant's visual survey.
4. The inspection took place and this report has been produced following a desktop review of the previous *DT report* where a DT report is available. The Consultant accepts no responsibility or liability for the accuracy of the advice provided by others, or for the reliance placed on that advice.
5. Where repair solutions are offered, given the limitations of visual survey work, no guarantees or assurances are provided around the effectiveness or durability of such repairs, nor as to the fact that further deterioration or damage may be uncovered as works progress that was not previously identified from the visual inspection.
6. For the avoidance of any doubt, this report is not a structural or geotechnical survey and does not cover the inspection or testing of any services unless specifically identified in the main body of the report.
7. Where the presence of asbestos or other materials hazardous to health have been identified in the previous *DT reports*, appropriate actions and processes were used in carrying out this inspection. Where during the inspection process the Consultant identified the possibility of such a presence and no indication was given in the previous reports of such occurrences, they have noted that possible occurrence and location but have not undertaken specialist investigations to confirm the presence or absence of asbestos or any other material hazardous to health. All comments are based upon a visual inspection only.
8. The comments made within this report are based on the Consultant's professional opinion and interpretation of the information reviewed. The information contained in this report is not legal advice.
9. It is assumed that the Ministry has provided all the information it currently has related to the building to be inspected, that is relevant to this investigation. However, it is not to be taken that the information supplied provides all the information needed to cover the building's condition, performance and maintenance history. The Consultant is not held responsible for any damage,

or cause of failure, that is not identified by the information provided, or from information that it is reasonable to expect the surveyor to have obtained from other sources, and/or is not evident during/at the time of the visual inspection carried out.

10. The Consultant has not considered whether any work recommended within this report requires a building consent. This element does not form part of this engagement. It is for the Ministry to consider consenting requirements and discuss this with their local Building Consent Authority.
11. The recommendations within this report are not sufficient for a builder to be directly engaged or instructed. A scope of repair and associated design will be required for work to be undertaken unless explicitly stated otherwise.
12. Where a building falls within the ten year long stop provisions of the New Zealand Building Act 2004, this report is not suitable for providing a full scope of repair or assisting legal counsel.
13. This report has been prepared with the following understanding of the Ministry's Weathertightness Remediation process. The Remediation inspection report will be reviewed by the Ministry's suitably experienced personnel and if necessary, discussed with the report's author. In cases where the Ministry decides to proceed with remediation, a suitably experienced professional, usually an architect or a building surveyor will be engaged by the Ministry to review the Ministry's brief, undertake his/her own investigations, including on-site visits and meetings with relevant school staff, prepare suitable documentation and observe the construction. The professional observing the construction will provide suitable quality assurance documentation which provides evidence that they have observed the construction and are satisfied that the construction complies with the New Zealand Building Code.
14. This weathertightness remediation inspection report is based primarily on a visual site inspection. It also relies on information provided by the building users such as the Principal, classroom teachers, maintenance managers and administrative staff. Other information may be available from the Ministry such as the previous Destructive Testing report and/or recent construction/maintenance reports. Due to the primarily visual inspection nature of this process, the building surveyor will not be held liable by the Ministry for any future *weathertightness failure* and *consequential damage* appearing on this Remediation inspection report building that was not apparent during this inspection or the subsequent *remedial work* undertaken by others. Any future weathertightness failure and *consequential damage* will be addressed using the Ministry's standard weathertightness remediation processes.

# Glossary

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The items defined in this Glossary are shown in italicized text throughout this document.

## **Adjacent work**

Building work required to a *building element* that does not have *consequential damage* but will be affected by the required *damage repair* and *weathertightness repair* to the extent that the Ministry needs to know of that effect to properly scope the extent and cost of *remedial work* (e.g. the removal and reinstallation or replacement of wall cladding that does not have *consequential damage*, but is located above an apron flashing or surrounding a head flashing that must be replaced for a *weathertightness repair*).

## **As when it was new**

Reinstating the *building element* to the condition and detail as it was at the time it was built using comparable modern materials.

## **Building element**

Any structural or non-structural component and assembly incorporated into or associated with a building. Although for this Remediation Inspection report these will usually be elements associated with the building envelope and structure, the definition in the Building Code includes fixtures, services, drains, permanent mechanical installations for access, glazing, partitions, and temporary supports.

## **Consequential damage**

The damage to a building element caused by a *weathertightness failure*, and that will require *damage repair*. *Consequential damage* includes *observed damage* and *hidden damage*.

## **Damage repair**

The building work, which may be either repair or replacement, required to fix *the consequential damage* so that the building element is returned to a Building Code compliant state.

## **DT report**

The Destructive Testing report produced under the Building Improvement Programme by building surveyors as a result of destructive or invasive testing to identify weathertightness issues and construction defects. The *DT report* recommends repair solutions.

## **Hidden damage**

*Consequential damage* that is not visible from destructive testing and/or visual inspection, but can reasonably be inferred to have occurred from the visible evidence arising from the nature of the *weathertightness failure*, *observed damage* and knowledge of both building science and the building's construction.

## **Imminent failure**

When it is believed that *weathertightness failure* of a *building element* will occur within twelve months from the time of the *remediation inspection report*.

## **Observed damage**

*Consequential damage* that is visible from destructive testing and visual inspection, and therefore known to have occurred. If necessary, evidence of *observed damage* can always be supported by photographs, material testing and the like whereas *hidden damage* must be inferred.

## **Remedial work**

The combined building work arising from *damage repair*, *weathertightness repair*, and any *adjacent work*.

**Weathertightness failure**

An as-built detail, feature or attribute of a *building element* that has caused any of the following *consequential damage*:

- i. undue dampness, damage to *building elements* or both caused by the penetration of water;
- ii. undue dampness, damage to *building elements* or both, caused by the absorption or transmittal of moisture;
- iii. adverse effects to *building elements* arising from moisture entering the space below suspended floors; or
- iv. condensation, fungal growth or the degradation of *building elements* caused by the accumulation or transfer of external moisture within concealed spaces and cavities.

Any as-built detail, feature or attribute of a *building element* that is not built-in accordance with a current *Acceptable Solution* is not considered a *weathertightness failure* unless there is evidence of *consequential damage*.

**Weathertightness repair**

The building work, which may be either repair or replacement, required to fix the *weathertightness failure* so that the remediated building element is returned to a *Building Code* compliant state.

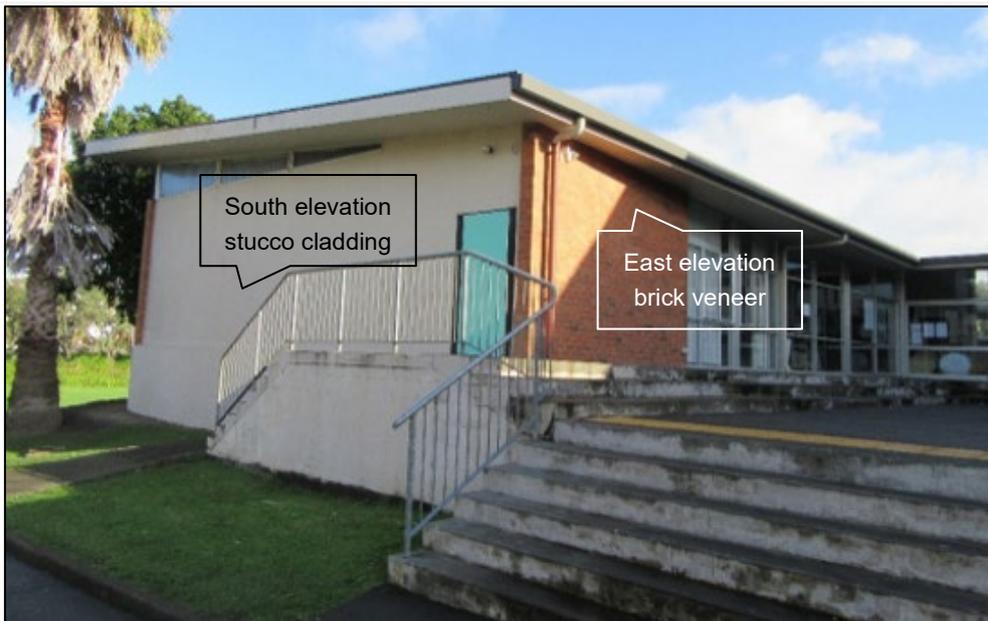
1) This is a model report. For actual Remediation Inspection reports the Appendix A photo section should contain sufficient photos to show the evidence of weathertightness failure and damage on all elevations as relevant. It is not sufficient to show such evidence on one or two elevations and extrapolate the conclusions to another elevation without providing photographic evidence, even though the details may be the same. This is because there can be significant variations on some elevations such as wide eaves which may protect the cladding with no observed weathertightness failure.

2) The relevance of each photo should be explained. It is not sufficient to show a poor detail which may or may not be a weathertightness failure. It is satisfactory to show a poor detail but note no weathertightness failure was observed.

## Appendix A Photos of building



**Photograph 1:** General view of the north elevation stucco cladding.



**Photograph 2:** General view of the south elevation stucco cladding and east elevation brick veneer cladding.



**Photograph 3:** General view of the west elevation (part stucco and part brick veneer cladding obscured behind the trees). Refer next photo of the stucco section of the cladding



**Photograph 4:** General view of the stucco cladding section of the west elevation.



**Photograph 5:** General view of the profiled metal sheet roof looking from north (in foreground) to south.



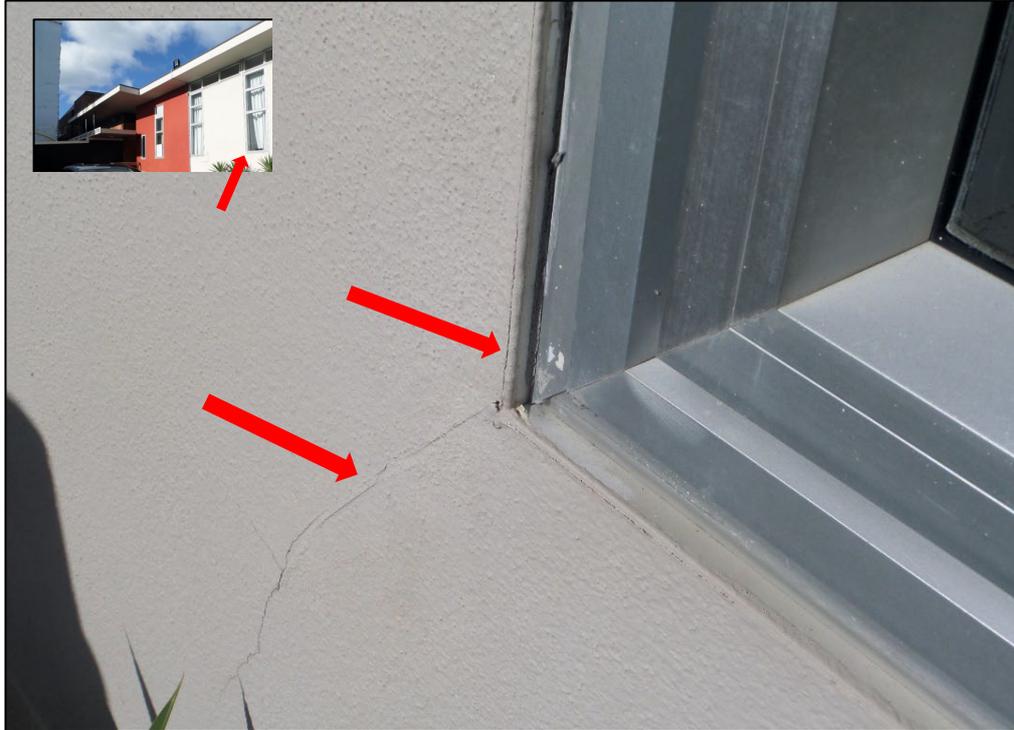
**Photograph 6:** North elevation. Cracking to stucco cladding and window junction. There are no visible control joints in the plaster. Refer next photo



**Photograph 7:** North elevation. Close up of photo 6 showing unsealed junction between aluminium window and adjacent stucco cladding plaster work which is allowing water entry behind the cladding. The window joinery is recessed into the stucco cladding; the recess is flat, allowing water to pond on the sill adjacent to the unsealed junction. The defects will be remedied by the recladding recommended for this elevation. Cladding cracking also arrowed.



**Photograph 8:** North elevation. Cracking to stucco cladding and open junction between aluminium window and stucco cladding is allowing water entry behind cladding. The defects will be remedied by the recladding recommended for this elevation.



**Photograph 9:** North elevation. Unsealed junction between aluminium window and adjacent stucco cladding plaster work. Cracking in stucco cladding radiating away from window sill. The defects will be remedied by the recladding recommended for this elevation



**Photograph 10:** North elevation. DT photo 1.17 showing typical failure at aluminium joinery / stucco cladding junction with deteriorated building wrap and rusting reinforcing mesh which is not sufficiently spaced off the substrate.

*An additional DT photo showing the timber framing condition should be included in this report.*



**Photograph 11:** North elevation. Cracking to stucco cladding junction between aluminium window and plaster is allowing water entry.



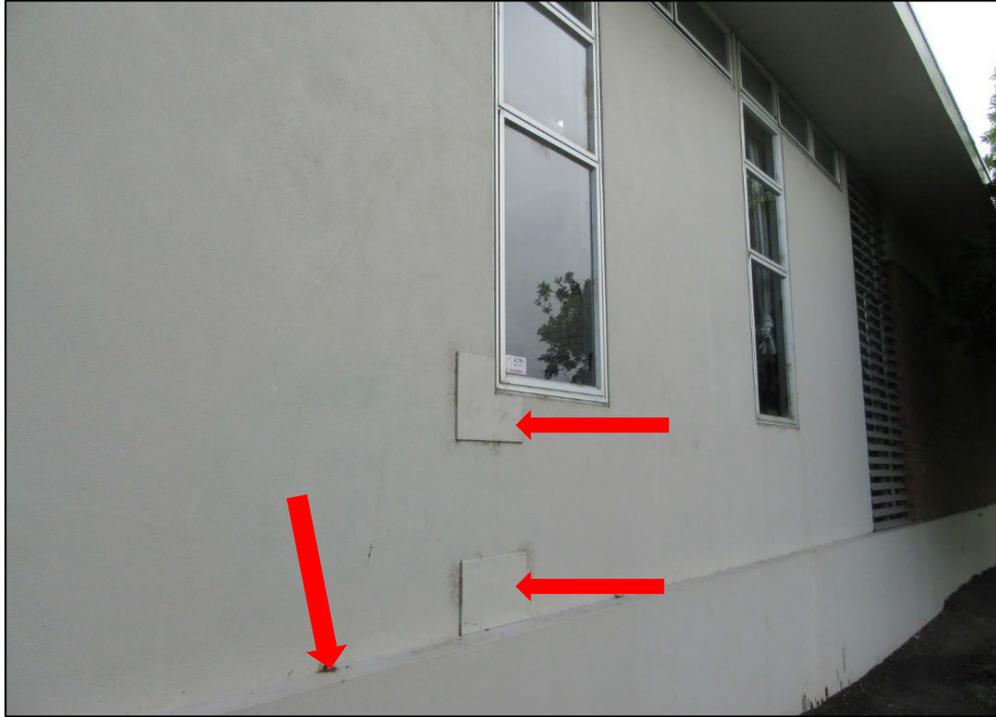
**Photograph 12:** North elevation. Further cracking to stucco cladding junction between aluminium window and adjacent plaster. The defects will be remedied by the recladding recommended for the stucco elevations.



**Photograph 13:** General view of south elevation stucco cladding. There are no visible control joints in the plaster. Refer next photo at patio steps.



**Photograph 14:** South elevation. Junction between stucco cladding and ground floor level plinth where weather-tightness failure has occurred as evidenced from the DT report. Refer cutout at far end of this wall in photo 18.



**Photograph 15:** West elevation. No clearance between stucco cladding and plinth. The DT investigation report provides evidence of moisture entering behind the cladding with resulting damage at both the window/stucco cladding junction and the base of the cladding/concrete plinth junction. The relevant DT report patches are indicated.

*Relevant DT photos showing the damage at both cutouts should be included in this report.*

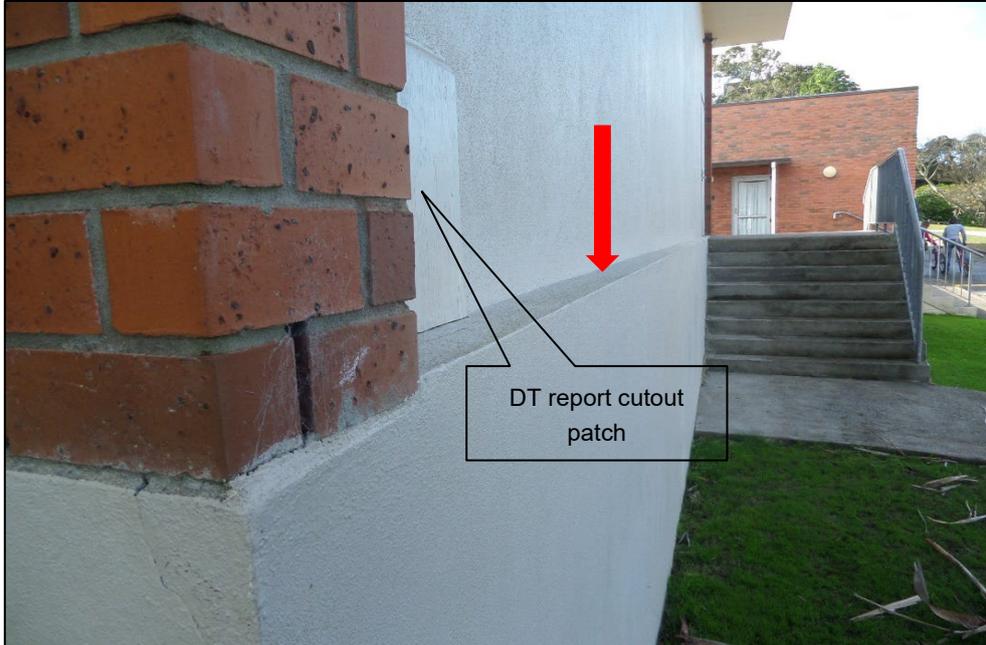


**Photograph 16:** North elevation. General view of typical junction between stucco cladding and external plinth where DT report shows weather-tightness failure has occurred (refer next photo).

*The relevant DT photo showing the sill cutout findings should be included in this report.*



**Photograph 17:** North elevation. DT photo 1.18 showing typical failure at cladding base/plinth junction. Deteriorated building paper, mould on back of cladding, corroded mesh and timber decay have resulted from moisture being trapped and unable to drain from this junction. The defects will be remedied by the recladding recommended for this elevation.



**Photograph 18:** South elevation. General view of the junction between stucco cladding and external plinth. Stucco is laid hard down onto perimeter plinth, with no clearance to allow drainage of moisture away from the base of the cladding. The DT report investigation confirmed moisture entry behind the cladding and timber framing decay at the indicated cutout. The defects will be remedied by the recladding recommended on this elevation.

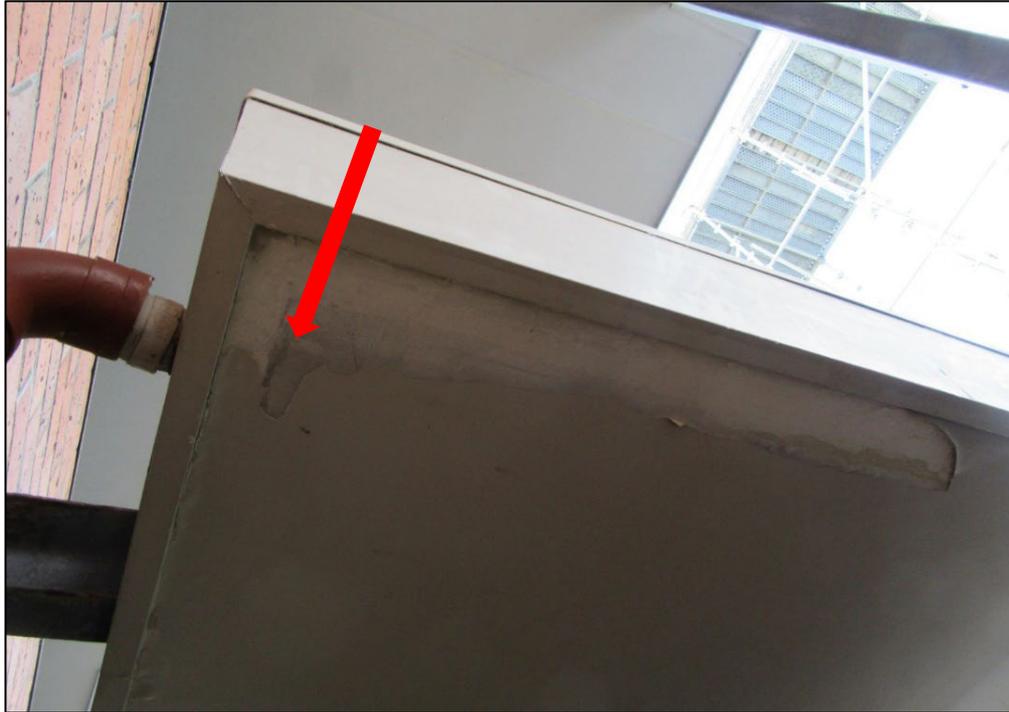
*The relevant DT photo showing the timber decay should be included in this report.*



**Photograph 19:** General view of the canopy to the north elevation. Water is ponding due to inadequate cross-falls and there are moss and lichen growths on the membrane. Arrow A: Membrane lifting adjacent to post, exposing substrate.



**Photograph 20:** North elevation, entry canopy. Arrow A: Membrane lifting and exposing substrate at roof perimeter. Arrow B: Fixings through top edge. Arrow C: Fascia board is face-fixed, trapping moisture. The substrate is visibly wet and there is moss growth below the membrane. Refer next photo below soffit.



**Photograph 21:** North elevation, entry canopy. Damaged soffit lining where water has been leaking through membrane which will need replacing. The defects will be remedied with a new membrane laid over new substrate with increased falls, along with replacement of decayed framing and damaged soffit linings.



**Photograph 22:** South elevation. No flashings or seals observed at junctions between stucco cladding and brick veneer. DT investigation indicated deteriorating building wrap due to water penetration at junction. The defect will be remedied as part of the recladding required on this elevation. Note indicated horizontal crack in stucco.

*The relevant DT photo showing the investigation should be included in this report.*



**Photograph 23:** General view of the roofing to the northern end of the building. Refer next photo of valley gutter that had been replaced between the DT report investigation and this inspection.



**Photograph 24:** New valley gutter. The previously damaged ceiling tiles in classroom 1 should be replaced (refer Table 3.6 Maintenance work identified).



**Photograph 25:** Corroded roof fixings need replacing (refer maintenance items).



**Photograph 26:** Raised roof fixings need replacing ((refer Table 3.6 Maintenance work identified).



**Photograph 27:** Overview of west wing roof. Refer next photo.



**Photograph 28:** Crude flashing and sealant installation is causing ponding at roof vent (ideally a cover flashing should have been installed up to the roof apex). No evidence of moisture entry was detected internally and it is recommended this detail be monitored annually (refer Table 3.6 Maintenance work identified).

# Appendix B

## Elevations showing recommended remediation

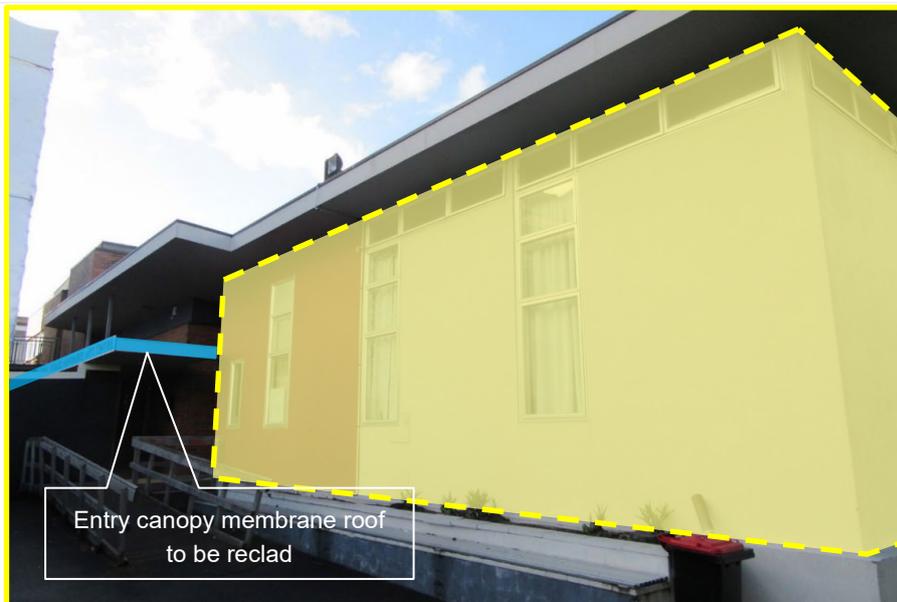
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Legend

-  Reclad on a cavity system
-  Replace membrane roofing



**Photograph 29:** South elevation



**Photograph 30:** North elevation and entry canopy roof



**Photograph 31:** West elevation. Brick veneer cladding at far end of elevation does not require remediation

Note: There is no remediation required to the brick veneer clad East elevation.

# Appendix C

## Additional Information from further investigations

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*Not required in this case and appendix should be deleted as no additional information received. There was no additional destructive testing required in this model report example.*