



7 August 2015

**PROPERTY 5**

s 9(2)(a)

Asset Development Group  
Housing New Zealand Corporation

by email: s 9(2)(a)

your reference: s 9(2)(a)

our reference: HNZC-133

Dear Sir,

s 9(2)(a)

**West Harbour: post remediation inspection and testing**

We are writing to report findings arising from our inspection and testing at the above premises on 29 July 2015.

#### USE OF THIS REPORT

1. Please note the comments on the use of this report for Court purposes given in Appendix A. This report may not be distributed or published without the prior consent of Forensic and Industrial Science Ltd and may not be reproduced except in full. This report is not intended to be used for evidential purposes in criminal proceedings.

#### EXECUTIVE SUMMARY

2. Methamphetamine, benzene, toluene, xylenes, iodine, lead and mercury were either not detected or were detected at levels below the Ministry of Health remediation guidelines.

## BACKGROUND

### scope of work

3. The site investigation was carried out by s 9(2)(a)
4. We have undertaken an inspection of the premises in order to:
  - a. measure concentrations of methamphetamine on surfaces;
  - b. assess levels of Total Volatile Organic Compounds (TVOCs);
  - c. assess levels of iodine, toluene, xylenes and benzene in air;
  - d. screen for toxic metals (lead and mercury) on surfaces;
  - e. assess the grounds for vegetation anomalies, fire pits and chemical containers;
  - f. assess remediation undertaken;
  - g. provide remediation guidance if required.
5. The laboratory operated by Forensic and Industrial Science Ltd (FISL) is accredited by International Accreditation New Zealand (IANZ) for analysis of Environmental Wipes via gas chromatography–mass spectrometry (GC-MS) for methamphetamine.
6. Opinions and interpretations are outside the scope of the laboratory accreditation.
7. The scope of work for this site does not include the sewage system or potable water. Please let us know if any parties involved (e.g. Council, Police, neighbours) have raised concerns about these areas.

### ASSOCIATED DOCUMENTS

8. Supplementary Document which contains Quality Assurance/Quality Control, sampling and analysis methodology details.
9. Envirolab report dated 5 August 2015.

## RESULTS

### air testing

#### *iodine, benzene, toluene and xylenes in air*

10. Please see the attached Envirolab report dated 5 August 2015 for analytical results for the air samples collected from the entry area.

**air results summary**

11. The table below shows a summary of results from air testing/screening undertaken along with the Ministry of Health guidelines.

Table 1: summary of air testing/screening results

target compound	NZL Ministry of Health guideline	result
iodine	0.0008 mg/m <sup>3</sup>	not detected
benzene	0.0036 mg/m <sup>3</sup>	sample below guideline level
toluene	0.3 mg/m <sup>3</sup>	
xylenes (total)	0.7 mg/m <sup>3</sup>	
hydrogen chloride	0.009 mg/m <sup>3</sup>	not tested for as very volatile compounds that are unlikely to persist
phosphine	0.0004 mg/m <sup>3</sup>	

Note 1: guidelines listed in the *Ministry of Health. 2010. Guidelines for the Remediation of Clandestine Methamphetamine Laboratory Sites. Wellington: Ministry of Health.*

**surface testing****toxic metals (mercury & lead) via XRF**

Table 2: XRF screening results (lead &amp; mercury)

surface tested	lead result	mercury result
field blank	not detected	not detected
kitchen floor	detected, result indicates the level detected is below the Ministry of Health guideline	not detected
laundry floor		

Note 1: we cannot exclude the possibility that any lead detected may be from a source unrelated to the manufacture of methamphetamine (e.g. automotive products, paint or glazing).

**methamphetamine via GC-MS**

Table 3: GC-MS analytical results for surfaces (methamphetamine)

surface tested	methamphetamine concentration recovered in $\mu\text{g}/100\text{cm}^2$
field blank	not detected
living room 1 window sill	0.30
bedroom 1 floor	trace
toilet room framing	0.07
bedroom 2 window surrounds	0.12
living room 2 ceiling frame	trace
kitchen window surrounds	0.10
laundry building paper	0.26
entry door frame	0.35

Note 1: surface concentrations assessed by gas chromatography are *minimum concentrations* because recovery of methamphetamine from surfaces is always less than 100%. Surface concentrations reported do not take into account the total mass available for human exposure via inhalation, dermal absorption or ingestion.

Note 2: the limit of detection is  $0.03 \mu\text{g}/100\text{cm}^2$ .

Note 3: 'trace' means analyte present at concentrations below  $0.03 \mu\text{g}/100\text{cm}^2$ .

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Table 4: pre- &amp; post-remediation comparison (methamphetamine)

surface tested	pre-remediation (19 February 2015)	post-remediation (29 July 2015)
	concentration of methamphetamine recovered in $\mu\text{g}/100\text{cm}^2$	
bedroom 1 door	4.06	not re-tested, item removed
bedroom 1 floor	not tested	trace
toilet room wall and framing	3.19 (wall)	0.07 (framing)
bathroom door	6.99	not re-tested, item removed
hallway ceiling	10.6	
bedroom 2 window sill and surrounds	1.36 (sill)	0.12 (surrounds)
bedroom 3 wall	0.50	not re-tested, item removed
living room 2 door	9.04	
living room 2 ceiling framing	not tested	trace
kitchen window sill and surrounds	1.18 (sill)	0.10 (surrounds)
laundry wall and building paper	0.79 (wall)	0.26 (building paper)
entry door and frame	19.2 (door)	0.35 (frame)
living room 1 window sill	8.69	0.30

Note 1: surface concentrations assessed by gas chromatography are *minimum concentrations* because recovery of methamphetamine from surfaces is always less than 100%. Surface concentrations reported do not take into account the total mass available for human exposure via inhalation, dermal absorption or ingestion.

Note 2: the limit of detection is  $0.03 \mu\text{g}/100\text{cm}^2$ .

Note 3: 'trace' means analyte present at concentrations below  $0.03 \mu\text{g}/100\text{cm}^2$ . These results are likely to be representative of all similar surfaces/material types in the premises.

#### **surface results summary**

13. The table below shows a summary of results from surface testing undertaken along with the New Zealand Ministry of Health guidelines.

Table 5: summary of surface testing results

target	Ministry of Health guideline	result
methamphetamine	$0.5 \mu\text{g}/100\text{cm}^2$	all samples below guideline level
lead	$2 \mu\text{g}/100\text{cm}^2$	all samples below guideline level
mercury	$35 \mu\text{g}/100\text{cm}^2$	not detected

## general observations

14. Visual assessment of the grounds has been undertaken. Chemical containers were not identified. A fire pit and an area of dead grass was noted at the site.

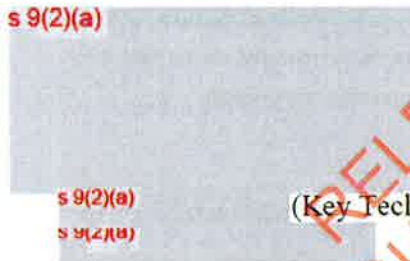
## CONCLUSIONS & ACTION RECOMMENDED

15. Concentrations of all compounds tested for were below the Ministry of Health remediation guidelines or were not detected.
16. On a precautionary basis, we recommend you engage professionals to dig out the soil in the fire pit and area of dead grass to 50cm beyond their margins and to a depth of 30cm, or to the 'B' (clay) horizon if this is encountered first. Soil that is removed should be disposed of to landfill in accordance with Territorial Authority regulations.
17. Photographic evidence of the soil removal should be provided upon completion of work.

If you have any questions please contact us.

Yours faithfully,  
**Forensic and Industrial Science Limited**

s 9(2)(a)



s 9(2)(a)  
s 9(2)(b)

(Key Technical Person signatory)

s 9(2)(a)



## Appendix A use of this report and additional information

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The purpose of on-site examination and testing is to:

- identify and assess hazards to human health and the environment;
- mitigate the risks attendant on the hazards identified;
- assess the nature and extent of contamination or damage to premises caused by activities related to manufacture or processing of illicit synthetic drugs.

It should be noted that lack of detectable contamination at a site does not necessarily mean that there is no contamination present, or that contamination has not existed previously at that site.

Due to the nature of clandestine drugs laboratory sites, successful remediation does not guarantee prevention of chronic health effects. As stated in the New Zealand Ministry of Health *Guidelines for the Remediation of Clandestine Methamphetamine Laboratory Sites*:  
*"As noted throughout the literature and succinctly stated in this document, there are no absolute guarantees that chronic health effects will be completely eliminated by remediating these impacted sites."* (2010:2)

Note: Some of the test methods used are 'screening' tests or presumptive tests of low specificity. Results from such tests are interpreted on a precautionary basis to minimise the risk of harm to future occupants of dwellings, and remediation guidance is formulated accordingly.

## Appendix B

### **safety guide: to be shown to all personnel undertaking remediation work preparation**

1. A site assessment should be undertaken and a PPE programme written by the decontamination contractor. As stated in the Health and Safety Guidelines on the Cleanup of Contaminated Sites, Occupational Safety and Health, 1994 “*A written PPE programme should be established for each site based on the information collected in the site assessment*”.

### **personal protective equipment and safe work practices**

2. Worker Health and Safety must be considered with reference to *Health and Safety Guidelines on the Cleanup of Contaminated Sites* (DOL/OSH: 1994).
3. Personal Protective Equipment (PPE) must be used. Selection and use of PPE should be undertaken with reference to *Health and Safety Guidelines on the Cleanup of Contaminated Sites* (DOL/OSH: 1994).

### **disposal**

4. Soil that is removed should be disposed of to landfill in accordance with Territorial Authority regulations.

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**Images: surfaces tested for methamphetamine**

(areas swabbed are delimited by the templates/tape)



Living room 1 window sill: methamphetamine was detected on this surface at 0.30  $\mu\text{g}/100\text{cm}^2$ .



Bedroom 1 floor: methamphetamine was detected on this surface at a trace concentration.



Toilet room framing: methamphetamine was detected on this surface at  $0.07 \mu\text{g}/100\text{cm}^2$ .



Living room 2 ceiling framing: methamphetamine was detected on this surface at a trace concentration.



Bedroom 2 window surrounds: methamphetamine was detected on this surface at  $0.12 \mu\text{g}/100\text{cm}^2$ .



Kitchen window surrounds: methamphetamine was detected on this surface at  $0.10 \mu\text{g}/100\text{cm}^2$ .



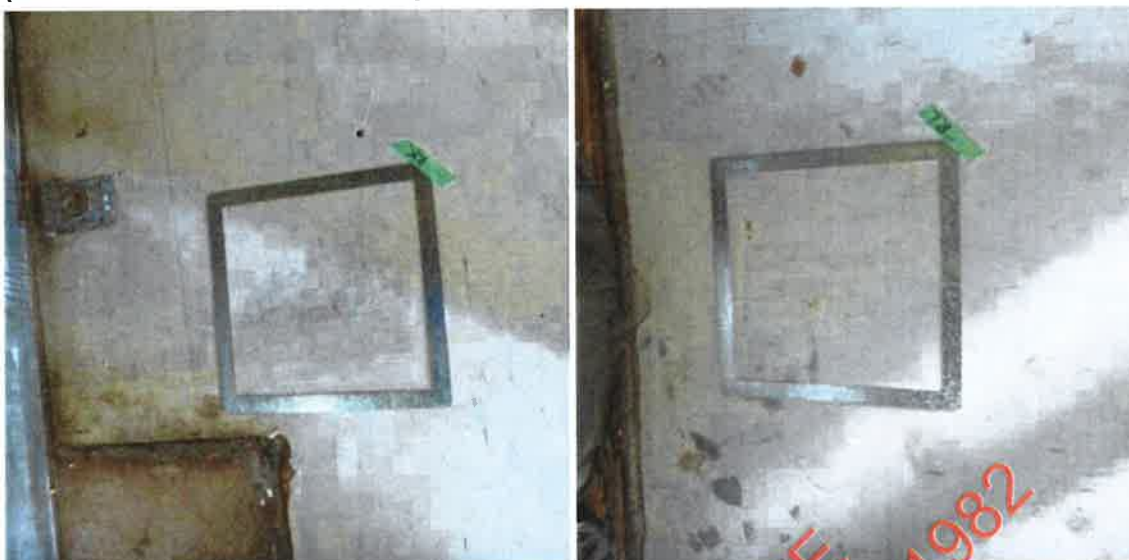
Laundry building paper: methamphetamine was detected on this surface at  $0.26 \mu\text{g}/100\text{cm}^2$ .



Entry door frame: methamphetamine was detected on this surface at  $0.35 \mu\text{g}/100\text{cm}^2$ .

**Images: surfaces tested for lead and mercury**

(areas swabbed are delimited by the templates)



Kitchen (left) and laundry (right) floors: mercury was not detected on these surfaces. Lead was detected on these surfaces. The results indicates the levels detected are below the Ministry of Health guideline for lead.

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**Images: grounds**



Burn pit located in the back yard: the soil in this area should be dug out on a precautionary basis.



Area of dead grass near the fence: the soil in this area should be dug out on a precautionary basis.



24 February 2015

**PROPERTY 5**

s 9(2)(a)

Project Coordinator  
Asset Development Group  
Housing New Zealand Corporation

by email: s 9(2)(a)

your reference: s 9(2)(a)

our reference: HNZC-133

Dear Madam,

s 9(2)(a)

*West Harbour: inspection and testing*

We are writing to report findings arising from our inspection and testing at the above premises on 19 February 2015.

## USE OF THIS REPORT

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## EXECUTIVE SUMMARY

2. Methamphetamine was detected at concentrations greater than the Ministry of Health remediation guideline of 0.5 µg/100cm<sup>2</sup>.
3. We recommended that the dwelling is remediated and that further testing is carried out after remediation is completed.

## BACKGROUND

### site history

4. We understand that the investigation and testing of the premises was triggered by suspicions of methamphetamine use on the premises.

## site description

5. The single storey dwelling is located in a suburban area. The dwelling comprises two living rooms, kitchen, bathroom, toilet, laundry, hallway and three bedrooms. An attached storage room is located at the rear of the property. The premises are currently unoccupied.
6. The previous tenants' possessions remain inside the premises.

## scope of work

7. The initial site investigation was carried out by s 9(2)(a) and s 9(2)(a)
8. We have undertaken an inspection of the dwelling in order to:
  - a. measure concentrations of methamphetamine on surfaces;
  - b. provide remediation guidance if required.
9. The laboratory operated by Forensic and Industrial Science Ltd (FISL) is accredited by International Accreditation New Zealand (IANZ) for analysis of Environmental Wipes via gas chromatography–mass spectrometry (GC-MS) for methamphetamine.
10. Opinions and interpretations are outside the scope of the laboratory accreditation.
11. The scope of work for this site did not include the sewage system, soil or potable water. Please let us know if any parties involved (e.g. Council, Police, neighbours) have raised concerns about these areas.

## ASSOCIATED DOCUMENTS

12. Please see the attached Supplementary Document for details of Quality Assurance/Quality Control, sampling and analysis methodology.

## RESULTS

### ***methamphetamine via GC-MS***

13. Concentrations of surface recoverable methamphetamine detected on 10 of the surfaces tested are greater than the Ministry of Health remediation guideline of 0.5 µg/100cm<sup>2</sup>.

### ***concentration within materials***

14. Methamphetamine was detected in the insulation. We are not aware of any remediation guidelines in relation to concentration of methamphetamine *within* materials.



Table 1: GC-MS analytical results (methamphetamine)

<b>surface tested</b>	<b>methamphetamine</b> concentration recovered in µg/100cm <sup>2</sup>
field blank	not detected
bedroom 1 door	<b>4.06</b>
toilet wall	<b>3.19</b>
bathroom door	<b>6.99</b>
hallway ceiling	<b>10.6</b>
bedroom 2 window sill	<b>1.36</b>
bedroom 3 wall	0.50
living room 2 door	<b>9.04</b>
kitchen window sill	<b>1.18</b>
laundry wall	<b>0.79</b>
entry door	<b>19.2</b>
living room 1 window sill	<b>8.69</b>
storage room wall	trace
<b>building material tested</b>	<b>methamphetamine</b> concentration recovered in µg/gram
insulation (from hallway ceiling)	<b>6.13 µg/g</b>

Note 1: surface concentrations assessed by gas chromatography are *minimum concentrations* because recovery of methamphetamine from surfaces is always less than 100%. Surface concentrations reported do not take into account the total mass available for human exposure via inhalation, dermal absorption or ingestion.

Note 2: the limit of detection is 0.03 µg/100cm<sup>2</sup>.

Note 3: 'trace' means analyte present at concentrations below 0.03 µg/100cm<sup>2</sup>.

Note 4: analysis of insulation is not an accredited test method.

15. These results are likely to be representative of all similar surfaces/material types in the premises.

### general observations

16. Significant staining was observed on the carpets. We are unable to determine whether this staining is due to illicit drug related activities or normal household spillages.
17. Significant corrosion of metallic objects was not observed.

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18. Chemical odours were not detected. A strong odour, thought to be caused by rotting food, was detected.
19. Several walls had large holes in them.

## CONCLUSIONS & ACTION RECOMMENDED

20. Due to the presence of methamphetamine at concentrations above the Ministry of Health remediation guideline of  $0.5 \mu\text{g}/100\text{cm}^2$  we recommend that decontamination of the dwelling is undertaken.
21. Decontamination should be carried out by certified professionals experienced in clandestine drug laboratory decontamination using appropriate methods and personal protection equipment.
22. Access to the dwelling should be restricted until final retesting has been completed.

## REMEDIATION GUIDE

### use of this guide

23. These recommendations should be used as guidance for work to reduce contamination to below Ministry of Health guideline levels.
24. The decontamination team must:
  - a. undertake an independent assessment of the site to confirm the scope of work;
  - b. read Appendix B and Appendix C before starting remediation.
25. The decision on whether to remove paint/lining materials or attempt cleaning should be made by the property owner in consultation with the remediation team. Cleaning test patches and using presumptive site tests may help assess whether cleaning of surfaces will be successful.

### previous tenants' possessions

26. Previous tenants' possessions should be disposed of *or* removed prior to remediation of the dwelling (with permission). Persons undertaking removal of tenants' possessions must wear appropriate personal protection equipment.
27. We note that these items were not tested so the level of contamination, if any, is unknown. Please let us know if you would like us to test a selection of the items and provide remediation guidance.

## **dwelling**

28. **If the remediation team wishes to attempt cleaning of the surfaces where removal has been listed we recommend the use of test patches to assess whether the technique proposed will successfully reduce contamination levels to below the remediation goal.**
29. All surfaces are to be vacuumed with a commercial grade vacuum cleaner using a high efficiency particulate air (HEPA) filter prior to surface washing.

### **carpet**

30. All carpet should be discarded.

### **flooring beneath carpet**

31. Flooring beneath carpet should be HEPA vacuumed following the removal of the carpet and then cleaned.
32. Condition of flooring beneath floor covering will be assessed during post remediation testing. Cleaning, sanding/stripping or removal of this substrate may be required.

### **vinyl**

33. Vinyl flooring should be cleaned.

### **wooden floors**

34. Wooden floors should be HEPA vacuumed and then sanded back.

### **roof-space, ceiling & mouldings**

35. Ceiling and mouldings should be disposed of in the hallway, bathroom, toilet, kitchen, both living rooms and bedrooms 1 and 2.
36. Ceiling and mouldings should be thoroughly cleaned in the laundry, bedroom 3 and the storage room.
37. All roof-space insulation should be disposed of and the ceiling space HEPA vacuumed and washed if accessible. The roof-space area should be contained by battening plastic sheeting across areas where ceiling materials have been removed.

### **light fittings & shades**

38. Light fittings and shades should be disposed of *or* be cleaned and if practicable left on the floor for inspection.

### **walls & skirting boards**

39. Walls and skirting boards should be disposed of in the hallway, bathroom, toilet, kitchen, both living rooms and bedrooms 1 and 2.

40. Walls and skirting boards should be thoroughly cleaned in the laundry, bedroom 3 and the storage room.

**switches & sockets**

41. All switch and socket covers/cover plates should be disposed of *or* be cleaned (beware of electrocution hazard). *Any cleaning should be undertaken thoroughly as these are high contact surfaces.*

**windows & surrounds**

42. Window panes should be cleaned.
43. Window sills/frames/surrounds should have paint removed in the hallway, bathroom, toilet, kitchen, both living rooms and bedrooms 1 and 2.
44. All other sills/frames/surrounds should be cleaned.

**curtains & netting**

45. All curtains and netting should be disposed of.

**doors & door frames**

46. Door handles should be cleaned *or* disposed of.
47. Doors with painted/varnished frames and glass panes should have paint/varnish removed (including the frame) *or* be disposed of. Glass panes should be cleaned.
48. Interior doors without glass panes should be disposed of *or* cleaned. *Please ensure all surfaces of the door are thoroughly cleaned.*

**cabinetry**

49. Cabinetry interiors and exteriors should be cleaned *or* be removed and disposed of. **Please note that cleaning alone may not successfully reduce contamination levels to below the remediation goal.**
50. All painted cabinetry should have paint removed *or* be removed and disposed.

**heaters & ventilation**

51. Heaters with air flow in and out (e.g. fan heaters) should be disposed of.
52. The bathroom extractor fan should be dismantled as far as possible and thoroughly cleaned. Any filters and ducting are to be disposed of. bath, shower, toilet, hand basin/vanity
53. All bathroom surfaces (e.g. toilet, shower, bath) should be cleaned.

**sinks & benches**

54. The laminate bench tops should be cleaned *or* removed and disposed of.

55. The kitchen and laundry sinks should be cleaned with stainless steel cleaner.

**appliances**

56. All appliances used for food storage or preparation should be disposed of.

57. All cutlery and crockery should be washed in a dishwasher. Dishwasher must then be run empty on a 'heavy' cycle.

**fireplace**

58. The fireplace in living room 1 should be thoroughly cleaned.

**areas exposed due to material removal (e.g. timber framing)**

59. Areas exposed in the course of material removal (e.g. timber framing exposed due to wall or ceiling removal) should be HEPA vacuumed and cleaned.

60. In our experience of retesting dwellings similar to s 9(2)(a) it is possible for the timber framing to have concentrations of methamphetamine above 0.5 µg/100cm<sup>2</sup>. Take appropriate measures to minimise redistribution of contaminants during remediation and carefully clean the framing after any linings are removed.

**drains**

61. All drains should be flushed with hot water and an appropriate cleaning compound for at least 20 minutes. Drains should be flushed after other remediation activities have been completed.

**grounds**

62. All areas of the property including grounds and underfloor space should be thoroughly searched to locate any items that should be disposed of. All chemicals not for routine household use should be disposed of appropriately.

## LIMITATIONS

63. We cannot guarantee that the remedial works recommended will be successful in reducing contaminants to acceptable levels. Please note that additional remedial works may be recommended after post remediation testing.

## POST REMEDIATION TESTING

64. The premises should be aired for at least 2 days after remediation has been completed. The premises must then be closed for 1 day prior to post remediation testing. All window and doors must be closed/boarded up prior to retesting.
65. Retesting must be carried out before ANY redecoration or refurbishment commences (e.g. painting, varnishing, re-lining).
66. Please let us know when the premises are ready for retesting.

If you have any questions please contact us.

Yours faithfully,  
**Forensic and Industrial Science Limited**

s 9(2)(a)

s 9(2)(a)

(Key Technical Person signatory)

s 9(2)(a)



## Appendix A

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Note: Some of the test methods used are 'screening' tests or presumptive tests of low specificity. Results from such tests are interpreted on a precautionary basis to minimise the risk of harm to future occupants of dwellings, and remediation guidance is formulated accordingly.

## Appendix B

### **safety guide: to be shown to all personnel undertaking remediation work preparation**

1. A site assessment should be undertaken and a PPE programme written by the decontamination contractor. As stated in the Health and Safety Guidelines on the Cleanup of Contaminated Sites, Occupational Safety and Health, 1994 “A written PPE programme should be established for each site based on the information collected in the site assessment”.

#### **airing out**

2. For the safety of personnel undertaking decontamination, the premises must be thoroughly ventilated for at least 24 hours prior to remediation. Windows and doors are to be kept open during remediation.

#### **personal protective equipment and safe work practices**

3. Worker Health and Safety must be considered with reference to *Health and Safety Guidelines on the Cleanup of Contaminated Sites* (DOL/OSH: 1994).
4. Personal Protective Equipment (PPE) must be used. Selection and use of PPE should be undertaken with reference to *Health and Safety Guidelines on the Cleanup of Contaminated Sites* (DOL/OSH: 1994).
5. PPE should include (but is not limited to): nitrile or other specialist gloves, thick leather gloves, chemical resistant coveralls with hood, safety boots, disposable over-boot covers and a full-face respirator fitted with appropriate filters (e.g. capable of removing VOCs, acid gases, particulates from sanding etc). Refer to the standard AS/NZS1715:2009 “*Selection, use and maintenance of respiratory protective equipment*” for additional guidance.
6. Clothing worn underneath coveralls should be washed twice on a normal hot cycle. No drying is necessary between cycles.
7. Disposable overalls, gloves and boot covers should be discarded after each use.
8. Non-disposable PPE should be cleaned after each use and kept in a “secondary containment” container. This container should be used for transportation of PPE between sites and should not be taken into the clan lab site.
9. Respirator filters should be changed at intervals in accordance with the manufacturer’s instructions. Filters should be replaced if air drawn through filters has any perceptible odour, taste or irritating effect.



10. Do not smoke or eat inside the premises. Hands should be washed thoroughly before handling or consuming food.
11. Be aware that undiscovered biohazard material such as syringes with hypodermic needles may be present. Observe sensible precautions when handling such items. All sharps should be disposed of into a sharps container.

**disposal**

12. Items to be discarded are to be removed from the premises before other remediation is carried out and must be disposed of in a prompt manner. They should not be taken to a transfer or recycling station or left on the kerbside. Skips must be secured.
13. Items should be rendered inoperable, wrapped and sealed appropriately then disposed of in accordance with Territorial Authority regulations.
14. Carpet for removal is to be cut up into small sections to prevent re-use. Appliances and other electrical goods for disposal are to be rendered unusable to prevent re-use.

**written certification of correct disposal method**

15. Written certification (e.g. "Crush and Bury") that burial has been undertaken must be obtained.

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## Appendix C

### general remediation recommendations

1. If removing wall linings ensure that Building Code requirements for bracing (see NZS 3604:1999) are not compromised. If in doubt consult the Territorial Authority (City Council or District Council).
2. Cleaning solutions containing ammonia or hypochlorite ion must not be used. Cleaning compounds containing polyphosphate must be handled in accordance with manufacturers' specifications. Avoid using highly alkaline cleaning solutions on aluminium surfaces.
3. For surface cleaning, thorough triple washing and rinsing should be undertaken. Washing cloths and cleaning solutions must be changed frequently. Surfaces must be rinsed with fresh water.
4. Once a room has been cleaned it should be closed off (e.g. with plastic sheeting and tape) to prevent recontamination. Seals should remain in place upon leaving the site.

### removal technique for coatings

5. The method used for removal of coatings (e.g. paint, varnish) should be decided on by the decontamination contractors in consultation with the property owner
6. Coatings should be stripped to the original surface (e.g. bare timber).
7. Possible options include (but are not limited to):
  - a) removal and disposal of the item/s;
  - b) sanding;
  - c) stripping;
  - d) scraping (e.g. with tungsten blade scraper);
  - e) soda- or dry-ice blasting.
8. Ensure that dust and debris is contained, captured and removed. The use of a barrier system such as Zipwall® may assist in effectively containing dust/debris.

Images: general



s 9(2)(a) West Harbour, view from front of property.



s 9(2)(a) West Harbour, view from rear of property.

**Images: surfaces tested for methamphetamine**

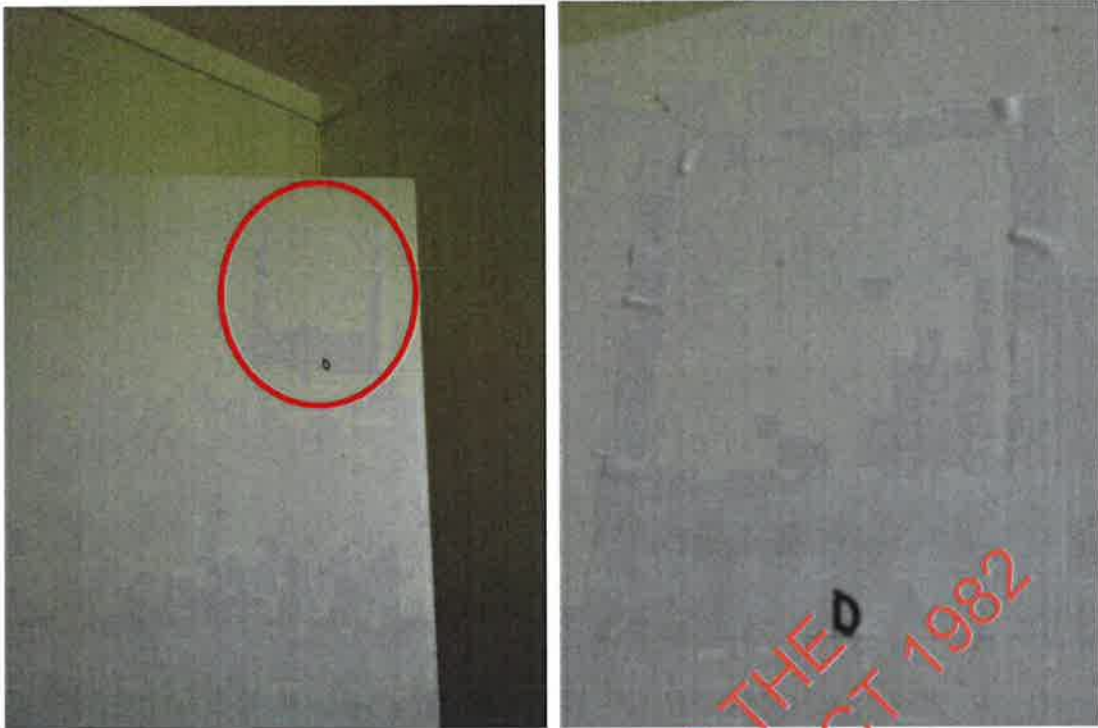
(areas swabbed are delimited by the templates/tape)



Bedroom 1 door: methamphetamine was detected on this surface at 4.06  $\mu\text{g}/100\text{cm}^2$ .



Toilet wall: methamphetamine was detected on this surface at 3.19  $\mu\text{g}/100\text{cm}^2$ .



Bathroom door: methamphetamine was detected on this surface at  $6.99 \mu\text{g}/100\text{cm}^2$ .



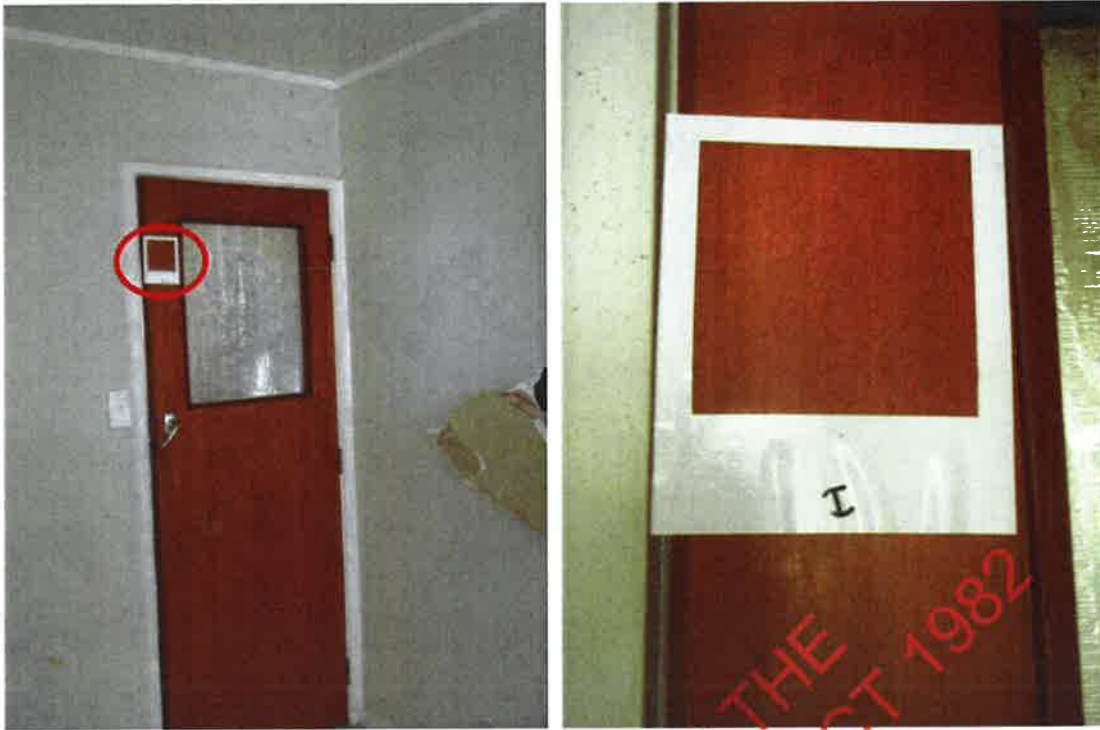
Hallway ceiling: methamphetamine was detected on this surface at  $10.6 \mu\text{g}/100\text{cm}^2$ .



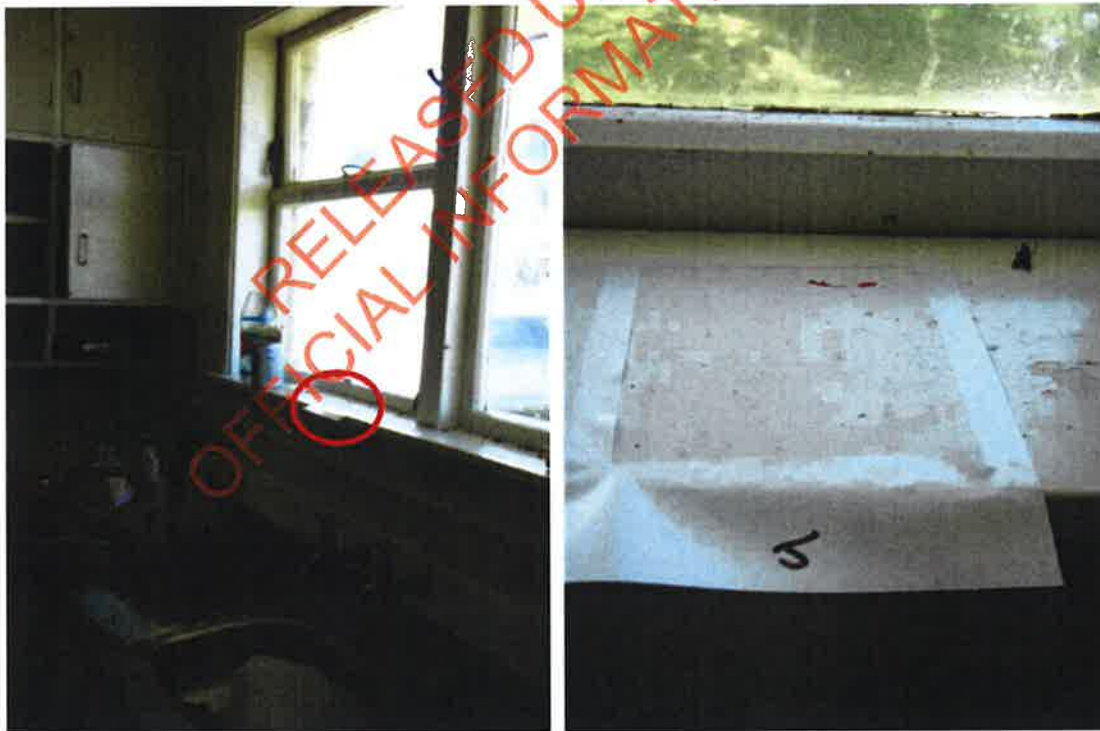
Bedroom 2 window sill: methamphetamine was detected on this surface at 1.36  $\mu\text{g}/100\text{cm}^2$ .



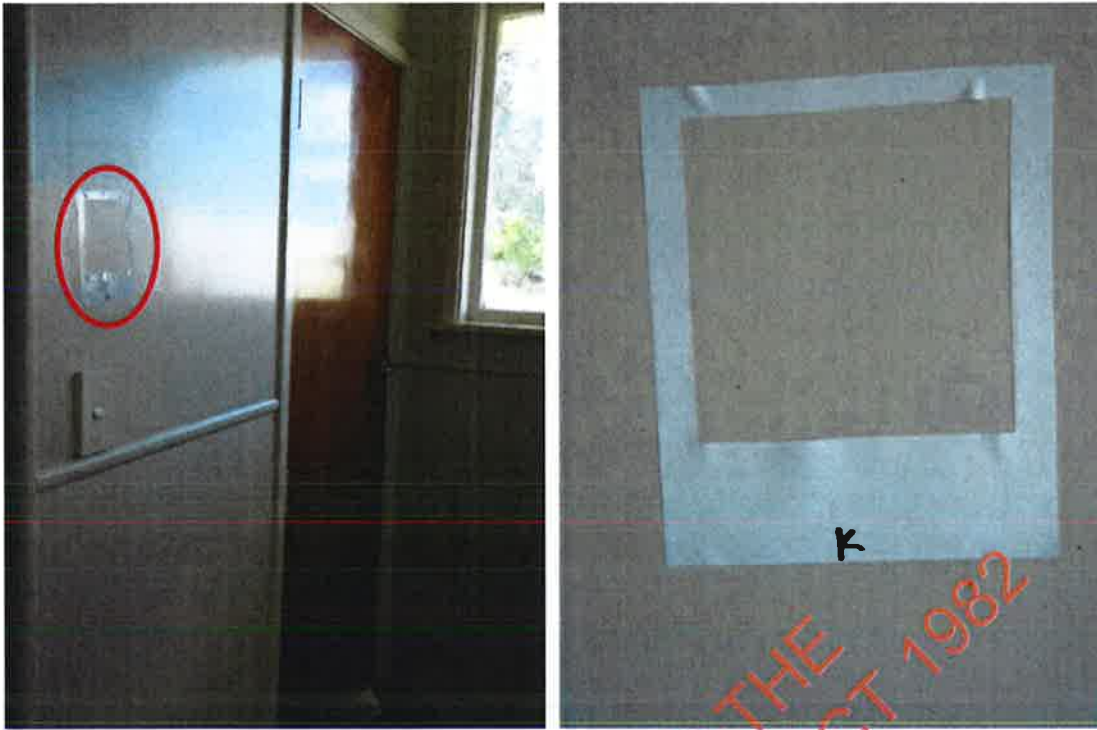
Bedroom 3 wall: methamphetamine was detected on this surface at 0.50  $\mu\text{g}/100\text{cm}^2$ .



Living room 2 door: methamphetamine was detected on this surface at 9.04  $\mu\text{g}/100\text{cm}^2$ .



Kitchen window sill: methamphetamine was detected on this surface at 1.18  $\mu\text{g}/100\text{cm}^2$ .



Laundry wall: methamphetamine was detected on this surface at 0.79  $\mu\text{g}/100\text{cm}^2$ .



Entry door: methamphetamine was detected on this surface at 19.22  $\mu\text{g}/100\text{cm}^2$ .





Living room 1 window sill: methamphetamine was detected on this surface at 8.69  $\mu\text{g}/100\text{cm}^2$ .



Storage room wall: methamphetamine was detected on this surface at a trace concentration.





## PROPERTY 5

### SAMPLING AND ANALYSIS METHODOLOGY

#### surfaces

##### *methamphetamine via GC-MS*

1. We have tested for residues of methamphetamine by analysis of methanol-dampened cotton gauze swabs via Gas Chromatography-Mass Spectrometry using a modified version of NIOSH method 9106.
2. The limit of detection for this method is 0.03 µg/100cm<sup>2</sup>.
3. Swabs were taken from surfaces in most air spaces/rooms.
4. Sampling targeted:
  - a. a range of material types;
  - b. locations on large surface areas (e.g. walls and ceilings) that are likely to show relatively high contamination levels;
  - c. areas that could be retested following remediation if required;
  - d. surfaces that can be difficult to remediate.

### QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

#### *accreditation*

5. The laboratory operated by Forensic and Industrial Science Ltd is accredited by International Accreditation New Zealand (IANZ) for analysis of Environmental Wipes via GC-MS for methamphetamine.
6. Other test methods referred to in this document have not been accredited.

#### *reference materials and blanks*

7. For methamphetamine analysis via GC-MS a field blank was included and certified reference materials were used as external and internal standards.

**INSTRUMENTAL PARAMETERS****Gas Chromatography analytical method & instrumental parameters**

The Gas Chromatography MS method used is adapted from NIOSH Method 9106.

parameter	details
analytical technique	solvent extraction, gas chromatography
injection method and volume	0.5-1.0 µL liquid injection
column	5ms 30 m x 250 µm
liquid phase thickness	0.25 µm
carrier gas and flow rate	hydrogen, 1.1mL/minute constant flow
detector and ionisation temperature	mass spectrometer, 250°C
injection temperature	230°C
column temperature programme	initial temperature 55°C, hold 2 min, ramp 20°/min to 230°C, hold 3 min
Standard 1 (external standard)	(±)-methamphetamine
Standard 2 (internal standard)	(±)-methamphetamine-D14

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