

DRYSCAN

Building and Infrared Inspections

Auckland

REPORT TYPE: Pre-Purchase Building and Weather
Tightness Inspection

DATE OF INSPECTION: 00/00/2022

DRYSCAN LIMITED

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Auckland.



Photo 1

REPORT PREPARED FOR:
Joe Smith

REPORT PREPARED BY:
Dryscan Ltd

00/00/2022

Joe Smith

Email: @gmail.com

Phone: (027)

To Whom It May Concern:

DryScan Limited was engaged to complete Pre-Purchase Building and Weather Tightness Inspection Report for Joe Smith at Auckland.

This report unless otherwise stated covers moisture ingress issues within the entire building envelope, internal and external and encompasses **NZS 4306:2005**. It has been prepared to the best of our ability and knowledge with the information made available to us at the time. It does not cover areas that were inaccessible at the time of the investigation.

This report is a guide only and identifies the presence of any thermal anomalies and any areas that may have sustained moisture damage as a result of these anomalies. A full, in depth moisture ingress inspection possibly requiring an invasive investigation may be required if major moisture ingress issues have been identified. This report does not check for structural failures and is not to be used as a road map for remedial work and whilst we have taken every care to comment on all aspects of the building, we do not make assumptions for areas of the building that cannot be sighted or are inaccessible at the time of our inspection. Some issues may also have been disguised at the time of our inspection in order to prevent their detection. DryScan Ltd was not required to check any council files related to the above property.

DryScan Ltd nor any subsidiary companies or employees of it undertake to accept any liability in the preparation of this report or the conclusion of any structural or remedial work undertaken by the owners or management.

Acceptance of this report is also acceptance of the conditions contained within.

We trust you find this report useful and that our service has met your expectations. If for any reason whatsoever you are disappointed with any facet of our service please let us know, as this is the only way we can make the necessary improvements.

Please do not hesitate to contact us if you have any queries with regard to the attached report.

Regards,



Bryce Hall
Inspector/Thermographer/Director
DryScan Limited



Auckland.

SITE INFORMATION

Date of Inspection	00/00/2022 at 09:05 AM (13 GMT)
Thermographer	Bryce Hall
Property Address	Auckland.
Property Description	Attached, 2 Storey Dwelling
Exterior Cladding	Brick and Direct Fixed Texture Coated Fibre-cement Board/Harditex type
Roofing Material	Tin Tiles
Joinery	Alloy

WEATHER CONDITIONS

Weather	Overcast
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SCOPE OF WORK

Pre-Purchase Building and Moisture Ingress inspection on the Entire Dwelling.

SUMMARY

The dwelling was built in 1998; it appears to be well constructed and in satisfactory condition with some abnormal or high moisture levels at the time of this investigation.

The main contributing factors to the increased moisture levels are:

- Joinery Failure
- Possible Penetration Failure
- Possible Ground Clearance Failure
- Water Proofing Failure

Remedial Items:

- Cladding Cracks
- Exterior Painting
- Chem-Wash Roof
- Chem-Wash Cladding
- Clean Gutters and Down Pipes

INTERNAL

Entry

Ground

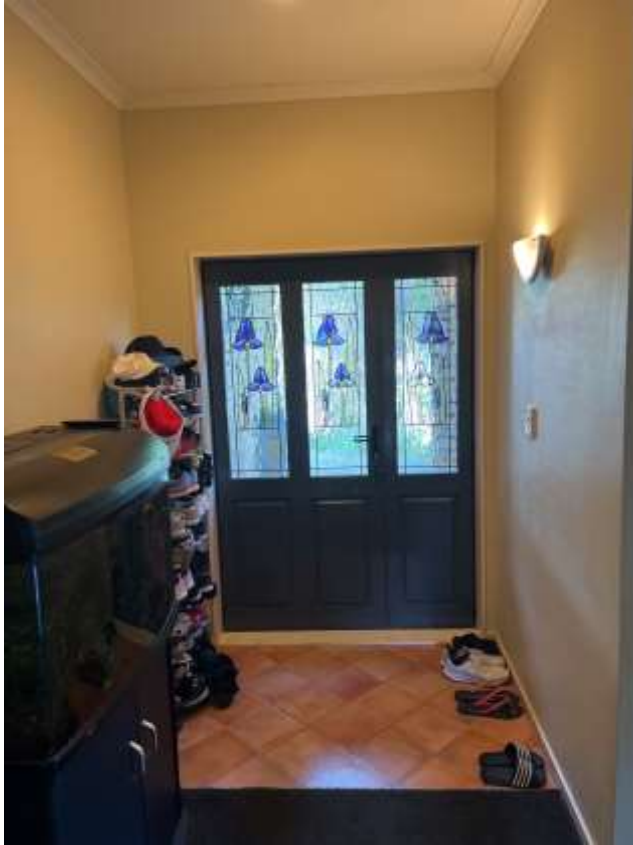


Photo 2

INFORMATION

LOCATION: West Wall

MOISTURE READING %: 10 - 14

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 10 - 14 % were obtained throughout the Entry West Wall. There were no thermal anomalies or any other signs of moisture ingress.

Lounge

Ground



Photo 3

INFORMATION

LOCATION: West Wall

MOISTURE READING %: 11 - 19

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 11 - 19 % were obtained throughout the Lounge West Wall. There were no thermal anomalies or any other signs of moisture ingress.

Lounge

Ground



Photo 4

INFORMATION

LOCATION: North Wall

MOISTURE READING %: 12-26

THERMAL ANOMALY: Yes

PRIORITY REPAIR RATING

Soon as Possible

COMMENTS

High moisture readings were obtained due to cladding failure, located outside here. Due to this, moisture ingress is tracking down/through the internal wall, giving a reading of 26% at the top above the doors on the right hand side (photos and thermal images 5 to 10).



Photo 5

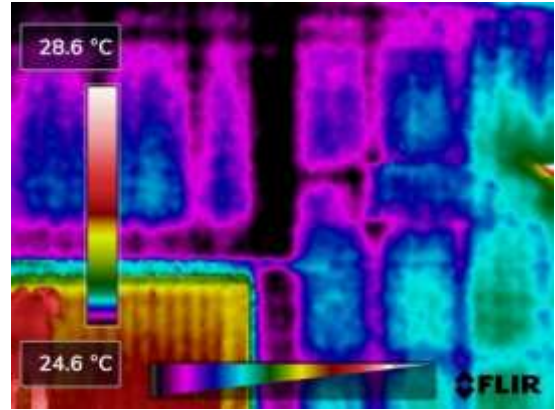


Photo 6



Photo 7



Photo 8



Photo 9



Photo 10

Dining

Ground



Photo 11

INFORMATION

LOCATION: North-East Wall

MOISTURE READING %: 12 - 61

THERMAL ANOMALY: Yes

PRIORITY REPAIR RATING

Soon as Possible

COMMENTS

High moisture readings were obtained due to waterproofing failure. Due to this, moisture ingress is tracking through the floor slab split level by the steps to the kitchen, giving a reading of 61% at the bottom on the left hand side of the steps (photos and thermal images 12 to 15).



Photo 12



Photo 13



Photo 14

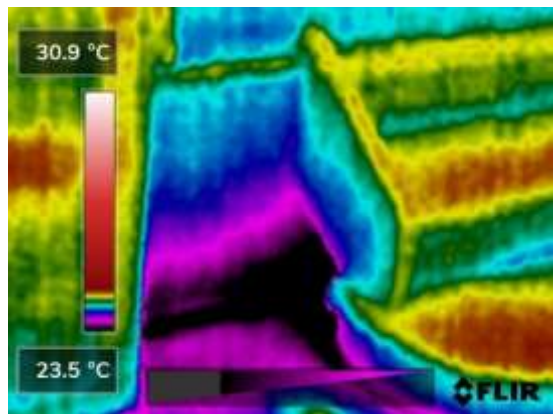


Photo 15

Kitchen

Ground



Photo 16

INFORMATION

LOCATION: East Wall

MOISTURE READING %: 11 - 15

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 11 - 15 % were obtained throughout the Kitchen East Wall. There were no thermal anomalies or any other signs of moisture ingress.

Kitchen Sink Plumbing appears to be in good working order, the rangehood is ducted outside (photos 17 & 18).



Photo 17



Photo 18

Family Room

Ground



Photo 19

INFORMATION

LOCATION: East Wall

MOISTURE READING %: 11 - 16

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 11 - 16 % were obtained throughout the Family Room East Wall. There were no thermal anomalies or any other signs of moisture ingress.

Toilet

Ground



Photo 20

INFORMATION

LOCATION: Central Internal Wall

MOISTURE READING %: 12 - 18

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 12 - 18 % were obtained throughout the Toilet Central Internal Wall. There were no thermal anomalies or any other signs of moisture ingress.

Bathroom 1

Ground



Photo 21

INFORMATION

LOCATION: South Wall

MOISTURE READING %: 15-94

THERMAL ANOMALY: Yes

PRIORITY REPAIR RATING

Soon as Possible

COMMENTS

This area has floor to Ceiling wall tiles with high moisture readings were obtained due to a possible pipe or ground clearance failure, located outside here. Due to this, moisture ingress is tracking down/through the internal wall, giving a reading of 94% at the bottom of the wall below the window (photos and thermal images 22 to 25).

A hot water shower test was carried out to determine if the junctions of the shower were failing. The shower is in good condition.



Photo 22

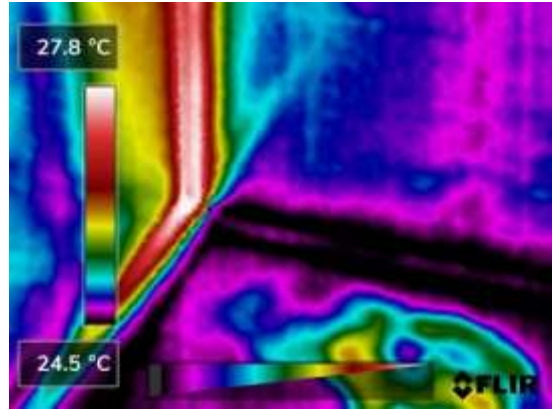


Photo 23



Photo 24



Photo 25

Bedroom 1

Ground



Photo 26

INFORMATION

LOCATION: South-East Wall

MOISTURE READING %: 12 - 19

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 12 - 19 % were obtained throughout the Bedroom 1 South-East Wall. There were no thermal anomalies or any other signs of moisture ingress.

Garage

Ground



Photo 27

INFORMATION

LOCATION: North-West Wall

MOISTURE READING %: 12 - 19

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 12 - 19 % were obtained throughout the Garage North-West Wall. There were no thermal anomalies or any other signs of moisture ingress.

Garage/Laundry

Ground



Photo 28

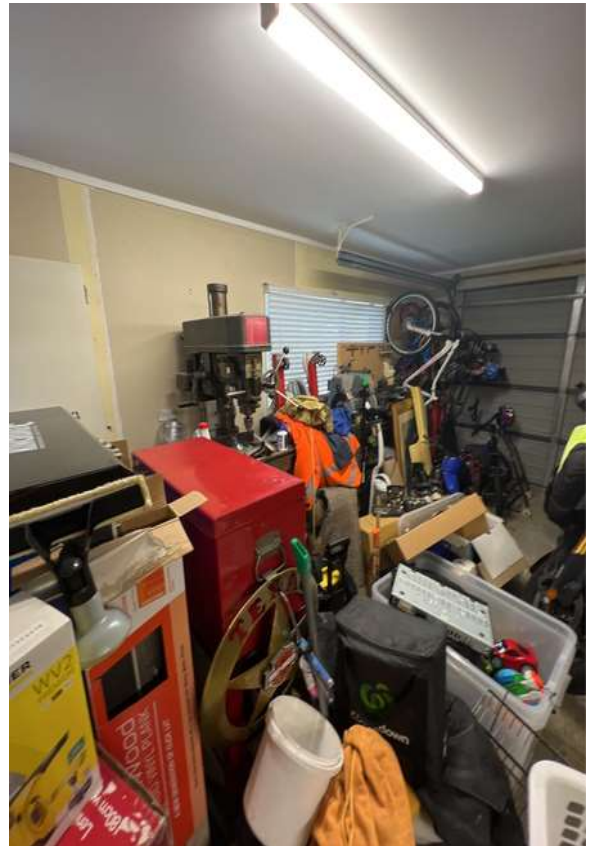


Photo 29

INFORMATION

LOCATION: South Wall

MOISTURE READING %: 12 - 19

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 12 - 19 % were obtained throughout the Garage/Laundry South Wall. There were no thermal anomalies or any other signs of moisture ingress.

Laundry Tub and Plumbing appears to be in good working order.

Stairwell

First Floor



Photo 30

INFORMATION

LOCATION: East Wall

MOISTURE READING %: 10 - 14

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 10 - 14 % were obtained throughout the Stairwell East Wall. There were no thermal anomalies or any other signs of moisture ingress.

Bedroom 2

First Floor



Photo 31

INFORMATION

LOCATION: North-East Wall

MOISTURE READING %: 10 - 17

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 10 - 17 % were obtained throughout the Bedroom 2 North-East Wall. There were no thermal anomalies or any other signs of moisture ingress.

Master Bedroom

First Floor



Photo 32

INFORMATION

LOCATION: North-West Wall

MOISTURE READING %: 11-28

THERMAL ANOMALY: Yes

PRIORITY REPAIR RATING

Soon as Possible

COMMENTS

High moisture readings were obtained due to a joinery failure, located outside here. Due to this, moisture ingress is tracking down/through the internal wall, giving a reading of 28% under the north wall window on the left hand side (photos and thermal images 33 to 35).



Photo 33

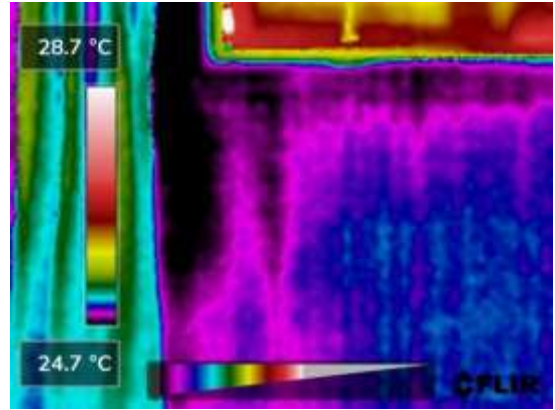


Photo 34



Photo 35

Walk-in Wardrobe

First Floor



Photo 36

INFORMATION

LOCATION: West Wall

MOISTURE READING %: 09 - 14

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 09 - 14 % were obtained throughout the Walk-in Wardrobe West Wall. There were no thermal anomalies or any other signs of moisture ingress.

Bathroom 2**First Floor**

Photo 37

INFORMATION

LOCATION: South-West Wall

MOISTURE READING %: 12 - 19

THERMAL ANOMALY: No

PRIORITY REPAIR RATING**N/A****COMMENTS**

Moisture readings of 12 - 19 % were obtained throughout the Bathroom 2 South-West Wall. There were no thermal anomalies or any other signs of moisture ingress. This area has floor to Ceiling wall tiles with no sign of moisture related issues.

A hot water shower test was carried out to determine if the junctions of the shower were failing. The shower is in good condition.

Toilet 2

First Floor



Photo 38

INFORMATION

LOCATION: South Wall

MOISTURE READING %: 12 - 18

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 12 - 18 % were obtained throughout the Toilet 2 South Wall. There were no thermal anomalies or any other signs of moisture ingress. This area has floor to Ceiling wall tiles with no sign of moisture related issues.

Bedroom 4

First Floor



Photo 39

INFORMATION

LOCATION: South-East Wall

MOISTURE READING %: 11 - 18

THERMAL ANOMALY: No

PRIORITY REPAIR RATING

N/A

COMMENTS

Moisture readings of 11 - 18 % were obtained throughout the Bedroom 4 South-East Wall. There were no thermal anomalies or any other signs of moisture ingress.

EXTERNAL

GROUND CLEARANCE

COMMENTS

The dwelling has concrete slab floor and foundation with sufficient clearance between the bottom edge of the cladding and the finished ground level throughout most of the dwelling, however there is no cladding clearance in the southeast walls with the plaster cladding below the level of the concrete path and signs of a possible failure into the bottom of the wall in bathroom 1 (photos 40 to 47). Air space clearance is needed.



Photo 40



Photo 41



Photo 42



Photo 43



Photo 44



Photo 45



Photo 46



Photo 47

JOINERY, FLASHINGS AND STILL TRAYS

COMMENTS

There are head flashings apparent above the windows. The joinery and joinery to cladding junctions are generally in good condition throughout the dwelling, however there is a mitre joint leak in the master bedroom window (photos 48 to 53).



Photo 48



Photo 49



Photo 50



Photo 51



Photo 52



Photo 53

PENETRATIONS

COMMENTS

The windows of the power meter box need to be properly sealed in place (photo 54).

The external alarm to wall cladding junction is in satisfactory condition (photo 55).

The external light fittings to wall cladding junctions are in good condition (photos 56 to 59).

The external taps and pipework to wall cladding junctions are in satisfactory condition with a possible pipe leak at the bottom of bathroom 1 wall that needs checking (photos 60 to 65).

The external extractor vents to wall cladding junction are in good condition (photos 66 to 69).

The vent pipe to roof flashing was found to be in good condition (photo 70).

The sky dish and TV aerial to roof penetration were in good condition at the time of our investigation (photo 71). We recommend that this is removed as is now obsolete.



Photo 54



Photo 55



Photo 56



Photo 57



Photo 58



Photo 59



Photo 60



Photo 61



Photo 62



Photo 63



Photo 64



Photo 65



Photo 66



Photo 67



Photo 68



Photo 69



Photo 70



Photo 71

EXTERNAL CLADDING

COMMENTS

This dwelling is clad with a mix of Brick veneer that is in good condition and non-cavity texture coated fibre-cement board/Harditex type cladding system and has a number of cracks that need remedial attention (photos 72 to 86).

The paint application waterproofs the plaster system and should be repainted every 5 to 7 years to help maintain the plaster cladding. This cladding needs a Chem-wash and a re-paint.



Photo 72



Photo 73



Photo 74



Photo 75



Photo 76



Photo 77



Photo 78



Photo 79



Photo 80



Photo 81



Photo 82



Photo 83



Photo 84



Photo 85

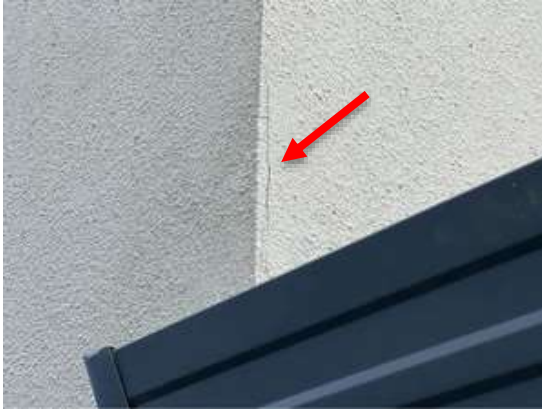


Photo 86

DECKS AND BALUSTRADES

COMMENTS

There is a multi-level timber deck that is generally in good condition (photos 87 to 90).



Photo 87



Photo 88



Photo 89



Photo 90

DOWNPIPES, RAINHEADS AND GUTTERS

COMMENTS

This dwelling has Klass/Taylor enclosed gutter system, can flood the soffits in heavy rain fall. There are overflow outlets and spreaders in place on the upper roof areas. Some gutters need clearing and cleaning (photos 91 to 96).



Photo 91



Photo 92



Photo 93



Photo 94



Photo 95



Photo 96

ROOF AND ROOF FLASHINGS

COMMENTS

The roof and roof flashing are in a satisfactory condition. There is crease damage from being walked on incorrectly and the roof needs a Chem-wash to remove moss, mould and dirt (photos 97 to 105).



Photo 97



Photo 98



Photo 99



Photo 100



Photo 101



Photo 102



Photo 103



Photo 104



Photo 105

INSULATION AND VENTILATION

COMMENTS

There is ceiling Insulation and a DVS ventilation system in place (photos 106 to 111).



Photo 106



Photo 107



Photo 108



Photo 109



Photo 110



Photo 111

FENCES AND GATES

COMMENTS

The fences and gates are generally in good condition (photos 112 to 116).



Photo 112



Photo 113



Photo 114



Photo 115



Photo 116

DRIVEWAY

COMMENTS

The driveway and paths are in good condition (photos 117 to 122).



Photo 117



Photo 118

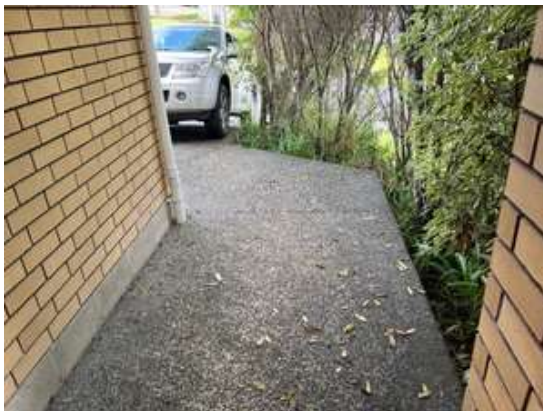


Photo 119



Photo 120



Photo 121



Photo 122

GARDEN RETAINING WALLS

COMMENTS

There are timber post and rail garden retaining walls that are in good condition (photos 123 to 128).



Photo 123



Photo 124



Photo 125



Photo 126



Photo 127



Photo 128

WEATHERTIGHTNESS RISK

WIND ZONE	Medium	Low Risk	Low wind zone as described by NZS3604
		Medium Risk	Medium wind zone described by NZS3604
		High Risk	High wind zone described by NZS3604
		Very High Risk	Very high wind zone described by NZS3604
NUMBER OF STOREYS	Medium	Low Risk	One Storey
		Medium Risk	Two stores in part
		High Risk	Two stores
		Very High Risk	More than two stores
ROOF/WALL INSPECTION DESIGN	Medium	Low Risk	Roof to wall intersection fully protected (e.g., hip and gable roof with eaves)
		Medium Risk	Roof to wall intersection partly exposed (e.g., hip and gable roof with no eaves)
		High Risk	Roof to wall intersection fully exposed (e.g., parapets or eaves at greater than 90° to vertical with soffit lining)
		Very High Risk	Roof elements finishing within the boundaries formed by the exterior walls (e.g., lower ends of aprons, chimneys etc.)
EAVES WIDTH (1)	Medium	Low Risk	Greater than 600 mm at first floor level
		Medium Risk	450-600 mm at first floor level or over 600 mm at second-floor level
		High Risk	100-450 mm at first floor level or 450-600 mm at the second-floor level
		Very High Risk	0-100 mm at first-floor level or 100-450 mm at second-floor level, or 450-600 mm at third floor level (2).
ENVELOPE COMPLEXITY	Medium	Low Risk	Simple rectangular, L, T a boomerang shape with single cladding type
		Medium Risk	More complex, angular or curved shapes (e.g., Y arrowhead with single cladding type)
		High Risk	Complex angular or curved shapes (e.g., Y or arrowhead) with multiple cladding types)
		Very High Risk	As for high risk, but with junctions not covered in C or F of this table (e.g., box window, pergolas, multi-story re-entrant shapes etc.)
DECK DESIGN	Low	Low Risk	None, timber slate deck or porch at ground level
		Medium Risk	Fully covered in plan by roof, timber slate deck attached that first or second floor level
		High Risk	Enclosed deck exposed in plan or cantilevered at first-floor level
		Very High Risk	Enclosed deck exposed in plan or cantilevered at second-floor level or above.

NOTE –

(1) Eaves width measured from external face of wall cladding to outer edge of overhang including gutters and fascias.

(2) Balustrades and parapets count as 0 mm eaves.

This Appendix is sourced from the Department of Building and Housing's Acceptable Solutions to the New Zealand Building Code Clause E2/AS1 External Moisture. Refer E2/AS1 for the risk matrix and evaluation.

CERTIFICATE

CERTIFICATE OF INSPECTION ENCOMPASSING NZS 4306:2005

Client:	Joe Smith
Site Address:	Auckland.
Inspector:	Bryce Hall Inspector/Thermographer/Director DryScan Limited <i>Apprenticeship Carpentry/Joinery 1976-80</i> <i>Trade Certificate 1980</i> <i>Advanced Trade Certificate 1984</i> <i>Level 1 Thermographer 2008</i> <i>Member BOINZ until 2016</i> <i>Registered Meth-Tester 2017</i> <i>Building Industry from 1976 45 yrs. +</i> <i>Building Inspector from 2008 12 yrs. +</i> <i>Member NZIBI 2020</i> <i>Encompassing NZS 4306:2005</i>
Inspection Date and Time:	00/00/2022 at 09:05 AM (13 GMT)

These Areas of the above-named property have been inspected.	Yes/No
(A) SITE	Yes
(B) SUBFLOOR	Yes
(C) EXTERIOR	Yes
(D) ROOF EXTERIOR	Yes
(E) ROOF SPACE	Yes
(F) INTERIOR	Yes
(G) SERVICES	No
(H) ACCESSORY UNIT, ANCILLARY SPACES AND BUILDINGS:	No

Any limitations to the coverage of the inspection are detailed in the written report.

Certification:

I hereby certify that I have carried out the inspection of the property site at the above address encompassing NZS 4306:2005 Residential property inspection – and I am competent to undertake the inspection.

For DRYSCAN LIMITED



Signature	Date: 00/00/2022
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An inspection carried out encompassing NZS4306:2005 is not a statement that a property complies with the requirement of any Act, regulation, or bylaw, nor is the report a warranty against any problems developing after the date of the property report. Refer to NZS 4306:2005 for full details

SUMMARY LIST OF INSPECTED FEATURES

SITE	Inspected?
Orientation of living spaces	Yes
Site exposure, contour & vegetation	Yes
Retaining walls	Yes
Paths, steps, handrails & driveways	Yes
Fencing	Yes
Surface water control	Yes
SUBFLOOR	Inspected?
Location of access point	No
Accessibility	No
Foundation type and condition	Yes
Foundation walls	Yes
Ground condition	Yes
Ground Vapour barrier	No
Drainage	Yes
Ventilation adequacy	No
Pile type, instability and condition	No
Pile to bearer connections	No
Obvious structural alteration	No
Ground clearance of timber framing	Yes
Floor type (timber or suspended concrete)	Yes
Timber framing and bracing	No
Insulation type, approximate thickness, coverage and condition	No
Plumbing – material type, leakage & support	No
Electrical – wiring type & support	No
Insect and pest infestation	No
Rotting timbers	No
Debris	No
EXTERIOR	Inspected?
Construction type	Yes
Cladding	Yes
Chimneys	Yes
Exterior stairs	Yes
Balconies, verandahs, patios, etc.	Yes
ROOF	Inspected?
Roof material	Yes
Roof condition	Yes
Roof water collection	Yes

Downpipes	Yes
Eaves, fascia & soffits	Yes
ROOF SPACE	Inspected?
Accessibility	Yes
Roof cladding	Yes
Thermal insulation type clearances, approximate thickness and coverage	Yes
Sarking	No
Party walls, fire proofing	No
Roof underlay & support	Yes
Roof frame construction and connections	Yes
Ceiling construction	Yes
Obvious structural alteration	Yes
Insect and pest infestation	Yes
Rotting timber	No
Discharges into roof space	Yes
Plumbing- material types, leakage & support	No
Electrical – wiring types & support	No
The fixings	No
INTERIORS	Inspected?
Ceilings	Yes
Walls	Yes
Timber floor	Yes
Concrete floors	Yes
Doors & frames	Yes
Electrical – operation of switches, etc.	No
Heating system	Yes
Kitchen - Bench top	Yes
- Cabinetry	Yes
- Sink	Yes
- Tiles	Yes
- Air extraction system	Yes
Bathroom, WC, En-suite - Floor	Yes
- Cistern, pan and bidet	Yes
- Tiles	Yes
- Bath	Yes
- Shower	Yes
- Vanity/wash basin	Yes
- Ventilation	Yes
- Special Features	Yes

Laundry	- Location	Yes
	- Floor	Yes
	- Tubs/cabinet	Yes
	- Tiles	Yes
	- Ventilation	Yes
Storage		Yes
Stairs		Yes
Exterior windows and doors		Yes
SERVICES		Inspected?
Fire warning, control systems and smoke alarm		No
Heating systems		Yes
Central vacuum systems		No
Ventilation systems		Yes
Security system		No
Electricity services		No
Gas services		No
Water services		Yes
Hot water services		Yes
Foul water disposal		Yes
Grey water recycling system		N/A
Rainwater collection systems		Yes
Solar heating		N/A
Aerials and antennae		Yes
Shading systems		Yes
Telecom		No
Lifts		N/A
ANCILLARY SPACES		Inspected?
Exterior claddings		No
Floors		No
Roofs		No
Subfloor		No

For Full Details of the inspection refer to the Inspector's "Property Report "and to NZS 4306:2005

CONCLUSION

In conclusion, our inspection showed that this dwelling is well built in satisfactory condition with some concern with regard to moisture ingress at the time of our inspection. There are a number of remedial items needing attention in the near future.

Once all the necessary remedial work has been completed we can come back to reassess the dwelling and confirm that we can see no further issues with respect to moisture ingress. There is a charge for this service.

We recommend that a regular monitoring and maintenance programme is undertaken. Most building elements will require maintenance to achieve their expected durability. The extent and nature of that maintenance will depend on the material or system, its geographical location and position within the building. The manufacturers' specifications will outline what maintenance should be undertaken.

Note: The term Weather Tightness can be misleading as no building is totally weather tight! And all inspections are a snapshot of the performance and condition of the building elements on the day of the inspection. We use the guidelines and encompass NZS 4306:2005 in our reports to assess if there is any moisture ingress into the building at the time of the inspection and if there is any clear evidence of damage or any maintenance issues needed remedial attention. This is not and cannot be a guarantee of future performance or weather tightness.

REPORT GUIDELINES

This report is designed to inform clients of any areas of elevated moisture, thermal anomalies or other signs of moisture ingress that may lead to deterioration or failure; it is not a guarantee against failure.

Where possible we gather information by observing infrared images which help us to identify the presence of any abnormal patterns of infrared radiation otherwise known as thermal anomalies within the building envelope, which in turn may enable us or any remedial experts to identify the location of any present or future issues and to allow such remedial teams to undertake the necessary repairs and locate directly areas that may have sustained damage. A full invasive inspection may be required by the remedial teams to check for structural damage where moisture levels are excessive.

DryScan Ltd is not responsible for determining what remedial work should be undertaken and recommends that any faults are addressed by suitably qualified persons. If at the conclusion of any works DryScan Ltd is requested to re-inspect, we will require producer statements from the contractors undertaking the repairs for their work, as we cannot make assumptions on areas of the building that cannot be sighted.



DRYSCAN INSPECTION PROCESS

INTERNAL

In each room every wall and ceiling where possible including every top and bottom plate are checked using a high resolution 640 x 480 pixel image Dryscan Infrared thermal imaging camera detector and a Carroll and Carroll non-invasive moisture meter. Our technicians carry probe moisture meters that can be employed on request in areas where the non-invasive meters are getting increased readings to check the moisture levels of the framework.

EXTERNAL

An external check is also undertaken looking particularly at areas where common problems occur such as decks and balustrades, penetrations through the external cladding, flashing details and ground clearance. The outside of the dwelling, walls and roof where possible is checked for any visible defects particularly in areas where there are increased moisture levels or other thermal anomalies internally.

EFFECTS OF MOISTURE ON TIMBER

Almost all building materials deteriorate when they are exposed to moisture over time. Moisture causes fungal decay and mould in timber. Also chemicals from corroded metal fixings can cause damage to timber.

TYPES OF ROT	CONDITIONS
Dry rot	<ul style="list-style-type: none">- Spore germination 28-30% moisture content- Optimum growth 30-40% moisture content- Minimum moisture content for continued growth 20%- requires high humidity and acidity for establishment
Wet rot	<ul style="list-style-type: none">- Optimum growth 50-60% moisture content- Minimum moisture content for continued growth 30%- High moisture required / sensitive to drying- Tolerant to many preservatives
Soft rot	<ul style="list-style-type: none">- Prefers high moisture

MOISTURE CONTENT READINGS

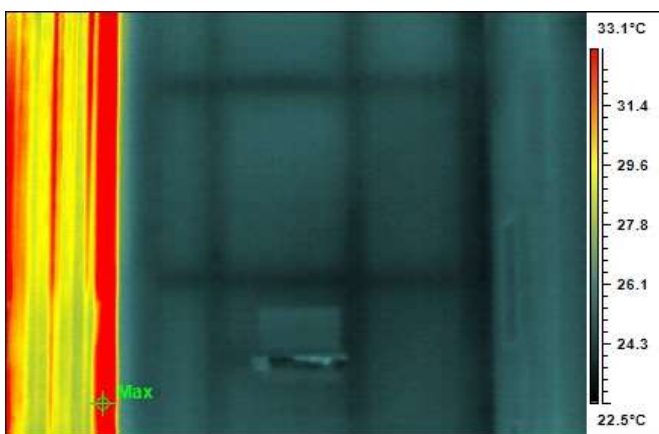
Acceptable levels of moisture are generally below 20%; anything above this level can cause damage to building elements over time and may require further investigation. The New Zealand Building Code - NZS3602 prescribes the maximum allowable moisture content level for untreated timber as 18% and for treated timber as 20%. For the purposes of this report, where moisture levels in excess of 20-30% are found, we generally recommend that a further invasive investigation is undertaken to check the structural integrity. Unless otherwise stated moisture readings taken are non-invasive, so they are not the exact moisture readings of the framework.

MOISTURE CONTENT IN TIMBER	
<18%	Decay is highly unlikely
18-30%	Less than the fibre saturation point of 30% - decay is unusual except for dry rot
>30%	Close to wood saturation - decay is common – timber will usually require removal

INTERPRETATION OF INFRARED IMAGES

Infrared technology uses the part of the light spectrum the human eye cannot see. All objects emit infrared light/radiation and temperature has a large effect on this. The infrared cameras are sensitive to the slightest variations in infrared light / temperature and therefore have the ability to see what we and normal cameras cannot. The camera converts this infrared radiation electronically into an image that is visible to us. In effect we are seeing the temperature of the image hence the term "infrared thermography".

EXAMPLES: [These are NOT the subject property]

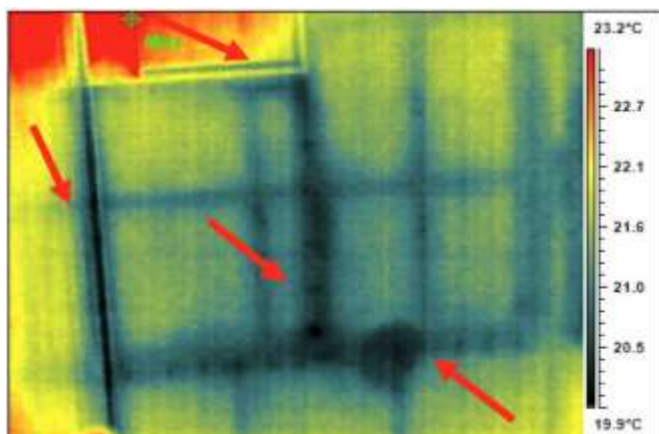


This image shows the cameras ability to show internal framework.

We can see the colouring (temperature) is consistent and even throughout the wall.

This is considered a normal temperature distribution and would indicate that there are no thermal anomalies present and there is no cause for concern.

The red and yellow on the left hand side is sun on the window frame.



This image shows a significant difference and inconsistent distribution in colour / temperatures which would indicate the presence of a thermal anomaly and would require further investigation.

Here the internal wall framing is visible, with warmer areas being highlighted in yellow and colder areas in purple/grey.

The colder purple/grey areas in this thermal image show a window leak tracking down inside this wall and would be an area of concern and a recommendation for further investigation would be expressed.

NOTE: The purple/grey colour is not always an indication of moisture as the colour is dependent on the ambient conditions or the colour palette used. Moisture can also be indicated by a lighter shade of colour if hot.



This Photo shows what the eye can sees and clearly shows why thermal imaging is a great tool in carrying out building inspections.

INSPECTION EQUIPMENT

Dryscan Infrared Solutions thermographers use non-contact high resolution, high performance 640 x 480 pixel image infrared cameras which offer a 45% higher performance than most traditional infrared detectors. They are equipped with the highest level of thermal sensitivity currently available in an uncooled infrared camera. With the thermal sensitivity of our cameras being 0.060 degrees Celsius at 30 degrees C, this means that at 30 degrees C, the infrared camera can differentiate between temperatures that are only 0.060 degrees apart. It is this thermal sensitivity that gives Dryscan Infrared's cameras their excellent image definition and crispness and enables us to more accurately pin point a hot spot or thermal anomaly, giving clearer definition of thermal variation across the target.

Dryscan thermographers are also equipped with Carrel & Carrel non-invasive moisture meters which are used in conjunction with our infrared cameras, particularly in areas where the camera has identified the presence of a thermal anomaly. These digital meters measure how much water is present in timber and is expressed as a percentage of moisture content. Our thermographers also carry invasive probe moisture meters which involve the driving of two probes through the plasterboard or timber surface enabling the operator to collect accurate moisture content readings. This method is usually employed in areas of concern in which high moisture readings have been obtained using non-invasive methods, or when requested by the homeowner.

For the purpose of this report, all moisture readings shown are taken from the non-invasive digital meters unless otherwise specified.

POLICIES ADOPTED BY DRYSCAN LTD

1. Purpose of Report

This report has been prepared for the client following an above ground infrared inspection of the building and/or its services. It provides general comments on the condition of the building and services at the time of our report.

2. Visual Inspection

Whilst all care to record any irregularities or defects in the building envelope apparent, it is important to note that this is a non-structural report only. DryScan Ltd is not responsible if we are unable to access any part of the building services or property to carry out an investigation.

3. Structural Survey

This report is not a structural survey. DryScan Ltd does not open up, uncover, dismantle or undertake any internal inspection of the building, services or chattels. We do not make any representation as to the soundness of the structure of the building services or chattels, or unless otherwise stated, the existence of any rot, mould, moisture, borer or other pest infestation.

4. Title and boundaries

DryScan Ltd has not undertaken a search of the title to the property or a survey of the property and unless otherwise stated it is assumed that all improvements lie within the title boundaries.

5. Compliance with statute/regulations/requisitions by territorial or other relevant authorities

DryScan Ltd makes no representation that the building complies with the requirements specified under the Building Act 1991, Health and Safety in Employment Act 1992, Evacuation of Building Regulations 1992 or the Disabled Persons Community Welfare Act 1975. This Report encompasses **NZS 4306:2005**.

6. Contamination or Hazards

This report is not a site or environment report and DryScan Ltd makes no representation as to the existence of any contaminant as defined in the Resource Management Act 1991 or any hazard as defined in the Health and Safety in Employment Act 1992.

7. Chattels

DryScan Ltd does not check the appliances, equipment or any other chattels to see if they are operational and makes no representation as to the condition, quality or efficiency of any such appliance, equipment or other chattels. DryScan Ltd does not check the operational efficiency of electrical equipment, dishwashers, swimming pools or burglar systems.

8. Publication

Neither the whole nor any part of this infrared report or any reference to it may be included in any published document, circular or statement without first obtaining the written approval of DryScan Ltd.

9. Responsibility

DryScan Ltd responsibility in connection with this report is limited to the client to whom it is addressed and is limited in liability to the full cost of the report. Acceptance of this report is deemed to be acceptance of these enclosed conditions.

10. General

Nothing contained in this statement of policies, shall be deemed to exclude or restrict any rights or remedies the client may have under the Fair Trading Act 1986 or the Consumer Guarantees Act 1983. If any provision in this statement of policies is illegal, invalid or unenforceable, the validity and enforceability of the remaining provisions will not be affected.

11. Further Imaging

DryScan Ltd will undertake further imaging, or if requested a more detailed report at a quoted cost or we can refer you to other competent persons to undertake further structural investigations.

12. Term of the Infrared Report

This report has been prepared on the basis of thermal imaging carried out on the date of the investigation. As building materials can deteriorate over time and weather conditions affect moisture levels, it is valid for the date of the inspection.

13. Rotting, leaking homes

This report is a visual/thermal/infrared imaging report. It shows inconsistencies with temperature distribution within the inspected area/s. Invasive techniques are required to ascertain conclusive evidence of the type/s of mould and/or percentage of moisture in any areas of concern.

14. Disclaimer

This report shall only be used as a reference to show that there are irregularities within the building. Further investigations carried out at the discretionary right of the person/s that authorized this report. DryScan Ltd makes no claim to there being moisture or mould within the structure as to verify this requires an invasive inspection by a qualified inspector within NZ.

15. Liability Insurance

DryScan Ltd is covered by Professional Indemnity and Public Liability Insurance.