Northern Territory Environment Protection Authority

ANNUAL RETURN

Information on this form is required in accordance with the conditions of your licence or approval issued under part 5 of the *Waste Management and Pollution Control Act* or part 7 of the *Water Act*.

Failure to provide the information requested on this form and/or the provision of false or misleading information is an offence under the legislation and you may be liable to heavy penalties.

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LICENCE/APPROVAL NO.	EPL230-01
REPORTING PERIOD	10 February 2021 - 9 February 2022

Section 1. Licence/Approval Holder Details

Please check your business details and contact details including 24-hour emergency response in NT EPA online and/or on page one of your licence.

Are these details correct?

☒ Yes Go to Section 2

☐ No Please correct your details by updating in NT EPA Online or complete the table below.

Licence holder	
Legal Entity Name:	ENI Australia
ABN:	18 092 812 023
Registered Business Address:	ENI Australia B.V 226 Adelaide Terrace, Perth WA 6000
Postal Address:	
Contact Person:	Joe Covic
Position Title:	Safety, Environment and Quality Manager
Contact Details:	
b/h:	+61 (0) 9320 2611
mobile:	0419 833 760
email:	mark.easterbrook@external.eni.com
Location of premises	
Address:	N.T. Portion 012637 plan(s) CP 004183 Nemarluk
24 hour emergency response	
Position Title:	Incident Management Duty Officer
phone:	
mobile:	0419 943 584

Section 2. Statement of Compliance

Were all conditions of the licence/approval complied with during the reporting period?

☐ Yes Proceed to Section 4.

☒ No Complete details below (add more rows if required)

Details of Non-compliance				
Condition number	Date of non-compliance (dd/mm/yy)	Was NT EPA notified? (Yes / No) If no, complete Section 3	If yes, date NT EPA notified (dd/mm/yy)	If yes, how was NT EPA notified? (e.g. phone, email, Pollution Hotline)
EPL230 Condition 28	16/02/2021	Y	12/03/2021	Email
EPL230 Condition 28	5/03/2021	Y	7/04/2021	Email
EPL230 Condition 28	09/04/2021	Y	1/06/2021	Email
EPL230 Condition 28	12/05/2021	Y	18/06/2021	Email
EPL230 Condition 28	09/06/2021	Y	20/07/2021	Email
EPL230 Condition 28	16/08/2021	Y	19/08/2021	Email
EPL230 Condition 28	15/09/2021	N		
EPL230 Condition 26	29/09/21	Y	30/09/2021	Email
EPL230 Condition 28	30/09/2021	Y	01/10/2021	Email

EPL230 Condition 28	19/10/2021	N		
EPL230 Condition 28	20/10/2021	N		
EPL230 Condition 28	16/11/2021	N		
EPL230 Condition 28	15/12/2021	N		
EPL230 Condition 28	16/12/2021	N		
EPL230 Condition 28	13/01/2021	N		
EPL230 Condition 28	13/01/2021	N		

Section 3. Report of Non-compliance

Please supply the following details for each non-compliance not reported to the NT EPA identified in Section 2. Use a separate page for each non-compliance.

The date and time of the non-compliance.

15th September 2021

When the non-compliance was detected and by whom.

Detected by Mark Easterbrook (Environmental Advisor) on 24th February 2022.

Sample Point – PW02 (Discharge Pump Outlet)

Produced Water measured above EPL Limits for Toluene, Ethylbenzene, m+p-xylene, Mn, Zn.

	Measured value 15th Sept 2021	EPL Limit	Unit
Toluene	2300	330	µg/l
Ethylbenzene	250	160	µg/l
m+p-xylene	930	150	µg/l
Manganese	2300	80	µg/l
Zinc	60	43	µg/l

The actual and potential causes and contributing factors to the non-compliance.

BTEX is a grouped term for the Benzene, Toluene, Ethylbenzene and Xylene (m+p).

The current produced water treatment methods do not focus on the removal of BTEX compounds, which are soluble in water. There are no available methods for treating BTEX in produced water to the ANZECC levels.

Clarity is being sought by Asset Integrity and Reservoir Engineering to identify the source on Mn and Zn.

The risk of environmental harm arising from the non-compliance.

The EPL limits for BTEX, Mn and Zn are very conservative as they are currently based on the ANZECC 80% species protection trigger levels (ANZECC 2000), which are intended to be a measure of ambient water quality in the marine environment, rather than as discharge criteria.

Produced water dispersion modelling and preliminary feedback from the field dispersion validation exercise indicate that the produced water rapidly disperses upon discharge, and water quality guideline values for 99% species protection are met within a 50m mixing zone. Manganese and Zinc are essential trace elements that are naturally present in the ocean water. Therefore, the risk of environmental harm is determined to be LOW.
The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.
Eni has investigated options to improve BTEX treatment and trialled a modification to the treatment process however this has had limited impact on BTEX. The water treatment vendor also advised that there is no readily available equipment that is guaranteed to meet the stipulated BTEX limits.
Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
Mixing zone study has been finalised, with recommendations for site specific trigger values and limits. The report was submitted to NTEPA on 30 April 2021. The Environmental Advisor is addressing NT EPA queries on the request at time of writing. An EPL amendment request has been submitted to request adoption of the recommended site-specific trigger values and limits. This assessment was still open at time of writing this Annual Return.
If no action was taken, why no action was taken.
NA

The date and time of the non-compliance.

19th October 2021

When the non-compliance was detected and by whom.

24th February 2022 by Mark Easterbrook (Environmental Advisor)

Sample Point – PW02 (Discharge Pump Outlet)

Produced Water measured above EPL Limits for Toluene, Ethylbenzene, m+p-xylene, and Zn

	Measured value 19th October 2021	EPL Limit	Unit
Toluene	3700	330	µg/l
Ethylbenzene	520	160	µg/l
m+p-xylene	2000	150	µg/l
Zinc	73	43	µg/l

Note, this Laboratory Report says Date Sampled as 20th November 2021, which is an error.

The actual and potential causes and contributing factors to the non-compliance.

BTEX is a grouped term for the Benzene, Toluene, Ethylbenzene and Xylene (m+p).

The current produced water treatment methods do not focus on the removal of BTEX compounds, which are soluble in water. There are no available methods for treating BTEX in produced water to the ANZECC levels.

Clarity is being sought by Asset Integrity and Reservoir Engineering to identify the source of Zn.

The risk of environmental harm arising from the non-compliance.

The EPL limits for BTEX and Zn are very conservative as they are currently based on the ANZECC 80% species protection trigger levels (ANZECC 2000), which are intended to be a measure of ambient water quality in the marine environment, rather than as discharge criteria.

Produced water dispersion modelling and preliminary feedback from the field dispersion validation exercise indicate that the produced water rapidly disperses upon discharge, and water quality guideline values for 99% species protection are met within a 50m mixing zone.

Zinc is an essential trace element that is naturally present in marine ecosystems.

Therefore, the risk of environmental harm is determined to be LOW.

The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.
Eni has investigated options to improve BTEX treatment and trialled a modification to the treatment process however this has had limited impact on BTEX. The water treatment vendor also advised that there is no readily available equipment that is guaranteed to meet the stipulated BTEX limits.
Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
Mixing zone study has been finalised, with recommendations for site specific trigger values and limits. The report was submitted to NTEPA on 30 April 2021. The Environmental Advisor is addressing NT EPA queries on the request at time of writing. An EPL amendment request has been submitted to request adoption of the recommended site-specific trigger values and limits. This assessment was still open at time of writing this Annual Return.
If no action was taken, why no action was taken.
NA

The date and time of the non-compliance.

20th October 2021

When the non-compliance was detected and by whom.

24th February 2021 by Mark Easterbrook (Environmental Advisor)

Sample Point – WW02 (Irrigation Pump Discharge)

Wastewater below EPL Limit value for pH, and above EPL limit for Zn, and Cu (Zinc and Copper)

	Measured value 20th October 2021	EPL Limit	Unit
pH	6.4	6.5-8.5	
Zn	210	43	µg/L
Cu	13	8	µg/L

The actual and potential causes and contributing factors to the non-compliance.

There is no known reason for the lower pH value with no operational impacts noted on the day. The effluent pH is often influenced by rainfall as the WWTP digester tanks are open to air and receive rainwater during the wet season.

Adjustment to the pH is not done as part of the wastewater treatment. There is no way of controlling the lower pH levels.

Clarity is being sought by Asset Integrity and Engineering to identify the source of Zn and Cu.

The risk of environmental harm arising from the non-compliance.

Treated wastewater effluent is discharged to an irrigation field that is not located in a Beneficial Use declared area.

WWTP influent is comprised of blackwater and greywater from the accommodation village and kitchens. During periods where rain falls directly into the tanks it has been noted that pH decreases.

The groundwater has a naturally low pH (~5); therefore, the treated effluent pH is not expected to have any adverse environmental impact.

The risk of environmental harm is deemed to be LOW.

The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.
None
Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
An EPL amendment request will be submitted to request adoption of the recommended site-specific trigger values and limits.
If no action was taken, why no action was taken.
pH adjustment to treated sewage wastewater has been investigated and the risk associated with introduction of additional, potentially corrosive chemicals (e.g. caustic) was considered to outweigh any benefits of maintaining a final pH between 6.5-8.5, particularly considering the naturally low pH of the local groundwater.

The date and time of the non-compliance.

16th November 2021

When the non-compliance was detected and by whom.

25th February 2022 by Mark Easterbrook (Environmental Advisor)

Sample Point – PW02 (Discharge Pump Outlet)

Produced Water measured above EPL Limit for pH, Mn, Toluene, Ethylbenzene, m+p-xylene

	Measured value 16th November 2021	EPL Limit	Unit
pH	8.9	6.5 - 8.5	
Manganese	100	80	µg/l
Toluene	1900	330	µg/l
Ethylbenzene	290	160	µg/l
m+p-xylene	1000	150	µg/l

The actual and potential causes and contributing factors to the non-compliance.

BTEX is a grouped term for the Benzene, Toluene, Ethylbenzene and Xylene (m+p).

Operations take pH samples every hour during pumping operations to confirm on-specification. It is suspected that this sample was taken after the discharge cycle. The Operations Report supports a pH between the accepted levels on the day of discharge. There is no record of discharge on the 16th November, so the higher readings were obtained whilst the pump was operating in full recycle.

Clarity is being sought by Asset Integrity and Reservoir Engineering to identify the source of Mn.

The current produced water treatment methods do not focus on the removal of BTEX compounds, which are soluble in water. There are no available methods for treating BTEX in produced water to the ANZECC levels.

The risk of environmental harm arising from the non-compliance.

The EPL limits for BTEX and Manganese are very conservative as they are currently based on the ANZECC 80% species protection trigger levels (ANZECC 2000), which are intended to be a measure of ambient water quality in the marine environment, rather than as discharge criteria.

No discharge had occurred.

If discharge had occurred, the produced water dispersion modelling and preliminary feedback from the field dispersion validation exercise indicate that the produced water rapidly disperses upon discharge. In the event of discharge, water quality guideline values for 99% species protection are met within a 50m mixing zone. Manganese is an essential trace element that is naturally present in marine ecosystems. Therefore, the risk of environmental harm is determined to be LOW.
The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.
Eni has investigated options to improve BTEX treatment and trialled a modification to the treatment process however this has had limited impact on BTEX. The water treatment vendor also advised that there is no readily available equipment that is guaranteed to meet the stipulated BTEX limits.
Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
Mixing zone study has been finalised, with recommendations for site specific trigger values and limits. The report was submitted to NTEPA on 30 April 2021. An EPL amendment request has been submitted to request adoption of the recommended site-specific trigger values and limits. This assessment was still open at time of writing this Annual Return.
If no action was taken, why no action was taken.
NA

The date and time of the non-compliance.

15th December 2021

When the non-compliance was detected and by whom.

25th February 2022 by Mark Easterbrook (Environmental Advisor)

Sample Point – WW02 (Irrigation Pump Discharge)

Wastewater above EPL Limit for BOD and E.Coli (>2420 cfu/100ml (per 100ml MPN))

	Measured value 15th December 2021	EPL Limit	Unit
BOD	29.8	20	mg/l
E.Coli	>2420	1000	(cfu/100ml) or (per 100ml MPN)

The actual and potential causes and contributing factors to the non-compliance.

Maintenance works were undertaken on the Wastewater Treatment Plant prior to sampling. The activity required the levels in the DAT and Irrigation tanks to be dropped to a level lower than normal. It is suspected that this action disturbed more sediments than would normally occur.

The risk of environmental harm arising from the non-compliance.

The treated wastewater effluent is discharged to an irrigation field that is not located in a Beneficial Use declared area.

Due to the low volume of effluent produced, intermittent discharge and ongoing groundwater monitoring, the environmental risk was deemed to be LOW.

Wastewater discharge volume is low and groundwater monitoring is ongoing, with E.Coli readings in groundwater consistently below detection.

The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.

It is acknowledged that certain maintenance campaigns may interfere with the sampling program.

Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.

Monitoring and recommendations for sampling outside of maintenance routines with the potential to unsettle solids in the DAT and Irrigation tanks.

If no action was taken, why no action was taken.
N/A

The date and time of the non-compliance.

16th December 2021

When the non-compliance was detected and by whom.

25th February 2022 by Mark Easterbrook (Environmental Advisor)

Sample Point – PW02 (Discharge Pump Outlet)

Produced Water above EPL Limit for Toluene, Ethylbenzene, and m+p-xylene

	Measured value 16th December 2021	EPL Limit	Unit
Toluene	3300	330	µg/l
Ethylbenzene	300	160	µg/l
m+p-xylene	1100	150	µg/l

The actual and potential causes and contributing factors to the non-compliance.

BTEX is a grouped term for the Benzene, Toluene, Ethylbenzene and Xylene (m+p).

The current produced water treatment methods do not focus on the removal of BTEX compounds. There are no available methods for treating BTEX in produced water to the ANZECC levels, without significant CAPEX spend.

The risk of environmental harm arising from the non-compliance.

The EPL limits for Toluene, Ethylbenzene and Xylene (m+p) are very conservative as they are currently based on the ANZECC 80% species protection trigger levels (ANZECC 2000), which are intended to be a measure of ambient water quality in the marine environment, rather than as discharge criteria.

Produced water dispersion modelling and preliminary feedback from the field dispersion validation exercise indicate that the produced water rapidly disperses upon discharge, and water quality guideline values for 99% species protection are met within a 50m mixing zone.

Therefore, the risk of environmental harm is determined to be LOW.

The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.
Eni has investigated options to improve BTEX treatment and trialled a modification to the treatment process however this has had limited impact on BTEX. The water treatment vendor also advised that there is no readily available equipment that is guaranteed to meet the stipulated BTEX limits.
Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
Mixing zone study has been finalised, with recommendations for site specific trigger values and limits. The report was submitted to NTEPA on 30 April 2021. The Environmental Advisor is addressing NT EPA queries on the request at time of writing. An EPL amendment request will be submitted to request adoption of the recommended site-specific trigger values and limits.
If no action was taken, why no action was taken.
NA

The date and time of the non-compliance.

13th January 2022

When the non-compliance was detected and by whom.

2nd March 2022 by Mark Easterbrook (Environmental Advisor)

Sample Point – WW02 (Irrigation Pump Discharge)

Wastewater below EPL Limit value for pH.

	Measured value 13th January 2022	EPL Limit	Unit
pH	4	6.5-8.5	

The actual and potential causes and contributing factors to the non-compliance.

The reason for the lower pH value is unclear. There were no operational impacts noted on the day. The effluent pH is often influenced by rainfall as the WWTP digester tanks are open to air and receive rainwater during the wet season. Adjustment to the pH is not done as part of the wastewater treatment.

The risk of environmental harm arising from the non-compliance.

Treated wastewater effluent is discharged to an irrigation field that is not located in a Beneficial Use declared area.

The groundwater has a naturally low pH (~5); therefore, the treated effluent pH is not expected to have any adverse environmental impact.

WWTP influent includes rainfall falling directly into the tanks. This mixes with blackwater and greywater from the accommodation village and kitchens. During periods of rain, the pH is noted to reduce.

The risk of environmental harm is deemed to be LOW.

The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.

None

Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
An EPL amendment request will be submitted to request adoption of the recommended site-specific trigger values and limits.
If no action was taken, why no action was taken.
pH adjustment to treated sewage wastewater has been considered and the risk associated with introduction of additional, potentially corrosive chemicals (e.g. caustic) was considered to outweigh any benefits of maintaining a final pH between 6.5-8.5, particularly considering the naturally low pH of the local groundwater.

The date and time of the non-compliance.

13th January 2022

When the non-compliance was detected and by whom.

25th February 2022 by Mark Easterbrook (Environmental Advisor)

Sample Point – PW02 (Discharge Pump Outlet)

Produced Water measured above EPL Limit for pH, Mn, Toluene, Ethylbenzene, m+p-xylene

	Measured value 13th January 2022	EPL Limit	Unit
pH	8.8	6.5 - 8.5	
Manganese	140	80	µg/l
Toluene	4100	330	µg/l
Ethylbenzene	540	160	µg/l
m+p-xylene	2200	150	µg/l

The actual and potential causes and contributing factors to the non-compliance.

BTEX is a grouped term for the Benzene, Toluene, Ethylbenzene and Xylene (m+p).

Operations take pH samples every hour during pumping operations to confirm specification. It is assumed that this sample was taken towards the end of the discharge cycle. The Operations Report supports a pH between the accepted levels on the day of discharge. There is a record of discharge on the 13th January, however it was later in the afternoon. The sample on which the high pH was read was taken in the early morning, whilst the PW discharge pump was in full recycle. The higher pH water was not discharged.

Clarity is being sought by Asset Integrity and Reservoir Engineering to identify the source.

The current produced water treatment methods do not focus on the removal of BTEX compounds, which are soluble in water. There are no available methods for treating BTEX in produced water to the ANZECC levels.

The risk of environmental harm arising from the non-compliance.

The EPL limits for BTEX and Manganese are very conservative as they are currently based on the ANZECC 80% species protection trigger levels (ANZECC 2000), which are intended to be a measure of ambient water quality in the marine environment, rather than as discharge criteria.

Produced water dispersion modelling and preliminary feedback from the field dispersion validation exercise indicate that the produced water rapidly disperses upon discharge, and water quality guideline values for 99% species protection are met within a 50m mixing zone. Manganese is an essential trace element that is naturally present in marine ecosystems. Therefore, the risk of environmental harm is determined to be LOW.
The action(s) that have or will be undertaken to mitigate any environmental harm arising from the non-compliance.
Eni has investigated options to improve BTEX treatment and trialled a modification to the treatment process however this has had limited impact on BTEX. The water treatment vendor also advised that there is no readily available equipment that is guaranteed to meet the stipulated BTEX limits.
Corrective actions that have or will be undertaken to ensure the non-compliance does not reoccur.
Mixing zone study has been finalised, with recommendations for site specific trigger values and limits. The report was submitted to NTEPA on 30 April 2021. An EPL amendment request has been submitted to request adoption of the recommended site-specific trigger values and limits. This assessment was still open at time of writing this Annual Return.
If no action was taken, why no action was taken.
NA

Section 4. Signature and Certification

This declaration must only be signed by a person(s) with the legal authority to sign it. The ways in which the application may be signed, and the people who may sign the application, are set out in the categories below.

If the licence holder is:	Tick	The application must be signed and certified by one of the following:
An individual	☐	The individual.
A partnership	☐	A partner.
A company	☐	The common seal being affixed in accordance with the *Corporations Act*, or
	☐	Two directors, or
	☐	A director and a company secretary, or
	X	If a proprietary company that has a sole director who is also the sole company secretary – by that director.
A public authority	☐	The Chief Executive Officer (CEO) of the public authority, or
	☐	By a person delegated to sign on the public authority's behalf in accordance with its legislation (Please note: a copy of the relevant instrument of delegation must be attached to this application).

I/We hereby declare that the information provided in this Annual Return and accompanying documents is to the best of my/our knowledge, true and correct.

Signature		Signature	
Name (printed)	Ernie Delfos	Name (printed)	
Position	Managing Director	Position	
Date	09/03/2022	Date	
Seal (if signing under seal):			

Joe Covic
2022.03.09
09:28:21 +08'00'