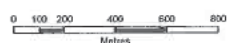




For additional secondary samples, their locations are shown however they will not have associated results. For samples where duplicates were collected the highest concentration is used.

LEGEND

- | | |
|-------------------------------|--------------------------------|
| HMAS Creswell / JBRF Boundary | Water Bodies |
| HMAS Creswell | Drainage Areas |
| HQ3 Area | Major Waterways |
| Ecology Sampling Area | Collected Invertebrate Samples |



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

g:\hcd\gda\AU\Sydney\Project\2126171\26171\Map\Deliverables\Concentrations\21_26171_2020_Biota_FW_Invertebrate_Concentrations.mxd
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Data source: Imagery - Neemap (Date: 14/06/2016), Topography Data - NSW LPI 2016. Created by jswmbr

Department of Defence
HMAS Creswell and Jervis Bay Range Facility

Freshwater and Estuarine Biota Concentrations of
PFHxS + PFOS (Sum) - Invertebrates

Job Number	21-26171
Revision	A
Date	29 Jun 2018

Figure 3A

Level 15, 133 Castlereagh Street Sydney NSW 2000 T 61 2 9239 7100 F 61 2 9239 7199 E sydmall@ghd.com.au W www.ghd.com.au



For 403 and secondary samples, these locations give chain of custody but they will not have associated results. For samples where digifnotes were collected the highest concentration is used

LEGEND

- HMAS Creswell/Jervis boundaries
- Water Bodies
- HMAS Creswell
- Drainage Areas
- 403 Area
- Major Waterways
- Ecology Sampling Area
- Collected Plant Samples

0 100 200 400 600 800
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

Department of Defence
HMAS Creswell and Jervis Bay Range Facility

Job Number 21-26171
Revision A
Date 29 Jun 2018

Freshwater and Estuarine Biota Concentrations of
PFHxS + PFOS (Sum) - Plants

Level 15, 133 Castlereagh Street Sydney NSW 2000 T 61 2 9230 7100 F 61 2 9230 7199 E sydmil@ghd.com.au W www.ghd.com.au

Figure 3B

ghd\del\ghd\AU\Sydney\Projects\2106171\GIS\Maps\Deliverables\Concentrations\21_26171_2027_Biota_FW_Plant_Concentrations.mxd
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Data source: Imagery - Nearmap (Date: 14/03/2016); Topography Data - NSW LPI 2016. Created by rmlweter



For additional secondary samples, their locations are shown however they will not have associated results. For samples where duplicates were collected, the highest concentration is used.

LEGEND

- HMAS Creswell/BRF Boundary
- Major Waterways
- Ecology Sampling Area
- Collected Vertebrate Samples
- ▨ Water Bodies
- Collected Scat Samples
- ▧ Drainage Areas

0 100 200 400 600 800
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Department of Defence
HMAS Creswell and Jervis Bay Range Facility

Job Number 21-26171
Revision A
Date 29 Jun 2018

Freshwater and Estuarine Biota Concentrations of
PFHxS + PFOS (Sum) - Vertebrates

Figure 3C

lightning@AMJ/Sydney/Projects/2102171/GIS/Maps/Defaultable/Concentration/21_26171_2018_Biota_FW_Vertebrate_Concentrations.mxd
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Data source: Imagery - Nearmap (Dated: 14/06/2018); Topography Data - NSW LPI 2018. Created by mwelber

Stedman, Andrew (Health)

From: [REDACTED]@ghd.com>
Sent: Friday, 29 June 2018 6:17 PM
To: [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@environment.gov.au; [REDACTED]@spotless.com.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@aecom.com; [REDACTED]@aecom.com;
[REDACTED]@infrastructure.gov.au; Clapham, David;
[REDACTED]@epa.nsw.gov.au; [REDACTED]@health.nsw.gov.au;
Stedman, Andrew (Health); [REDACTED] Hudson, Lyndell
(Health); [REDACTED]@shoalhaven.nsw.gov.au;
[REDACTED]@infrastructure.gov.au; [REDACTED]@shoalhaven.nsw.gov.au
Subject: Factual Letter 18 - PFAS Results for Jervis Bay and Wreck Bay Biota sampling

Dear JBRF PCG,

Please find attached Factual Letter 18 – Biota sampling from Jervis and Wreck Bay areas.
Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

GHD

[REDACTED]@ghd.com
Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
Water | Energy & Resources | Environment | Property & Buildings | Transportation

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Stedman, Andrew (Health)

From: [redacted]@ghd.com>
 Sent: Friday, 29 June 2018 6:37 PM
 To: [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@environment.gov.au; [redacted]@spotless.com.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@defence.gov.au; [redacted]@aecom.com; [redacted]@aecom.com; [redacted]@infrastructure.gov.au; Clapham, David; [redacted]@epa.nsw.gov.au; [redacted]@health.nsw.gov.au; Stedman, Andrew (Health); [redacted] Hudson, Lyndell (Health); [redacted]@shoalhaven.nsw.gov.au; [redacted]@infrastructure.gov.au; [redacted]@shoalhaven.nsw.gov.au

Subject: RE: Factual Letter 18 - PFAS Results for Jervis Bay and Wreck Bay Biota sampling
Attachments: 2126171_LET_factual letter 18_ June 2018.pdf

ear JBRF PCG,

Please find attached Factual Letter 18 – Biota sampling from Jervis and Wreck Bay areas. Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

[redacted]

GHD

[redacted]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
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29 June 2018

2126171_LET_factual letter 18

[REDACTED] JBRF & HMAS Creswell
PFAS Investigation and Management Branch,
Department of Defence

Dear [REDACTED]

**JBRF & HMAS Creswell- Environmental investigation: Preliminary sampling results
Aquatic ecology sampling results from the marine areas of Jervis Bay and Wreck
Bay (processed by 28 June 2018)**

1 Introduction

GHD Pty Ltd (GHD), on behalf of the Department of Defence (Defence), is undertaking the Environmental Investigation in and around Jervis Bay Range Facility (JBRF) and HMAS Creswell, within the Jervis Bay Territory (JBT) (the Site). This report includes data that has been collected and processed as at 28 June 2018, from the aquatic sampling programs from within Jervis Bay and Wreck Bay marine areas.

It should be noted that these data are provided for information purposes only and that the use of these data should take into account factors that have been used to develop the conceptual site model (as presented in GHD's Sampling, Analysis and Quality Plan).

GHD will continue to provide results from further sampling, following the processing of the data.

2 Purpose

The purpose of the provision of preliminary data is to allow Defence and other stakeholders, including NSW and ACT Governments to view the data prior to its use in the technical reports for the Environmental Investigations.

3 Laboratory Analysis

Upon collection, the samples were sent under Chain of Custody (CoC) conditions to the following National Association of Testing Authorities (NATA) accredited laboratories:

- ALS Environmental, 277-289 Woodpark Road Smithfield, NSW, 2164
- National Measurement Institute (NMI), 105 Delhi Road, North Ryde, NSW 2113
- Eurofins | mgt, Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, 2066

4 Preliminary Results Tables

The preliminary results are provided in the attached tables.

The data is not for public distribution.

5 Closure

GHD trusts the above information is suitable for Defence requirements.

Yours Sincerely
GHD Pty Ltd



Enclosures:

Table 1: Aquatic Biota Results – Jervis Bay

Table 2: Aquatic Biota Results – Wreck Bay

Figure 1: Biota Sample Locations

Figure 2A: Concentrations of PFHxS + PFOS (Sum) – Aquatic Invertebrates

Figure 2B: Concentrations of PFHxS + PFOS (Sum) – Aquatic Plants

Figure 2C: Concentrations of PFHxS + PFOS (Sum) – Aquatic Vertebrates

ANZSIC Class	ANZSIC Subclass	ANZSIC Division	ANZSIC Section	ANZSIC Subsection	ANZSIC Code	ANZSIC Description	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)	ANZSIC Description (Alternative)		
26	261	2611	26111	261111	2611110000	Acetylene															
26	261	2611	26111	261112	2611120000	Acetylene in liquid form															
26	261	2611	26111	261113	2611130000	Acetylene in solid form															
26	261	2611	26112	261121	2611210000	Acetylene gas															
26	261	2611	26112	261122	2611220000	Acetylene gas in liquid form															
26	261	2611	26112	261123	2611230000	Acetylene gas in solid form															
26	261	2612	26121	261211	2612110000	Acetylene gas															
26	261	2612	26121	261212	2612120000	Acetylene gas in liquid form															
26	261	2612	26121	261213	2612130000	Acetylene gas in solid form															
26	261	2612	26122	261221	2612210000	Acetylene gas															
26	261	2612	26122	261222	2612220000	Acetylene gas in liquid form															
26	261	2612	26122	261223	2612230000	Acetylene gas in solid form															
26	261	2613	26131	261311	2613110000	Acetylene gas															
26	261	2613	26131	261312	2613120000	Acetylene gas in liquid form															
26	261	2613	26131	261313	2613130000	Acetylene gas in solid form															
26	261	2613	26132	261321	2613210000	Acetylene gas															
26	261	2613	26132	261322	2613220000	Acetylene gas in liquid form															
26	261	2613	26132	261323	2613230000	Acetylene gas in solid form															

Table 2
Aquatic Biota Results - Newark Bay

MemberID	Location Code	Fig. ID	Match Description	Trips Type	Sample Comments	Depth (m)	Depth of Sample Provided	Phenolcarbazone sulfonic acid (PCSA)	Hexachlorocyclopentadiene sulfonic acid (HCSA)	1,2,3,4,6,8-Hexachlorodibenz-p-dioxin sulfonic acid (HDDSA)	1,2,3,4,6,8-Hexachlorodibenz-p-dioxin (HDD)	Polychlorinated biphenyl sulfonic acid (PCBSA)	Polychlorinated biphenyl (PCB)	Polychlorinated dibenz-p-dioxin sulfonic acid (PCDOSA)	Polychlorinated dibenz-p-dioxin (PCDD)	Polychlorinated dibenzofuran sulfonic acid (PCDFSA)	Polychlorinated dibenzofuran (PCDF)	Polychlorinated naphthalene sulfonic acid (PCNSA)	Polychlorinated naphthalene (PCN)	Polychlorinated quaterphenylene sulfonic acid (PCQPSA)	Polychlorinated quaterphenylene (PCQP)	Polychlorinated biphenyl sulfonic acid (PCBSA)	Polychlorinated biphenyl (PCB)	Polychlorinated dibenz-p-dioxin sulfonic acid (PCDOSA)	Polychlorinated dibenz-p-dioxin (PCDD)	Polychlorinated dibenzofuran sulfonic acid (PCDFSA)	Polychlorinated dibenzofuran (PCDF)	Polychlorinated naphthalene sulfonic acid (PCNSA)	Polychlorinated naphthalene (PCN)	Polychlorinated quaterphenylene sulfonic acid (PCQPSA)	Polychlorinated quaterphenylene (PCQP)	
101	NEWARK BAY	WV 0001	WV 0001	Normal		1.0	1.0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000



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Job Number	21-25171
Revision	A
Date	27 Apr 2018

Department of Defence



Figure 1
Biota Sample Locations

Paper Size A3

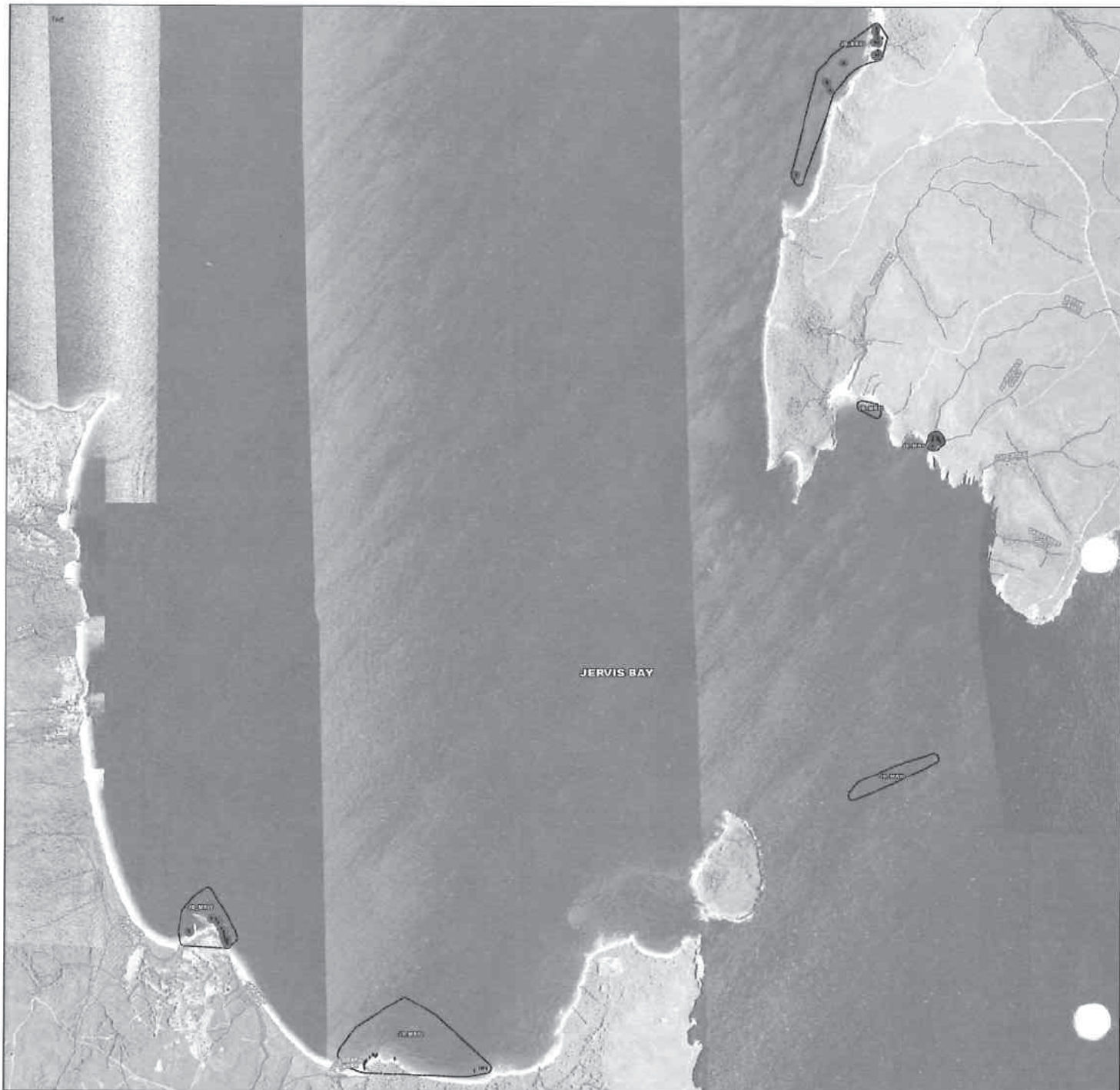
Horizontal Datum: GDA 1984
Grid: GDA 1984 MGR Zone 56

LEGEND

- Investigation Area Extent
- Jervis Bay Range Facility
- HMAS Creswell
- Water Bodies
- Drainage Areas
- Major Waterways
- Minor Waterways / Drainage Lines (Approximate)
- Estuarine Species Sampling Location
- Freshwater Species Sampling Location
- Terrestrial Species Sampling Location
- Marine Species Sampling Area (Approximate)

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1984
Grid: GDA 1984 MGR Zone 56

CL370577025/MAPS/DEFENCE/2017_1203_EchoMapMGR1984
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Data source: Imagery - Lands and Property Administration (imagery Datecode: 20170904); Streets, Waterways - NSW LPI 2013 DTDS; Contours - NSW LPI 2015.



For additional secondary samples, their locations are shown however they will not have associated results. For samples where duplicates were collected, the highest concentration is used.



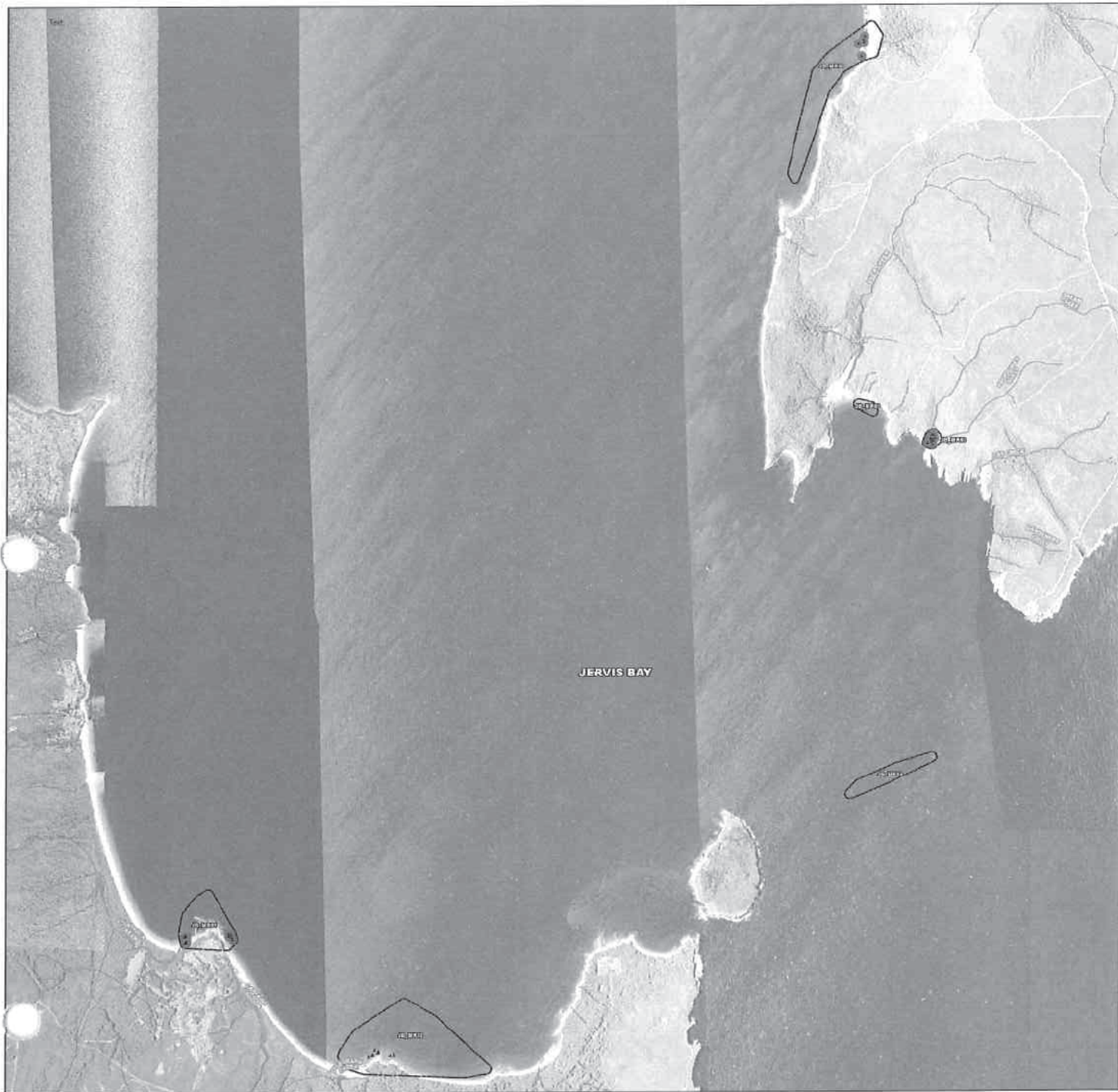
Department of Defence
 HMAS Creswell and Jervis Bay Range Facility

Job Number | 21-26171
 Revision | A
 Date | 29 Jun 2018

Marine Biota Concentrations of
 PFHxS + PFOS (Sum) - Invertebrates

Figure 2A

g:\hdm\g\MA\B\jervis\Projects\2106171\GIS\Map\Deliverables\Concentrations\21_26171_Biota_MR_Invertebrate_Concentrations.mxd
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 Data source: (fragrey - DfS) (2017) and Nearmap (Date: 14/09/2016); Topography Data - NSW LPI 2016. Created by xnwber



Biota Concentrations (mg/kg)

- <LOR
- LOR - 0.001
- 0.001 - 0.01
- 0.01 - 0.1
- 0.1 - 1
- 1 - 10
- 10 - 100
- 100 - 500

For additional secondary samples, their locations are shown however they will not have associated results. For samples where duplicates were collected, the highest concentration is used.

LEGEND

- Ecology Sampling Area
- Collected Plant Samples
- Water Bodies
- Drainage Areas
- Major Waterways

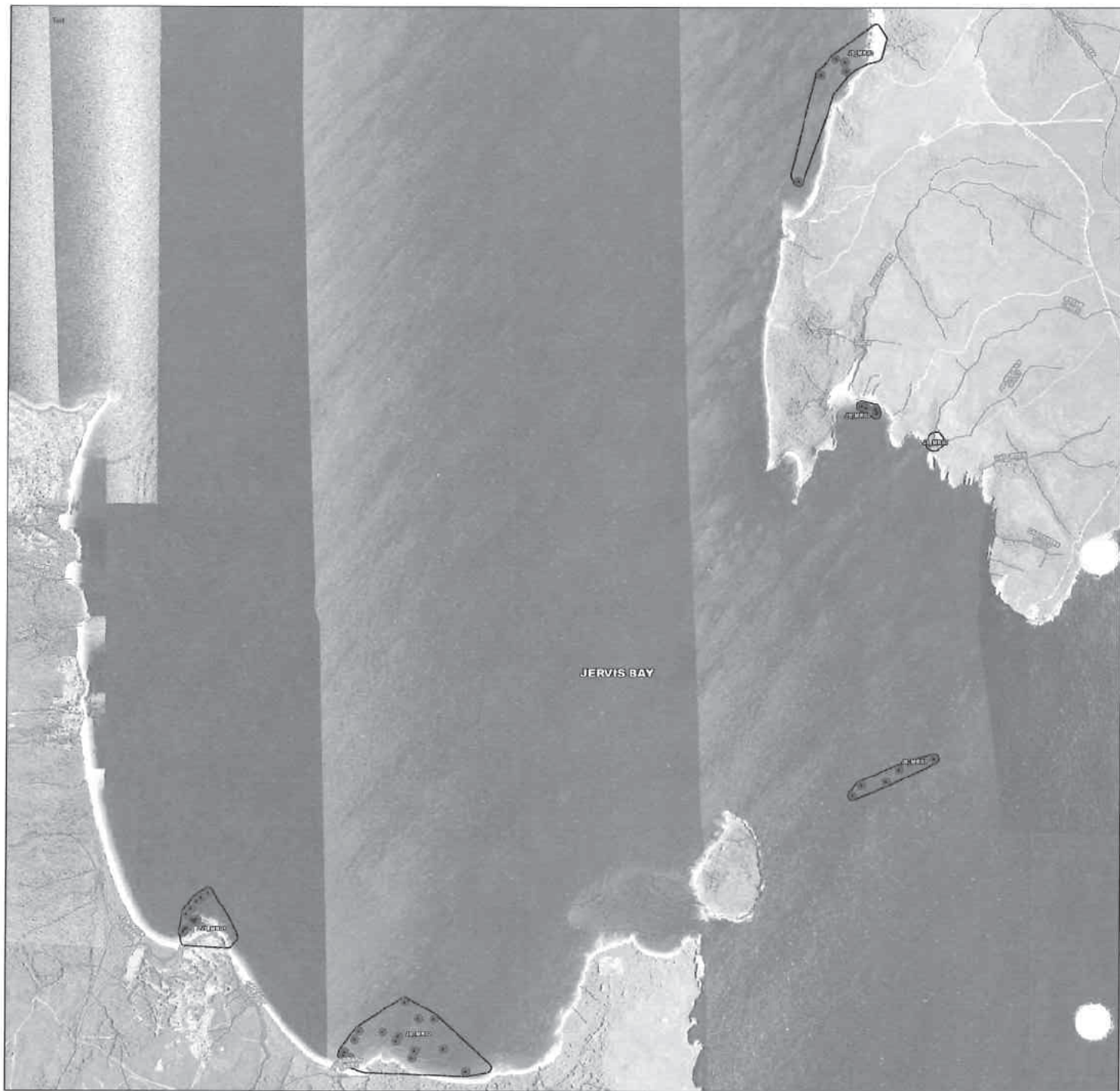


Department of Defence
 HMAS Creswell and Jervis Bay Range Facility
**Marine Biota Concentrations of
 PFHxS + PFOS (Sum) - Plants**

Job Number | 21-26171
 Revision | A
 Date | 29 Jun 2018

Figure 2B

G:\2126171\GIS\Maps\Biodiversity\Concentrations\21_26171_2018_Biota_MR_Plant_Concentrations.mxd
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 Data source: Imagery - DFSI (2017) and Nearmap (Deleted: 14/08/2016); Topography Data - NSW LPI 2016. Created by: mweber



LEGEND
 Ecology Sampling Area Collected Vertebrate Samples
 Water Bodies
 Drainage Areas
 Major Waterways

0 200 400 600 800 0 100 200 300 400
 Metres (Jervis Bay) Metres (Wreck Bay)
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 56



Department of Defence
 HMAS Creswell and Jervis Bay Range Facility
**Marine Biota Concentrations of
 PFHxS + PFOS (Sum) - Vertebrates**

Job Number | 21-26171
 Revision | A
 Date | 29 Jun 2018

Figure 2C

G:\21\26171\GIS\Maps\Deliverables\Concentrations\21_26171_Z031_Biote_MR_Vertebrate_Concentrations.mxd
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 Data source: Imagery - DFSI (2017) and Nearmap (Dated: 14/08/2016); Topography Data - NSW LPI 2016. Created by: zweber

Stedman, Andrew (Health)

From: [REDACTED]@ghd.com>
Sent: Friday, 29 June 2018 6:38 PM
To: [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@environment.gov.au; [REDACTED]@spotless.com.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@aecom.com; [REDACTED]@aecom.com; [REDACTED]@infrastructure.gov.au; Clapham, David; [REDACTED]@epa.nsw.gov.au; [REDACTED]@health.nsw.gov.au; Stedman, Andrew (Health); [REDACTED] Hudson, Lyndell (Health); [REDACTED]@shoalhaven.nsw.gov.au; [REDACTED]@infrastructure.gov.au; [REDACTED]@shoalhaven.nsw.gov.au

Subject: Factual Letter 21 - PFAS Results for Jervis Bay Territory residential Biota sampling

Dear JBRF PCG,

Please find attached Factual Letter 21 – Biota sampling from Jervis and Wreck Bay areas.

Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

GHD

[REDACTED]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
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Stedman, Andrew (Health)

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Sent: Friday, 29 June 2018 7:47 PM
To: [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
 [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
 [REDACTED]@environment.gov.au; [REDACTED]@spotless.com.au;
 [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
 [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
 [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
 [REDACTED]@aecom.com; [REDACTED]@aecom.com;
 [REDACTED]@infrastructure.gov.au; Clanham, David;
 [REDACTED]@epa.nsw.gov.au; [REDACTED]@health.nsw.gov.au;
 Stedman, Andrew (Health); [REDACTED] Hudson, Lyndell
 (Health); [REDACTED]@shoalhaven.nsw.gov.au;
 [REDACTED]@infrastructure.gov.au; [REDACTED]@shoalhaven.nsw.gov.au
Subject: Re: Factual Letter 19 - PFAS Results for Flat rock and Captains Lagoon
Attachments: 2126171_LET_factual letter 21_ June 2018.pdf; 2126171_LET_factual letter 21_ June
 2018.pdf

Dear JBRF PCG,

Please find attached Factual Letter 21 – Residential Biota sampling from Jervis bay Territory area.
 Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

GHD

[REDACTED]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
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29 June 2018

2126171_LET_factual letter 21

[REDACTED] JBRF & HMAS Creswell
PFAS Investigation and Management Branch
Department of Defence

Dear [REDACTED]

**JBRF & HMAS Creswell- Environmental investigation: Preliminary sampling results
Terrestrial ecology sampling results from home grown produce of Jervis Bay
Territory (processed by 28 June 2018)**

1 Introduction

GHD Pty Ltd (GHD), on behalf of the Department of Defence (Defence), is undertaking the Environmental Investigation in and around Jervis Bay Range Facility (JBRF) and HMAS Creswell, within the Jervis Bay Territory (JBT) (the Site). This report includes data that has been collected and processed as at 28 June 2018, from areas of home grown produce within the Jervis Bay Territory and Jervis Bay School.

It should be noted that these data are provided for information purposes only and that the use of these data should take into account factors that have been used to develop the conceptual site model (as presented in GHD's Sampling, Analysis and Quality Plan).

GHD will continue to provide results from further sampling, following the processing of the data.

2 Purpose

The purpose of the provision of preliminary data is to allow Defence and other stakeholders, including NSW and ACT Governments to view the data prior to its use in the technical reports for the Environmental Investigations.

3 Laboratory Analysis

Upon collection, the samples were sent under Chain of Custody (CoC) conditions to the following National Association of Testing Authorities (NATA) accredited laboratories:

- ALS Environmental, 277-289 Woodpark Road Smithfield, NSW, 2164
- National Measurement Institute (NMI), 105 Delhi Road, North Ryde, NSW 2113

4 Preliminary Results Tables

The preliminary results are provided in the attached tables.

The data is not for public distribution.

5 Closure

GHD trusts the above information is suitable for Defence requirements.

Yours Sincerely
GHD Pty Ltd



Enclosures:

Table 1: Terrestrial Biota - Residential Gardens and Jervis Bay School

Table 2: Soil - Residential Gardens and Jervis Bay School

Figure 1: Concentrations of PFHxS + PFOS (Sum) – Home grown produce

Figure 2: Concentrations of PFHxS + PFOS (Sum) – Soil Residential Gardens

Table with 35 columns: Morphology/Flora, Locality/Date, Field ID, Name/Description, Sample Type, Sample Size, Weight of Sample Analyzed, and 34 columns of Analytical Data (e.g., 1,5-D, 1,6-D, 2,4-D, etc.). The table contains a large volume of chemical analysis data for various plant and animal samples.



Table 2
Soil - Residential Gardens and Jarvis Bay School

Division of Culture
JRRF RMAS Ground PROs Investigation

Location Code	Field ID	Sample Date	Sample Type	Depth	Moisture (%)	PHAS
101	101	05/04/2018	Normal	0-15	0.000	None
102	102	05/04/2018	Normal	0-15	0.000	None
103	103	05/04/2018	Normal	0-15	0.000	None
104	104	05/04/2018	Normal	0-15	0.000	None
105	105	05/04/2018	Normal	0-15	0.000	None
106	106	05/04/2018	Normal	0-15	0.000	None
107	107	05/04/2018	Normal	0-15	0.000	None
108	108	05/04/2018	Normal	0-15	0.000	None
109	109	05/04/2018	Normal	0-15	0.000	None
110	110	05/04/2018	Normal	0-15	0.000	None
111	111	05/04/2018	Normal	0-15	0.000	None
112	112	05/04/2018	Normal	0-15	0.000	None
113	113	05/04/2018	Normal	0-15	0.000	None
114	114	05/04/2018	Normal	0-15	0.000	None
115	115	05/04/2018	Normal	0-15	0.000	None
116	116	05/04/2018	Normal	0-15	0.000	None
117	117	05/04/2018	Normal	0-15	0.000	None
118	118	05/04/2018	Normal	0-15	0.000	None
119	119	05/04/2018	Normal	0-15	0.000	None
120	120	05/04/2018	Normal	0-15	0.000	None



For additional secondary samples, their locations are shown however they will not have associated results. For samples where duplicates were collected, the highest concentration is used.

LEGEND

- HMAS Creswell JBRF Boundary
- Ecology Sampling Area
- Water Bodies
- Drainage Areas
- Major Waterways
- Collected Vertebrate Sample (Chicken Egg)
- Collected Fruit/Vegetable Samples

0 100 200 400 600 800
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Contour: GDA 1994 MGA Zone 56

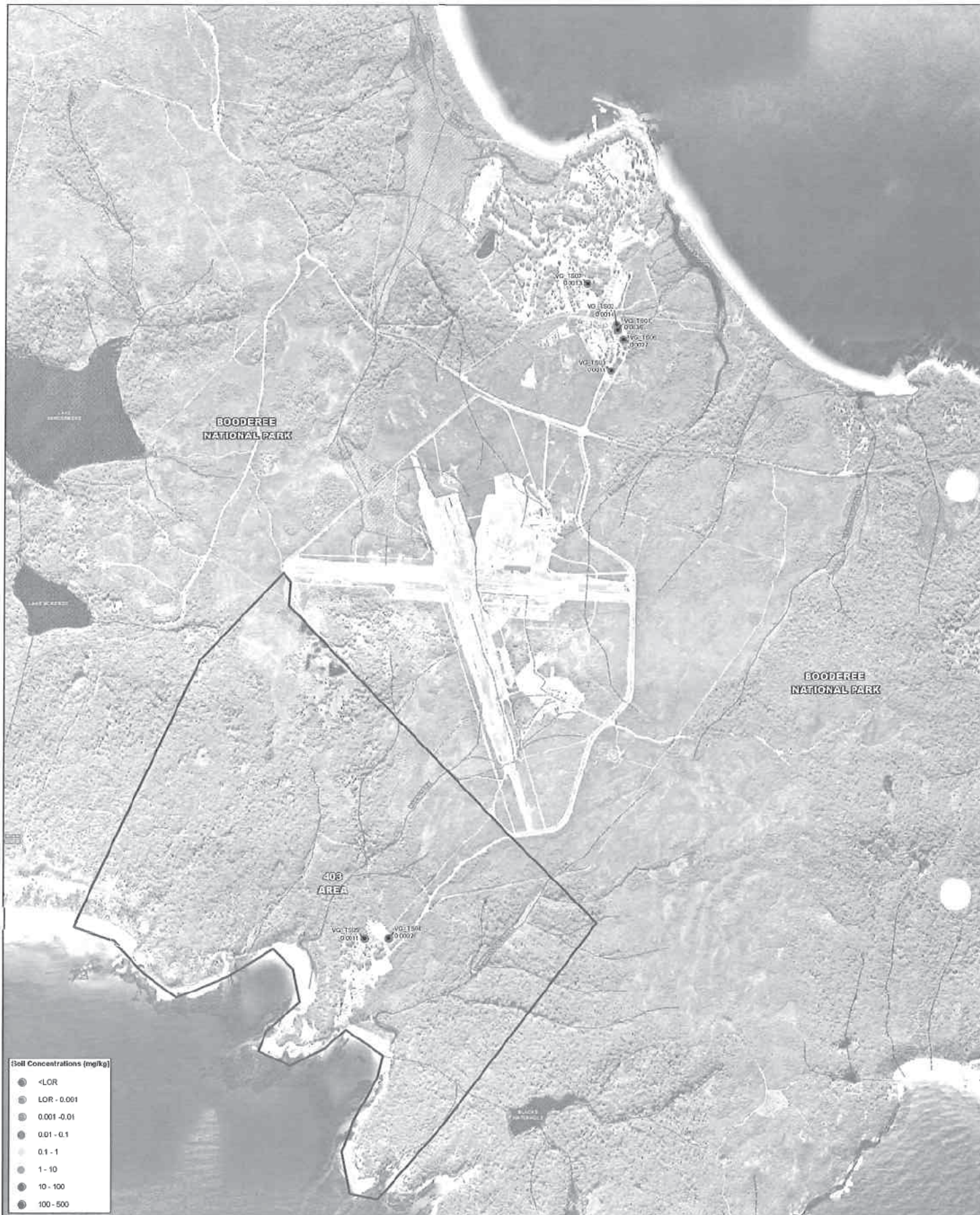


Department of Defence
HMAS Creswell and Jervis Bay Range Facility
Homegrown Produce Biota Concentrations of
PFHxS + PFOS (Sum) - Plants & Vertebrates

Job Number 21-26171
Revision A
Date 29 Jun 2018

Figure 1

\\hcm\hcm\GHD\sydney\Projects\2126171\HMAS\Maps\Deliverables\Concentration\21_26171_2032_Biota_HG_HomegrownProduce_Concentrations.mxd
© 2018. Whilst every care has been taken to prepare this map, GHD and NSW LPI make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Imagery - Nearmap (Date: 14/08/2016); Topography Data - NSW LPI 2016. Created by: mweber



LEGEND

- HMAS Creswell / JBRF Boundary
- Water Bodies
- Drainage Areas
- Major Waterways
- Soil Sample

0 125 250 500
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Department of Defence
 HMAS Creswell and Jervis Bay Range Facility
Concentration plan for PFHxS and PFOS (sum)
 - Soil (Residential Gardens)

Job Number | 21-26171
 Revision | A
 Date | 29 Jun 2018

Figure 2

G:\212617\GIS\Maps\Deliverables\Concentrations\01_26171_2010_Concentrations_PFHxS_Soil_Veg.mxd
 © 2018. Whilst every care has been taken to prepare this map, GHD and NSW LPI make no representations or warranties about the accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unusable in any way and for any reason.
 Data source: Imagery - Nearmap (Dated: 14/08/2016); Streets, Waterways, Contours - NSW LPI 2015 DTDR; Contours - NSW LPI 2016. Created by mbeber

Stedman, Andrew (Health)

From: [REDACTED]@ghd.com>
Sent: Friday, 29 June 2018 8:04 PM
To: [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@environment.gov.au; [REDACTED]@spotless.com.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@aecom.com; [REDACTED]@aecom.com;
[REDACTED]@infrastructure.gov.au; Clapham, David;
[REDACTED]@epa.nsw.gov.au; [REDACTED]@health.nsw.gov.au;
Stedman, Andrew (Health); [REDACTED] Hudson, Lyndell
(Health); Peter Watson; [REDACTED]@shoalhaven.nsw.gov.au;
[REDACTED]@infrastructure.gov.au; [REDACTED]@shoalhaven.nsw.gov.au
Subject: Factual Letter 21- PFAS Results for Residential sampling Jervis Bay Territory Areas
Attachments: 2126171_LET_factual letter 21_ June 2018.pdf

Dear JBRF PCG,

Please find attached Factual Letter 21 – Residential Biota sampling from Jervis bay Territory area.

With my apologies for previous emails with missing attachments and incorrect message titles.

Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

[REDACTED]

GHD

[REDACTED]@ghd.com
Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
ter | Energy & Resources | Environment | Property & Buildings | Transportation

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Stedman, Andrew (Health)

From: [REDACTED]@ghd.com>
Sent: Monday, 2 July 2018 8:06 AM
To: [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@environment.gov.au; [REDACTED]@spotless.com.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au;
[REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]
[REDACTED]@aecom.com; [REDACTED]@aecom.com;
[REDACTED]@infrastructure.gov.au; [REDACTED]@aecom.com; [REDACTED]@aecom.com;
[REDACTED]@epa.nsw.gov.au; [REDACTED]@health.nsw.gov.au;
Stedman, Andrew (Health); [REDACTED] Hudson, Lyndell
(Health); Peter Watson; [REDACTED]@shoalhaven.nsw.gov.au;
[REDACTED]@infrastructure.gov.au; [REDACTED]@shoalhaven.nsw.gov.au
Subject: Recall: Factual Letter 18 - PFAS Results for Jervis Bay and Wreck Bay Biota sampling

[REDACTED] would like to recall the message, "Factual Letter 18 - PFAS Results for Jervis Bay and Wreck Bay Biota sampling".

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Williams, Jarrod (Health)

From: Clapham, David
Sent: Monday, 2 July 2018 8:20 AM
To: Barr, Conrad (Health); Pengilley, Andrew (Health)
Subject: FW: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 18 Jervis Bay Marine and Wreck Bay Marine - Data Tables [SEC=UNCLASSIFIED]
Attachments: JB_Biota_20180628.xlsm; WB_Biota_20180628.xlsm

From: [REDACTED]@defence.gov.au] **On Behalf Of** PFASIM Jervis Bay
Sent: Friday, 29 June 2018 8:37 PM
To: Pengilley, Andrew (Health) <Andrew.Pengilley@act.gov.au>; Chester, Heath <Heath.Chester@act.gov.au>; Hudson, Lyndell (Health) <Lyndell.Hudson@act.gov.au>; [REDACTED]@epa.nsw.gov.au> [REDACTED]@epa.nsw.gov.au>; Barr, Conrad (Health) <Conrad.Barr@act.gov.au>
Cc: PFASIM Jervis Bay <pfasim.jervisbay@defence.gov.au>; Clapham, David <David.Clapham@act.gov.au>; [REDACTED]@infrastructure.gov.au>; [REDACTED]@ghd.com>
Subject: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 18 Jervis Bay Marine and Wreck Bay Marine Data Tables [SEC=UNCLASSIFIED]

UNCLASSIFIED

Please find attached the excel data tables associated with Factual Letter 18 – Jervis Bay Marine and Wreck Bay Marine.

Regards,

[REDACTED]
 Project Manager – Investigations East
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** steve.tattam1@defence.gov.au

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Williams, Jarrod (Health)

From: Clapham, David
Sent: Monday, 2 July 2018 8:20 AM
To: Pengilley, Andrew (Health); Barr, Conrad (Health)
Subject: FW: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 19 - Flat Rock Creek and Captains Lagoon - Data Tables [SEC=UNCLASSIFIED]
Attachments: CL_Biota_20180628.xlsm; FC_Biota_20180628.xlsm

From: [REDACTED]@defence.gov.au] **On Behalf Of** PFASIM Jervis Bay
Sent: Friday, 29 June 2018 8:38 PM
To: Pengilley, Andrew (Health) <Andrew.Pengilley@act.gov.au>; Chester, Heath <Heath.Chester@act.gov.au>; Hudson, Lyndell (Health) <Lyndell.Hudson@act.gov.au>; [REDACTED]@epa.nsw.gov.au>; [REDACTED]@epa.nsw.gov.au>; Barr, Conrad (Health) <Conrad.Barr@act.gov.au>
Cc: PFASIM Jervis Bay <pfasim.jervisbay@defence.gov.au>; Clapham, David <David.Clapham@act.gov.au>; [REDACTED]@infrastructure.gov.au>; [REDACTED]@ghd.com>
Subject: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 19 - Flat Rock Creek and Captains Lagoon - ata Tables [SEC=UNCLASSIFIED]

UNCLASSIFIED

Please find attached the excel data tables associated with Factual Letter 19 – Flat Rock Creek and Captain’s Lagoon.

Regards,

[REDACTED]
 Project manager - Investigations East
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: [REDACTED]@defence.gov.au

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Williams, Jarrod (Health)

From: Clapham, David
Sent: Monday, 2 July 2018 8:21 AM
To: Pengilley, Andrew (Health); Barr, Conrad (Health)
Subject: FW: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 20 - Mary Creek and Summercloud Creek - Data Tables [SEC=UNCLASSIFIED]
Attachments: MC_Biota_20180628.xlsm; SC_Biota_20180628.xlsm

From: [REDACTED]@defence.gov.au] **On Behalf Of** PFASIM Jervis Bay
Sent: Friday, 29 June 2018 8:38 PM
To: Pengilley, Andrew (Health) <Andrew.Pengilley@act.gov.au>; Chester, Heath <Heath.Chester@act.gov.au>; Hudson, Lyndell (Health) <Lyndell.Hudson@act.gov.au>; [REDACTED]@epa.nsw.gov.au>; [REDACTED]@epa.nsw.gov.au>; Barr, Conrad (Health) <Conrad.Barr@act.gov.au>
Cc: PFASIM Jervis Bay <pfasim.jervisbay@defence.gov.au>; Clapham, David <David.Clapham@act.gov.au>; [REDACTED]@infrastructure.gov.au>; [REDACTED]@ghd.com>
Subject: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 20 - Mary Creek and Summercloud Creek - ata Tables [SEC=UNCLASSIFIED]

UNCLASSIFIED

Please find attached the excel data tables associated with Factual Letter 20 – Mary Creek and Summercloud Creek.

Regards,

[REDACTED]
 Project Manager – Investigations East
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: [REDACTED]@defence.gov.au

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Williams, Jarrod (Health)

From: Clapham, David
Sent: Monday, 2 July 2018 8:21 AM
To: Pengilley, Andrew (Health); Barr, Conrad (Health)
Subject: FW: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]
Attachments: HG_Biota_20180628.xlsm; HG_Soil_20180628.xlsm

From: [REDACTED]@defence.gov.au] **On Behalf Of** PFASIM Jervis Bay
Sent: Friday, 29 June 2018 8:38 PM
To: Pengilley, Andrew (Health) <Andrew.Pengilley@act.gov.au>; Chester, Heath <Heath.Chester@act.gov.au>; Hudson, Lyndell (Health) <Lyndell.Hudson@act.gov.au>; [REDACTED]@epa.nsw.gov.au>; [REDACTED]@epa.nsw.gov.au>; Barr, Conrad (Health) <Conrad.Barr@act.gov.au>
Cc: PFASIM Jervis Bay <pfasim.jervisbay@defence.gov.au>; Clapham, David <David.Clapham@act.gov.au>; [REDACTED]@infrastructure.gov.au>; [REDACTED]@ghd.com>
Subject: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]

UNCLASSIFIED

Please find attached the excel data tables associated with Factual Letter 21 – Residential and School Data Sampling.

Regards,

[REDACTED]
 Project Manager – Investigations East
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
 M: [REDACTED] E: [REDACTED]@defence.gov.au

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ED-HPS-Support

From: [REDACTED]@infrastructure.gov.au
Sent: Monday, 2 July 2018 9:45 AM
To: Clapham, David
Cc: Barr, Conrad (Health)
Subject: FW: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]

Hi David

I note that late last Friday Defence provided factual letters 18-21 with associated data. Can you please confirm that along with the other data provided by Defence to date for the JBT, the ACT will consider the data and provide advice on what, if any, action might be necessary?

Please let me know if you wish to discuss.

Kind regards

From: [REDACTED]@defence.gov.au **On Behalf Of** PFASIM Jervis Bay
Sent: Friday, 29 June 2018 8:38 PM
To: 'Pengilley, Andrew (Health)' <Andrew.Pengilley@act.gov.au>; 'Chester, Heath' <Heath.Chester@act.gov.au>; 'Hudson, Lyndell (Health)' <Lyndell.Hudson@act.gov.au>; [REDACTED]@epa.nsw.gov.au; [REDACTED]@epa.nsw.gov.au; 'Barr, Conrad (Health)' <Conrad.Barr@act.gov.au>
Cc: PFASIM Jervis Bay <pfasim.jervisbay@defence.gov.au>; 'Clapham, David' <David.Clapham@act.gov.au>; [REDACTED]@infrastructure.gov.au; [REDACTED]@ghd.com>
Subject: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]

UNCLASSIFIED

Please find attached the excel data tables associated with Factual Letter 21 – Residential and School Data Sampling.

Regards,

[REDACTED]
 Project Manager – Investigations East
 PFAS Investigation & Management Branch
 Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] **E:** [REDACTED]@defence.gov.au

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Williams, Jarrod (Health)

From: Clapham, David
Sent: Monday, 2 July 2018 9:49 AM
To: [REDACTED]
Cc: Barr, Conrad (Health) [REDACTED] Pengilley, Andrew (Health)
Subject: RE: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]

Thanks Luke – yes I've ensured that Health Protection and the Office of the Chief Health Officer have received that letters and can confirm that the ACT is developing advice in consultation with NSW EPA.

While we await the finalisation of our recommendations, perhaps you and I can meet later in the week to discuss next steps?

Best

David

on [REDACTED]@infrastructure.gov.au]
Sent: Monday, 2 July 2018 9:45 AM
To: Clapham, David <David.Clapham@act.gov.au>
Cc: Barr, Conrad (Health) <Conrad.Barr@act.gov.au>
Subject: FW: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]

Hi David

I note that late last Friday Defence provided factual letters 18-21 with associated data. Can you please confirm that along with the other data provided by Defence to date for the JBT, the ACT will consider the data and provide advice on what, if any, action might be necessary?

Please let me know if you wish to discuss.

Kind regards

From: [REDACTED]@defence.gov.au> **On Behalf Of** PFASIM Jervis Bay
Sent: Friday, 29 June 2018 8:38 PM
To: 'Pengilley, Andrew (Health)' <Andrew.Pengilley@act.gov.au>; 'Chester, Heath' <Heath.Chester@act.gov.au>; 'Hudson, Lyndell (Health)' <Lyndell.Hudson@act.gov.au>; [REDACTED]@epa.nsw.gov.au>; [REDACTED]
 [REDACTED] 'Barr, Conrad (Health)' <Conrad.Barr@act.gov.au>
Cc: PFASIM Jervis Bay <pfasim.jervisbay@defence.gov.au>; 'Clapham, David' <David.Clapham@act.gov.au>; [REDACTED]@infrastructure.gov.au>; [REDACTED]@ghd.com>
Subject: Defence PFAS Investigation Jervis Bay Territory - Factual Letter 21 Residential and School Sampling - Data Tables [SEC=UNCLASSIFIED]

UNCLASSIFIED

Please find attached the excel data tables associated with Factual Letter 21 – Residential and School Data Sampling.

Regards,

[REDACTED]
Project Manager – Investigations East
PFAS Investigation & Management Branch
Infrastructure Division

Department of Defence | Estate & Infrastructure Group
M: [REDACTED] E: [REDACTED]@defence.gov.au

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If you have received this e-mail in error, please notify the Department on (02) 6274-7111 and delete all copies of this transmission together with any attachments.

Williams, Jarrod (Health)

From: [REDACTED]@ghd.com>
Sent: Tuesday, 3 July 2018 9:03 AM
To: Pengilley, Andrew (Health); Barr, Conrad (Health)
Subject: FW: Factual Letter 18 - PFAS Results for Jervis Bay and Wreck Bay Biota sampling
Attachments: 2126171_LET_factual letter 18_ June 2018.pdf

Hi Andrew and Conrad,

Please accept my apologies for not adding you to the PCG distribution list, to follow is factual letters 19, 20 and 21 issued to the PCG on the 29/06/18.

Regards,

GHD *Proudly employee owned*

[REDACTED]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

From: [REDACTED]
Sent: Friday, 29 June 2018 6:37 PM

[REDACTED]

<heath.chester@act.gov.au>; 'michelle.callaway@environment.gov.au' <michelle.callaway@environment.gov.au>;

[REDACTED]

[REDACTED]; 'David.Clapham@act.gov.au'

[REDACTED]

'Stedman, Andrew (Health)' <Andrew.Stedman@act.gov.au>;

Subject: RE: Factual Letter 18 - PFAS Results for Jervis Bay and Wreck Bay Biota sampling

Dear JBRF PCG,

Please find attached Factual Letter 18 – Biota sampling from Jervis and Wreck Bay areas.

Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,



GHD

@ghd.com
Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
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Williams, Jarrod (Health)

From: [REDACTED]@ghd.com>
Sent: Tuesday, 3 July 2018 9:03 AM
To: Pengilley, Andrew (Health); Barr, Conrad (Health)
Subject: FW: Factual Letter 19 - PFAS Results for Flat rock and Captains Lagoon
Attachments: 2126171_LET_factual letter 19_ June 2018.pdf

From: Dave Hager
Sent: Friday, 29 June 2018 5:58 PM

[REDACTED]
 [REDACTED]
 <heath.chester@act.gov.au> [REDACTED]

[REDACTED] 'David.Clapham@act.gov.au'

<David.Clapham@act.gov.au>

Stedman, Andrew (Health) <Andrew.Stedman@act.gov.au> [REDACTED]

[REDACTED] 'Glendon Lee' <Glendon.Lee@health.nsw.gov.au> [REDACTED]

'Lyndell.Hudson@act.gov.au' <Lyndell.Hudson@act.gov.au> [REDACTED]
 [REDACTED]

Subject: Factual Letter 19 - PFAS Results for Flat rock and Captains Lagoon

Dear JBRF PCG,

Please find attached Factual Letter 19 – Biota sampling from flat rock creek and Captains lagoon areas.

Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

[REDACTED]
GHD

[REDACTED]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
[Water](#) | [Energy & Resources](#) | [Environment](#) | [Property & Buildings](#) | [Transportation](#)

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Williams, Jarrod (Health)

From: [REDACTED]@ghd.com>
Sent: Tuesday, 3 July 2018 9:04 AM
To: Pengilley, Andrew (Health); Barr, Conrad (Health)
Subject: FW: Factual Letter 20 - PFAS Results for Mary Creek and Summercloud Creek
Attachments: 2126171_LET_factual letter 20_ June 2018.pdf

From: [REDACTED]
Sent: Friday, 29 June 2018 6:08 PM

[REDACTED] n
 Heath Chester (InTouch)

<heath.chester@act.gov.au>

[REDACTED]
 'David.Clapham@act.gov.au'

<David.Clapham@act.gov.au>

'Stedman, Andrew (Health)' <Andrew.Stedman@act.gov.au>

'Glendon Lee' <Glendon.Lee@health.nsw.gov.au>

'Lyndell.Hudson@act.gov.au' <Lyndell.Hudson@act.gov.au>

Subject: Factual Letter 20 - PFAS Results for Mary Creek and Summercloud Creek

Dear JBRF PCG,

Please find attached Factual Letter 19 – Biota sampling from Mary Creek and Summercloud Creek areas.

Please note the figure quality has been reduced for email transfer, with higher quality figures available on request.

Regards,

GHD

[REDACTED]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
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Stedman, Andrew (Health)

From: [REDACTED]@ghd.com>
Sent: Monday, 16 July 2018 11:13 AM
To: [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@spotless.com.au; [REDACTED]@shoalhaven.nsw.gov.au; [REDACTED]@infrastructure.gov.au; [REDACTED]@environment.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@defence.gov.au; [REDACTED]@aecom.com; [REDACTED]@aecom.com; [REDACTED]@infrastructure.gov.au; Clapham, David; [REDACTED]@epa.nsw.gov.au; [REDACTED]curtis.gregory@health.nsw.gov.au; Stedman, Andrew (Health); [REDACTED]Hudson, Lyndell (Health); [REDACTED]@shoalhaven.nsw.gov.au

Subject: JBRF PFAS Investigation - Monthly meeting minutes and reports
Attachments: 2126171_REP_May 2018 Monthly Report_PCG.pdf; 2126171_REP_June 2018 Monthly Report_PCG.PDF; JBRF PCG_MEETING 16_AGENDA.pdf; JBRF-PGC Meeting Minutes 15 - June 2018.pdf

Dear JBRF PCG,

Please see attached the agenda for tomorrow's meeting along with minutes from last meeting and monthly reports.

Please join at 2:00 pm Tuesday 17 July, using details below

Join WebEx meeting

Meeting number: [REDACTED]

Join by phone

Call-in toll-free number: [REDACTED] Australia)

Call-in number: [REDACTED] Australia)

Show global numbers

Participant Pin Code: [REDACTED]

Please dial *0 if you experience audio difficulties during conference

Can't join the meeting? [Contact support](#).

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Regards,

GHD Proudly employee owned

[REDACTED]@ghd.com
 Level 2, 57 Graham Street (PO Box 621) Nowra NSW 2541 Australia | <http://www.ghd.com/>
 Water | Energy & Resources | Environment | Property & Buildings | Transportation

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Australian Government
Department of Defence
Estate and Infrastructure Group

PFAS Investigation and Management
Monthly Report- Jervis Bay Range Facility

20 05 2018

BP8 Level 1
 8 Brindabella Circuit
 Brindabella Business Park
 PO Box 7925 Canberra BC 2610

Re: Jervis Bay Range Facility Environmental Investigation – Progress Report May 2018

1.0 Introduction

The following progress report has been prepared by GHD Pty Ltd to provide a summary of activities for the Comprehensive Investigation of PFAS Site Conditions at Jervis Bay Range Facility, HMAS Creswell and surrounds for the period between 1 May 2018 and 31 May 2018.

2.0 Critical items

2.1 New items

- GHD conducted stream flow monitoring, surface water and sediment sampling post rain events 12/05/18 from Onsite and Off site areas.
- GHD issue factual letter 13 Rev 2, On site terrestrial biota, to Defence and PCG (30/05/2018).
- GHD issue raw ESDAT output data 01/05/18 as preliminary advice of received samples results. GHD note the ESDAT data contained sample results which had not been validated against internal records or supporting QA results. Preliminary results report elevated PFAS levels in onsite and off site biota and surface water samples.
- GHD and Defence hold planning meetings for delivery and presentation of sample results for of 403 lands.
- GHD and Defence issue 403 lands initial sample results letter to WBACC board for sample results received prior to 11/05/18. The results letter included:
 - Consolidated tables of sample results grouped by sample media.
 - Figures detailing sample locations.
 - Project and Department of Health guidance values for PFAS.
 - Laboratory Certificates of analysis, redacted to show samples from 403 land only.
- GHD and Defence attend WBACC board meeting 22/05/18 to deliver initial sample results letter and provide WBACC board members with project information and opportunity to discuss project and results. Key topics included:
 - Sampling process and activities conducted on 403 lands with support from cultural supervisors.
 - Non PFAS contamination sample analysis, reporting no exceedances of hydrocarbons and other contaminants.

- General conversation regarding PFAS contamination and health guidance.
- GHD secure and submit additional biota samples from Wreck Bay, Captains Lagoon and Flat Rock creek to support investigation dataset.
- GHD submit additional secondary biota samples from residential fruit and vegetable sampling and Mary creek to validate primary sample results and support investigation dataset.
- GHD issue Draft Waste Disposal plan Rev A to Defence to identify waste management options for drilling waste created during development of groundwater wells (29/05/2018)

2.2 Previously raised items to be addressed

GHD identify Factual Results Letters will be issued grouped by sample type and area. The list of factual letters is provided below with basic summary:

- Factual Memo 1 - Combined media - Soil, Sediment, Surface water and Groundwater – HMAS Creswell and JBRF areas (On Site) (Issued 2017).
- Factual Memo 2 - Combined media - Soil, Sediment, Surface water and Groundwater – HMAS Creswell and JBRF areas (On Site) (Issued 2017).
- Factual Memo 3 - Combined media - Soil, Sediment, Surface water and Groundwater – HMAS Creswell and JBRF areas (On Site) (Issued 2017).
- Factual Memo 4 - Combined media - Soil, Sediment, Surface water and Groundwater – HMAS Creswell and JBRF areas (On Site) (Issued 2017).
- Factual Memo 5 - Combined media - Soil, Sediment, Concrete core, Surface water and Groundwater – HMAS Creswell and JBRF areas (On Site) (Issued 2017).
- Factual Letter 6 - Water – Lake McKenzie, Lake Windermere and Potable water storage tanks (JBTA infrastructure) (Issued 2017).
- Factual Letter 7 - Water – Lake McKenzie, Lake Windermere (Issued 2017).
- Factual Letter 8 - Black/grey water - Sewerage system JBRF, HMAS Creswell (Issued 2017).
- Factual Letter 9 - Black/grey water - Sewerage system JBRF, HMAS Creswell, Wreck Bay sewer pump stations (Issued 2017).
- Factual Letter 10 - Water – Lake McKenzie, Lake Windermere (Issued 2017).
- Factual Letter 11 - Water - JBRF – closed loop water systems associated with firefighting training school (Issued 2017).
- Factual Letter 12 - Black/grey water - Sewerage system JBRF, HMAS Creswell (Issued 2017).
- Factual Letter 13 - Terrestrial ecology biota – On Site – HMAS Creswell/JBRF areas (Issued 2018).
- Factual Letter 14 - Soil and Water - dry weather - off site – 403 lands (To Be Issued 2018).
- Factual Letter 15 - Soil and Water - wet weather - off site – 403 lands (To Be Issued 2018).
- Factual Letter 16 - Aquatic ecology Biota – unnamed pools (403 lands) (To Be Issued 2018).
- Factual Letter 17 - Aquatic and terrestrial ecology Biota – lake McKenzie area (To Be Issued 2018).
- Factual Letter 18 - Terrestrial ecology Biota – On Site – HMAS Creswell/JBRF areas (To Be Issued 2018).
- Factual Letter 19 - Biota Marine/Estuarine/Freshwater – Flat Rock and Captains Lagoon (To Be Issued 2018).
- Factual Letter 20 - Biota Marine/estuarine/Freshwater – Mary’s and Summercloud Creeks (To Be Issued 2018).

- Factual Letter 21 - Biota – Fruit and vegetable residential gardens – School, Wreck Bay, Village road (To Be Issued 2018).

3.0 Project progress

The following items have been completed this reporting period:

- 100% completion of on site biota sampling (JBRF, Creswell, Flatrock Creek and Captains Lagoon).
- 100% completion of 403 and BNP investigation sampling including installation of wells, soil, sediment, surface water and biota sampling, under supervision of WBACC cultural supervisors.
- Receipt and preliminary analysis of 40% of sample results.

3.1 Project impacts

- Onsite sample results (biota, soil, water) and potential for agency dietary advice.
- 403 land sample (biota, soil, water) results and potential for agency dietary advice.

3.2 Project meetings

Project meetings held this reporting period are presented in Table 1.

Table 1: Summary of meetings held during the May reporting period

Meeting date	Meeting title	Participants	Minutes circulated
Recurring Wednesday's	Weekly meetings	JBRF project team – Defence, GHD & Site auditor	Yes
15/05/2018	PCG Monthly	Defence, GHD, Site auditor, Agencies and stakeholders	Yes
21/05/2018	WBACC results presentation preparation	GHD/Defence	No
22/05/2018	WBACC results presentation	[REDACTED] & WBACC board members	No

3.3 Project deliverables submitted this period

Project deliverables submitted during this reporting period are presented in Table 2.

Table 2: Project deliverables submitted during the May reporting period

Document status	Title	Date submitted
Final	2126171 LET Factual Letter 13 May 2018	29/05/18
Draft	2126171 LET Drfat Waste Disposal plan May 2018	29/05/18
Draft	Results Letter – Wreck bay 403 lands - 180521	18/05/18
Final	Results Letter – Wreck bay 403 lands - 180521	21/05/18

3.4 Project Milestones

The following project milestones were achieved in the May reporting period:

- 99% completion of on site, biota, soil, sediment and water sampling.

- 99% completion of off site (BNP and 403) biota, soil, sediment and water sampling.
- 99% completion of off site biota, residential garden and soil sampling.

4.0 Project Forecast

The project schedule is presented in the enclosed project schedule, dated 28 March 2018.

4.1 Schedule tracking forecast

- The project schedule originally impacted by approval processes to access the Wreck Bay community land has been revised with investigation and reporting completion programmed for January 2019.

4.2 Project deliverables expected next period

- Completion off any additional sampling, as required.
- Sample result data analysis
- Preparation and issue of sample results

4.3 Technical Advisor forecast

The Technical Advisor's achievements and planned activities are presented in Table 3.

Table 3: Technical Advisor achievements and key activities during the May reporting period

Scope item	Achieved to date	Planned for next month
Monitor Project progress and provide comment	Yes	ongoing

5.0 Community enquiries

In this reporting period:

- No community independent enquiries were received via the Community Hotline (1800 987 618) and email (Jervisbay@ghd.com.au)
- There are 0 outstanding stakeholder enquires

6.0 Interaction with Government

Meetings and communications with government stakeholders are summarised in Table 4.

Table 4: Summary of interactions with Government during the May reporting period

Meeting date	Meeting title	Participants	Minutes circulated
15/05/2018	PCG 14 Monthly meeting	Defence, GHD, Site auditor, Agencies and stakeholders	Yes

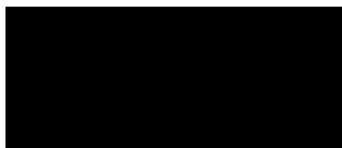
9.0 Requests for information from Defence

- All relevant reports and information associated with JBRF environmental assessments and contamination investigations have been provided to GHD by Defence.

10.0 Other Matters

- Nil

Yours sincerely



CC:

Enclosures: Project Mile Stone Schedule - Dated 28/03/2018

Project schedule, dated 28 March 2018

Item	Start	Finish	
DSI	5/04/2017	28/08/2017	GHD
On-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling (Round 1).	5/04/2017	09/05/2017	GHD
On-Site Groundwater Bore, Sediment and surface water sampling (Round 2).	18/04/18	20/05/18	GHD
Off-Site Groundwater Bore Installation, Soil, Sediment and surface water sampling (Round 1)	19/03/18	13/04/2018	GHD
Off-Site Groundwater Bore, Sediment and surface water sampling (Round 2)	18/04/18	20/05/18	GHD
Biota sampling	15/02/2018	10/05/2018	GHD
Laboratory analysis	12/02/18	10/06/18	ALS
Laboratory analysis of on hold samples (if required)	TBC	TBC	
Defence, GHD, Auditor results analysis workshop	21/05/18	21/05/18	
DSI Reporting	28/05/2018	27/08/2018	GHD/Defence/Agency/WBACC
DSI Report preparation	28/05/2018	29/06/2018	GHD
Defence and Auditor review of Draft DSI Report	02/07/2018	13/07/2018	Defence/Auditor
Update of Draft DSI Report	16/07/2018	23/07/2018	GHD
ACT & NSW State Agency review of DSI Report	24/07/2018	06/08/2018	Agency
WBACC Review of DSI report (If required)?	TBC	TBC	WBACC
Finalise DSI Report	07/08/2018	27/08/2018	GHD/Defence/Auditor
Groundwater Numerical Modelling	30/03/18	27/09/18	
Data capture, modelling, calibration and sensitivity analysis	14/04/18	16/08/18	GHD
Draft groundwater modelling report Preparation	17/08/18	30/08/18	GHD
Defence and Auditor review of Draft GWM Report	31/08/18	13/09/18	GHD/Defence/Auditor


Finalisation of groundwater modelling report	14/09/18	27/09/18	
Human Health and ecological risk assessment	24/08/2017	30/09/2018	GHD/Defence/Agency/WBACC
ACT & NSW State Agency review of HHERA Plan	20/11/2017	01/12/2017	Agency
Risk Workshop	16/07/2018	16/07/2018	GHD
HHERA Draft report Preparation	17/07/2018	10/09/2018	GHD
Defence and Auditor review of Draft HHERA report	11/09/2018	24/09/2018	Defence/Auditor
Update of Draft HHERA report	24/09/2018	08/10/2018	GHD
Agency review of HHERA	09/10/2018	22/10/2018	Agency
WBACC Review of HHERA report (If required)?	TBC	TBC	WBACC
Finalise HHERA Report	23/10/2018	12/11/2018	GHD/Defence/Auditor
PFAS Area Management Plan (PMAP)	18/07/2018	12/11/2018	GHD/Defence/Auditor
PMP Template Workshop	28/09/2018	28/09/2018	GHD/Defence/Auditor
PMP Draft Report preparation	01/10/2018	19/10/2018	GHD
Defence and Auditor review of Draft PMP report	22/10/2018	02/11/2018	GHD/Defence/Auditor
PMP report workshop	15/10/2018	15/10/2018	GHD/Defence/Auditor
Finalise PMP Report	30/10/2018	12/11/2018	GHD/Defence
Community Information Sessions	21/03/2017	25/05/2018	
Community Information Session 3	TBC	TBC	GHD/Defence/Agency/Community
Community Information Session 4 (Post DSI/HHERA report finalisation)	14/11/2018	14/11/2018	GHD/Defence/Agency/Community
Stakeholder engagement reporting	19/10/2018	31/12/2018	GHD/Defence
Finalise stakeholder engagement reports	05/12/2018	11/12/2018	GHD/Defence
Meetings with Agencies	TBC	TBC	GHD/Defence/Agency
Project Close out	12/12/2018	16/01/2019	GHD/Defence



Australian Government
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Estate and Infrastructure Group

PFAS Investigation and Management
Monthly Report- Jervis Bay Range Facility

04 07 2018


 BP8 Level 1
 8 Brindabella Circuit
 Brindabella Business Park
 PO Box 7925 Canberra BC 2610

Re: Jervis Bay Range Facility Environmental Investigation – Progress Report June 2018

1.0 Introduction

The following progress report has been prepared by GHD Pty Ltd to provide a summary of activities for the Comprehensive Investigation of PFAS Site Conditions at Jervis Bay Range Facility, HMAS Creswell and surrounds for the period between 1 June 2018 and 30 June 2018.

2.0 Critical items

2.1 New items

- GHD issue factual letters 13, 14, 15, 16, 17, 18, 19, 20 & 21, Off site water, soil, sediment, biota and residential gardens.
- GHD issue electronic files to WBACC for Results Letter 1 – Wreck bay 403 lands – 180522 following request from CAPT Huxtable.
- GHD issue raw ESDAT output data to Defence/NSW EPA to accompany factual letters.
- GHD, Defence and site auditor meet GHD Canberra office 19/06/2018 to discuss the following items:
 - DSI development, identifying the groundwater numerical model will form an annex to the DSI report.
 - HHERA development, identifying the HHERA will be composed of two separate reports, The Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA).
 - PMAP development, identifying all requirements and templates are not confirmed at this time.
 - Schedule, as presented section 4.
- GHD submit secondary samples and interlab duplicates of Lilly Pilly fruit to validate primary sample results.
- GHD develop residential garden sampling results letters for Village Road, Wreck Bay and Jervis Bay School properties.