

**Full Non-Invasive Moisture Test Inspection On  
123 Anywhere Street, Auckland**



**Date of inspection:**..... 9<sup>th</sup> October 2007  
**Weather conditions:** ..... Dry  
**Previous Weather conditions:** ..... Variable  
**Compass bearing from official front door:**..... South facing

**This report is based on a visual inspection only, no invasive testing was performed.**

9<sup>th</sup> October 2007  
Joe Bloggs  
123 Anywhere St  
Auckland

Dear Joe,

Thank you for choosing **Cornerstone Property Inspection Services Ltd.**

We were requested to perform a full non-invasive moisture test survey on the address below:

**Anywhere St, Auckland**

**Cornerstone Property Inspection Services Ltd** have been able to provide a full, in-depth report on the property named above.

We conducted this inspection for the purpose of detecting any present moisture levels to interior wall linings on the exterior walls within the property.

We pride ourselves on being thorough and have digitally documented as much information during the inspection process as was possible on the day of the survey.

As an independent company **Cornerstone Property Inspection Services Ltd** has been contracted by you and will respond to any questions in relation to the Non-Invasive Moisture Test Inspection performed.

It should be noted that this report is based on findings detected during a visual inspection only (details found in our Terms and Agreement conditions). Some areas of the internal wall surfaces may not have been readily accessible on the day of inspection and some basic assumptions may have been made. Any such scenarios will be outlined within the report.

Kind regards,

**Cornerstone Property Inspection Services Ltd**

## Moisture testing

During the course of every **Residential Property Inspection**, basic moisture testing procedures will be undertaken around high risk areas and places of common fault.

Any moisture concentrations detected during this or any extended surveys (findings related), will be included within this report.

These will relate to percentages as an accurate gauged measurement. Readings found to over an acceptable average (above 18%) will be documented. In cases where findings are deemed to be within the 'acceptable' range, (below 18.0%), levels may not be included.

Below is a guide to moisture content within substrates, photographs of the Protimeter 'Surveymaster' moisture detection equipment used and explanations of invasive and non-invasive moisture testing.

**Normal:** ..... Although readings will differ from house to house given dwelling location, type of heating used and ventilation the rooms, readings in excess of 18.0 % may be considered high when compared to average readings taken throughout the property interior.

**Of Concern:** ..... Moisture content of between 20.0% - 25.0% may allow the establishment of decay species under certain conditions. This environment can also harbour toxic mould growth on the reverse of wall linings. This level of moisture content serves as a warning that remedial action is required, but extreme damage is not likely.

**Hazardous:** ..... A detected moisture content of between 25% and 30% will allow the establishment of most timber decay species. It is unlikely that timber with this moisture content will be able to remain in the structure and may require replacement. Toxic mould growth on the reverse of wall linings is likely.

**Severe:** ..... Moisture content in excess of 30.0% is extreme and rapid timber deterioration is probable. This does depend on how long the moisture has been present in the timber. It is unlikely that any simple remedial options are available. Timber with this extent of moisture content will require removal from the structure and specific methods may be required to clean up the advanced decay within the framing. Toxic mould growth within the wall cavity and on the reverse of wall linings is very likely.



### Non Invasive

**Moisture Testing:** During a standard inspection this involves passing the 'Protimeter' hand held device over the plasterboard and joinery local to high risk areas such as around windows and door sills, reveals and heads. Further testing inside from high risk roof flashing details and internally constructed balconies is undertaken as well as surface testing around wet rooms ie: showers, laundry, etc. During the full Non-Invasive moisture test all external wall surface area including the above will be tested using this method.



### Invasive

**Moisture Testing:** This can involve driving probes attached to a slide hammer, through the plasterboard wall lining into the timber framing of the property at key points to collect accurate readings of moisture concentrations detected during the Non-Invasive testing procedure as detailed above. Holes may also be drilled through exterior cladding linings and deeper probes inserted at measured depth intervals recording the readings to assess potential decay species within the timber tested.

**Note:** To perform invasive testing, written permission must first be obtained from the owner.

## Property description:

### The dwelling:

The property inspected is an independent detached structure situated furthest from the road.

Access to all exterior areas is easily available.

The cladding system used consists of 20mm solid plaster with a paint finished surface of what appears to be a Hi-build flexible acrylic product. The paint appears to be in generally good condition in all areas visible.

Remaining surface areas are lined with stone masonry.

The cladding systems appear in generally good condition. No serious defects were sighted.

The roofing is concrete tiled with small areas of a membrane over ply flat roofing.

The foundations are concrete block exterior with a slab over-site foundation floor.

Although the purpose of the inspection was not related to the properties structure, no evidence of structural movement was noted during the moisture testing survey.

## External results:

### Exterior inspection process:

The property was surveyed in a clockwise direction externally and all features were duly documented using digital photography. The outdoor inspection concentrates on potential flaws or defects in the cladding or flashing systems used and will focus on higher risk areas such as around window and door joinery, roofing eave / soffit overhangs, flashing details, ground clearances and any penetrations through the cladding medium. Assessing the practice used at the time of installation or when any remedial works were performed.

'Search' mode surface scanning to the exterior 20mm solid plaster painted surface in neutral areas away from any potential moisture ingress gave generally average readings between 11.0% and 16.0% ('Search Mode'). This is evidence to suggest that the painted cladding system used is performing well.

Further readings were taken around aluminium window and door joinery (a common place for ingress to occur).

Readings to isolated areas here escalated to 21% ('Search Mode') indicating the possibility of moisture within the solid plaster to a local area.

Right – 'Search Mode' readings here suggest moisture ingress penetrating beyond the paint line local to a visible crack. Attention is required.

Professionally applied paint suitable quality sealant to all vertical window and door joinery details is recommended prior to the next repaint.



## External results, continued:

External corners (where reasonably accessible) were tested and found to be within an average range. External wall surface areas beneath high-risk roof flashing details and windows were also tested externally. Readings here gave an acceptable average result. Visible evidence suggests excessive water flows are ongoing where water marks are visible local to the rain head beside the garage south-west elevation.



Evidence to suggest excessive water flows beneath the rain head is visible here.



Bristle foliage protector should be removed or cleaned regularly.



Enlarge the over flow provision to expel collected water from a lower level is required.

Readings were also taken from around the bottom plate at random locations. Some readings up to 75% ('Search Mode') were taken. Ground clearance (the distance from the bottom edge of the cladding system to the finished ground level) is minimal to isolated areas.



The finished concrete path height has compromised the ground clearance here.



'Search Mode' readings were high. Moisture ingress due to the ground clearance breach is suspected.



Clearance of 50mm is recommended between the decking against the exterior cladding here.

## External results, continued:

Further testing to areas directly around fixings penetrating the cladding system was performed. Although no moisture concerns were detected, it should be noted that the cracks to the sealant provisions around the soil pipe penetration at the rear north-east elevation of the laundry are present.



Sealing the soil pipe penetration is required.



Spouting butted against the cladding prevents paint application to cladding beneath. Clearance is recommended.

Sample Only

## Internal results:

Testing was also carried out to internal linings, skirting board and trims (where reasonable access allows) of all exterior walls focussing on areas around window and door joinery penetrations where higher than acceptable average readings were detected during the exterior 'Search' mode survey.

Moisture levels above an acceptable average are present in two places:

- The plasterboard wall lining over the south-east window in the office exterior wall directly beneath the rain head gave readings of **21.3 - 37.2%**.



**37.2%** is high.



Suspected moisture signatures in the skirting trim beside the window beneath the rain head are visible. 'Measure Mode' moisture testing proved inconclusive.

- Further moisture is present in the plasterboard wall lining local to the exterior findings at ground level beneath the rain head beside the garage. 'Measure Mode' short probe testing detected levels of concentration between **33.4 - 41%**.



**41%** is high.



**33.4%** is high.

## Internal results, continued:

We also moisture tested wall linings in the vicinity of the showers as these are areas where leaks are a common occurrence and can cause serious damage if not located and repaired.

- Isolated minor sealant failure to the shower cubicle in the main bathroom is noted. Although moisture levels locally around the wall linings and flooring substrate are acceptable, leaks are present under test conditions.



Right – Minor leaks were sighted under test conditions. Attention is required.



Sample Only

## Conclusions

It is believed that the moisture ingress concerns detected in the office area wall linings local to the rain head are as a direct result of rain head design defect. The bristle foliage protector has been inserted into the down pipe outlet within the rain head box. This is causing a back-up of collected water which is currently over loading the local spouting configuration. The foliage protector should be removed or cleaned at regular intervals.

Repositioning the rain head to accommodate a 50mm minimum clearance from the cladding is recommended. This will enable flashing and sealing the plaster surface beneath and allow any future overflow (if any) to harmlessly disperse away from the building line.

An extension to the rain head drip edge recommended.

It should be noted that the foliage deposits from local tree lines is considered excessive.

Regular cleaning of spouting, valleys and the rain head will be an ongoing requirement.

Fitting quality foliage guards to all spouting is a recommendation.

The concrete pathway is creating a breach to ground clearance beneath the garage south-east elevation window.

Forming a drainage channel here to allow collected water to disperse into the local storm water drainage system whilst artificially creating ground clearance to the base of the channel is recommended.

Repainting the cladding every 5-6 yrs using a quality 'Hi-build' / 'Elastometric' acrylic paint product, such as Resene's X200 series or similar is strongly recommended.

Given the cladding style of this property it is important that the owner performs annual checks to ensure early detection of possible problems.

### Potential defects to look for:

- Cracking, especially around window and door joinery and around external corners.
- Any penetrations through the cladding substrate should be sealed using a silicone based sealant suitable for painting. These will include: light fittings, plumbing, vent covers, laundry driers, pergolas and any wall mounted, screw/nail fixed item.
- Broken roofing tiles, loose flashings, blocked spouting / gutters / down pipes.
- Areas of pooling water where ground clearance is at a minimum, keep yard gullies clean.
- Check skirting boards for expansion, discoloration, paint delaminating or flaking, especially around the ground floor.
- Check for carpet discolouration and rust 'dots' where carpet gripper beneath could be wet and rusting.

Yours faithfully



Phil Tuttle  
Director  
CPIS Ltd

## NZS 4306:2005

### Definitions of Weather - Tightness Risk Assessment

<b>Wind zone</b>	Low risk	Low wind zone	as described by NZS:3604
	Medium risk	Medium wind zone	as described by NZS:3604
	High risk	High wind zone	as described by NZS:3604
	Very high risk	Very high wind zone	as described by NZS:3604
<b>Number of storeys</b>	Low risk	One storey	
	Medium risk	Two storeys in part	
	High risk	Two storeys	
	Very high risk	More than two storeys	
<b>Roof/wall intersection design</b>	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.)	
<b>Eaves width</b>	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	
<b>Envelope complexity</b>	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.)	
<b>Deck design</b>	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:** Eaves width measured from internal face of wall cladding to outer edge of overhang including fascias and gutter/fascia combinations.  
Balustrades and parapet walls are not considered as eaves of any sort.

## Insight into Cornerstone

I have been working within the building industry for over 20 years and have gained a wealth of knowledge from travelling with my trade skills. I served my apprenticeship time as a Bricklayer in the UK building new homes and working on extensive renovation projects involving properties of historical interest. Sole trading for a period as builder, I performed specialist brickwork to order and further designed and built many other unique projects. I sub contract installed replacement windows and erected conservatories in aluminium and PVC whilst gaining extensive experience as a glazier specialising with sealed unit double glazing.

I travelled with my trades within the UK, Europe, Australia and New Zealand, eventually settling in Auckland 6 years ago after returning several times over a seven year period.

After a serious back injury followed by surgery I undertook extensive training in the profession of residential property inspections whilst employed by two reputable companies within the Auckland region, I have to date documented maintenance issues on over 900 properties for prospective home buyers and vendors alike.

I established '**Cornerstone Property Inspection Services Ltd**' out of the markets need for accurate in-depth surveys. My un-bias reporting methods and ethical standing on the housing market today gives you the advantage. Allowing my clients the opportunity to assess their investment and clearly understand present, ongoing and future maintenance requirements, with a basic 'easy-to-read' reporting system.

We carry valid public liability insurance and indemnity cover and operate all of our residential property inspections to comply with NZS 4306: 2005 the recognised standard of regulation for residential property inspection.

We are also members of BOINZ (Building Officials Institute of New Zealand) and pride ourselves in our market leading documents and professionalism.

Our aim is to set a benchmark within the residential property inspection industry.

Liaising with real estate agents, lawyers, and lending institutions is just part of my daily routine. I have a keen eye for detail and make myself readily available under most circumstances should you have any questions over the inspection.



Kind regards,

**Cornerstone Property Inspection Services Ltd**