

Herriman Karmen

From: Oliver Jacinta
Sent: Tuesday, 26 February 2013 9:56 AM
To: Apostol Alex
Subject: RE: Ostoic Sediment Sampling

Hi Alex

Below are the GPS readings for the sediment sampling (although I think the GPS only recorded 1 site):

- 14/02/2013 12:45pm - Upstream – One Mile Creek
S 20°41.507' E 140°30.510'
- 14/02/2013 1:00pm – Ostoic Discharge Point (near railway track)
S 20°41.617' E 140°30.447'
- 14/02/2013 1:09pm - Downstream – One Mile Creek Bridge
S 20°41.519' E 140°30.355'
- 14/02/2013 1:18pm – Cemetery Adjacent to Ostoic
S 20°41.805' E 140°30.307'

Cheers

Jacinta

From: Apostol Alex
Sent: Monday, 25 February 2013 3:42 PM
To: Oliver Jacinta
Subject: Ostoic Sediment Sampling

Hi Jacinta,

Did you have the GPS readings for our sediment sampling at Ostoic (Cloncurry) on 14 Feb 2013?

Rgrds, Alex

Alex Apostol
Senior Environmental Officer
Mining and Heavy Industry, Northern Region
Environmental Services and Regulation
Department of Environment and Heritage Protection
5b Sheridan Street PO Box 937
Cairns QLD 4870
Telephone: 07 4222 5359
Facsimile: 07 4222 5070
Email: alex.apostol@ehp.qld.gov.au
Website: www.ehp.qld.gov.au

From: Gonzo Gus [Gus.Gonzo@ehp.qld.gov.au]
Sent: Monday, 13 February 2012 4:55 PM
To: Butler Hamish
Subject: RE: Your Reference : Ostojic Bulk Handling Facility

As discussed,
approach sounds ok.
Cheers
Gus

From: Butler Hamish
Sent: Monday, 13 February 2012 3:35 PM
To: Gonzo Gus
Subject: FW: Your Reference : Ostojic Bulk Handling Facility

Gus,

FYI- Sample results from the Ostojic release have indicated non compliances with the DA and against recognised guidelines.

Alex will be finalising his report based on the sampling but looking at the numbers likely outcomes will be EE to investigate potential for EV harm and PIN for non compliance with DA.

Cheers.

Hamish Butler
Team Leader-Mount Isa
Mining & Heavy Industry
Regional Services
Department of Environment and Resource Management

Phone: (07) 4222 5333 (Cairns)
(07) 4744 7870 (Mount Isa)
Fax : (07) 4222 5070
Email: hamish.butler@derm.qld.gov.au

From: Apostol Alex
Sent: Monday, 13 February 2012 3:01 PM
To: Butler Hamish
Subject: FW: Your Reference : Ostojic Bulk Handling Facility

Hamish,

Attached is the certificate of analysis for Ostojic water and sediment samples. Below is the summary of exceedances.

FYI.

I will try to complete my site inspection report by Thursday.

Rgrds,
Alex

ID	Time	In-situ Analysis	Sampling Location Description	Note	Exceedances		
					DA SPDE01054010 Trigger	ANZECC Protection of Aquatic Ecosystem (2000) 95% Protection Level	ISQG Low (Trigger Value)
AA310112-01	10:35 AM		Just below the spillway/Discharge point	Sediment			Cu
AA310112-02	10:35 AM	pH = 7.81 T = 30.15°C EC = 0.172 mS/cm DO = 58.8%/4.41 mg/L	About 30~40m downstream of spillway/discharge point	Water sample; A small pool of water remains onsite.	pH, DO, Cu	Cu, Zn	
AA310112-03	10:50 AM		Unknown creek, approx. 500m downstream of spillway/discharge point	Sediment sample			
AA310112-04	10:50 AM	pH = 8.06 T = 29.79°C EC = 0.159 mS/cm	Unknown creek, approx. 500m downstream of spillway/discharge point	Water sample; Other industry/ activities may have influenced	pH, DO, Cu	Cu	

		DO = 76.5%/5.80 mg/L		water/sediment quality on this site.			
AA310112-05	11:10 AM	pH = 8.67 T = 31.54°C EC = 0.214 mS/cm DO = 98.0%/7.09 mg/L	Stormwater pond	Water sample	pH	Cd, Cu, Pb, Zn	
AA310112-06	11:20 AM	pH = 6.95 T = 30.49°C EC = 0.205 mS/cm DO = 4.3%/0.30 mg/L	Upstream of the creek, just before the culvert crossing the railway.	Water sample; Other industry, residential and roads are discharging into this creek.	DO, Cu	Cu, Zn	
AA310112-7	11:20 AM		Upstream of the creek, just before the culvert crossing the railway.	Sediment sample			Cu

Alex Apostol
Senior Environmental Officer
Environmental Services\North Region
Mining & Industry
Department of Environment & Resource Management

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Cnr Camoowal & Mary Streets
Mt Isa QLD 4825 Australia
Phone: (07) 4744 7814 \Fax: (07) 4744 7800
Email: alex.apostol@derm.qld.gov.au
Website: www.derm.qld.gov.au

From: ALSE Brisbane Aus [mailto:alse_au_eb@alsglobal.com]
Sent: Monday, 13 February 2012 9:04 AM
To: Apostol Alex
Subject: Your Reference : Ostojic Bulk Handling Facility. Deliverables(Including Invoice) for ALSE Workorder : EB1203083

This e-mail has been automatically generated.

-- PLEASE DO NOT REPLY --

ALS acknowledges the risks associated with supplying electronic media reports based on client requirements. This type of format has the ability to embed viruses within the code and, as such, ALS has introduced a three tier layer of protection throughout their company resources. However, ALS cannot guarantee any attachment is virus free and will not be held liable for any disruption to business. It is highly recommended that all attachments received are scanned prior to opening.

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From: Fegan Warwick [Warwick.Fegan@ehp.qld.gov.au]
Sent: Thursday, 29 March 2012 3:11 PM
To: david.peet@ostojic.com.au
CC: Apostol Alex
Subject: DERM sampling results - Cloncurry Bulk Loading Facility
Attachments: Ostoic Bulk Handling Facility Results.xls

Hi David,

As discussed today, please find attached a copy of the department's sampling results at your Cloncurry facility.

Should you have any questions, please do not hesitate to give me a call.

Regards,
Warwick

Warwick Fegan
A/Team Leader
Mining & Industry - North Region
Department of Environment and Resource Management

Telephone: (07) 4222 5324; Mount Isa: (07) 3330 4306
Facsimile: (07) 4222 5070
E: warwick.fegan@derm.qld.gov.au

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PO Box 937 Cairns QLD 4870

RTI DL RELEASE - EHP

OstoJic Bulk Handling Facility 31/01/2012

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of Sample		Water	Water	Water	Water
Sulphate	mg/L	16	7	31	5
arsenic	mg/L	0.004	0.001	0.002	0.005
Barium	mg/L	0.05	0.034	0.07	0.083
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	<0.001	<0.001	0.002	0.004
Copper	mg/L	0.096	0.012	0.212	0.102
Lead	mg/L	0.001	<0.001	0.007	0.003
Manganese	mg/L	0.024	0.014	0.059	0.628
Nickel	mg/L	<0.001	<0.001	0.003	0.002
Vanadium	mg/L	0.02	0.02	<0.01	<0.01
Zinc	mg/L	0.052	<0.005	0.071	0.064
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
exceeds ANZECC (2000) Livestock (cattle) guidelines (guideline relevant to total metals)					

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		exceeds drinking water health-based guideline value (guideline relevant to total metals)			
		exceeds drinking water aesthetic guideline value (guideline relevant to total metals)			
		exceeds both drinking water and recreational guideline value (guideline relevant to total metals)			

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Site Description		Just below the spillway /Discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Upstream of the creek, just before the culvert crossing the railway.	
Sample		AA310112-01	AA310112-03	AA310112-07	
date sampled		31/01/2012	31/01/2012	31/01/2012	

Type of Sample		Sediments	Sediments	Sediments	
Sulphate	mg/kg	170	260	390	
arsenic	mg/kg	<5	<5	14	
Barium	mg/kg	60	200	80	
Beryllium	mg/kg	<1	<1	<1	
Cadmium	mg/kg	<1	<1	<1	
Chromium	mg/kg	13	14	17	
Cobalt	mg/kg	9	18	12	
Copper	mg/kg	218	43	1960	
Lead	mg/kg	<5	<5	16	
Manganese	mg/kg	292	1090	464	
Nickel	mg/kg	10	16	16	
Vanadium	mg/kg	39	68	42	
Zinc	mg/kg	31	9	74	
Mercury	mg/kg	<0.1	<0.1	<0.1	

	exceed ISQG low
	exceeds ISQG high

RTI DL RELEASE - EHP

ANZECC 2000
Livestock (cattle)
1000
0.5
0.01
1
1
1
0.1
1
20

Australian Drinking Water Guideline (2004)		Guidelines for Managing Risks in Recreational Water (2006)
Health	Aesthetic	Recreational
500	250	5000
0.007		
0.7		
0.002		
0.05		0.5
2	1	20

0.01		
0.5	0.1	
0.02		0.2
	3	

ANZECC 2000	
Ecosystems, slightly-moderately disturbed systems	Ecosystem low reliability values
0.024	
0.0002	
0.001	
0.0014	
0.0034	
1.9	
0.011	
0.008	

o dissolved metals)

ISQG low	ISQG high

20	70
1.5	10
80	370
65	270
50	220
21	52
200	410
0.15	1

RTI DL RELEASE - EHP

OstoJic Bulk Handling Facility 31/01/2012

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RTI DL RELEASE - EHP

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ISQG low	ISQG high

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RTI DL RELEASE - EHP

Ostojic Bulk Handling Facility
Water & Sediment Sampling
31 January 2012

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AA310112-7	11:20 AM		Upstream of the creek, just before the culvert crossing the railway.	Sediment sample			Cu

OstoJic Bulk Handling Facility 31/01/2012

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Zinc	mg/L	0.052	<0.005	0.071	0.064
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
		exceeds drinking water health-based guideline value (guideline relevant to total metals)			
		exceeds drinking water aesthetic guideline value (guideline relevant to total metals)			
		exceeds both drinking water and recreational guideline value (guideline relevant to total metals)			

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012
Type of Sample		Water	Water	Water	Water
Sulphate	mg/L	16	7	31	5
arsenic	mg/L	0.004	0.001	0.002	0.005
Barium	mg/L	0.05	0.034	0.07	0.083
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001
Cobalt	mg/L	<0.001	<0.001	0.002	0.004
Copper	mg/L	0.096	0.012	0.212	0.102
Lead	mg/L	0.001	<0.001	0.007	0.003
Manganese	mg/L	0.024	0.014	0.059	0.628
Nickel	mg/L	<0.001	<0.001	0.003	0.002
Vanadium	mg/L	0.02	0.02	<0.01	<0.01
Zinc	mg/L	0.052	<0.005	0.071	0.064
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001
		exceeds ANZECC (2000) Ecosystemes (95th percentile) guidelines (guideline relevant to)			

Site Description		Just below the spillway /Discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Upstream of the creek, just before the culvert crossing the railway.	
Sample		AA310112-01	AA310112-03	AA310112-07	
date sampled		31/01/2012	31/01/2012	31/01/2012	

Type of Sample		Sediments	Sediments	Sediments	
Sulphate	mg/kg	170	260	390	
arsenic	mg/kg	<5	<5	14	
Barium	mg/kg	60	200	80	
Beryllium	mg/kg	<1	<1	<1	
Cadmium	mg/kg	<1	<1	<1	
Chromium	mg/kg	13	14	17	
Cobalt	mg/kg	9	18	12	
Copper	mg/kg	218	43	1960	
Lead	mg/kg	<5	<5	16	
Manganese	mg/kg	292	1090	464	
Nickel	mg/kg	10	16	16	
Vanadium	mg/kg	39	68	42	
Zinc	mg/kg	31	9	74	
Mercury	mg/kg	<0.1	<0.1	<0.1	

	exceed ISQG low
	exceeds ISQG high

RTI DL RELEASE - EHP

ANZECC 2000
Livestock (cattle)
1000
0.5
0.01
1
1
1
0.1
1
20

Australian Drinking Water Guideline (2004)		Guidelines for Managing Risks in Recreational Water (2006)
Health	Aesthetic	Recreational
500	250	5000
0.007		
0.7		
0.002		
0.05		0.5
2	1	20

0.01		
0.5	0.1	
0.02		0.2
	3	

ANZECC 2000	
Ecosystems, slightly-moderately disturbed systems	Ecosystem low reliability values
0.024	
0.0002	
0.001	
0.0014	
0.0034	
1.9	
0.011	
0.008	

to dissolved metals)

ISQG low	ISQG high

20	70
1.5	10
80	370
65	270
50	220
21	52
200	410
0.15	1

RTI DL RELEASE - EHP

From: Butler Hamish
Sent: Tuesday, 12 March 2013 11:12 AM
To: Apostol Alex
Subject: FW: Sediment Sampling at Ostojoic
Alex,

Can you provide some justification around why these samples should be analysed so that we can get them to the lab.

Cheers.

Hamish Butler
Team Leader-North Region
Mining & Heavy Industry
Environmental Services and Regulation
Department of Environment and Heritage Protection

Phone: (07) 4222 5333 (Cairns)
(07) 4722 5350 (Townsville)
Fax : (07) 4222 5070
Email: hamish.butler@ehp.qld.gov.au

From: Fomiatti Minnesma Ingrid
Sent: Tuesday, 26 February 2013 9:25 AM
To: Fegan Warwick; Butler Hamish
Subject: RE: Sediment Sampling at Ostojoic

Hi

I am happy to support – but can I please understand why what and how?

Thank you
Ingrid

Ingrid Fomiatti Minnesma
Acting Regional Manager Mining and Compliance
Northern Region
Department of Environment and Heritage Protection
5b Sheridan Street
GPO Box 937
Cairns QLD 4870
Telephone: 07 4222 5337
Facsimile: 07 4222 5070
Email: Ingrid.FomiattiMinnesma@ehp.qld.gov.au
You can visit us online at www.ehp.qld.gov.au

From: Fegan Warwick
Sent: Tuesday, 26 February 2013 8:47 AM
To: Fomiatti Minnesma Ingrid; Butler Hamish
Subject: FW: Sediment Sampling at Ostojoic

Hamish / Ingrid,

Sediment samples were taken during the Ostojoic Inspection at the following locations:

1. Upstream of One Mile Creek,
2. Immediately after the release point from Ostojoic stormwater pond
3. Downstream of One Mile Creek

4. West of Ostoic facility, along the side of cemetery

It is recommended that the samples are analysed for metals 7 and sulphate to determine potential contamination issues associated with the operation. Overall cost is estimated at \$172.

If approved, we will arrange transport of samples.

Warwick

Warwick Fegan
Principal Environmental Officer
Environmental Services & Regulation – Northern Region
Department of Environment and Heritage Protection
Telephone: (07) 4222 5324 Facsimile: (07) 4222 5070

5b Sheridan St Cairns QLD 4870
PO Box 937 Cairns QLD 4870

www.ehp.qld.gov.au

From: Apostol Alex
Sent: Tuesday, 26 February 2013 8:42 AM
To: Fegan Warwick
Subject: RE: Sediment Sampling at Ostoic

Hi Warwick,

From the last sediment samples, only Cu exceeded the ISQG (low and high) limit.

We may probably analyse only 7 Metals (As, Cd, Cr, Cu, Ni, Pb & Zn) and SO4.

Total cost will be = \$43/sample x 4 samples = \$172.

Rgrds, Alex

Alex Apostol
Senior Environmental Officer
Mining and Heavy Industry, Northern Region
Environmental Services and Regulation
Department of Environment and Heritage Protection
5b Sheridan Street PO Box 937
Cairns QLD 4870
Telephone: 07 4222 5359
Facsimile: 07 4222 5070
Email: alex.apostol@ehp.qld.gov.au
Website: www.ehp.qld.gov.au

From: Fegan Warwick
Sent: Monday, 25 February 2013 5:55 PM
To: Apostol Alex
Subject: RE: Sediment Sampling at Ostoic

Released

Hi Alex,

Based on last lot of sampling – is there any metals we can eliminate to target the testing further?

Cheers,

Warwick Fegan
Principal Environmental Officer
Environmental Services & Regulation – Northern Region
Department of Environment and Heritage Protection
Telephone: (07) 4222 5324 Facsimile: (07) 4222 5070

5b Sheridan St Cairns QLD 4870
PO Box 937 Cairns QLD 4870

www.ehp.qld.gov.au

From: Apostol Alex
Sent: Monday, 25 February 2013 3:50 PM
To: Fegan Warwick
Subject: Sediment Sampling at Ostoic

Hi Warwick,

We took a total of 4 samples during our site inspection at Ostoic on 14 Feb 2013.

Sampling Locations:

5. Upstream of One Mile Creek,
6. Immediately after the release point from Ostoic stormwater pond
7. Downstream of One Mile Creek
8. West of Ostoic facility, along the side of cemetery

Parameters: SO₄, 13 metals (As, Ba, Be, Cd, Cr, Co, Cu, Mn, Ni, Pb, V, Zn, Hg)

Estimated cost of sampling = \$57 per sample x 4 samples = \$228.00

Rgrds, Alex

Alex Apostol
Senior Environmental Officer
Mining and Heavy Industry, Northern Region
Environmental Services and Regulation
Department of Environment and Heritage Protection
5b Sheridan Street PO Box 937
Cairns QLD 4870
Telephone: 07 4222 5359
Facsimile: 07 4222 5070
Email: alex.apostol@ehp.qld.gov.au
Website: www.ehp.qld.gov.au

OstoJic Bulk Handling Facility 31/01/2012

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.		
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06		
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012		
Type of Sample		Water	Water	Water	Water		
Sulphate	mg/L	16	7	31	5		
arsenic	mg/L	0.004	0.001	0.002	0.005		
Barium	mg/L	0.05	0.034	0.07	0.083		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001		
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cobalt	mg/L	<0.001	<0.001	0.002	0.004		
Copper	mg/L	0.096	0.012	0.212	0.102		
Lead	mg/L	0.001	<0.001	0.007	0.003		
Manganese	mg/L	0.024	0.014	0.059	0.628		
Nickel	mg/L	<0.001	<0.001	0.003	0.002		
Vanadium	mg/L	0.02	0.02	<0.01	<0.01		
Zinc	mg/L	0.052	<0.005	0.071	0.064		
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		
exceeds ANZECC (2000) Livestock (cattle) guidelines (guideline relevant to total metals)							

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.		
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06		
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012		
Type of Sample		Water	Water	Water	Water		
Sulphate	mg/L	16	7	31	5		
arsenic	mg/L	0.004	0.001	0.002	0.005		
Barium	mg/L	0.05	0.034	0.07	0.083		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001		
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cobalt	mg/L	<0.001	<0.001	0.002	0.004		
Copper	mg/L	0.096	0.012	0.212	0.102		

Lead	mg/L	0.001	<0.001	0.007	0.003		
Manganese	mg/L	0.024	0.014	0.059	0.628		
Nickel	mg/L	<0.001	<0.001	0.003	0.002		
Vanadium	mg/L	0.02	0.02	<0.01	<0.01		
Zinc	mg/L	0.052	<0.005	0.071	0.064		
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		
		exceeds drinking water health-based guideline value (guideline relevant to total metals)					
		exceeds drinking water aesthetic guideline value (guideline relevant to total metals)					
		exceeds both drinking water and recreational guideline value (guideline relevant to total metals)					

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.		
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06		
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012		
Type of Sample		Water	Water	Water	Water		
Sulphate	mg/L	16	7	31	5		
arsenic	mg/L	0.004	0.001	0.002	0.005		
Barium	mg/L	0.05	0.034	0.07	0.083		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001		
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cobalt	mg/L	<0.001	<0.001	0.002	0.004		
Copper	mg/L	0.096	0.012	0.212	0.102		
Lead	mg/L	0.001	<0.001	0.007	0.003		
Manganese	mg/L	0.024	0.014	0.059	0.628		
Nickel	mg/L	<0.001	<0.001	0.003	0.002		
Vanadium	mg/L	0.02	0.02	<0.01	<0.01		
Zinc	mg/L	0.052	<0.005	0.071	0.064		
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		
		exceeds ANZECC (2000) Ecosystemes (95th percentile) guidelines (guideline relevant to total metals)					

Site Description		Just below the spillway /Discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Upstream of the creek, just before the culvert crossing the railway.			
Sample		AA310112-01	AA310112-03	AA310112-07			
date sampled		31/01/2012	31/01/2012	31/01/2012			

Type of Sample		Sediments	Sediments	Sediments			
Sulphate	mg/kg	170	260	390			
arsenic	mg/kg	<5	<5	14			
Barium	mg/kg	60	200	80			
Beryllium	mg/kg	<1	<1	<1			
Cadmium	mg/kg	<1	<1	<1			
Chromium	mg/kg	13	14	17			
Cobalt	mg/kg	9	18	12			
Copper	mg/kg	218	43	1960			
Lead	mg/kg	<5	<5	16			
Manganese	mg/kg	292	1090	464			
Nickel	mg/kg	10	16	16			
Vanadium	mg/kg	39	68	42			
Zinc	mg/kg	31	9	74			
Mercury	mg/kg	<0.1	<0.1	<0.1			

	exceed ISQG low
	exceeds ISQG high

RTI DL RELEASE - EHP

ANZECC 2000
Livestock (cattle)
1000
0.5
0.01
1
1
1
0.1
1
20

Exceedances

Sample Number	Australian Drinking Water Guideline (2004) Health	Protection of Aquatic Ecosystem (2000) 95% Protection Level
AA310112-01		
AA310112-02		Cu, Zn
AA310112-03		
AA310112-04		Cu
AA310112-05		Cd, Cu, Pb, Zn
AA310112-06	Mn	Cu, Zn
AA310112-07		

Australian Drinking Water Guideline (2004)		Guidelines for Managing Risks in Recreational Water (2006)
Health	Aesthetic	Recreational
500	250	5000
0.007		
0.7		
0.002		
0.05		0.5
2	1	20

0.01		
0.5	0.1	
0.02		0.2
	3	

ANZECC 2000	
Ecosystems, slightly-moderately disturbed systems	Ecosystem low reliability values
0.024	
0.0002	
0.001	
0.0014	
0.0034	
1.9	
0.011	
0.008	

it to dissolved metals)

ISQG low	ISQG high

20	70
1.5	10
80	370
65	270
50	220
21	52
200	410
0.15	1

RTI DL RELEASE - EHP

ISQG (Trigger Value)
Cu (low)
Cu (high)

RTI DL RELEASE - EHP

Compliance inspections toolkit

Compliance inspections (Levels A, B and C)

Checklist, on-site record & inspection report

This toolkit is for internal use to assist Environmental Services officers when conducting Level A, B and C site inspections to record general details of the site being inspected, pre-inspection considerations and planning, on-site observations and to document recommendations and obtain approval for compliance/enforcement action. For Levels B and C, refer to addendum sheets also. This document can be used in hard copy and taken with the officer to be completed on site. The soft copy document can be completed upon return to the office.

Part A. General Information

Company name: Ostojic Group Pty Ltd	Date of inspection: 31 Jan 2012	Time: 1030H ~ 1245H
Trading as: As above	EA/DA number (if applicable): SPDE01054010	
Description of business activity/ERAs: ERA50 (1B) Bulk Mineral Handling, 100t ~ 50,000t per day	File number: ISA2944; NOR/086766	
Street address: Sir Hudson Fysh Drive, Cloncurry	Real property description (lot on plan): Lot 138 on Plan RP905659	
Site representative/s: Michael Mortimore	Position/s: Site Superintendent	Contact telephone: s.49
Department's representatives: Alex Apostol & Wing Leung		
Registered business address: PO Box 38915 Northern Territory 0821		
Inspection level (check box): Level A ☐ Level B ☒ Level C ☐ Pre-Wet Season ☐ Other ☐		

Part B. Pre-inspection considerations (add or delete lines as necessary)

Environmental risk	Low- Medium
Last inspection date	23 December 2011
General description of location	The Ostojic Group Bulk Handling Facility is located on Sir Hudson Fysh Drive, Cloncurry and is on the northern tip of the Cloncurry town centre. The facility is about 13.1 hectares and is bound by Golf Club road to the north and an unnamed road to the south.

Inspection toolkit
Checklist, on-site record & inspection report

Outstanding issues and/or non-compliances/enforcement (e.g. environmental protection orders)	A draft TEP to be submitted on 22 Feb 2012.
Sampling Plan	Collect water and sediment samples from the stormwater retention pond, upstream and downstream of the creek that received the stormwater overflow on the night of 27 January 2012.
Access to Site & Sampling Locations	All sampling locations were accessible during the time of inspection.
Work Place Health & Safety – consider what appropriate PPE is required for the Industry being inspected	
Safety helmet	Yes ☒ No ☐
Hearing protection	Yes ☐ No ☒
Eye protection	Yes ☒ No ☐
Protective clothing	Yes ☒ No ☐
Protective footwear	Yes ☒ No ☐
Respiratory protection	Yes ☐ No ☒
Other	Yes ☐ No ☒ If yes, describe PPE:
Arrange safety induction training with occupier of site before any work is done	Yes ☐ No ☒ No safety inductions were conducted as the DERM officers were guided by the host throughout the duration of the inspection.
Vehicle & Equipment Check completed	Yes ☒ No ☐ NOTE: Vehicle safety checklists and call in schedules are still required to be completed separately

Part C. Conditions for assessment

Condition number: SPDE01054010 Condition WA1	Compliant: Yes ☐ No ☒	Photos taken Y/N																																						
Condition: (Release to Waters)																																								
<p>Contaminants must not be released from the site to land or waters other than in accordance with the conditions of this development approval.</p> <p>Settled/treated stormwater runoff water from the settling pond must only be released from the site to waters in compliance with the release limits listed in Table 2, and from the contaminant release point described in the Stormwater Management Plan.</p> <p>Table 2 – Contaminant release limits to water</p> <table border="1" data-bbox="140 775 1294 931"> <thead> <tr> <th>Water Quality characteristics (Units)</th> <th>Discharge limit</th> <th>Limit Type</th> <th>Monitoring Frequency</th> </tr> </thead> <tbody> <tr> <td>Turbidity (NTU)</td> <td>50</td> <td>Maximum</td> <td rowspan="4">Daily during release (the first sample must be taken within 2 hours of commencement of release)</td> </tr> <tr> <td>pH</td> <td>6.0 – 9.0</td> <td>Range</td> </tr> <tr> <td>Oil and grease</td> <td>No visible film</td> <td>Maximum</td> </tr> <tr> <td>Copper (mg/l)</td> <td>1.0</td> <td>Maximum</td> </tr> </tbody> </table>			Water Quality characteristics (Units)	Discharge limit	Limit Type	Monitoring Frequency	Turbidity (NTU)	50	Maximum	Daily during release (the first sample must be taken within 2 hours of commencement of release)	pH	6.0 – 9.0	Range	Oil and grease	No visible film	Maximum	Copper (mg/l)	1.0	Maximum																					
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pH	6.0 – 9.0	Range																																						
Oil and grease	No visible film	Maximum																																						
Copper (mg/l)	1.0	Maximum																																						
Observations (include name and relevant comments made by any on-site staff)																																								
<p>The DA holder was unable to take water sample from the settling pond within 2 hours of commencement of release. The release from the settling pond occurred on the night of 27 January 2012 and lasted for about 4 hours. No sample was taken due to unavailability of sampling bottles, as per information from Michael Mortimore (MM). DERM was notified of the release incident by email on 28 January (Saturday) 2012. DERM was able to collect water sample from the settling pond the next Tuesday (31 Jan 2012), four days after the release event.</p> <p>During the time of inspection, water level at the settling pond was back to a usual low level and there was no evidence of overflows from the settling pond. Water sample from the settling pond has the following results:</p> <table border="1" data-bbox="451 1350 992 1868"> <thead> <tr> <th>Sampling Location</th> <th>Stormwater Settling Pond (AA310112-05)</th> </tr> </thead> <tbody> <tr><td>pH</td><td>8.67</td></tr> <tr><td>Temperature, °C</td><td>31.54</td></tr> <tr><td>EC, mS/cm</td><td>0.214</td></tr> <tr><td>DO, % Sat, mg/L</td><td>98%/7.09</td></tr> <tr><td>Sulfate, mg/L</td><td>31</td></tr> <tr><td>Arsenic, mg/L</td><td>0.002</td></tr> <tr><td>Barium, mg/L</td><td>0.070</td></tr> <tr><td>Beryllium, mg/L</td><td><0.001</td></tr> <tr><td>Cadmium, mg/L</td><td>0.0007</td></tr> <tr><td>Cobalt, mg/L</td><td>0.002</td></tr> <tr><td>Chromium, mg/L</td><td><0.001</td></tr> <tr><td>Copper, mg/L</td><td>0.212</td></tr> <tr><td>Manganese, mg/L</td><td>0.059</td></tr> <tr><td>Mercury, mg/L</td><td><0.0001</td></tr> <tr><td>Nickel, mg/L</td><td>0.003</td></tr> <tr><td>Lead, mg/L</td><td>0.007</td></tr> <tr><td>Vanadium, mg/L</td><td><0.01</td></tr> <tr><td>Zinc, mg/L</td><td>0.071</td></tr> </tbody> </table> <p>Results have indicated that the water from the settling pond exceeded the ANZECC (2000) Protection of Aquatic Ecosystem at 95% Protection Level for Cd, Cu, Pb and Zn.</p>			Sampling Location	Stormwater Settling Pond (AA310112-05)	pH	8.67	Temperature, °C	31.54	EC, mS/cm	0.214	DO, % Sat, mg/L	98%/7.09	Sulfate, mg/L	31	Arsenic, mg/L	0.002	Barium, mg/L	0.070	Beryllium, mg/L	<0.001	Cadmium, mg/L	0.0007	Cobalt, mg/L	0.002	Chromium, mg/L	<0.001	Copper, mg/L	0.212	Manganese, mg/L	0.059	Mercury, mg/L	<0.0001	Nickel, mg/L	0.003	Lead, mg/L	0.007	Vanadium, mg/L	<0.01	Zinc, mg/L	0.071
Sampling Location	Stormwater Settling Pond (AA310112-05)																																							
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Ostojic Group Pty Ltd is in breach of SPDE01054010 Condition WA1 for not taking water sample from the stormwater pond within 2 hours of commencement of release as required by the condition. Having no sampling bottles during the time of release is not an acceptable justification for not taking samples. It is Ostojic responsibility to ensure that all necessary supplies, materials, equipment and manpower must be available to comply with all condition of the DA.



Figure 1: Stormwater settling pond.

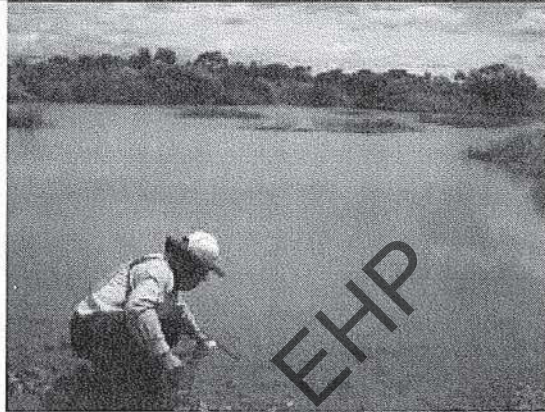


Figure 2: Water sampling at the stormwater settling pond on 31 January 2012.



Figure 3: Release point/spillway of stormwater settling pond.

Condition number: SPDE01054010 Condition WA3		Compliant: Yes ☐ No ☒	Photos taken Y/N																				
Condition:																							
<p>The release of contaminants to waters from the release points must be monitored at any receiving waters within 500m downstream of the release. The monitoring must include each quality characteristics and be at the frequency specified in Table 3 (Receiving Water Monitoring Triggers, Limits and Frequency).</p> <p>Table 3 – Receiving Water Monitoring Triggers, Limits and Frequency</p> <table border="1"> <thead> <tr> <th>Water Quality characteristics (Units)</th> <th>Trigger Level</th> <th>Contaminant Limit</th> <th>Monitoring Frequency</th> </tr> </thead> <tbody> <tr> <td>Dissolved Oxygen (Percent Saturation)</td> <td>90-120</td> <td>N/A</td> <td rowspan="5"> Event based sampling of discharge <ul style="list-style-type: none"> One sample must be taken within 24 hours of a discharge event or commencing. Where a discharge event has a duration of 24 hours or greater, samples must be taken daily for one week, and once a week thereafter. </td> </tr> <tr> <td>Turbidity (NTU)</td> <td>15</td> <td>50</td> </tr> <tr> <td>pH</td> <td>6.0 – 7.5</td> <td>6.0 – 9.0</td> </tr> <tr> <td>Oil and grease</td> <td>N/A</td> <td>No visible film</td> </tr> <tr> <td>Copper (mg/l)</td> <td>0.0014</td> <td>1.0</td> </tr> </tbody> </table>				Water Quality characteristics (Units)	Trigger Level	Contaminant Limit	Monitoring Frequency	Dissolved Oxygen (Percent Saturation)	90-120	N/A	Event based sampling of discharge <ul style="list-style-type: none"> One sample must be taken within 24 hours of a discharge event or commencing. Where a discharge event has a duration of 24 hours or greater, samples must be taken daily for one week, and once a week thereafter. 	Turbidity (NTU)	15	50	pH	6.0 – 7.5	6.0 – 9.0	Oil and grease	N/A	No visible film	Copper (mg/l)	0.0014	1.0
Water Quality characteristics (Units)	Trigger Level	Contaminant Limit	Monitoring Frequency																				
Dissolved Oxygen (Percent Saturation)	90-120	N/A	Event based sampling of discharge <ul style="list-style-type: none"> One sample must be taken within 24 hours of a discharge event or commencing. Where a discharge event has a duration of 24 hours or greater, samples must be taken daily for one week, and once a week thereafter. 																				
Turbidity (NTU)	15	50																					
pH	6.0 – 7.5	6.0 – 9.0																					
Oil and grease	N/A	No visible film																					
Copper (mg/l)	0.0014	1.0																					
Observations (include name and relevant comments made by any on-site staff)																							
<p>The DA holder was unable to take water samples from the impacted creek during the release event or within 24 hours of the release event. MM has stated that Ostoic has no sampling bottles that can be used to collect water samples during the release event. Ostoic has already placed an order from ALS Laboratory to supply them with the appropriate sampling bottles but as at the time of inspection, the bottles have not arrived yet.</p> <p>DERM officers collected water and sediment samples from the unknown creek on 31 January 2012. During the time of inspection, the creek was dry except for some part where small holes of water remain. Table 1 provides the result of water and sediment samples:</p> <p>Analysis of the water samples revealed the following:</p> <ol style="list-style-type: none"> Water samples from downstream, about 30~40m of the spillway/discharge point and approx. 500m of the spillway/discharge point exceeded the DA pH trigger range of 6.0~7.5. In-situ DO measurements at the three sampling locations (upstream and downstream) were below the DA trigger level (lower limit) and ANZECC (2000) Slightly Disturbed Ecosystem of 90~120% saturation. Water samples from all sampling locations exceeded the DA trigger level and ANZECC (2000) Protection of Aquatic Ecosystem at 95% Protection Level of 0.0014 mg/L for Cu. Water samples from downstream, about 30~40m of the spillway/discharge point and upstream location just before the culvert crossing the railway exceeded the ANZECC (2000) Protection of Aquatic Ecosystem at 95% Protection Level of 0.008 mg/L for Zn. Ostoic Group Pty Ltd is in breach of SPDE01054010 Condition WA3 for not taking water sample from the receiving environment within 24 hours of commencement of release as required by the condition. Having no sampling bottles during the time of release is not an acceptable justification for not taking samples. It is Ostoic responsibility to ensure that all necessary supplies, materials, equipment and manpower must be available to comply with all condition of the DA. 			Y																				

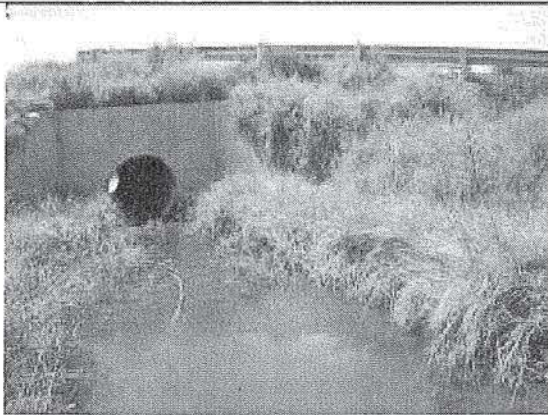


Figure 4: Downstream of the creek, about 30-40m from spillway of stormwater settling pond.



Figure 5: Downstream of the creek, approx. 500m from spillway of stormwater settling pond.



Figure 6: Upstream of the creek, just before the culvert crossing the railway.

RTI DE RELEASE - EHP

Compliance inspections toolkit

Table 1
Ostojic Bulk Handling Facility
Water Quality Analysis, 31 January 2012

Sampling Point	Stormwater Settling Pond (AA310112-05)	About 30~40m downstream of spillway/discharge point (AA310112-02)	Unknown Creek, approx. 500m downstream of spillway/discharge point (AA310112-04)	Upstream of the Creek, just before the culvert crossing the railway (AA310112-06)	DA SPDE01054010			ANZECC 2000 Livestock	Australian Drinking Water Guideline (2004) Health		Guidelines for Managing Risks in Recreational Water (2006)	ANZECC 2000 Ecosystems, Slightly to Moderately Disturbed
					Discharge Limit (Table 2)	Receiving Water (Table 3)						
						Trigger Level	Contaminant Limit					
pH	8.67	7.81*↑	8.06*↑	6.95	6.0~9.0	6.0~7.5	6.0~9.0					6.0~7.5
Temperature, °C	31.54	30.15	29.79	30.49								
EC, mS/cm	0.214	0.172	0.159	0.205								0.02~0.25
DO, % Sat, mg/L	98%/7.09	58.8%*↑, 4.41	76.5%*↑, 5.80	4.3%*↑, 0.30		90~120%	N/A					90~120%
Sulfate, mg/L	31	16	7	5				1000	500	250	5000	
Arsenic, mg/L	0.002	0.004	0.001	0.005				0.5	0.007			0.024
Barium, mg/L	0.070	0.050	0.034	0.083					0.7			
Beryllium, mg/L	<0.001	<0.001	<0.001	<0.001								
Cadmium, mg/L	0.0007*	0.0001	<0.0001	<0.0001				0.01	0.002			0.0002
Cobalt, mg/L	0.002	<0.001	<0.001	0.004				1				
Chromium, mg/L	<0.001	<0.001	<0.001	<0.001				1	0.05		0.5	0.001
Copper, mg/L	0.212*	0.096*↑	0.012*↑	0.102*↑	1.0	0.0014	1.0	1	2	1	20	0.0014
Manganese, mg/L	0.059	0.024	0.014	0.628*					0.5	0.1		1.9
Mercury, mg/L	<0.0001	<0.0001	<0.0001	<0.0001								
Nickel, mg/L	0.003	<0.001	<0.001	0.002							0.2	0.011
Lead, mg/L	0.007*	0.001	<0.001	0.003				0.1	0.01			0.0034
Vanadium, mg/L	<0.01	0.02	0.02	<0.01					0.02			
Zinc, mg/L	0.071*	0.052*	<0.005	0.064*				20		3		0.008

* - exceeds ANZECC 2000 slightly to moderately disturbed ecosystem.

↑ - exceeds DA SPDE01054010 Receiving water trigger level.

* - exceeds Australian Drinking Water Health Based Guideline (2004)



Table 2
Ostojic Bulk Handling Facility
Sediment Analysis, 31 January 2012

Sampling Point	Just below the spillway/discharge point (AA310112-01)	Unknown Creek, approx. 500m downstream of spillway/discharge point (AA310112-03)	Upstream of the Creek, just before the culvert crossing the railway (AA310112-07)	ISQG Low	ISQG High
Sulfate, mg/L	170	260			
Arsenic, mg/L	<5	<5		20	70
Barium, mg/L	60	200			
Beryllium, mg/L	<1	<1			
Cadmium, mg/L	<1	<1		1.5	10
Cobalt, mg/L	9	18	12		
Chromium, mg/L	13	14	17	80	370
Copper, mg/L	218*	43	1960	65	270
Manganese, mg/L	292	1090	464		
Mercury, mg/L	<0.1	<0.1	<0.1	0.15	1
Nickel, mg/L	10	16	16	21	52
Lead, mg/L	<5	<5	16	50	220
Vanadium, mg/L	39	68	42		
Zinc, mg/L	31	9	74	200	410

* - exceeds ISQG Low value

* - exceeds ISQG High value

Compliance inspections toolkit

Condition number: SPDE01054010 Condition WA5	Compliant: Yes ☐ No ☒	Photos taken Y/N
<i>Condition:</i>		
<p>If quality characteristics of the release measured in the receiving waters monitored in accordance with condition WA4, exceeds the trigger level stated in Table 3 (Receiving Water Monitoring Triggers, Limits and Frequency), the holder of this development approval must undertake an investigation in accordance with the ANZECC & ARM CANZ 2000 methodology, into the potential for environmental harm and provide a written report to the administering authority within 3 months, outlining:</p> <ul style="list-style-type: none"> i. details of the investigation carried out, and; ii. actions taken to prevent environmental harm. 		
<i>Observations (include name and relevant comments made by any on-site staff)</i>		
No investigation has been carried out by Ostoic Group Pty Ltd. It is recommended that DERM requires Ostoic Group Pty Ltd to conduct an investigation in accordance with condition WA5.		N

Condition number: SPDE01054010 Condition WA3	Compliant: Yes ☐ No ☒	Photos taken Y/N
<i>Condition: Stormwater Management Plan</i>		
<p>Prior to commencement of activities, a stormwater management plan must be prepared that is acceptable to the administering authority, and then implemented for the site. The stormwater management plan must address at least the following:</p> <ul style="list-style-type: none"> • Prevention of incident stormwater and stormwater runoff from contacting wastes or contaminants; • Diversion of upstream runoff away from areas where it may be contaminated by bulk products being loaded or unloaded, wastes, contaminants or other materials; • Specify the sampling location(s) of all contaminant release points; • Specify the monitoring frequency or stormwater discharges to the environment, and; • Collection, treatment and disposal of all contaminated stormwater runoff. 		
<i>Observations (include name and relevant comments made by any on-site staff)</i>		
<p>Ostoic Group Pty Ltd submitted a Site Based Stormwater Management Plan during DERM site inspection on 14 December 2011. Review of the Plan has indicated the following:</p> <ol style="list-style-type: none"> 1. The plan has indicated three (3) legal point of discharge. Two discharges in the north boundary of the site and one discharge in the south into the road reserve. However, the 		N

<p>actual site condition has two discharge points, one in the north, where the 27 Feb 2012 discharge occurred and one in the east discharging into the large grassed channel. The actual location, i.e., GPS coordinates, of these discharge points must be specified in the plan.</p> <p>2. The plan must be revised to show the catchment area of each stormwater pond and release points</p> <p>3. Monitoring program contained in the Site-Based Stormwater Management Plan is inadequate. It does not contain the proposed location of water and sediment sampling on site. It does not contain the specific water/sediment quality parameters that should be monitored.</p> <p>4. The monitoring program, likewise, does not show the proposed location of water and sediment sampling, both upstream (reference) and downstream, of the receiving environment.</p>	
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Part D. On-site observations – Areas of Concern

Detail any other areas of concerns identified on site that are not conditioned by the environmental authority / development approval

Sediment Sampling and Analysis:

Result of sediment analysis (Refer to Table 2) have indicated exceedance of Interim Sediment Quality Guidelines (ISQG)- Low/Trigger Value of 65 mg/kg of Cu at a location just below the spillway/discharge point and ISQG – High value of 270 mg/kg of Cu at the location upstream of the creek, just before the culvert crossing the railway.

The results have indicated that activities in the Osojic Bulk Handling Facility (i.e., transport and storage, stockpiling of concentrate materials) have significantly impacted both upstream and downstream portion of the unknown creek.

Part E. Pre-Wet Inspections

Did you run through the pre-wet inspection checklist?	Yes ☐ No ☒
Were there any areas of concern?	Yes ☐ No ☒
If yes to above, describe the issue/s identified.	N/A

Part F. Closing meeting

Discuss preliminary findings, non-compliances, observations, further items to be provided, timing and any other matters (list names of all persons present).

Following the site inspection/water and sediment sampling, DERM officers, Alex Apostol & Wing Leung, informed Michael Mortimore that the samples collected will be sent to ALS Laboratory for analysis. Once the result is released, DERM will assess compliance with the DA SPDE01054010 conditions.

Part G. Recommendation (NB: Refer to parts C – E where relevant)

It is recommended that a Penalty Infringement Notice (PIN) be issued to Ostoic Group Pty Ltd for breaching DA SPDE01054010 Conditions WA1 and WA3.

It is recommended that a letter be sent out to Ostoic Group Pty Ltd to:

- detail the non-compliance with DA SPDE01054010;
- require Ostoic Group Pty Ltd to revise the Stormwater Management Plan;
- require Ostoic Group Pty Ltd to conduct investigation into the potential for environmental harm and provide a written report to DERM in accordance with DA SPDE01054010 Condition WA5.

Part H. Natural justice

☒ Did the client provide information relating to any extenuating circumstances that prevented compliance?
Yes ☒ No ☐

If Yes, describe what information was provided:

Michael Mortimore informed DERM officers that Ostoic Group Pty Ltd has no sampling bottles to use to obtain water samples during the discharge incident. He further informed DERM that Ostoic has already ordered sampling bottles from ALS Laboratory, but as of the date of site inspection, the sampling bottles have not arrived.

☒ If the client provided information, have you taken this information into consideration when making your recommendation? Yes ☐ No ☒

If Yes, describe the consideration given and what conclusions have been formed by the department.

Part I. Ecotrack

Ecotrack case number	CA23909
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Activity	Time (hours)	Comments
Planning	2	
Inspection	2.25	Include travel time from/to Mount Isa/Cloncurry
Reporting	8	
Total	12.25	

Part J. Approval

Environmental Officer	Reviewing Officer
s.49 - Signature	
Name: Alex Apostol	Name:
Date: 2 March 2012	Date:

Delegated decision-maker	Approve / Reject Recommendation (circle one)
<p>Reasons for decision</p> <p>☐ I approve this recommendation based upon the information set out in this report.</p> <p>☐ I reject the above recommendation as I consider it more appropriate for the department to take an alternative approach to this breach.</p> <p>The alternative option/s that should be considered in this case are:</p> <p>My reasons for this are:</p>	
<p>Name:</p> <p>Date:</p>	

OstoJic Bulk Handling Facility 31/01/2012

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.		
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06		
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012		
Type of Sample		Water	Water	Water	Water		
Sulphate	mg/L	16	7	31	5		
arsenic	mg/L	0.004	0.001	0.002	0.005		
Barium	mg/L	0.05	0.034	0.07	0.083		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001		
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cobalt	mg/L	<0.001	<0.001	0.002	0.004		
Copper	mg/L	0.096	0.012	0.212	0.102		
Lead	mg/L	0.001	<0.001	0.007	0.003		
Manganese	mg/L	0.024	0.014	0.059	0.628		
Nickel	mg/L	<0.001	<0.001	0.003	0.002		
Vanadium	mg/L	0.02	0.02	<0.01	<0.01		
Zinc	mg/L	0.052	<0.005	0.071	0.064		
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		
exceeds ANZECC (2000) Livestock (cattle) guidelines (guideline relevant to total metals)							

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.		
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06		
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012		
Type of Sample		Water	Water	Water	Water		
Sulphate	mg/L	16	7	31	5		
arsenic	mg/L	0.004	0.001	0.002	0.005		
Barium	mg/L	0.05	0.034	0.07	0.083		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001		
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cobalt	mg/L	<0.001	<0.001	0.002	0.004		
Copper	mg/L	0.096	0.012	0.212	0.102		

Lead	mg/L	0.001	<0.001	0.007	0.003		
Manganese	mg/L	0.024	0.014	0.059	0.628		
Nickel	mg/L	<0.001	<0.001	0.003	0.002		
Vanadium	mg/L	0.02	0.02	<0.01	<0.01		
Zinc	mg/L	0.052	<0.005	0.071	0.064		
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		
		exceeds drinking water health-based guideline value (guideline relevant to total metals)					
		exceeds drinking water aesthetic guideline value (guideline relevant to total metals)					
		exceeds both drinking water and recreational guideline value (guideline relevant to total metals)					

Site Description		About 30~40m downstream of spillway/discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Stormwater pond	Upstream of the creek, just before the culvert crossing the railway.		
Sample Number		AA310112-02	AA310112-04	AA310112-05	AA310112-06		
Date Sampled		31/01/2012	31/01/2012	31/01/2012	31/01/2012		
Type of Sample		Water	Water	Water	Water		
Sulphate	mg/L	16	7	31	5		
arsenic	mg/L	0.004	0.001	0.002	0.005		
Barium	mg/L	0.05	0.034	0.07	0.083		
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cadmium	mg/L	0.0001	<0.0001	0.0007	<0.0001		
Chromium	mg/L	<0.001	<0.001	<0.001	<0.001		
Cobalt	mg/L	<0.001	<0.001	0.002	0.004		
Copper	mg/L	0.096	0.012	0.212	0.102		
Lead	mg/L	0.001	<0.001	0.007	0.003		
Manganese	mg/L	0.024	0.014	0.059	0.628		
Nickel	mg/L	<0.001	<0.001	0.003	0.002		
Vanadium	mg/L	0.02	0.02	<0.01	<0.01		
Zinc	mg/L	0.052	<0.005	0.071	0.064		
Mercury	mg/L	<0.0001	<0.0001	<0.0001	<0.0001		
		exceeds ANZECC (2000) Ecosystemes (95th percentile) guidelines (guideline relevant to total metals)					

Site Description		Just below the spillway /Discharge point	Unknown creek, approx. 500m downstream of spillway/discharge point	Upstream of the creek, just before the culvert crossing the railway.			
Sample		AA310112-01	AA310112-03	AA310112-07			
date sampled		31/01/2012	31/01/2012	31/01/2012			

Type of Sample		Sediments	Sediments	Sediments			
Sulphate	mg/kg	170	260	390			
arsenic	mg/kg	<5	<5	14			
Barium	mg/kg	60	200	80			
Beryllium	mg/kg	<1	<1	<1			
Cadmium	mg/kg	<1	<1	<1			
Chromium	mg/kg	13	14	17			
Cobalt	mg/kg	9	18	12			
Copper	mg/kg	218	43	1960			
Lead	mg/kg	<5	<5	16			
Manganese	mg/kg	292	1090	464			
Nickel	mg/kg	10	16	16			
Vanadium	mg/kg	39	68	42			
Zinc	mg/kg	31	9	74			
Mercury	mg/kg	<0.1	<0.1	<0.1			

	exceed ISQG low
	exceeds ISQG high

RTI DL RELEASE - EHP

ANZECC 2000
Livestock (cattle)
1000
0.5
0.01
1
1
1
0.1
1
20

Exceedances

Sample Number	Australian Drinking Water Guideline (2004) Health	Protection of Aquatic Ecosystem (2000) 95% Protection Level
AA310112-01		
AA310112-02		Cu, Zn
AA310112-03		
AA310112-04		Cu
AA310112-05		Cd, Cu, Pb, Zn
AA310112-06	Mn	Cu, Zn
AA310112-07		

Australian Drinking Water Guideline (2004)		Guidelines for Managing Risks in Recreational Water (2006)
Health	Aesthetic	Recreational
500	250	5000
0.007		
0.7		
0.002		
0.05		0.5
2	1	20

0.01		
0.5	0.1	
0.02		0.2
	3	

ANZECC 2000	
Ecosystems, slightly-moderately disturbed systems	Ecosystem low reliability values
0.024	
0.0002	
0.001	
0.0014	
0.0034	
1.9	
0.011	
0.008	

it to dissolved metals)

ISQG low	ISQG high

20	70
1.5	10
80	370
65	270
50	220
21	52
200	410
0.15	1

RTI DL RELEASE - EHP

ISQG (Trigger Value)
Cu (low)
Cu (high)

RTI DL RELEASE - EHP

Ostojic Bulk Handling Facility
Water & Sediment Sampling
31 January 2012

ID	Time	In-situ Analysis	Sampling Location Description	Note	Exceedances		
					DA SPDE01054010 Trigger	ANZECC Protection of Aquatic Ecosystem (2000) 95% Protection Level	ISQG Low (Trigger Value)
AA310112-01	10:35 AM		Just below the spillway/Discharge point	Sediment			Cu
AA310112-02	10:35 AM	pH = 7.81 T = 30.15°C EC = 0.172 mS/cm DO = 58.8%/4.41 mg/L	About 30~40m downstream of spillway/discharge point	Water sample; A small pool of water remains onsite.	pH, DO, Cu	Cu, Zn	
AA310112-03	10:50 AM		Unknown creek, approx. 500m downstream of spillway/discharge point	Sediment sample			
AA310112-04	10:50 AM	pH = 8.06 T = 29.79°C EC = 0.159 mS/cm DO = 76.5%/5.80 mg/L	Unknown creek, approx. 500m downstream of spillway/discharge point	Water sample; Other industry/ activities may have influenced water/sediment quality on this site.	pH, DO, Cu	Cu	
AA310112-05	11:10 AM	pH = 8.67 T = 31.54°C EC = 0.214 mS/cm DO = 98.0%/7.09 mg/L	Stormwater pond	Water sample	pH	Cd, Cu, Pb, Zn	
AA310112-06	11:20 AM	pH = 6.95 T = 30.49°C EC = 0.205 mS/cm DO = 4.3%/0.30 mg/L	Upstream of the creek, just before the culvert crossing the railway.	Water sample; Other industry, residential and roads are discharging into this creek.	DO, Cu	Cu, Zn	
AA310112-7	11:20 AM		Upstream of the creek, just before the culvert crossing the railway.	Sediment sample			Cu

Ostojic Bulk Handling Facility
Water & Sediment Sampling
31 January 2012

ID	Time	In-situ Analysis	Sampling Location Description	Note	Exceedances		
					DA SPDE01054010 Trigger	ANZECC Protection of Aquatic Ecosystem (2000) 95% Protection Level	ISQG Low (Trigger Value)
AA310112-01	10:35 AM		Just below the spillway/Discharge point	Sediment			Cu
AA310112-02	10:35 AM	pH = 7.81 T = 30.15°C EC = 0.172 mS/cm DO = 58.8%/4.41 mg/L	About 30~40m downstream of spillway/discharge point	Water sample; A small pool of water remains onsite.	pH, DO, Cu	Cu, Zn	
AA310112-03	10:50 AM		Unknown creek, approx. 500m downstream of spillway/discharge point	Sediment sample			
AA310112-04	10:50 AM	pH = 8.06 T = 29.79°C EC = 0.159 mS/cm DO = 76.5%/5.80 mg/L	Unknown creek, approx. 500m downstream of spillway/discharge point	Water sample; Other industry/ activities may have influenced water/sediment quality on this site.	pH, DO, Cu	Cu	
AA310112-05	11:10 AM	pH = 8.67 T = 31.54°C EC = 0.214 mS/cm DO = 98.0%/7.09 mg/L	Stormwater pond	Water sample	pH	Cd, Cu, Pb, Zn	
AA310112-06	11:20 AM	pH = 6.95 T = 30.49°C EC = 0.205 mS/cm DO = 4.3%/0.30 mg/L	Upstream of the creek, just before the culvert crossing the railway.	Water sample; Other industry, residential and roads are discharging into this creek.	DO, Cu	Cu, Zn	
AA310112-7	11:20 AM		Upstream of the creek, just before the culvert crossing the railway.	Sediment sample			Cu