Appendix B: Notifications and Relevant Regulatory Correspondence

Hi Lauren,

Just confirming as discussed.

At 0945 today, approximately 22,000 litres of diesel was spilt at Berrimah Rail Terminal, Export Drive Berrimah.

Spill is contained within the property and contractors are attending site to commence clean-up.

Please let me know if you have any immediate questions.

Regards,

Adam Reed
Environment Manager

8 8343 5444 | 0458 628 406
Adam.Reed@1rail.com.au | 1rail.com.au

Level 3, 33 Richmond Road, Keswick SA 5035

ONE Team - We work as one to get the best outcomes for our customers.

AUTHORISED OFFICER DIRECTION

(Issued pursuant to section 72(k) of the *Waste Management and Pollution Control Act 1998*)

Issued to: *One Rail Australia Pty Ltd* (ABN 17 079 444 296)

TAKE NOTICE THAT I, *Lauren Cooper*, an authorised officer for the purposes of section 70 of the *Waste Management and Pollution Control Act* 1998 ("the Act"), have reason to believe that:

A) *One Rail Australia Pty Ltd* (One Rail) is the occupier of Section 5411, Hundred of Bagot and Section 5641, Hundred of Bagot, also known as the Berrimah Rail Terminal, Export drive Berrimah ('the premises');

B) The premises is currently used as the Berrimah Rail Terminal;

C) The premises is also subject to Environment Protection Licence EPL 222-01;

D) On 30 May 2020 at approximately 11.16hrs One Rail notified the Northern Territory Environment Protection Authority (NT EPA) via the Pollution Hotline of a diesel spill at the Berrimah Rail Terminal;

E) The notification was that the spill was approximately 20,000 litres and that a contractor was on site to clean up now;

F) Authorised Officers of the NT EPA attended the premises on 30 May 2020 at approximately 1350hrs and observed:

   a. One Rail had initiated a spill response and recovery operation involving the use of a vacuum truck and spill kit material;

   b. A significant volume of an unknown liquid, potentially diesel located within a swale storm drain with containment in place to prevent surface flow leaving site;

G) Further information received via an email from One Rail (30 May 2020 at 1209hrs) was an estimation of 22,000 litres of diesel has spilled or 'leaked' at Berrimah Rail Terminal;

H) The cause of the spill has been reported to be a failure of the unattended, automatic filling operation not cutting off when the locomotive tanks were full;

I) The locomotive identified as experiencing the fault and therefore being the cause of the diesel spill is ALF22 and this locomotive had departed the rail terminal prior to Authorised Officers being onsite;

J) Section 12 of the Act states that a person who:

AUTHORISED OFFICER DIRECTION

a. conducts an activity that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste; or

b. performs an action that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste,

Must take all measures that are reasonable and practicable to:

c. prevent or minimise the pollution or environmental harm; and

d. reduce the amount of the waste;

K) Section 83 of the Act provides offences for polluting the environment causing environmental harm; and

L) The Act defines environmental harm as any potential harm (including risk of harm and future harm) to or potential adverse effect on the environment.

M) The Act defines environment as land, air, water, organisms and ecosystems and includes well-being of humans; structure or modified by humans; amenity values of an area; and economic, cultural and social conditions.

N) I issued a verbal Direction to immediately prevent pollution was issued to Shane Hennessey of One Rail Australia on 30 May 2020.

AND I HEREBY DIRECT *One Rail Australia Pty Ltd* (ABN 17 079 444 296) pursuant to section 72(k) of the Act to:

Immediately prevent pollution and environmental harm resulting from the spill. By the method of preventing all spilled liquids (including diesel/ hydrocarbons) from contaminating soils, surface waters or ground waters.

Lauren Cooper 01/06/2020

Authorised Officer **Date**

Northern Territory Environment Protection Authority

Important Notice

Failure to comply with the lawful requirements of an authorised officer is an offence under section 76(c) of the *Waste Management and Pollution Control Act* and may incur significant penalties and/or other statutory action.

This notice takes effect on the date on which it is served upon you.

AUTHORISED OFFICER DIRECTION

(Issued pursuant to section 72(k) of the *Waste Management and Pollution Control Act 1998*)

Issued to: *One Rail Australia Pty Ltd* (ABN 17 079 444 296)

TAKE NOTICE THAT I, *Lauren Cooper*, an authorised officer for the purposes of section 70 of the *Waste Management and Pollution Control Act* 1998 ("the Act"), have reason to believe that:

A) *One Rail Australia Pty Ltd* (One Rail) is the occupier of Section 5411, Hundred of Bagot and Section 5641, Hundred of Bagot, also known as the Berrimah Rail Terminal, Export drive Berrimah ('the premises');

B) The premises is currently used as the Berrimah Rail Terminal;

C) The premises is also subject to Environment Protection Licence EPL 222-01;

D) On 30 May 2020 at approximately 1116h One Rail notified the Northern Territory Environment Protection Authority (NT EPA) via the Pollution Hotline of a diesel spill at the Berrimah Rail Terminal;

E) The notification was that the spill was approximately 20,000 litres and that a contractor was on site to clean up now;

F) Authorised Officers of the NT EPA attended the premises on 30 May 2020 at approximately 1350h and observed:

   a. One Rail had initiated a spill response and recovery operation involving the use of a vacuum truck and spill kit material;

   b. A significant volume of an unknown liquid, potentially diesel located within a swale storm drain with containment in place to prevent surface flow leaving site;

G) Further information received via an email from One Rail (30 May 2020 at 1209h) was that an estimated 22,000 litres of diesel has spilled or 'leaked' at Berrimah Rail Terminal;

H) The cause of the spill has been reported to be a failure of the unattended, automatic filling operation not cutting off when the locomotive tanks were full;

I) The locomotive identified as experiencing the fault and therefore being the cause of the diesel spill is ALF22 and this locomotive had departed the rail terminal prior to Authorised Officers being onsite;

J) Section 12 of the Act states that a person who:

a. conducts an activity that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste; or

b. performs an action that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste,

Must take all measures that are reasonable and practicable to:

c. prevent or minimise the pollution or environmental harm; and

d. reduce the amount of the waste;

K) Section 83 of the Act provides offences for polluting the environment causing environmental harm; and

L) The Act defines environmental harm as any potential harm (including risk of harm and future harm) to or potential adverse effect on the environment.

M) The Act defines environment as land, air, water, organisms and ecosystems and includes well-being of humans; structure or modified by humans; amenity values of an area; and economic, cultural and social conditions.

N) I issued a verbal direction to immediately prevent pollution, this was issued to Shane Hennessey of One Rail on 30 May 2020.

O) I followed up the verbal direction issued on 30 May 2020 with a written direction issued to the Company Directors of One Rail Australia Pty Ltd on 1 June 2020 to immediately prevent pollution and environmental harm resulting from the spill.

P) On 1 June 2020 at approximately 1730h and after discussions with authorised officers, a One Rail employee agreed to provide the NT EPA a basic plan of action to delineate the likely diesel contamination at the premises as a result of the spill on 30 May 2020. It was agreed that the plan was to be provided within 24hrs. As of 4 June 2020 no plan has been provided and no further communications has been received from One Rail.

AND I HEREBY DIRECT *One Rail Australia Pty Ltd* (ABN 17 079 444 296) pursuant to section 72(k) of the Act:

1) To **immediately** manage wastes on or in land by:

   a. Undertaking sufficient surface water, groundwater and soil analysis to be able to determine the types, amount, distribution and mobility of contaminants in the environment as a result of the diesel spill that occurred at the premises on 30 May 2020; and

   b. By 1500h on 5 June 2020 determine **and** implement suitable actions to manage and start to recover wastes in the land that have resulted from the diesel spill that occurred at the premises on 30 May 2020; and

c. Undertake daily inspections and sufficient monitoring to detect any pollution or impact to the surrounding environment as a result of the diesel spill, including but not limited to the identified Significant Biodiversity Area located adjacent to the spill location.

2) By 12 June 2020 provide a report to the NT EPA detailing how you have achieved compliance with requirement (1) above.

Lauren Cooper 04/06/2020

Authorised Officer **Date**

Northern Territory Environment Protection Authority

Important Notice

Failure to comply with the lawful requirements of an authorised officer is an offence under section 76(c) of the *Waste Management and Pollution Control Act* and may incur significant penalties and/or other statutory action.

This notice takes effect on the date on which it is served upon you.

AUTHORISED OFFICER DIRECTION

(Issued pursuant to section 72(k) of the *Waste Management and Pollution Control Act 1998*)

Issued to: One Rail Australia Pty Ltd (ABN 17 079 444 296)

TAKE NOTICE THAT I, *Claudia Bennett,* an authorised officer for the purposes of section 70 of the *Waste Management and Pollution Control Act 1998* ("the Act"), have reason to believe that:

A) One Rail Australia Pty Ltd (One Rail) is the occupier of Section 5411, Hundred of Bagot and Section 5461, Hundred of Bagot, also known as the Berrimah Rail Terminal, Export Drive Berrimah ('the premises');

B) The premises is currently used as the Berrimah Rail Terminal;

C) The premises is subject to an Environment Protection Licence (EPL 222-01);

D) On 30 May 2020 at approximately 1116h One Rail notified the Northern Territory Environment Protection Authority (NT EPA) via the Pollution Hotline of a 20,000 L diesel spill at the Berrimah Rail Terminal;

E) Authorised officers of the NT EPA attended the premises on 30 May 2020 at approximately 1350h and observed;

   a. One Rail had initiated a spill response and recovery operation involving the use of a vacuum truck and spill kit material;

   b. A significant volume of an unknown liquid, potentially diesel located within a swale/storm drain with containment in place to prevent surface flow leaving the site;

F) Further information was later reported via an email from One Rail (received 30 May 2020 at 1209h) revising the spill volume to an estimated 22,000 Litres;

G) The cause of the spill was reported to be a failure of the unattended, automatic filling operation not cutting off when the locomotive tanks were full;

H) A verbal direction was issued to Shane Hennessey of One Rail on 30 May 2020 to immediately prevent pollution. A follow up written direction was issued to the Company Directors of One Rail on 1 June 2020 (Attachment A);

I) On 1 June 2020, One Rail agreed to provide the NT EPA a basic plan of their proposed actions at the premises. It was agreed that the plan would be provided within 24 hrs.

J) As of 4 June 2020 no plan, nor further communication was received from One Rail. A second direction was subsequently issued to Company directors on 04 June 2020 to take specified measures (Attachment B).

K) On 4 February 2021, Authorised Officers attended the site to inspect remedial works associated with the historical (30 May 2021) diesel spill. Upon inspection officers observed:

   a. A stockpile of material visibly contaminated with hydrocarbons (understood to be soil contaminated with the historical diesel spill) uncovered with no pollution controls, located approximately 10 metres from an unlined channel leading to Darwin Harbour;

b. Hydrocarbon-like sheens seeping from the stockpile into the adjacent soils and on ponded surface waters at multiple locations around the stockpile and the unlined channel.

c. Hydrocarbon-like sheens in the flow of surface water in the unlined channel downstream of the stockpile; and

L) A verbal direction was issued to an employee of One Rail on 4 February 2021 to prevent environmental harm and clean-up pollution within 24 hours.

M) On 5 February 2021, Authorised Officers attended the site to inspect remedial works in response to the verbal direction issued on 4 February 2021. Officers observed:

a. Hydrocarbon-like sheens seeping from the stockpile into the adjacent soils and on ponded surface waters at multiple locations around the stockpile;

b. Sediment from works at the premises in the flow of surface water in the unlined channel downstream of the works around the stockpile;

N) Waste hydrocarbons unfit for their intended purpose are a listed waste under Schedule 2 of the Waste Management and Pollution Control (Administration) Regulations;

O) Soil contaminated with a listed waste are a listed waste under Schedule 2 of the Waste Management and Pollution Control (Administration) Regulations;

P) Hydrocarbons (as a product or a waste) are also contaminant as defined in S4 of the Act;

Q) Sediments are a contaminant as defined in S4 of the Act; and

R) Section 83 of the Act provides a number of offences for causing pollution and environmental harm;

AND I HEREBY DIRECT One Rail Australia Pty Ltd (ABN 17 079 444 296) pursuant to section 72(k) of the Act to:

1) Prevent environmental harm from the premises.

For the purpose of 1) you must within 48 hours of this notice being issued:

a) take measures that are sufficient to ensure that there is no further seepage of hydrocarbons from the stockpile into the environment; and

b) take measures that are sufficient to ensure that there is no discharge of sediments from the premises into the environment;

c) monitor and maintain the measures implemented in a) and b) and ensure that they remain sufficient to prevent discharge of both hydrocarbons and sediment into the environment at all times.

AUTHORISED OFFICER DIRECTION

Authorised Officer **Date** 12/02/2021

Northern Territory Environment Protection Authority

Important Notice
Failure to comply with the lawful requirements of an authorised officer is an offence under section 76(c) of the *Waste Management and Pollution Control Act 1998* and may incur significant penalties and/or other statutory action.
This notice takes effect on the date on which it is served upon you.

AUTHORISED OFFICER DIRECTION

Attachment A – AOD issued to One Rail on 01 June 2021

AUTHORISED OFFICER DIRECTION

Attachment B – AOD issued to One Rail on 04 June 2021

NORTHERN TERRITORY GOVERNMENT

DEPARTMENT OF
ENVIRONMENT, PARKS AND WATER SECURITY

14 May 2021

Arnhemica House
Level 1, 16 Parap Road
Parap NT 0820

Postal Address
GPO Box 3675
Darwin NT 0801
T 08 8924 4161
F 08 8942 6554
E pollution@nt.gov.au

File Ref: NTEPA2020/0007-193
Case Ref: PRL9059

Company Directors
One Rail Australia Pty Ltd
Level 3, 33 Richmond Road
KESWICK SA 5035

Dear Company Directors,

Re: ALLEGED NON-COMPLIANCES WITH THE WASTE MANAGEMENT AND POLLUTION CONTROL ACT 1998 – SHOW CAUSE

On 04 February 2021 Authorised Officers of the Northern Territory Environment Protection Authority (NT EPA) inspected the One Rail Australia Pty Ltd (One Rail) premises located at Section 5411, Hundred of Bagot and Section 5461, Hundred of Bagot, also known as the Berrimah Rail Terminal ('the premises').

On 30 May 2020, One Rail notified the NT EPA of a 20,000 L diesel spill at the premises. One Rail was issued Authorised Officers Directions on 01 and 04 June 2020, detailing the requirement to immediately manage wastes and undertake a soil, surface water and ground water assessment to determine the types, amounts, distribution and mobility of contaminants in the environment as a result of the spill.

On 03 February 2021, Officers discussed remedial works undertaken at the site with Adam Reed, the Environmental Manager for One Rail. Mr Reed explained that remedial works had been undertaken at the site and involved the excavation of approximately 12,000 tonnes of diesel contaminated soils. Mr Reed stated that the contaminated soils were consolidated and stockpiled on site for proposed future management.

Officers inspected the site on 04 February 2021 and observed:

1. A stockpile of soil (understood to be resultant from remedial works associated with a historical diesel spill) uncovered and unsecured, and positioned approximately 10 metres to the south of an earthen stormwater channel.
2. A hydrocarbon-like sheen was identified at multiple locations seeping from the stockpile into adjacent soils and ponded surface water.
3. A hydrocarbon-like sheen was observed at multiple locations within the adjacent earthen stormwater channel that discharges off site into the surrounding mangroves.

At the time of the inspection, officers authorised under the Waste Management and Pollution Control Act 1998 ('the Act') collected representative soil and surface water samples from the stockpile, adjacent ground surfaces and pooled water and issued an authorised officer direction; instructing One Rail to:

1. Prevent environmental harm from the premises.
   For the purpose of 1) and within 48 hours:
   a. Take measures that are sufficient to ensure that there is no further seepage of hydrocarbons from the stockpile into the environment;

b. Take measures that are sufficient to ensure that there is no discharge of sediments from the premises into the environment; and
c. Monitor and maintain the measures implemented in a) and b) and ensure that they remain sufficient to prevent discharge of both hydrocarbons and sediment into the environment at all times.

Evidence obtained to date indicates that you may have committed offences under Section 83 of the Act, including:

1. Section 83 (5): A person must not cause an environmental nuisance;
2. Section 83 (6): A person must not intentionally cause or permit a contaminant or waste to be stored:
   a. In a manner or condition in which; or
   b. At a place from which,
   It is reasonably likely that the contaminant or waste could:
   c. Leak, spill or escape from storage into the environment; and
   d. In leaking, spilling or escaping from storage, cause environmental harm
3. Section 83 (7): A person must not cause or permit a contaminant or waste to be stored:
   a. In a manner or condition in which; or
   b. At a place from which,
   It is reasonably likely that the contaminant or waste could:
   c. Leak, spill or escape from storage into the environment; and
   d. In leaking, spilling or escaping from storage, cause environmental harm.

Prior to the NT EPA undertaking any compliance and/or enforcement action in regard to the above alleged offences, you are being invited to 'show cause' as to why compliance and/or enforcement action should not proceed.

Any written submissions you wish the NT EPA to consider, must be received by this office before **4pm ACST 28 May 2021**.

Contingent on the information then at hand, the NT EPA may take appropriate compliance and enforcement action in line with its published compliance and enforcement policy, or alternatively may exercise its discretion.

Please send your submissions to pollution@nt.gov.au or GPO 3675, Darwin NT 0801, ensuring that it is received before the deadline specified above.

Should you require any further information or clarification, please do not hesitate to contact myself on 08 8924 4161 or at pollution@nt.gov.au.

Regards,

Claudia Bennett
Environmental Officer
Providing services for the
Northern Territory Environment Protection Authority

ORA-28052021

28 May 2021

Claudia Bennett

Environmental Officer
Environmental Operations – Environment Division

Department of Environment, Parks and Water Security

Northern Territory Government

Dear Claudia

One Rail Show Cause Response

This letter outlines One Rail Australia's response to alleged non-compliances with the Waste Management and Pollution Control (WMPC) Act outlined in correspondence received on 14 May 2021 from Claudia Bennett (Environmental Officer – NT Department of Environment, Parks and Water Security).

Background

On 30 May 2020, a diesel spill of approximately 20,000 litres occurred at the One Rail Australia Berrimah Freight Terminal, located at Export Drive Berrimah NT. This was caused by a failure of the automatic fuelling system on board the departing Darwin to Adelaide freight service.

Significant emergency response, monitoring and remediation works have taken place at the site since May 2020, including:

- Immediate engagement of Greencap to advise and oversee initial response.
- Spill containment to prevent further immediate migration to stormwater drains and potentially to mangrove environment (DSI Section 11.2.1).
- Preparation and implementation of a Remediation Action Plan.
- Excavation of approximately 1,100 tonnes of soil.
- Stockpiling of contaminated soils on and covered with plastic.
- Installation of a groundwater monitoring well network to monitor groundwater conditions at the site.
- Preparation and implementation of a groundwater monitoring plan to monitor groundwater, surface water and sediment conditions quarterly.
- Preparation of an all-encompassing *Detailed Site Investigation Report*, including assessment of residual risks to human health and environment associated with the spill.

Post spill monitoring since 30 May 2020 has also included daily shoreline inspections and groundwater, surface water and sediment monitoring. Groundwater monitoring was established in July 2020 and surface water and sediment monitoring was established in December 2020 due to the onset of the NT wet season.

Since identifying potential containment issues in February 2021, One Rail have increased perimeter containment measures around the stockpile and conducted weekly monitoring to ensure risks to environment related to the 2020 diesel spill are being adequately mitigated.

Previous correspondence was sent to EPA dated 26 March 2021 regarding future stockpile management at the site, which is currently underway to manage and remediate contaminated soils.

To date NT EPA have received and reviewed:

- Berrimah Fuel Spill Response Report (June 2020)
- Greencap/One Rail Remediation Action Plan (sent 15 June 2020)
- Site drainage plans (sent 9 February 2021)

ONE RAIL Australia
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One Rail Australia Pty Ltd
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ABN 17 079 444 296
PO Box 309
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1rail.com.au

- October 2020 Groundwater Monitoring Report and December 2020 surface water sampling results (sent 3 February 2021).

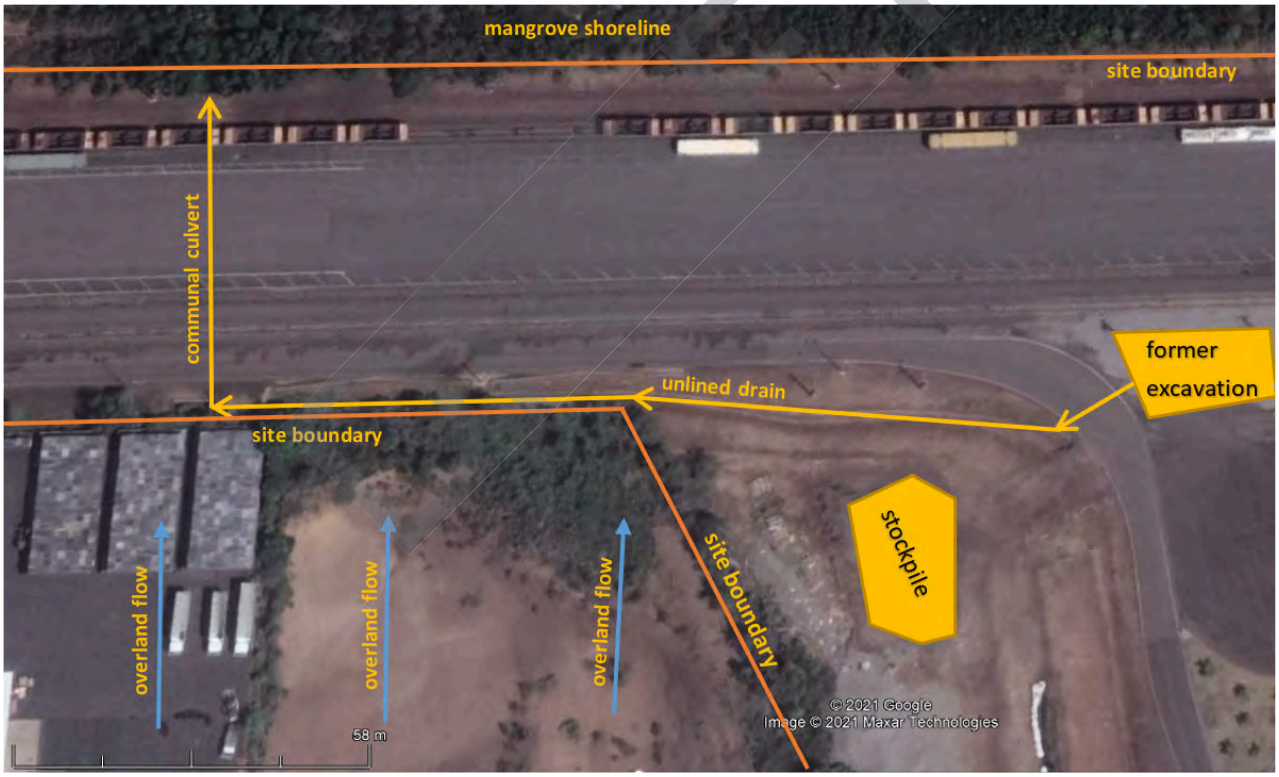
In addition to this letter, One Rail will be providing for review several additional documents. Because of their size, they will be provided under separate cover:

- July GME Report (August 2020).
- January GME report (March 2021).
- Updated GMMP (March 2021).
- Final DSI Report (April 2021).
- Summary drain sampling letter report (May 2021)

Site Location

The initial spill occurring in May 2020 occurred in the Berrimah One Rail Terminal, with soils stockpiled in the vicinity of the spill location temporarily, prior to long term management elsewhere on the site after the 2020/2021 wet season. The 1100 tonne soil stockpile is located approximately 10 metres adjacent an onsite stormwater culvert, which then joins to a communal concrete-lined drainage culvert 120 metres west, before passing under the container pad and expelling at the mangroves 55 metres north of this location. The DSI (Section 10.4) identifies the intertidal mangrove community as a potential source-pathway-receptor.

Several offsite sources feed both the communal culvert (as designed) but also overland flow from neighbouring properties contributes to the onsite unlined drainage culvert.



Visual sheens have historically been identified at the communal drain outfall in June 2020 as part of environmental monitoring of the shoreline conducted by Greencap. This was not associated with the One Rail site, and NT EPA were notified of this observation at the time. A sample taken by Greencap of this area did not confirm the presence of petroleum hydrocarbons, nor was the potential source of the sheen identified.


June 2020


June 2020

Post Remediation Site Monitoring

A *Groundwater Monitoring and Management Plan (GMMP)* was prepared by Greencap to document and direct how risks to the environment would be monitored post remediation. An initial draft was prepared by Greencap in August 2020 and subsequently refined based on the DSI and risk assessment work being carried out in parallel (notably the inclusion of surface water and sediment sampling in December 2020).

Monitoring was undertaken in-line with the GMMP in July 2020 (groundwater), October 2020 (groundwater) and January 2021 (groundwater, surface water and sediment). Notable results from these three sampling rounds conducted were:

- LNAPL (free phase diesel) detected in one groundwater well during the October 2020 sampling event.
- Minor hydrocarbon impacts detected in one sediment sample located downgradient of spill site (but upgradient of stockpile), which was thought to be a residual from remedial works, and subsequently removed. Hydrocarbon concentrations were not detected in surface water samples during January monitoring. Results are contained within the January 2021 Groundwater Monitoring report.

Interim storage of stockpiled soils

Throughout the excavation and remedial works undertaken, heavily impacted soils have been stored on plastic and covered with plastic periodically during each stage of works. Photos of the stockpile taken during excavation works are included below.


May 2020


June 2020

ONE RAIL Australia
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1rail.com.au


August 2020


October 2020

A final plastic covering was placed over the stockpile in October 2020, however, was subsequently removed in December 2020 citing safety concerns of the plastic tearing loose in high winds, presenting a risk to neighbouring properties, terminal operations, or the mangroves.

Grossly impacted hydrocarbon soils within the stockpile remained protected internally by plastic. Plastic was re-instated in February 2021 following NT EPA concerns. Stockpile sampling conducted in February and May 2021 of the upper portion of the pile confirms uncovered soils were not grossly impacted.

The stockpile had also been track rolled using the excavator to prevent the potential for erosion and sedimentation to occur.

Post Incident Monitoring

Significant monitoring of the impacts associated with the diesel spill have been conducted across the site and surrounding area.

Following the EPA site inspection on 4 February 2021, further increased monitoring was conducted including at the adjacent mangroves bordering the site.

At no point since 30th May 2020 were hydrocarbons detected migrating beyond the confines of the site to the mangroves.

6/6/20 – 26/7/20	Daily inspections of mangrove shoreline and drains to ensure impacts have not migrated to the mangroves. No impacts were identified associated with the One Rail site.
30/7/20	Initial quarterly groundwater monitoring event of wells MW01-MW04. All reported results were below respective trigger levels.
14/10/20 – 31/10/20	Second quarterly groundwater monitoring of wells MW01-MW04 and newly installed wells MW05-MW08. All reported results were below respective trigger levels.
8/12/20	Initial surface water sample collected from onsite drain, below detection levels.
21/1/21	Third quarterly groundwater monitoring of wells MW01-MW08 as well as surface water and sediment monitoring. All reported results were below respective trigger levels, with the exception of one sediment sample which was subsequently removed.
5/2/21	Collection of sediment and runoff samples around the stockpile as well as collection of mangrove sediment samples. One sample (SPR5) reported a concentration marginally above site ecological screening levels. All other samples, including mangrove samples were below detection levels. Subsequent silica gel clean-up of this sample reported

	concentrations below detection levels indicating impacts were not associated with petroleum hydrocarbons.
5/2/21 – 12/2/21: Collection of surface water samples along the One Rail drain and outlet to communal culvert at the mangroves.	Highest concentration (SW05) collected between the stockpile and the face of adjoining drain (not the drain itself) was indicative of leaching from the stockpile, but not detected in the drain in the immediate vicinity at SW03 (refer sample location plan below). Minor concentrations were also detected at three more locations, including the mangroves. These three minor concentrations were later removed using the silica gel clean-up method to remove non-petrogenic hydrocarbons. SW05 was not subjected to a silica gel clean-up due to its high concentrations.
19/2/21 onward: Weekly monitoring of drains (subject to available flows in adjacent drain.)	All concentrations reported below screening criteria, except for one sample on 5 March 2021 and 3 samples on 19 March 2021. During both events, impacts were confined to within the onsite stormwater drain, and were not repeated during subsequent events.

Sample location plan is included below.

Response to alleged offences

Within the 'show cause' letter dated 14 May 2021, NT EPA allege offences may have been committed under Section 83 of the WMPC Act.

These alleged potential offences include:

1. *Section 83 (5): A person must not cause any environmental nuisance.*

Environmental nuisance means:

a) *An adverse effect on the amenity of an area that:*
   - *Is caused by noise, smoke, dust, fumes or odours; and*
   - *Unreasonably interferes with or is likely to unreasonably interfere with the enjoyment of the area by persons who occupy a place within the area or are otherwise lawfully in that area; or*

b) *An unsightly or offensive condition caused by contaminants or waste.*

One Rail believes that no contravention of the WMPC Act has occurred under Section 83 (5) as no adverse effect has occurred on the area to interfere with the enjoyment of the area (rail terminal) and no unsightly or offensive condition caused. The site is located on private property in an area that is only accessible to One Rail employees. The DSI has concluded that the site in its current condition does not pose an unacceptable threat to the relevant receptors, including employees or others who may have reason to be at the site.

2. Section 83(6): A person must not intentionally cause or permit a contaminant or waste to be stored:
   - *In a manner or condition in which; or*
   - *At a place from which,*
     It is reasonably likely that the contaminant or waste could:
   - *Leak, spill or escape from storage into the environment; and*
   - *In leaking, spilling or escaping from storage, cause environmental harm.*

One Rail believes that there has been no contravention of the WMPC Act as:

- There was no intent to store in a manner to allow a release of contaminants.
- An assessment has determined that there is no reasonable likelihood that the contaminant waste would escape, based on the layering of plastic at multiple levels within and beneath the stockpile.
- Environmental harm has not been caused as evidenced by the relative non-detection of petrogenic hydrocarbons outside of the One Rail site or within the unlined stormwater drain onsite.
- Impacts observed do not meet the definition of environmental harm under the WMPC Act. Whilst elevated concentrations were observed between the stockpile and the drain, this did not result in detectable concentrations in the unlined stormwater drain onsite, nor any detection level movement toward the potential environmental receptor of the intertidal mangrove community (DSI, Section 11.4.3).

3. Section 83(7): A person must not intentionally cause or permit a contaminant or waste to be stored:
   - *In a manner or condition in which; or*
   - *At a place from which,*
     It is reasonably likely that the contaminant or waste could:
   - *Leak, spill or escape from storage into the environment; and*
   - *In leaking, spilling or escaping from storage, cause environmental harm*

One Rail believes that there has been no contravention of s83(7) of the WMPC Act as:

- An assessment has determined that there is no reasonable likelihood that the contaminant waste would escape, based on the layering of plastic at multiple levels within and beneath the stockpile.
- Environmental harm has not been caused as evidenced by the relative non-detection of petrogenic hydrocarbons outside of the One Rail site or within the unlined stormwater drain onsite.
- Impacts observed do not meet the definition of environmental harm under the WMPC Act. Whilst elevated concentrations were observed between the stockpile and the drain, this did not result in detectable concentrations in

the unlined stormwater drain onsite, nor any detection level movement toward the potential environmental receptor of the intertidal mangrove community (DSI, Section 11.4.3)

Current Status

Excavation and backfill of the initial spill site was completed prior to the onset of the 2020/2021 wet season.

The DSI Report was prepared to encompass the excavation, monitoring and validation work conducted to date, as well as to assess risks to human health and environment associated with the spill. The DSI was finalised in April 2021 and concluded that the current condition does not pose an unacceptable risk to the identified human health and environmental receptors.

Conclusions of the DSI are subject to further recommendations, notably to continue the monitoring of groundwater, surface water and sediment.

Next Steps and Stockpile Management

As outlined in One Rail letter dated 26 March 2021, One Rail is currently segregating and relocating soils onsite for long term bioremediation. This includes segregation and re-testing of the upper less impacted material, and bio-piling of impacted materials to a suitable level prior to either disposal or re-use.

Heavily impacted soils are to be placed on and covered with 1.5mm thick plastic HDPE liners to withstand wet-season conditions. Liners are continuous in construction and allow a greater level of reinforcement to be used to prevent tearing in high winds.

To date, a dedicated soil remediation area has been prepared in the southern portion of the site, with clean soils removed to allow placement of heavily impacted soils.

A soil remediation methodology has been prepared by Greencap detailing the methodology for remediation, sampling frequency and environmental measures to ensure safe containment throughout.

Should you wish to discuss this matter further please do not hesitate to get in contact.

Yours sincerely,

Luke Anderson
Chief Executive Officer

NORTHERN TERRITORY GOVERNMENT
Department of
ENVIRONMENT, PARKS AND WATER SECURITY

Environment Division
Arnhemica House, Level 1
16 Parap Road, PARAP NT 0820

Postal address
GPO Box 3675
DARWIN NT 0801

E pollution@nt.gov.au

T 08 8924 4218
T 08 8942 6554

File reference
NTEPA2020/0007-193~0057

6 July 2021

Managing Director
One Rail Australia Pty Ltd
Level 3, 33 Richmond Road
KESWICK SA 5035

RE: SECTION 48 AUDIT NOTICE – ONE RAIL AUSTRALIA PTY LTD – BERRIMAH RAIL TERMINAL

Dear Managing Director,

I refer you to your recent correspondence with officers from the Environment Division regarding the land located at Section 5411, Hundred of Bagot and Section 5461, Hundred of Bagot, also known as the Berrimah Rail Terminal ("the premises").

As delegate of the Northern Territory Environment Protection Authority (NT EPA), I have issued a notice to One Rail Australia Pty Ltd (One Rail) pursuant to Section 48 of the *Waste Management and Pollution Control Act 1998* (the Act) requiring One Rail to carry out an environmental audit program.

I acknowledge that investigations and remediation work have been undertaken at the premises in relation to an historical spill. However, there are still concerns about the risk of environmental harm or pollution resulting from a stockpile of contaminated soils. The environmental audit program is designed to ensure that further investigations are sufficient to determine the extent and nature of hydrocarbon contamination at and beyond the premises.

Failure to comply with the requirements of the environmental audit program may attract substantial penalties.

Should you wish to discuss the contents of this letter or have any questions about the issuing of the Section 48 Notice please contact Claudia Bennett on (08) 8924 4161.

Yours sincerely

Amy Dennison
Delegate of the Northern Territory Environment Protection Authority
6 July 2021

Ian Lightfoot

From: Claudia Louise Bennett <Claudia.Bennett@nt.gov.au>
Sent: Wednesday, 7 July 2021 10:11 AM
To: Luke Anderson; Daniel Hill
Cc: Adam Reed; Peter Vasel; ChristineJ Plewinski
Subject: TRM: FW: Issue of Section 48 Notice - One Rail Australia
Attachments: Cover Letter Section 48.pdf; Section 48 Notice.pdf

Dear Company Directors,

I refer you to our previous correspondence regarding potential non-compliances with the *Waste Management and Pollution Control Act 1998* (WPMC Act) by One Rail Australia Pty Ltd (One Rail) at its premises located at Section 5411, Hundred of Bagot and Section 5461, Hundred of Bagot, also known as the Berrimah Rail Terminal ("the premises").

A notice under Section 48 of the WMPC Act has been issued and is attached for your actioning.

Kind regards,
Claudia

Claudia Bennett
Environmental Officer
Environmental Operations – Environment Division
Department of Environment, Parks and Water Security
Northern Territory Government

Providing services for the
Northern Territory Environment Protection Authority

Floor 1, Arhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin, NT 0801

P: (08) 8924 4161
E: claudia.bennett@nt.gov.au

W: Northern Territory Environment Protection Authority
W: Department of Environment, Parks and Water Security
W: Parks and Wildlife Commission

Stay up to date and connect with us:

NTDEPWS NTG Parks & Wildlife NT Bushfires NT

From: Claudia Louise Bennett
Sent: Wednesday, 7 July 2021 8:39 AM
To: 'Adam Reed' <Adam.Reed@1rail.com.au>
Cc: 'Luke Anderson' <Luke.Anderson@1rail.com.au>; 'Daniel Hill' <Daniel.Hill@1rail.com.au>
Subject: RE: Draft Section 48 Notice - One Rail Australia

Good morning,

Regarding the below, a Section 48 notice is intended to be issued to One Rail today.

I will send across shortly.

Kind regards,
Claudia

Claudia Bennett
Environmental Officer
Environmental Operations – Environment Division
Department of Environment, Parks and Water Security
Northern Territory Government

Providing services for the
Northern Territory Environment Protection Authority

Floor 1, Arhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin, NT 0801

P: (08) 8924 4161
E: claudia.bennett@nt.gov.au

W: Northern Territory Environment Protection Authority
W: Department of Environment, Parks and Water Security
W: Parks and Wildlife Commission

Stay up to date and connect with us:

NTDEPWS NTG Parks & Wildlife NT Bushfires NT

From: Claudia Louise Bennett **On Behalf Of** Pollution NTEPA
Sent: Tuesday, 29 June 2021 9:01 AM
To: 'Adam Reed' <Adam.Reed@1rail.com.au>; Pollution NTEPA <Pollution.NTEPA@nt.gov.au>
Cc: Luke Anderson <Luke.Anderson@1rail.com.au>; Daniel Hill <Daniel.Hill@1rail.com.au>; ChristineJ Plewinski <Christinej.Plewinski@nt.gov.au>; Peter Vasel <Peter.Vasel@nt.gov.au>
Subject: RE: Draft Section 48 Notice - One Rail Australia

Good morning Adam,

Thank you for the below.
I will be in touch in due course.

Kind regards,
Claudia

Claudia Bennett
Environmental Officer
Environmental Operations – Environment Division
Department of Environment, Parks and Water Security
Northern Territory Government

Providing services for the
Northern Territory Environment Protection Authority

Floor 1, Arhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin, NT 0801

P: (08) 8924 4161
E: claudia.bennett@nt.gov.au

W: Northern Territory Environment Protection Authority
W: Department of Environment, Parks and Water Security
W: Parks and Wildlife Commission

Stay up to date and connect with us:

NTDEPWS NTG Parks & Wildlife NT Bushfires NT

From: Adam Reed <Adam.Reed@1rail.com.au>
Sent: Monday, 28 June 2021 5:49 PM
To: Pollution NTEPA <Pollution.NTEPA@nt.gov.au>

Cc: Luke Anderson <Luke.Anderson@1rail.com.au>; Daniel Hill <Daniel.Hill@1rail.com.au>
Subject: RE: Draft Section 48 Notice - One Rail Australia

Hi Claudia,

One Rail Australia has no comment on the intended recommendation, as outlined.

Regards

From: Claudia Louise Bennett <Claudia.Bennett@nt.gov.au>
Sent: Tuesday, 22 June 2021 3:22 PM
To: Luke Anderson <Luke.Anderson@1rail.com.au>; Adam Reed <Adam.Reed@1rail.com.au>
Cc: Peter Vasel <Peter.Vasel@nt.gov.au>; ChristineJ Plewinski <Christinej.Plewinski@nt.gov.au>
Subject: Draft Section 48 Notice - One Rail Australia

Dear Company Director,

As you are aware, Northern Territory Environment Protection Authority (NT EPA) officers authorised under the Waste Management and Pollution Control Act (WMPC Act) 1998 have been investigating potential non-compliances with the WMPC Act by One Rail Australia Pty Ltd (One Rail) at its premises located at Section 5411, Hundred of Bagot and Section 5461, Hundred of Bagot, also known as the Berrimah Rail Terminal ("the premises").

Based on the information at hand, officers intend to recommend to the delegate of the NT EPA the issue of a notice under Section 48 of the WMPC Act, requiring One Rail to undertake an environmental audit program (EAP). A Draft of the Section 48 notice is attached for reference.

You are receiving this Draft as a courtesy. Any comments regarding the intended issue of the Section 48 Notice should be sent via email to pollution@nt.gov.au by no later than close of business on 29 June 2021.

Should you wish to discuss the contents of this letter or have any questions about the intended issuing of a Section 48 Notice please contact the undersigned at pollution@nt.gov.au.

Yours sincerely,

Claudia Bennett
Environmental Officer
Environmental Operations – Environment Division
Department of Environment, Parks and Water Security
Northern Territory Government

Providing services for the
Northern Territory Environment Protection Authority

Floor 1, Arhemica House, 16 Parap Road, Parap
PO Box 3675, Darwin, NT 0801

P: (08) 8924 4161
E: claudia.bennett@nt.gov.au

W: Northern Territory Environment Protection Authority
W: Department of Environment, Parks and Water Security

W: Parks and Wildlife Commission

Stay up to date and connect with us:

Adam Reed
Environment Manager

8 8343 5444 | +61 (458) 628406
adam.reed@1rail.com.au | 1rail.com.au

Level 3, 33 Richmond Road, Keswick, South Australia 5035

ONE RAIL Australia

ONE Team - We work as one to get the best outcomes for our customers.

ntepa Northern Territory Environment Protection Authority

NOTICE TO CARRY OUT ENVIRONMENTAL AUDIT PROGRAM

(Issued pursuant to Section 48(1) of the *Waste Management and Pollution Control Act 1998*)

ISSUED TO: One Rail Australia Pty Ltd
ACN 079 444 296

OF: Level 3, 33 Richmond Road
KESWICK SA 5035

WHEREAS the Northern Territory Environment Protection Authority ("NT EPA") is satisfied for the reasons stated in **Attachment "A"** to this notice that you are a person required to carry out an Environmental Audit Program in relation to the Berrimah Rail Terminal, located at Section 5411 and Section 5641, Hundred of Bagot, as delineated in **blue** in **Attachment "C"** ("the premises") to evaluate:

(i) **the types, amount, distribution and mobility of contaminants and wastes present in the environment resulting from "the incident" as defined in Reason 4 of Attachment "A"; and**

(ii) **the extent to which actions are required to be taken, or results required to be achieved, for waste management or the prevention, reduction, control, rectification or clean-up of pollution or environmental harm resulting from pollution have been taken or achieved as a result of the incident.**

NOW TAKE NOTICE that you are required to comply with each of the requirements specified in **Attachment "B"** to this notice on and from the date of issue of this notice.

ISSUE DATE: 07/07/2021

.....
AMY DENNISON
EXECUTIVE DIRECTOR
ENVIRONMENTAL REGULATION
DELEGATE OF THE NT EPA

Important Notice

Failure to comply with this notice is an offence under Section 52 of the *Waste Management and Pollution Control Act 1998* and may incur significant penalties and/or other statutory action.

This notice takes effect on the date on which it is served upon you. Pursuant to Section 108 of the *Waste Management and Pollution Control Act 1998*, **you have the right to apply for a review of the decision to issue you with this Notice to carry out an Environmental Audit. If you intend to apply for a review, YOU MUST MAKE AN APPLICATION NOT LATER THAN 28 DAYS after the day on which this Notice of the decision was given.** For information on how to lodge an application for review, contact the Northern Territory Environment Protection Authority, telephone 8924 4041.

Pursuant to Section 112 of the *Waste Management and Pollution Control Act 1998* the person issued with this notice must fulfil certain obligations before selling, leasing, sub-leasing, giving or exchanging land, premises, a vehicle or business which is the subject of this Notice.

ATTACHMENT "A"

REASONS FOR ISSUING THIS NOTICE

1. One Rail Australia Pty Ltd (One Rail) occupies and controls Section 5411 and Section 5461, Hundred of Bagot, also known as the Berrimah Rail Terminal, and located off Export Drive, Berrimah as delineated in blue in **Attachment "C"** ("the premises");
2. One Rail provides a rail service to the freight forwarding and transportation industry and transports containers that may contain listed waste via rail, between terminals in South Australia and the Northern Territory;
3. One Rail holds Environmental Protection Licence (EPL222) for the transport of listed wastes on a commercial or fee for service basis;
4. On 30 May 2020 at 9:30am, approximately 20,000 litres of diesel was released to the environment during the fuelling of a locomotive at the premises ("the incident");
5. The approximate location of the incident referred to in 4 above is designated by the green highlighted area in **Attachment "D"**;
6. On 12 June 2020, One Rail submitted a report to the NT EPA titled *Berrimah Fuel Spill May 2020*, which detailed the actions taken in response to the incident and states:
   (a) Upon discovery of the spill, immediate spill control measures were implemented including excavation of makeshift bunds and installation of shallow sumps to collect free product under the supervision of environmental consultants "Greencap";
   (b) Approximately 4,500 litres of diesel was recovered during the immediate spill response;
   (c) Following the spill response an Interim Remedial Action Plan (RAP) was prepared to guide impact delineation works;
   (d) Approximately 400 tonnes of diesel impacted soils were excavated and stockpiled at the premises for future management;
   (e) Daily monitoring of the mangroves offsite was undertaken to determine the extent of any impacts; and
   (f) Any residual impacts were to be managed via the implementation of an updated RAP;
7. On 28 May 2021, One Rail submitted a report to the NT EPA titled *Detailed Site Investigation Report Final April 2021* ("The DSI Report") which details the investigation and remedial works undertaken by Greencap in response to the incident, including:
   (a) Excavation and stockpiling of an additional 345 m^3 of diesel impacted soils at the premises;
   (b) A soil investigation to delineate the extent and mobility of in situ diesel impacted soils;

(c) Validation sampling to determine whether all of the diesel impacted soil from the incident has been removed;

(d) Installation and sampling of 11 groundwater monitoring wells; and

(e) Mass balance calculations to determine the extent of diesel impacts in the remaining in situ soils;

8. The DSI Report estimated approximately 18,000 litres of diesel had been recovered during remedial works (as either free phase product or as impacted soils), resulting in approximately 2,000 litres of diesel remaining in situ at the premises;

9. The DSI Report identified Light Non-Aqueous Phase Liquid (LNAPL) impacts within one groundwater monitoring well adjacent the incident location;

10. On 4 February 2021, NT EPA officers attended the premises ("the inspection") and observed:

a. An area of new ballast placed across the incident location, understood to have been a result of remedial works referred to in **8** above.

b. A stockpile of soil (excavated as part of the incident response and remediation) that was uncovered, unsecured and positioned approximately 10 metres south of an earthen stormwater drain, that flows beyond the boundary of the premises into the surrounding mangroves, as shown in **Attachment "D"**;

c. A hydrocarbon-like sheen seeping from the stockpile into adjacent soils and stagnant surface water (photos are provided in **Attachment "E"**); and

d. A hydrocarbon-like sheen within the adjacent earthen stormwater drain (photos are provided in **Attachment "E")**;

11. During the investigation, NT EPA officers obtained a copy of the stormwater drainage plan for the premises, provided in **Attachment "F"**;

12. The stormwater drainage plan for the premises, referred to in **11** above, indicates that the earthen stormwater drain collects surface water before discharging into the mangrove community beyond the northern boundary of the premises;

13. During the inspection NT EPA officers collected soil samples from the stockpile and adjacent ground surfaces, and a surface water sample from the stagnant surface water pools down gradient of the stockpile;

14. The location of collected samples, referred to in **13** above, are shown in pink in **Attachment "G"** and laboratory analytical results, provided in **Attachment "H"** show that:

a. The soil sample collected from the stockpiled soil associated with the incident contained very high levels of diesel;

b. The soil sample collected from the ground surface adjacent to the stockpile contained high levels of diesel; and

c. The surface water sample collected from the stagnant surface water pools down gradient of the stockpile, and adjacent the earthen stormwater drain contained diesel;

15. Diesel is categorised as a heavy end hydrocarbon and typically contains saturated hydrocarbons (e.g. paraffin) and aromatic hydrocarbons (e.g. naphthalene);
16. Diesel and diesel contaminated soil resulting from the pollution incident, that occurred at the premises on 30 May 2020, is defined as a contaminant and as a waste pursuant to section 4 the *Waste Management and Pollution Control Act 1998* (the Act);
17. Hydrocarbons have the potential to kill or inhibit microbial species and reduce water/nutrient uptake by plants which can result in toxicity to some plant species and impaired ecosystem functioning[1];
18. Human health may also be impacted as a result of hydrocarbon contamination whereby impacts migrate into surface/groundwater used for consumption[2];
19. The incident has impacted soil and has potentially impacted nearby water environments;
20. An evaluation of the suitability of the management of the contaminated soil stockpile at the premises is required to ensure that it is not causing pollution and environmental harm; and
21. An evaluation of the effectiveness of prevention, reduction, control, rectification or clean up measures implemented following the incident, which resulted in pollution and environmental harm, is required to inform any additional actions to prevent further pollution or environmental harm.

[1] Truskewycz A, Gundry TD, Khudur LS, et al. *Petroleum Hydrocarbon Contamination in Terrestrial Ecosystems-Fate and Microbial Responses* in Molecules. (2019), accessed via: Petroleum Hydrocarbon Contamination in Terrestrial Ecosystems—Fate and Microbial Responses (nih.gov)

[2] Kuppusamy S., Maddela N.R., Megharaj M., Venkateswarlu K. (2020) I*mpact of Total Petroleum Hydrocarbons on Human Health* in Total Petroleum Hydrocarbons pp 139-165, Springer, Cham. Accessed via Petroleum Hydrocarbon Contamination in Terrestrial Ecosystems—Fate and Microbial Responses (nih.gov).

ATTACHMENT "B"

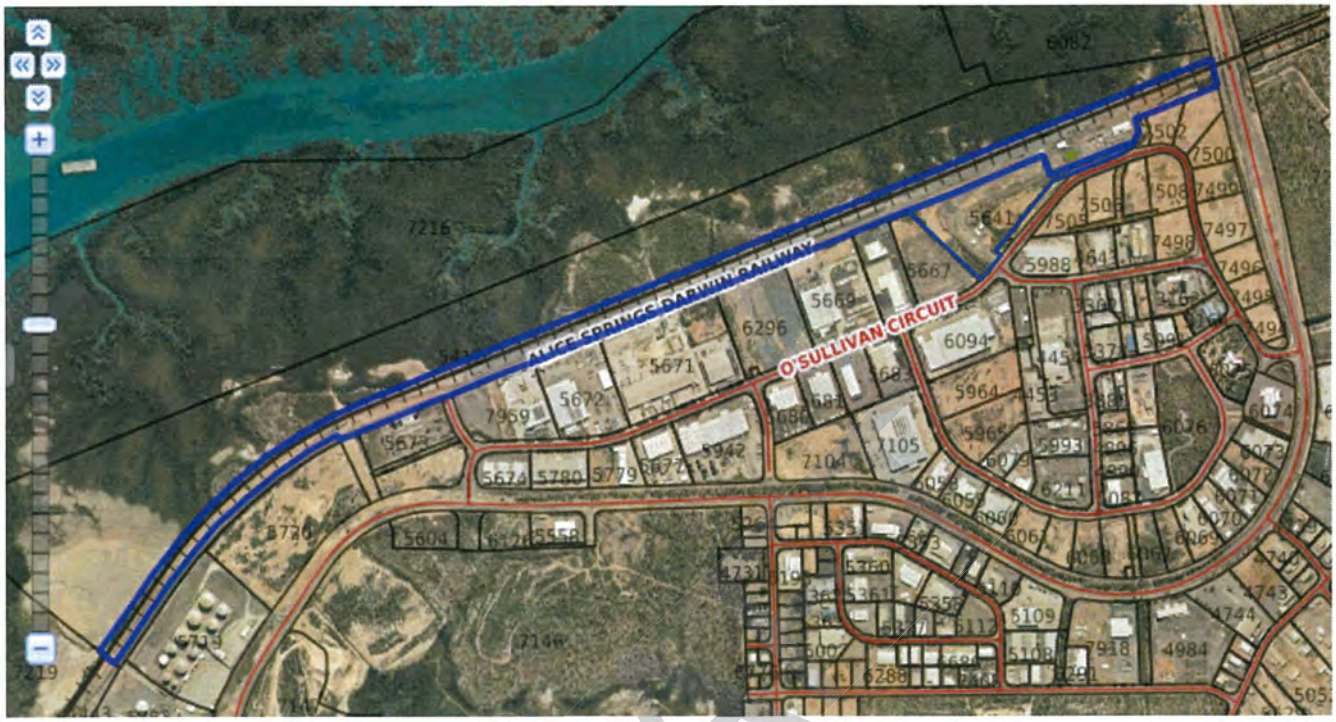
NOTICE REQUIREMENTS

1. The environmental audit program (the program) must be performed by *a* person registered under section 68 of the *Waste Management and Pollution Control Act 1998* (the Act), in this case an environmental auditor specifically accredited under the New South Wales or Victorian auditor accreditation schemes;
2. Within one month from the date of issue of this notice you must engage the environmental auditor referred to in requirement 1 above;
3. Within two months from the date of issue of this notice you must submit a scope of works for the program to the NT EPA for consideration;
4. Within six months from the date of issue of this notice you must submit an **Environmental Audit Report** prepared by the person referred to in requirement 1 above;
5. The **Environmental Audit Report** referred to in requirement 4 above must relate to the risk of any possible harm or detriment to the land, surface water and groundwater environments caused by the incident at the premises, as determined by:
    (a) review of any monitoring programs, data, records, reports or other information relevant to the scope of the audit; and
    (b) collection and/or modelling of any data as the auditor sees fit;
9. The **Environmental Audit Report** referred to in requirement 4 must:
    (a) indicate if the incident which occurred at the premises has caused a risk of any possible harm or detriment to the land, surface water and groundwater environments;
    (b) where a risk of any possible harm or detriment to a segment of the environment has been determined in 9(a) recommend any measures necessary to reduce the risk to an acceptable level; and
    (c) include an indicative implementation timetable for any recommended clean-up and/or management works referred to in requirement 9(b); and
10. The program must relate to the activities, processes and operations associated with the incident undertaken by or for One Rail at the premises.

ATTACHMENT "C"

"THE PREMISES"

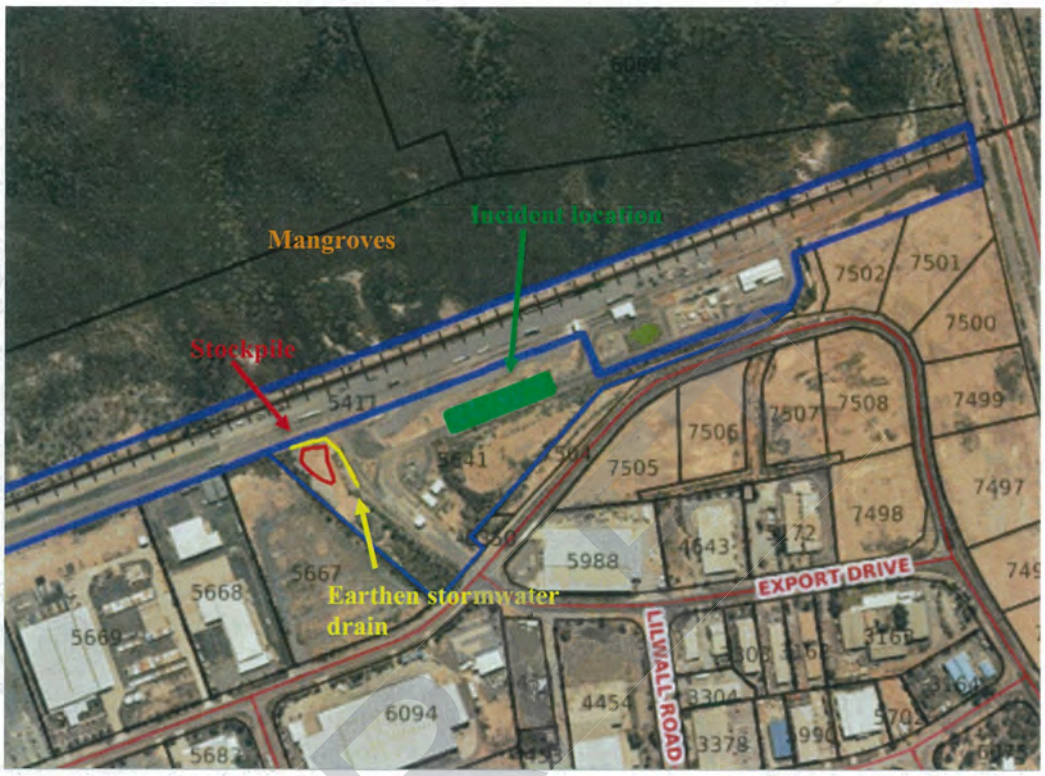
SITE LOCATION AND PROPERTY BOUNDARY (DELINEATED IN BLUE)



ATTACHMENT "D"

INSPECTION AREA

SITE EXTENT WITH APPROXIMATE LOCATION OF THE INCIDENT AND ASSOCIATED STOCKPILE AND EARTHEN STORMWATER CHANNEL



ATTACHMENT "E"

PHOTOGRAPHS

Photograph 1: *Stockpiled material facing east. Stockpile is uncovered with no erosion or sediment controls in place.*

Photograph 2: *Stockpiled material facing west. Earthen stormwater drain visible on far right of image, flowing west.*

Photograph 3: *Stockpiled material facing south. Visible hydrocarbon-like sheen leaching out of stockpile and pooling in surface water adjacent the stockpile.*

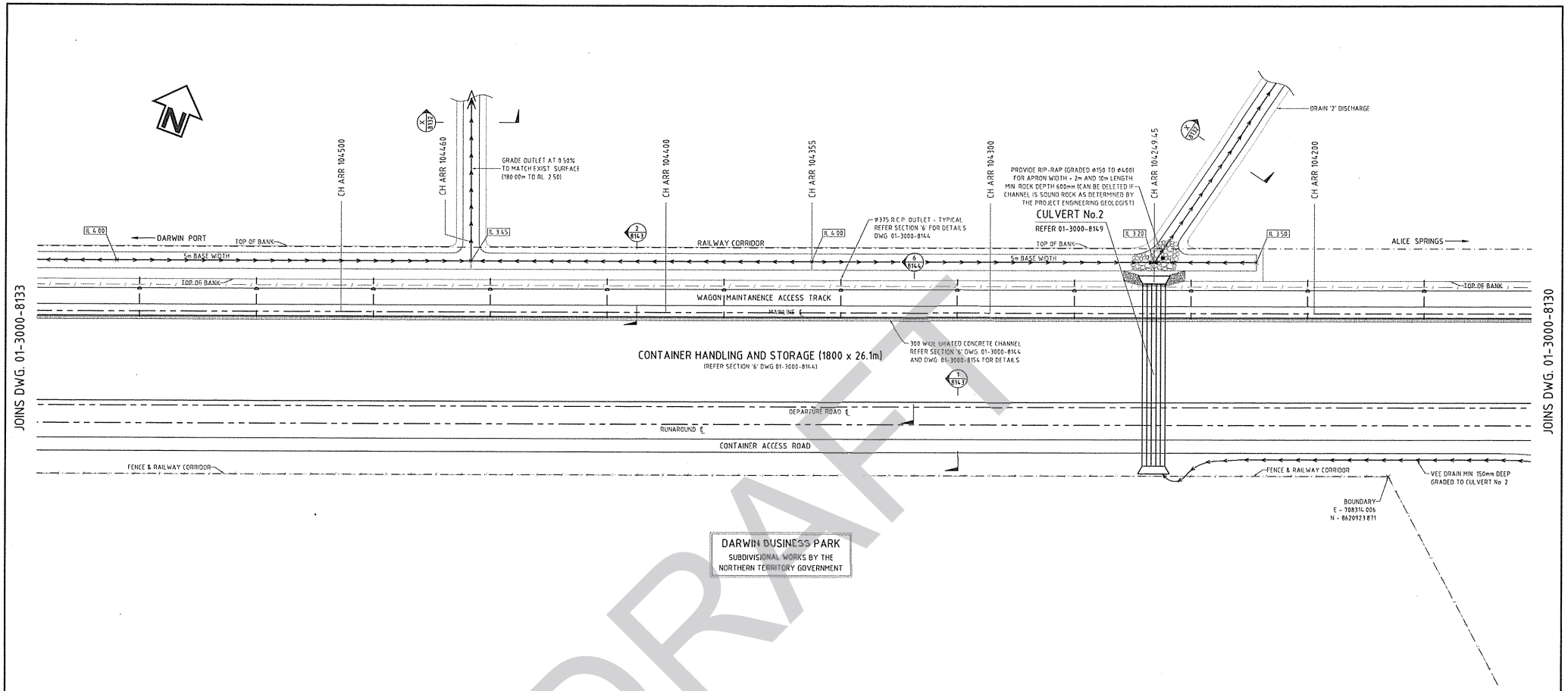
Photograph 4: *Visible hydrocarbon-like sheen atop ground surfaces and pooling in surface water adjacent stockpile.*

Photograph 5: *Earthen stormwater drain located north of the stockpile. Visible hydrocarbon-like sheen visible in water and on surrounding ground surfaces.*

Photograph 6: *Earthen stormwater drain located north of the stockpile. Visible hydrocarbon-like sheen visible in water and on surrounding ground surfaces.*

ATTACHMENT "F"

FACILITY DRAINAGE MAP



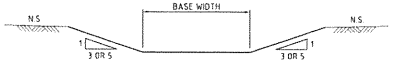
DARWIN BUSINESS PARK
SUBDIVISIONAL WORKS BY THE NORTHERN TERRITORY GOVERNMENT

LEGEND

- RAILWAY CORRIDOR BOUNDARY
- CHAIN MESH FENCE
- RAILWAY TRACK CENTRELINE
- OPEN DRAIN CENTRELINE
- U.G. DRAINAGE PIPE

NOTES

1. ALL VEE DRAINS TO BE CUT TO 1 ON 4 BATTERS
2. REFER DWG Nos 01-3000-8143, 8145 & 8156 FOR TYPICAL SECTIONS
3. CULVERT SETOUT COORDINATES SHOWN ARE TO THE FACE OF THE HEADWALL UNITS AND CENTRELINE ON THE CULVERT STRUCTURE
4. CULVERT SETOUT CHAINAGES SHOWN ARE TO THE CENTRELINE OF THE CULVERT STRUCTURE AND RELEVANT OFFSETS ARE FROM THE MAINLINE CENTRELINE TO THE FACE OF THE CULVERT HEADWALL UNITS
5. ALL REINFORCED CONCRETE PIPES SHALL BE 375mm DIA U.N.O., CLASS 4 WITH HS3 SUPPORT CONDITIONS TO AS 3725
6. REFER TO DWG Nos 01-3000-8149, 8152 & 8153 FOR REINFORCED BOX CULVERT ARRANGEMENT DETAILS/WINGWALL DETAILS
7. REFER DWG No 01-3000-8144 FOR GRATED INLET & FIELD INLET DETAILS
8. COORDINATES TO MGA94 ZONE 52



SECTION X-X
N.T.S

NOTE
GRADE BASE AT 1200 TO DAYLIGHT BY SHORTEST ROUTE
SIDE SLOPES = 1:3 WHERE N.S. RL - 3.00m
SIDE SLOPES = 1:5 WHERE N.S. RL < 3.00m
BASE WIDTH = 5.0M AT CHN 104460.00
BASE WIDTH = 10.0M AT CHN 104249.45

NOTE: FOR COMPLETE INFORMATION THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH PROJECT QUALITY ASSURANCE AND CONSTRUCTION RECORDS

AB

0 10 20 30 40 50
SCALE 1:500

FINAL DESIGN DOCUMENTATION

B1	
CAD FILE	01-3000-8132.dwg
REFERENCE FILES	see above
PLOT SCALE	1:1
SCALES USED	1:500

100 MILLIMETRES ON ORIGINAL DRAWING

DRAWING INDEX

CODE	DATE	DESCRIPTION	DA	PA
AB	08.09.03	FINAL DESIGN DOCUMENTATION	CWD	CWD
6	31.07.03	5m WIDE OPEN DRAIN (STH) DELETED, VEE DRAIN ADDED AND FENCE MOVED TO BOUNDARY	CWD	CWD
5	23.04.03	CONTAINER PAVEMENT PIPE SIZE CHANGED TO 375mm AND NOTES ADDED/AMENDED	CWD	CWD
4	08.02.03	NORTHERN FENCE AMENDED CONTAINER PAVEMENT DETAILS AMENDED DRAINAGE DETAIL DELETED	CWD	CWD

REVISIONS AND ISSUES

CODE	DATE	DESCRIPTION	DA	PA
3	23.01.03	APPROVED FOR CONSTRUCTION	CWD	CWD
2	13.12.02	TOP OF BANK/DRAIN MOVED NTH 1.8m, PRECAST REP OUTLETS DELETED RIP-RAP, ROCK PROTECT ADDED		
1	12.11.02	RIP-RAP, EDGE STRIP ADDED, INV. LEVELS CHANGED PIPE END DETAIL 'A' ADDED ISSUED FOR AUTHORITY APPROVAL ROADWORKS DETAILS REMOVED VARIOUS DRAINAGE DETAILS AMENDED	CWD	CWD
0	13.06.02	ADRAIL APPROVED FOR SUBMISSION TO PRINCIPAL	CWD	CWD

REVISIONS AND ISSUES

		DATE
DESIGNER	T.C.	13.06.02
DRAFTER	M.L.	13.06.02
DESIGN CHECKER	D.B.	13.06.02
DRAFTING CHECKER	G.S.C.	13.06.02
DESIGN APPROVAL	C.W.D.	13.06.02
QUALITY CHECK	G.J.H.	13.06.02
PROJECT APPROVAL	C.W.D.	13.06.02
PRINCIPAL APPROVAL	A.P.T.C.	15.01.03

ADrail

- Brown & Root Construction Pty Ltd ABN 84 094 432 533
- Barclay Mowlem Construction Limited ABN 36 009 830 460
- Macmahon Contractors Pty Ltd ABN 37 007 611 485
- John Holland Pty Ltd ABN 11 004 282 268

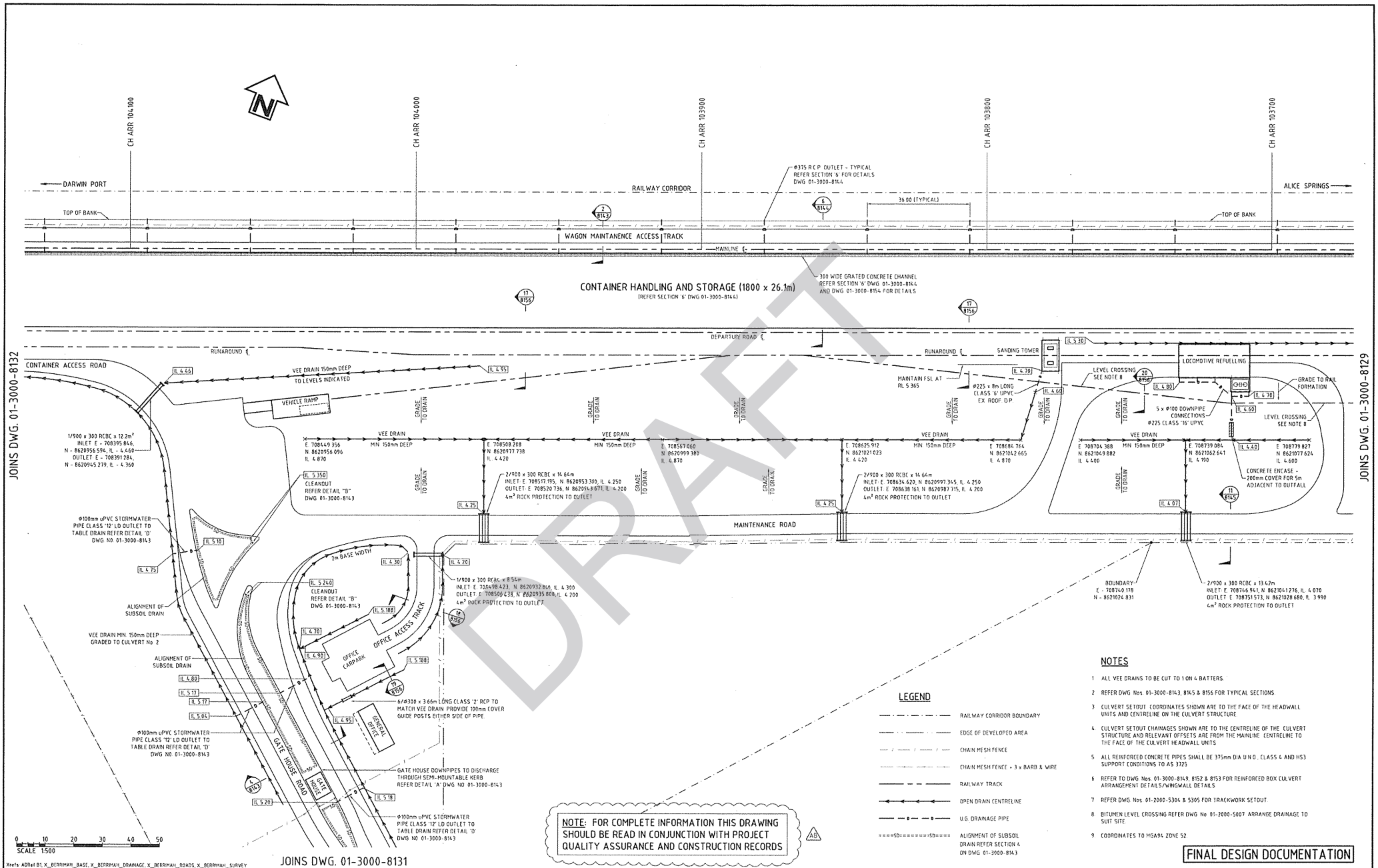
ALICE SPRINGS - DARWIN RAILWAY PROJECT

BERRIMAH FREIGHT TERMINAL DRAINAGE
SHEET 4 OF 7

DRAWING NUMBER: 01-3000-8132

REVISION CODE: AB

O:\Drafting\Drawings\Permanent_Facilities\01-3000-8132 Rev AB.dwg, 12/09/2003 05:40:18 PM, G.Hepworth



LEGEND

- RAILWAY CORRIDOR BOUNDARY
- EDGE OF DEVELOPED AREA
- CHAIN MESH FENCE
- CHAIN MESH FENCE + 3 x BARB & WIRE
- RAILWAY TRACK
- OPEN DRAIN CENTRELINE
- U.G. DRAINAGE PIPE
- ALIGNMENT OF SUBSOIL DRAIN REFER SECTION 4 ON DWG. 01-3000-8143

NOTES

1. ALL VEE DRAINS TO BE CUT TO 1 ON 4 BATTERS.
2. REFER DWG Nos. 01-3000-8143, 8145 & 8156 FOR TYPICAL SECTIONS.
3. CULVERT SETOUT COORDINATES SHOWN ARE TO THE FACE OF THE HEADWALL UNITS AND CENTRELINE ON THE CULVERT STRUCTURE.
4. CULVERT SETOUT CHAINAGES SHOWN ARE TO THE CENTRELINE OF THE CULVERT STRUCTURE AND RELEVANT OFFSETS ARE FROM THE MAINLINE CENTRELINE TO THE FACE OF THE CULVERT HEADWALL UNITS.
5. ALL REINFORCED CONCRETE PIPES SHALL BE 375mm DIA U.N.O., CLASS 4 AND H53 SUPPORT CONDITIONS TO AS 3725.
6. REFER TO DWG Nos. 01-3000-8149, 8152 & 8153 FOR REINFORCED BOX CULVERT ARRANGEMENT DETAILS/WINGWALL DETAILS.
7. REFER DWG Nos. 01-2000-5304 & 5305 FOR TRACKWORK SETOUT.
8. BITUMEN LEVEL CROSSING REFER DWG No. 01-2000-5007. ARRANGE DRAINAGE TO SUIT SITE.
9. COORDINATES TO MGA94 ZONE 52.

NOTE: FOR COMPLETE INFORMATION THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH PROJECT QUALITY ASSURANCE AND CONSTRUCTION RECORDS

FINAL DESIGN DOCUMENTATION

B1	
CAD FILE	01-3000-8131.dwg
REFERENCE FILES	see above
PLOT SCALE	1:1
SCALES USED	1500

100 MILLIMETRES ON ORIGINAL DRAWING

DRAWING INDEX

CODE	DATE	DESCRIPTION	DA	PA
AB	08.09.03	FINAL DESIGN DOCUMENTATION	CWD	CWD
6	31.07.03	5m WIDE OPEN DRAIN DELETED, VEE DRAIN ADDED	CWD	CWD
5	23.04.03	CONTAINER PAVEMENT PIPE SIZE CHANGED TO 375mm AND NOTES AMENDED	CWD	CWD
4	08.02.03	CONTAINER PAVEMENT & NORTHERN FENCE AMENDED, SOUTHERN BDY. COORD'S CORRECTED, NOTES AMENDED	CWD	CWD
3	29.01.03	APPROVED FOR CONSTRUCTION	CWD	CWD
		TOP OF BANK MOVED NORTH 1.9m, PRECAST RCP OUTLETS DELETED, ROCK PROT. INCREASED TO 4m		
2	13.12.02	DRAIN, GRADING NOTES & CONC. EDGE STRIP ADDED	CWD	CWD
1	12.11.02	ISSUED FOR AUTHORITY APPROVAL. ROADWORKS DETAILS REMOVED. VARIOUS DRAINAGE DETAILS AMENDED	CWD	CWD
0	13.06.02	ADRAIL APPROVED FOR SUBMISSION TO PRINCIPAL	CWD	CWD

REVISIONS AND ISSUES

	DATE
DESIGNER	T.C. 13.06.02
DRAFTER	M.L. 13.06.02
DESIGN CHECKER	D.B. 13.06.02
DRAFTING CHECKER	G.S.C. 13.06.02
DESIGN APPROVAL	C.W.D. 13.06.02
QUALITY CHECK	G.J.H. 13.06.02
PROJECT APPROVAL	C.W.D. 13.06.02
PRINCIPAL APPROVAL	A.P.T.C. 15.01.03

ADrail

- Brown & Root Construction Pty Ltd ABN: 84 094 382 533
- Barclay Mowlem Construction Limited ABN: 36 009 850 460
- Macmahon Contractors Pty Ltd ABN: 37 007 611 485
- John Holland Pty Ltd ABN: 11 004 282 268

ALICE SPRINGS - DARWIN RAILWAY PROJECT

BERRIMAH FREIGHT TERMINAL DRAINAGE SHEET 2 OF 7

DRAWING NUMBER: 01-3000-8130

REVISION CODE: AB

ATTACHMENT "G"

INVESTIGATION AREA
APPROXIMATE LOCATION OF STOCKPILE, EARTHEN STORMWATER DRAIN AND COLLECTED SAMPLE LOCATIONS

ATTACHMENT "H"

LABORATORY ANALYTICAL RESULTS

Client Project: Berrimah Rail Terminal – PRL9059
Client Ref: NTEPA2020/0007-193
Ref: 20S3454
Contact: Leif Cooper
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REPORT ON THE ANALYSIS OF SPILLED HYDROCARBONS

5-May-2021

INTRODUCTION

ChemCentre received six samples from the Department of Environment and Natural Resources on 18 February 2021. The Chain-of-Custody document accompanying the samples provided details of the six samples (see Appendix 1).

Photographs of all the samples were taken and are included in Appendix 2.

NT EPA requested ChemCentre analyse the samples together with a diesel reference sample (previously supplied on 31 July 2020) to determine if the hydrocarbon content of the samples was related.

SUMMARY

The samples were compared to each other using the method CEN/TR 15522-2, with analysis conducted by gas chromatography–flame ionisation detector (GC-FID) and gas chromatography–mass spectrometer (GC-MS).

Two of the samples contained soil with significant amounts of diesel fuel. One sample contained mainly water with a trace amount of diesel. The remaining samples (two waters, one soil) did not contain significant amounts of any hydrocarbon.

Percent weathering plots of the three samples containing diesel (comparing them to each other) showed that the samples have different degrees of weathering, with the two soil samples showing evaporation, and the water sample also showing significant evaporation and water-washing effects.

The diagnostic ratios of the two soil samples show they come from the same source as the reference diesel, where differences in the chromatographic patterns and/or diagnostic ratios of samples are lower than the variability of the method or can be explained as being the result of expected weathering processes. The degradation of hydrocarbons in the water sample meant that any match with the other samples was inconclusive.

CONTENTS

SAMPLE IDENTIFICATION

The samples were assigned a unique laboratory identification number (see Table 1). Note: Sample 20S3454/002 (BRT-01) was described as having the following containers "1 x Jar, 2 x bottles, 2 x vials" of "Soil and Liquid". Only one jar of soil was received by ChemCentre personnel for this sample, as annotated on the Chain of custody (no bottles/liquid).

A reference diesel was also analysed. This reference diesel was previously provided by NT EPA (from the same sample location) and was initially analysed in report 20S0458_R0.

Table 1

ChemCentre Lab No	Client Sample ID	Description	Date sampled	Date received
20S3454/001	BRT-SP01	Soil (one jar)	4/02/2021	18/02/2021
20S3454/002	BRT-01	Soil (one jar)	4/02/2021	18/02/2021
20S3454/003	BRT-03	Liquid (two bottles and two vials)	4/02/2021	18/02/2021
20S3454/004	BRT-08	Liquid (two bottles and two vials)	4/02/2021	18/02/2021
20S3454/005	BRT-09	Soil (one jar)	4/02/2021	18/02/2021
20S3454/006	BRT-09	Liquid (two bottles and two vials)	4/02/2021	18/02/2021
20S0458/001	BTY 5	Vial of diesel (reference)	30/05/2020	31/07/2020

ANALYSIS

Each of the soil samples, 20S3454/001, 002, and 005, were extracted by sub-sampling 10 g into a vial, adding 20 mL of dichloromethane (DCM) : acetone (1:1) along with the addition of sodium sulfate. The samples were then sonicated for 30 minutes, and a portion of this extract was subsampled for analysis.

Samples 20S3454/003, 004, and 006 were primarily water. These samples were extracted with DCM and the extract dried with sodium sulfate and placed into vials for analysis.

The diesel reference sample 20S0458/001 was diluted in DCM and vialled for analysis.

The water and soil extracts were analysed by GC-FID and the total hydrocarbon content was calculated.

Selected extracts were then further analysed along with the diesel reference sample, using GC-MS to identify individual compounds in the sample.

WEATHERING

When oil is spilled and exposed to the environment, the chemical properties of the oil begin to change. Several factors such as evaporation, water washing, photo-oxidation and microbial degradation alter the oil's chemical characteristics. These processes are termed "weathering" and can confound oil spill identification if not properly understood, as they create differences between an oil spill sample and a suspected source sample. Generally, the most important effect on an oil spill is evaporation, as significant losses of the more volatile components of an oil (less than C_{14}) occur within hours of exposure to the environment. Other processes may take place over months or years. Annex G of CEN/TR 15522-2 summarises the weathering processes and their effects on an oil's composition, including evaporation, dissolution, re-distribution, biodegradation, and photooxidation.

FINGERPRINTING

The basis of oil spill identification is the detection of the oil's "fingerprint". This fingerprint is made up of several compounds, predominantly polycyclic aromatic hydrocarbons (PAHs) and biomarkers, whose relative concentrations to each other can be calculated and compared to positively match one oil sample to another. The CEN/TR 15522:2 method outlines several PAHs and biomarkers, in the following classes:

- n-alkanes
- branched alkanes, including isoprenoids (e.g. pristane and phytane)
- PAHs
- alkylated-PAHs
- bicyclic sesquiterpanes
- alkylbenzenes/toluenes
- adamantanes/diamantanes
- tricyclic diterpanes
- hopanes
- steranes and diasteranes
- triaromatic steroids

These compounds have low volatility and are water-insoluble, making them highly resistant to biodegradation and weathering. Many studies have shown that diagnostic ratios of compounds within these classes are stable, sometimes over long periods of time (Philp 1985, Leeder et al 1992, Douglas et al 1996).

METHOD CEN/TR 15522-2

The CEN/TR 15522-2 method builds on the earlier NordTest methodology (Daling et al, 2002), and uses Gas Chromatography (GC) to separate and identify the distribution of compounds that make up an oil. GC analysis is coupled with either a Flame Ionisation Detector (GC-FID), or with a Mass Spectrometer (GC-MS).

Gas Chromatography – Flame Ionisation Detection (GC-FID)

A tiered approach is taken to oil spill fingerprinting. The first tier is to screen each sample using GC-FID, which gives a chromatogram of the whole oil. This chromatogram will (usually) display a series of peaks representing the n-alkanes, which shows the boiling range of the oil, as well as the isoprenoid compounds pristane and phytane. At this stage, the chromatograms of the spill samples and the potential source samples are compared, and any obviously non-matching samples can be ruled out of further tiers of analysis. This comparison should consider the boiling range of the samples, and a weathering check of the compounds. It is important not to rule out a potential source based only on a difference in boiling ranges, without first considering if that difference could have been caused by evaporation of the lighter components of the spill sample. As well as the boiling range and weathering check, some biodegradation ratios can also be calculated (as ratios of n-alkanes and isoprenoids). These n-alkanes and isoprenoids can also be used to compare spill samples with potential source samples, particularly if the spill was relatively fresh and no significant biodegradation is expected.

Gas Chromatography – Mass Spectrometer (GC-MS)

The second tier of the CEN/TR 15522-2 method is analysis of the spill samples and the potential source samples by GC-MS. The mass spectrometer has the capability to scan the components coming out of the chromatograph at all ion ratios, which generates a total ion chromatograph (TIC). Alternatively, the spectrometer can operate in selected ion monitoring (SIM) mode. This will enhance the detection of the chosen fragmentation ions by detecting those ions for longer times. This capability allows the oil spill analyst to look specifically for those compounds that will yield the diagnostic ratios required to characterise an oil's "fingerprint". There are over 130 compounds recommended by the CEN/TR 15522-2 methodology that comprise a basic fingerprint, listed in Appendix 5.

Percent Weathering (PW) Plots and Diagnostic Ratios

The use of PW plots and diagnostic ratios for comparison of oil samples is based on both the GC-FID data of n-alkanes and isoprenoids and on GC-MS data of a suite of alkylated PAHs and petroleum biomarkers. Collectively, these targeted compounds provide a range of markers capable of monitoring different types of weathering and revealing "genetic" differences between oil from different origins and between different product (fuel) types. PW plots are generated by comparing a peak size in a suspected source oil's chromatogram to the size of the same peak in the chromatogram from a sample of spilled oil. To eliminate differences caused by the concentration of the oil in the solvent, the peak sizes are normalised, usually to the hopane concentration of each sample, but to other weathering-resistant compounds when hopanes are absent.

Conclusions

Once all the analysis has been completed, conclusions can be drawn by comparing results from all sources, including samplers' information, GC-FID chromatograms, GC-MS chromatograms, PW plots, and diagnostic ratios. The methodology suggests some criteria for the classification of spill samples from the correlations, outlined in Table 2.

Table 2

Classification	Definition
Positive match	Differences in the chromatographic patterns and diagnostic ratios of samples submitted for comparison are lower than the variability of the method, or can be explained unequivocally, for example by weathering
Probable match	Differences in chromatographic patterns and diagnostic ratios do not permit an unequivocal positive match, but they can be explained reasonably by external factors, for example weathering in combination with mixing or by non-representative or heterogeneous properties of the available samples
Inconclusive	Differences in the chromatographic patterns and diagnostic ratios of the samples submitted for comparison do not permit a probable or non-match conclusion; for example, in case the concentration of the contaminant in a sample is too low
Non-match	Differences in the chromatographic patterns and diagnostic ratios of the samples submitted for comparison are pronounced and are larger than the variability of the method, and such differences cannot be explained by any external factors such as weathering, contamination, or heterogeneity

GC-FID RESULTS

The sample **20S3454/001 (BRT-SP01)** was a 250 mL jar full of soil. A portion of the soil was placed in a vial with some sodium sulfate and a 1:1 mix of dichloromethane and acetone. This vial was sonicated for 30 minutes to extract any hydrocarbons into the solvent mix, and the resulting extract was analysed in duplicate by GC-FID. The chromatographic profiles are shown in Figure 1 and Figure 2.

The chromatogram indicates that the sample contains diesel.

Figure 1: 20S3454/001 (BRT-SP01), GC-FID chromatogram

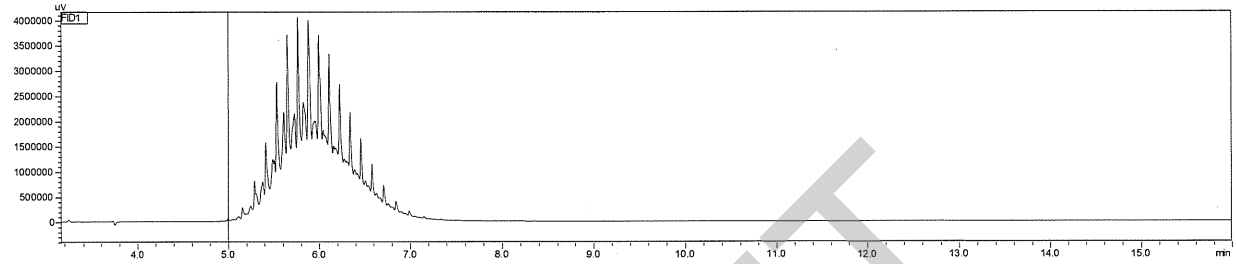
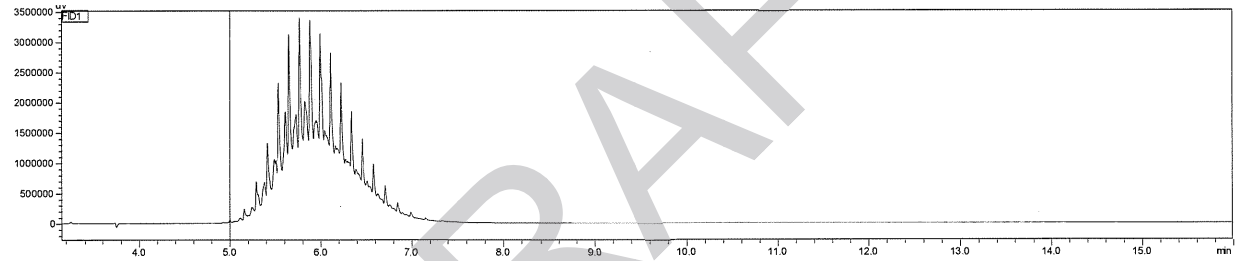


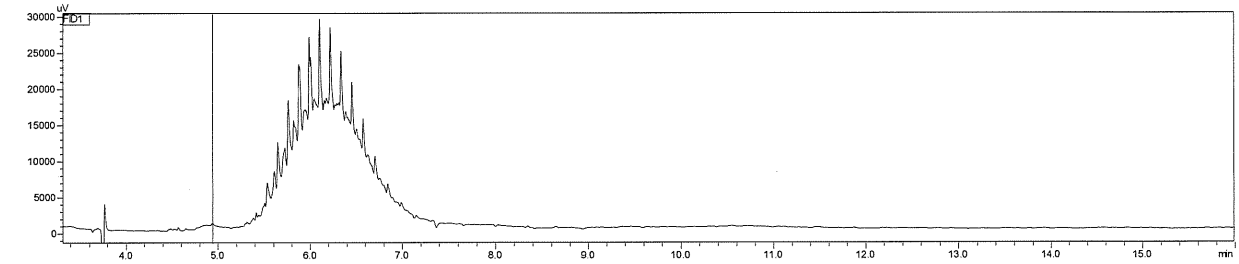
Figure 2: 20S3454/001 (BRT-SP01) duplicate, GC-FID chromatogram



The sample **20S3454/002 (BRT-01)** was a 250 mL jar full of soil. A portion of the soil was placed in a vial with some sodium sulfate and a 1:1 mix of dichloromethane and acetone. This vial was sonicated for 30 minutes to extract any hydrocarbons into the solvent mix, and the resulting extract was analysed by GC-FID. The chromatographic profile is shown in Figure 3.

The chromatograms indicate that the sample contains diesel.

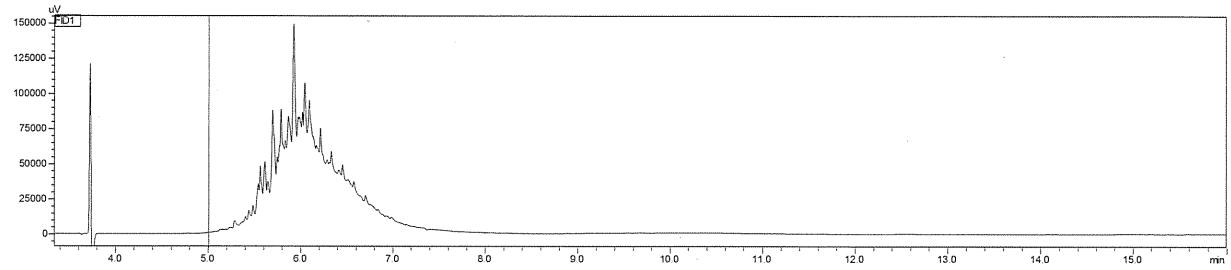
Figure 3: 20S3454/002 (BRT-01), GC-FID chromatogram



The sample **20S3454/003 (BRT-03)** was two 40 mL vials and two 100 mL bottles containing primarily water. This was extracted with a small portion of dichloromethane and the resulting extract was analysed by GC-FID. The chromatographic profile is shown in Figure 4.

The chromatogram indicates that the sample contains a small amount of degraded diesel.

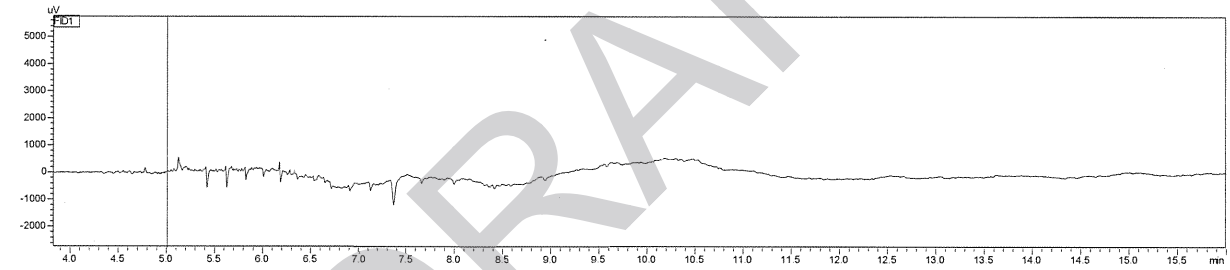
Figure 4: 20S3454/003 (SP1), GC-FID chromatogram



The sample **20S3454/004 (BRT-08)** was two 40 mL vials and two 100 mL bottles containing primarily water. This was extracted with a small portion of dichloromethane and the resulting extract was analysed by GC-FID. The chromatographic profile is shown in Figure 5.

The chromatogram indicates that the sample contains no significant levels of hydrocarbon.

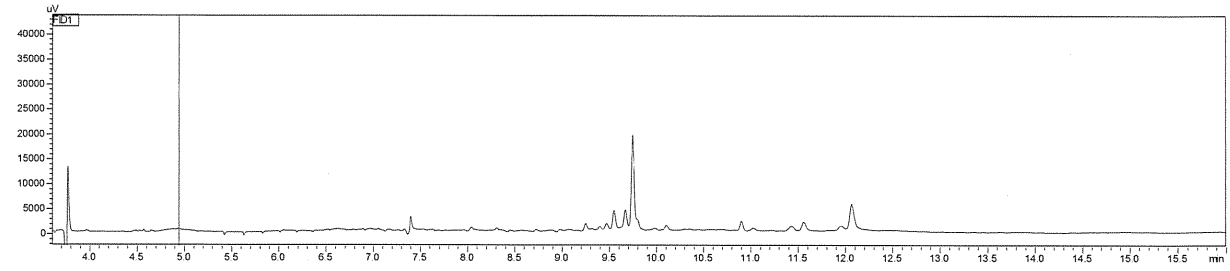
Figure 5: 20S3454/004 (BRT-08), GC-FID chromatogram



The sample **20S3454/005 (BRT-09, soil)** was a 250 mL jar full of soil. A portion of the soil was placed in a vial with some sodium sulfate and a 1:1 mix of dichloromethane and acetone. This vial was sonicated for 30 minutes to extract any hydrocarbons into the solvent mix, and the resulting extract was analysed by GC-FID. The chromatographic profile is shown in Figure 6.

The chromatogram indicates that the sample contains no significant levels of hydrocarbon.

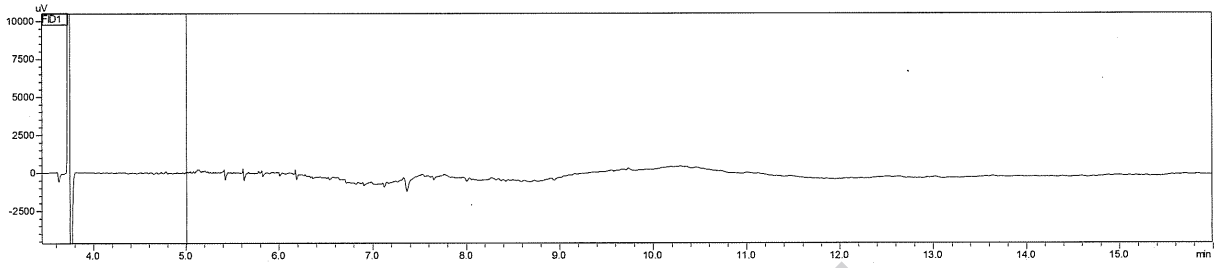
Figure 6: 20S3454/005 (BRT-09, soil), GC-FID chromatogram



The sample **20S3454/006 (BRT-09, liquid)** was two 40 mL vials and two 100 mL bottles containing primarily water. This was extracted with a small portion of dichloromethane and the resulting extract was analysed by GC-FID. The chromatographic profile is shown in Figure 7.

The chromatogram indicates that the sample contains no significant levels of hydrocarbon.

Figure 7: 20S3454/006 (BRT-09, liquid), GC-FID chromatogram



The amount of Total Recoverable Hydrocarbon (TRH) in each sample was calculated by comparing the area under the chromatogram to the area of alkane standards (see Table 3).

Table 3

Sample	Total Recoverable Hydrocarbons
203454/001	36,000 mg/kg
203454/001 duplicate	29,000 mg/kg
203454/002	320 mg/kg
203454/003	49 mg/L
203454/004	< 2.5 mg/L
203454/005	< 100 mg/kg
203454/006	< 2.5 mg/L

Visual comparison of chromatograms

The chromatograms shows that the three samples containing diesel have similar boiling ranges, with some degradation of n-alkanes evident in sample 3.

Percent Weathering plots (PW plots) were calculated from the GC chromatograms of samples 1, 2, and 3 by normalising the heights of the alkane peaks to the average height of the C20 to C24 alkanes and comparing each sample's alkane profile to the least weathered sample (20S3454/001). The duplicate samples were also compared to each other.

The plots appear in Appendix 3 and show the following:

- All plots show a normal weathering pattern and differences between the samples could be caused by evaporation and biodegradation.
- Sample 3 shows less biodegradation, with pristane and phytane apparently lower than the surrounding n-alkanes in this sample.

These findings are supported by the calculation of the acyclic isoprenoid ratios (see Table 4). The ratios are similar for all samples, indicating that the samples are potentially from the same source.

Table 4: Acyclic isoprenoid ratios

Sample	C17/Pr	C18/Ph	Pr/Ph
20S3454/001	1.73	2.63	1.41
20S3454/001r	1.73	2.65	1.42
20S3454/002	1.88	2.73	1.10
20S3454/003	2.19	3.81	1.15

GC-MS RESULTS

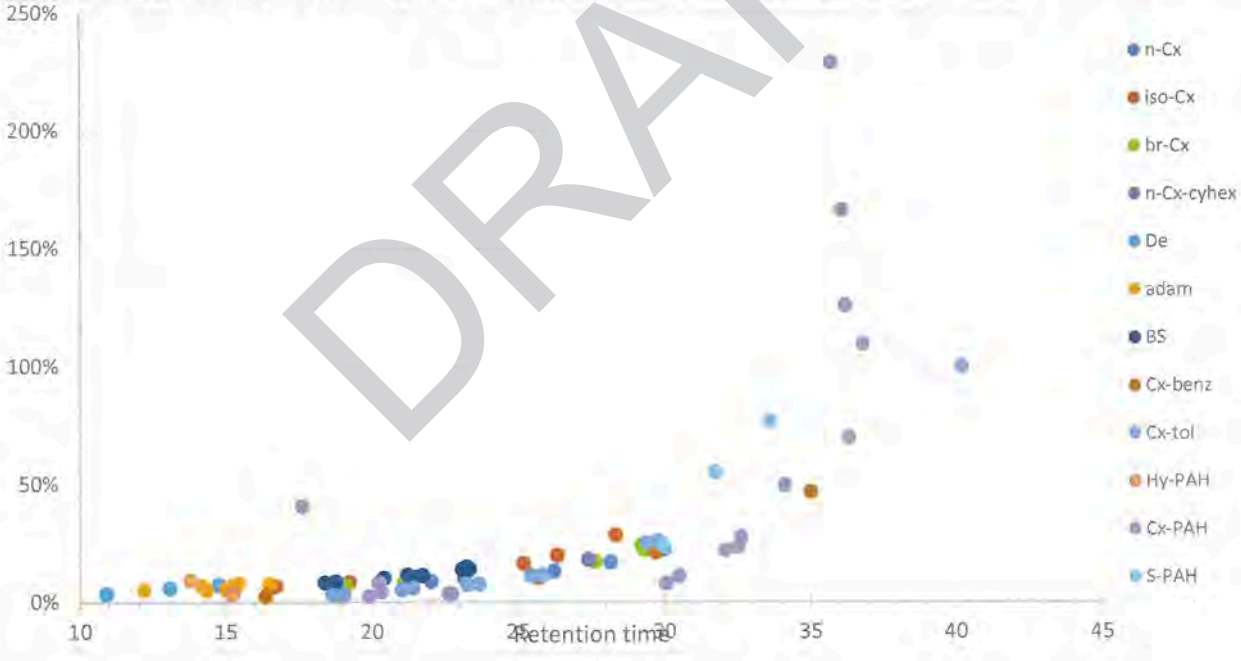
Based on the GC-FID chromatograms, samples 1, 2, and 3 (and sample 1 duplicate) were further analysed by GC-MS. The remaining samples did not contain significant hydrocarbons and were excluded from further analysis. A well-characterised reference oil (the AGSO standard) and the reference diesel sample from the same location (20S0458/001 – BTY 5) were also analysed for comparison.

The GC-MS analysis was conducted in selected ion monitoring (SIM). Analysing in selected ion monitoring (SIM) mode increased the sensitivity of the m to the compounds required for Percent Weathering (PW) plots, here normalised to the peak height of phytanyltoluene (or C23 terpane if present). The diagnostic ratios of PAHs and biomarkers were then calculated. A list of the compounds of interest used in PW plots and the diagnostic ratios derived from them appear in Appendix 5.

Samples 2 and 3 are each compared to sample 1 in the PW plots below (Figure 8 and Figure 9). All three samples are compared to the reference diesel in Figure 10 to Figure 12.

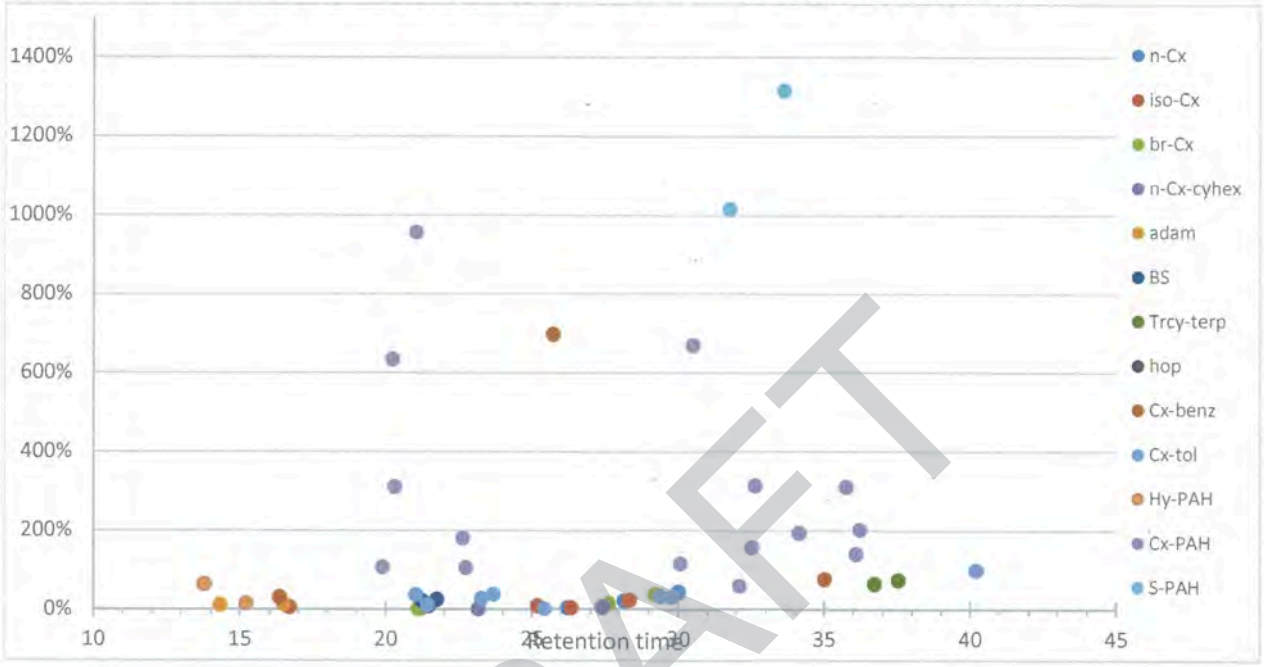
The PW plot in Figure 8 shows that sample 1 and sample 2 are the same diesel, with different weathering patterns impacting the ratios. Sample 2 is more evaporated, as shown by the lower points to the left of the plot. The alkyl-PAH and alkyl-benzene compounds are reduced in sample 1, likely due to water washing.

Figure 8: PW plot of sample 20S3454/002 (BRT-01) compared to sample 20S3454/001 (BRT-SP01)



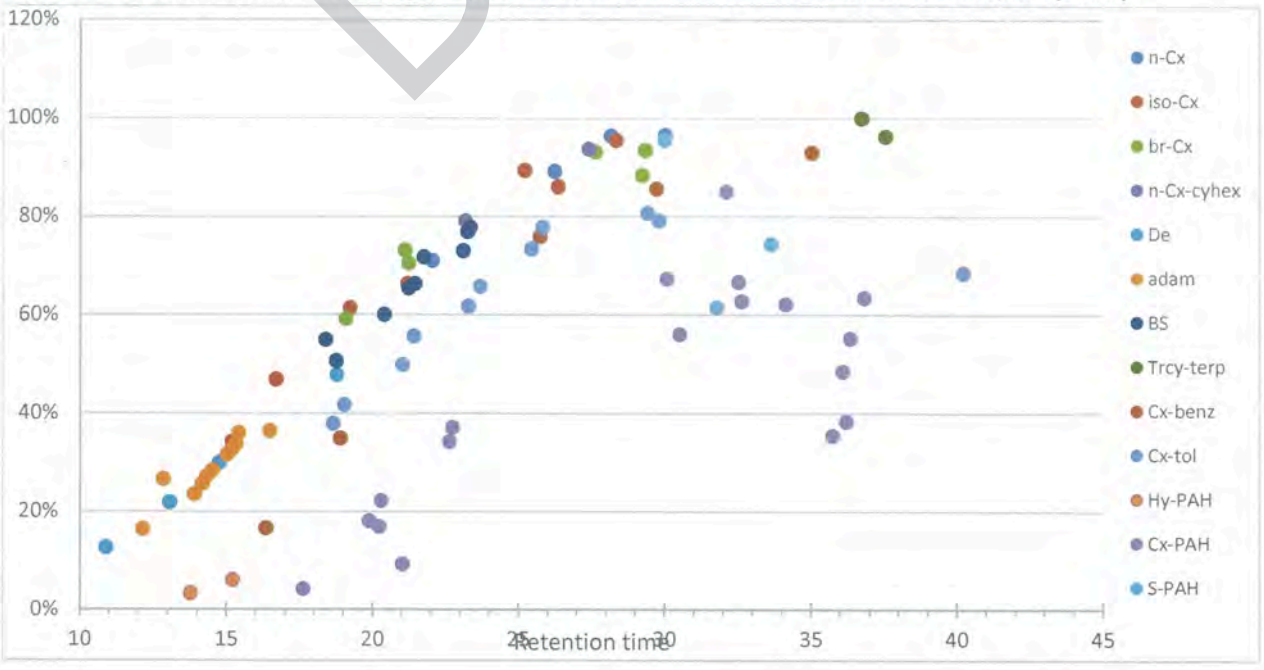
The PW plot in Figure 9 shows that sample 1 and sample 3 appear to be different hydrocarbons. There are some trends visible, indicating that they may have had a common source, with extreme weathering reducing the more volatile compounds, and water-washing enhancing the more soluble compounds (noting that sample 3 was a water sample).

Figure 9: PW plot of sample 20S3454/003 (BRT-03) compared to sample 20S3454/001 (BRT-SP01)



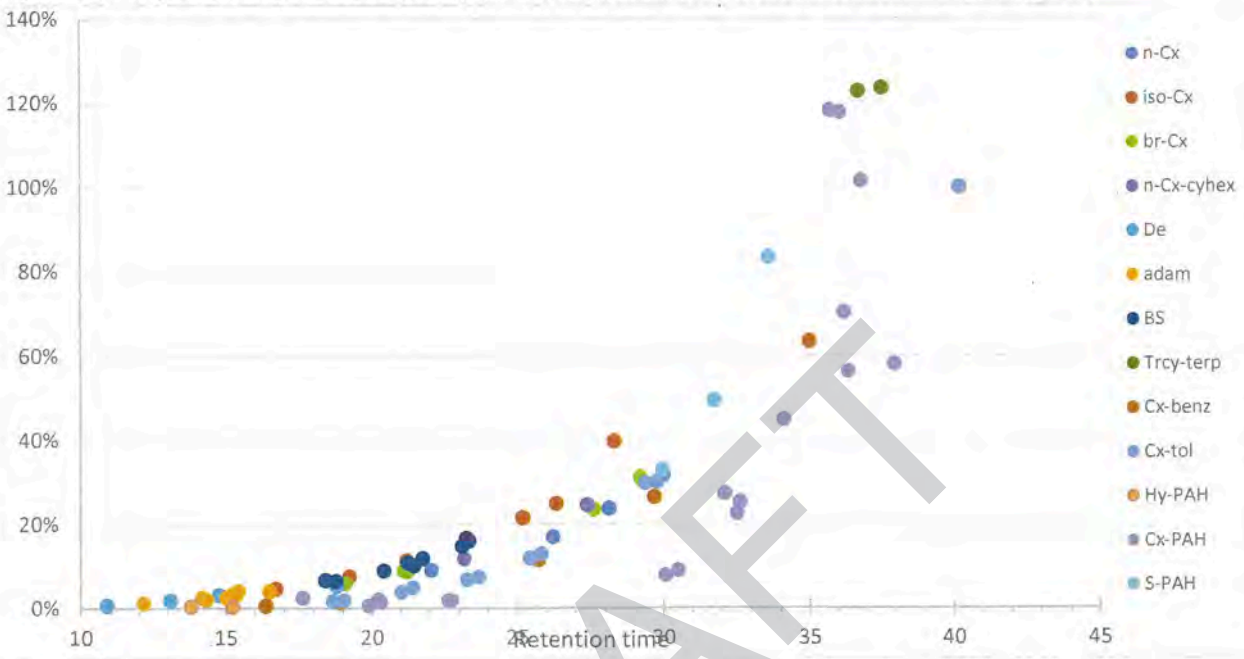
The PW plot in Figure 10 shows that sample 1 matches the reference diesel, with the water-washing of the alkyl-PAH and alkyl-benzene compounds more apparent, and some evaporation of sample 1 also visible.

Figure 10: PW plot of sample 20S3454/001 (BRT-SP01) compared to reference diesel 20S0458/001 (BYT 5)



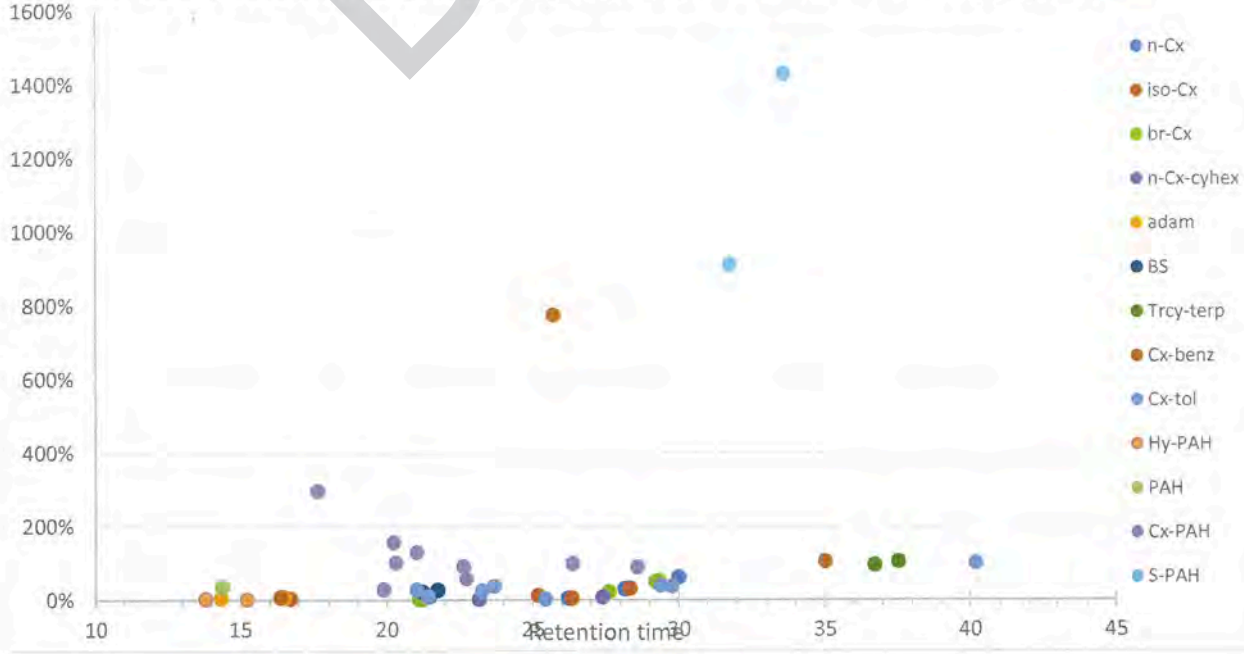
The PW plot in Figure 11 shows that sample 2 matches the reference diesel, with a similar pattern of degradation to sample 1. Comparing Figure 11 to Figure 10 shows that sample 2 is more impacted by evaporation, and sample 1 is more impacted by water-washing of the alkyl-PAH and alkyl-benzene compounds.

Figure 11: PW plot of sample 20S3454/002 (BRT-01) compared to reference diesel 20S0458/001 (BYT 5)



The PW plot in Figure 12 shows that sample 3 and the reference diesel appear to be different hydrocarbons. There are some trends visible, indicating that they may have had a common source, with extreme weathering reducing the more volatile compounds, and water-washing enhancing the more soluble compounds (noting that sample 3 was a water sample).

Figure 12: PW plot of sample 20S3454/003 (BRT-03) compared to reference diesel 20S0458/001 (BYT 5)



The recommended diagnostic ratios were calculated and are presented in Table 5. For samples 1, 2, and the reference diesel, all diagnostic ratios were within the 14% limit specified in the method as a significant difference, except for the ratios known to be affected by weathering. Sample 3 was more complex, and no definitive match was able to be found for this sample.

Table 5

	20S3454/001 BRT-SP01	20S3454/001 BRT-SP01 Duplicate	20S3454/002 BRT-01	20S3454/003 BRT-03	20S0458/001 BTY-5 Ref. diesel
1-M-Adm/1,2-DM-Adm	0.739	0.830	0.688	0.000	1.420
1-M-Adm/2-E-Adm	0.621	0.775	0.415	0.000	1.377
i-C13/2-M-tetralin	2.103	2.208	3.789	0.000	0.369
c-1,3,4-TM-Adm/2-E-Adm	0.615	0.689	0.566	0.000	0.684
C6-/C7-Benz	0.542	0.567	0.517	0.000	1.139
2-E-Adm/i-C14	0.134	0.122	0.150	0.323	0.172
BS1/BS2	1.259	1.135	1.204	0.000	1.160
C3-de peak/BS2	0.888	0.855	0.775	0.000	0.940
Bi/2-EN	0.000	0.000	0.000	0.000	4.047
2-E-N/2,6+2,7 DM-N	0.000	0.147	0.000	0.000	0.207
BS4/BS5	0.423	0.445	0.458	1.053	0.429
Br-Alk 169-3/n-C15	1.042	1.057	1.013	0.000	1.049
BS5/BS6	2.224	2.275	2.064	0.781	2.407
BS8/BS9	1.135	1.222	1.062	0.000	1.195
m-/o-C8-Tol	1.461	1.492	1.432	1.051	1.556
BS10/Norpri	0.636	0.673	0.543	0.000	0.730
Norpri/m-C9-Tol	2.488	2.719	3.672	9.237	2.044
C10-Benz/n-C11-CyC6	0.154	0.138	0.089	19.622	0.190
n-C17/Pri	1.704	1.587	1.122	1.718	1.644
Pri/Phy	1.369	1.427	0.952	0.223	1.519
n-C18/Phy	2.219	2.176	1.316	2.066	2.198
4-M-Dbt/1-M-Dbt	0.000	0.000	0.000	0.000	0.000
2-MPhe/1-MPhe	2.292	1.852	1.636	0.396	1.908
FAME 16:0/18:0	0.000	0.000	0.000	0.000	0.000

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CONCLUSION

Six samples were received by ChemCentre on the 18 February 2021. The samples were analysed along with a reference diesel sample provided previously by NT EPA (Ref 20S0458/001, received 31/07/2020). The samples were compared to each other using the CEN/TR 15522-2 methodology, with analysis conducted by GC-FID and fingerprinting analysis by GC-MS-SIM.

Three samples did not contain a significant amount of hydrocarbon and fingerprinting analysis was not undertaken on these samples.

The remaining samples were compared and two of them displayed a positive match, both to each other, and to the reference diesel sample. Differences in the chromatographic patterns and/or diagnostic ratios of samples were lower than the variability of the method or can be explained as being the result of expected weathering processes.

The third sample was inconclusive – due to extreme weathering, a positive match could not be unequivocally made.

COMMENTS

This report applies only to the sample(s) as received and may only be reproduced in full.

Leif Cooper
Senior Chemist and Research Officer
Scientific Services Division

APPENDIX 1

Chain of Custody for samples received on 18 February 2021

CHEM CENTRE.

ntepa Northern Territory Environment Protection Authority

2053454

SAMPLE INFORMATION & ANALYSIS REQUEST

Customer	Department of Environment & Natural Resources	**Laboratory**	ChemCentre, WA
Contract Number	N/A	**Quote Number**	**2102026**
Project Name	Berrimah Rail Terminal – PRL9059	**Lab Contact Name**	Leif Cooper
Reference Number	NTEPA2020/0007-193	**Lab Address**	ChemCentre, Scientific Services Division, Building 500, Resources and Chemistry Precinct, Cnr Manning Rd & Townsing Drive off Conlon Street, Bentley, WA 6102 Refer to map and delivery instructions – Esky Label
Contact Name	Claudia Bennett	**Lab Phone**	9422 9900
Phone	8924 4161	**Lab Email**	ssd@chemcentre.wa.gov.au
Email	pollution@nt.gov.au & claudia.bennett@nt.gov.au	**Turnaround time**	Standard TAT
Invoice to	pollution@nt.gov.au	**Sample retention time**	Retain as evidence under secure chain-of-custody; dispose only on instruction from the NT EPA

Type and Number of Bottles

Various bottled and Jars

Sample Information

Lab Sample ID	Sample ID	Date Sampled	Time Sampled	Container Type	Type of Sample	Sample Preservation	Analysis Required	Comments
2053454/001.	BRT-SP01	04/02/21	~10 00	1 x Jar	Soil	Locked refrigerator	TRH	
002.	BRT-01	04/02/21	~10 15	1 x Jar 2 x bottles 2x Vials	Soil and Liquid	Locked refrigerator	TRH GC-FID Screen GC-MS Fingerprinting (against SP01 sample)	Did not receive bottles & vials.
003.	BRT-03	04/02/21	~10 20	2 x bottles 2x Vials	Liquid	Locked refrigerator	TRH GC-FID Screen GC-MS Fingerprinting (against SP01 sample)	

2058454/004.	BRT-08	04/02/21	~11.15	2 x bottles 2x vials	Liquid	Locked refrigerator	TRH GC-FID Screen GC-MS Fingerprinting (against SP01 sample)	
005. 006.	BRT-09	04/02/21	~11 40	1 x Jar 2x bottles 2x vials	Soil + liquid	Locked refrigerator	TRH	Pending Results (TRH present) will analyse for: GC-FID Screen GC-MS Fingerprinting

ntepa Northern Territory Environment Protection Authority

CHAIN-OF-CUSTODY

Relinquished	Received	Notes
Name: Claudia Bennett.	Name Dale Carter	
Date: 16/02/21	Date 18/02/2021	
Time: 13:30pm.	Time 09:45	
Organisation: NT EPA.	Organisation: ChemCentre	
Sample Status Chilled.	Sample Status Cold ≈17°C	
Signature	Signature	

Relinquished	Received	Notes
Name: Baifern. T	Name	
Date: 16-2-21	Date	
Time: 1:31	Time	
Organisation: Tnt	Organisation:	
Sample Status	Sample Status	
Signature	Signature	

APPENDIX 2 – PHOTOGRAPHS OF SAMPLES

Figure 13: 20S3454/001 (BRT-SP01)

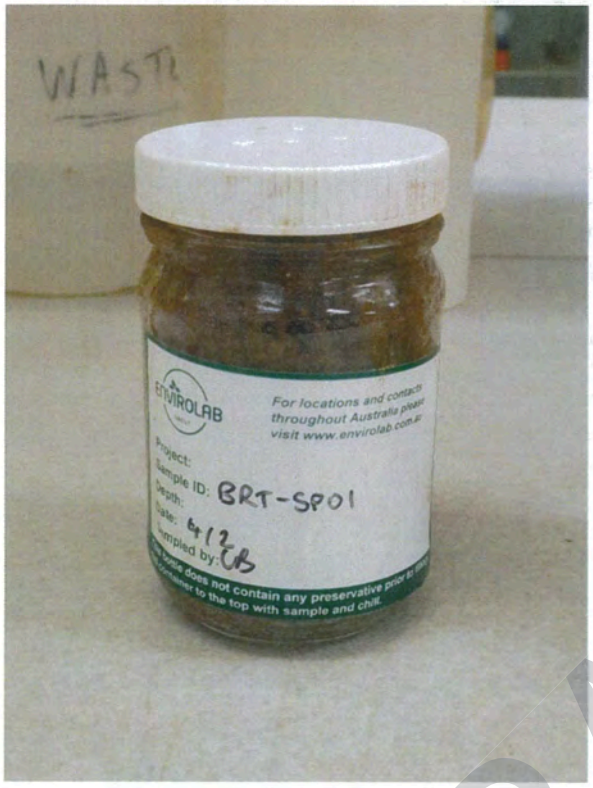


Figure 14: 20S3454/002 (BRT-01)

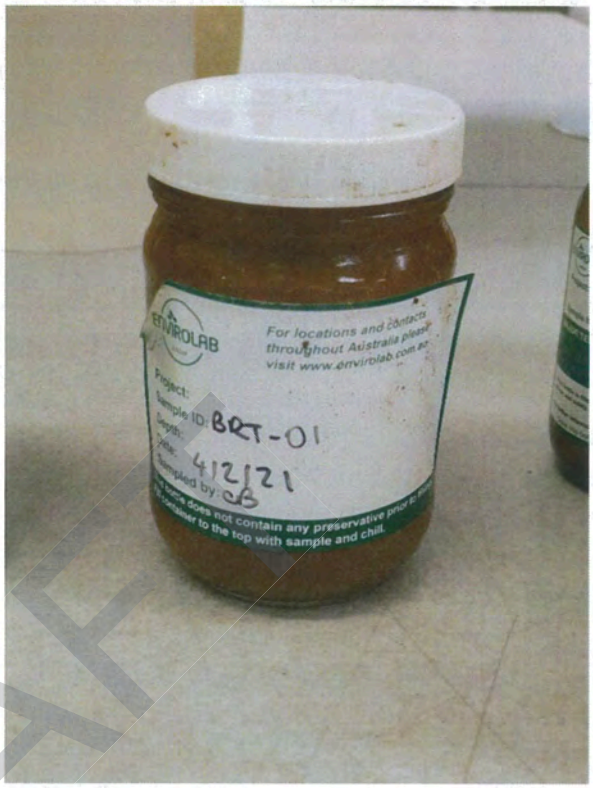


Figure 15: 20S3454/003 (BRT-03)

Figure 16: 20S3454/004 (BRT-08)

Figure 17: 20S3454/005 (BRT-09, soil)

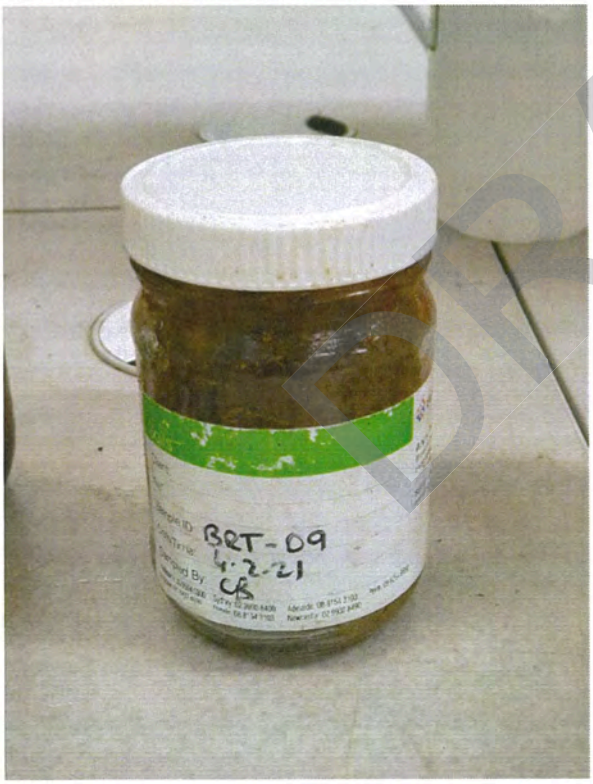
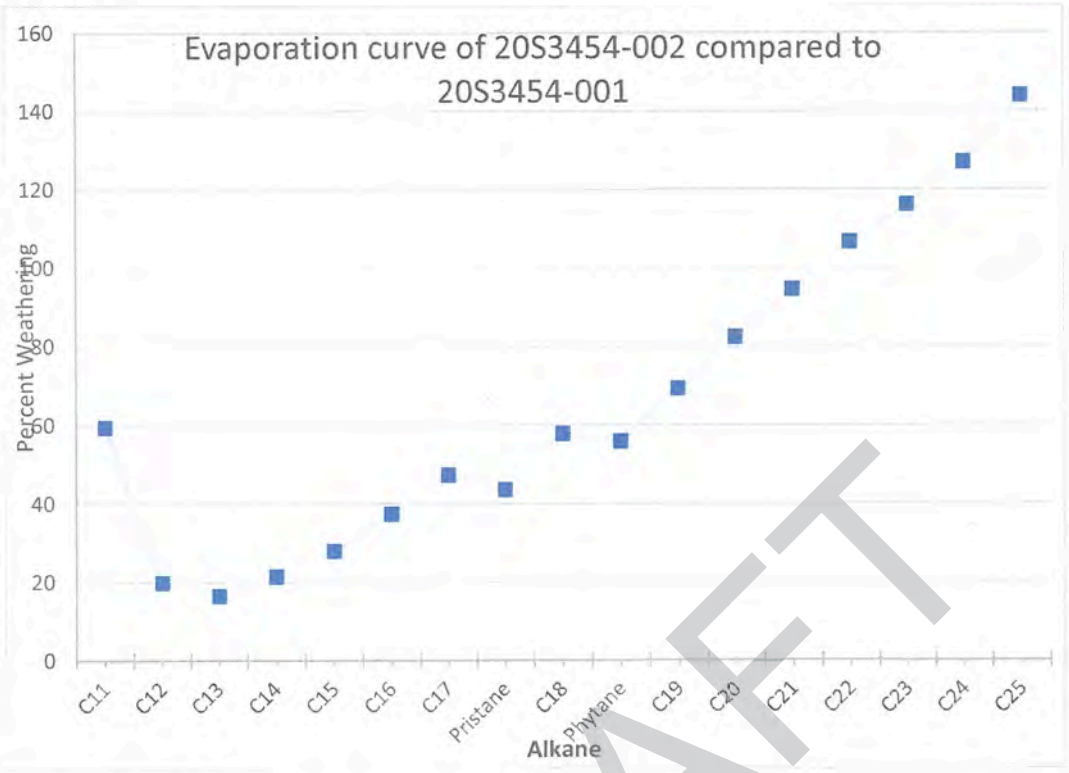


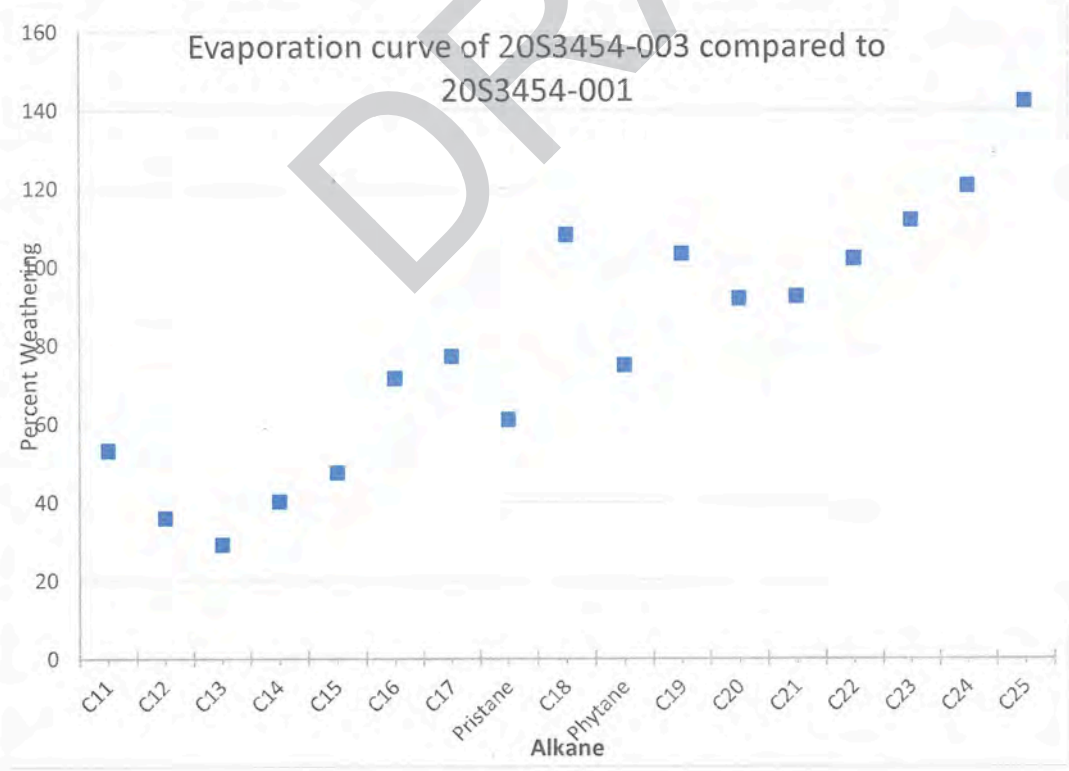
Figure 18: 20S3454/006 (BRT-09, liquids)

Figure 19: Reference diesel 20S0458/001 (BTY 5)

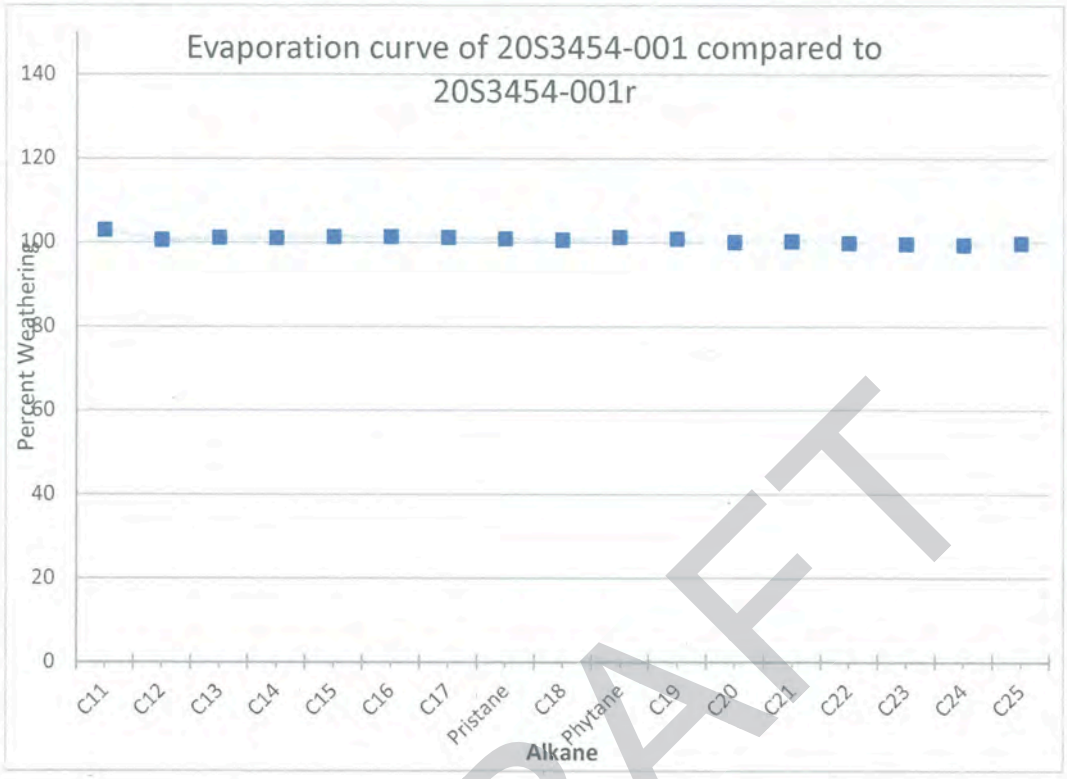
APPENDIX 3

GC PW plots





QC – GC PW plots



APPENDIX 4

GC-MS scan – Selected Ion Monitoring (SIM) chromatograms

Figure 20: Sample 20S3454/001, bicyclic sesquiterpanes

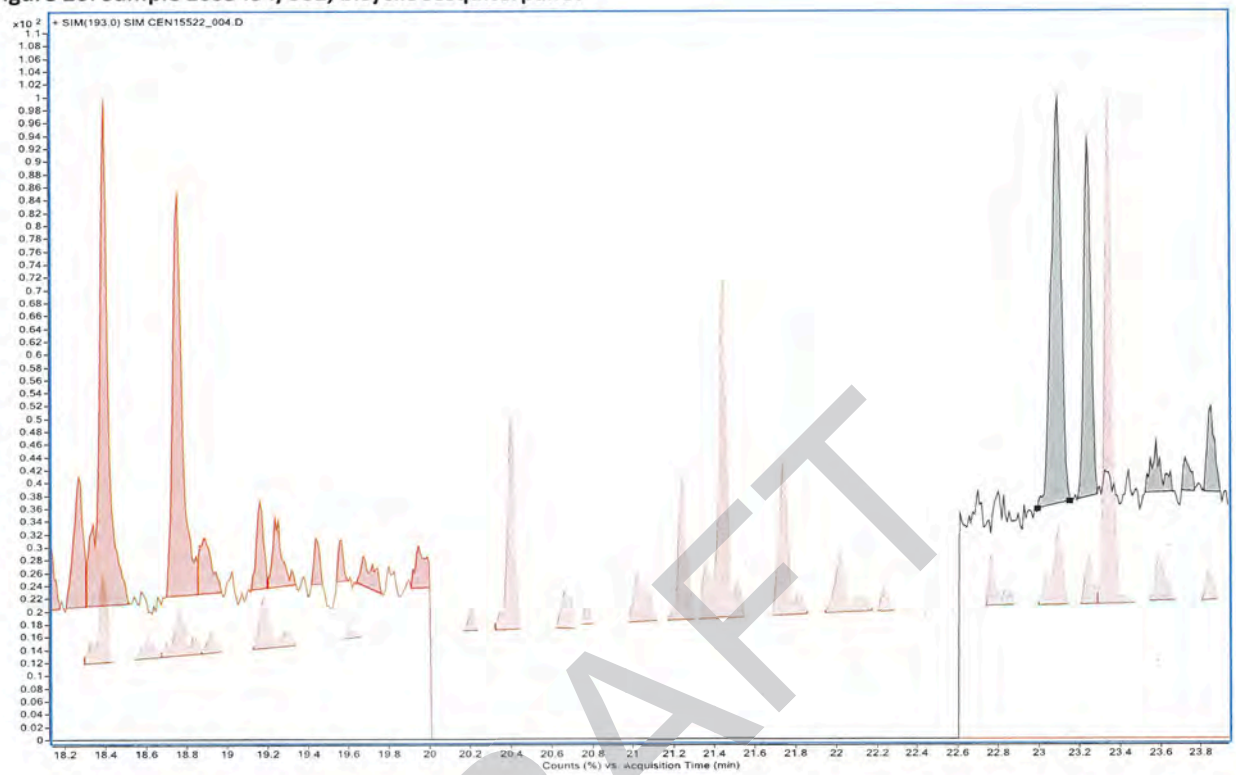


Figure 21: Sample 20S3454/002, bicyclic sesquiterpanes

Figure 22: Sample 20S3454/003, bicyclic sesquiterpanes

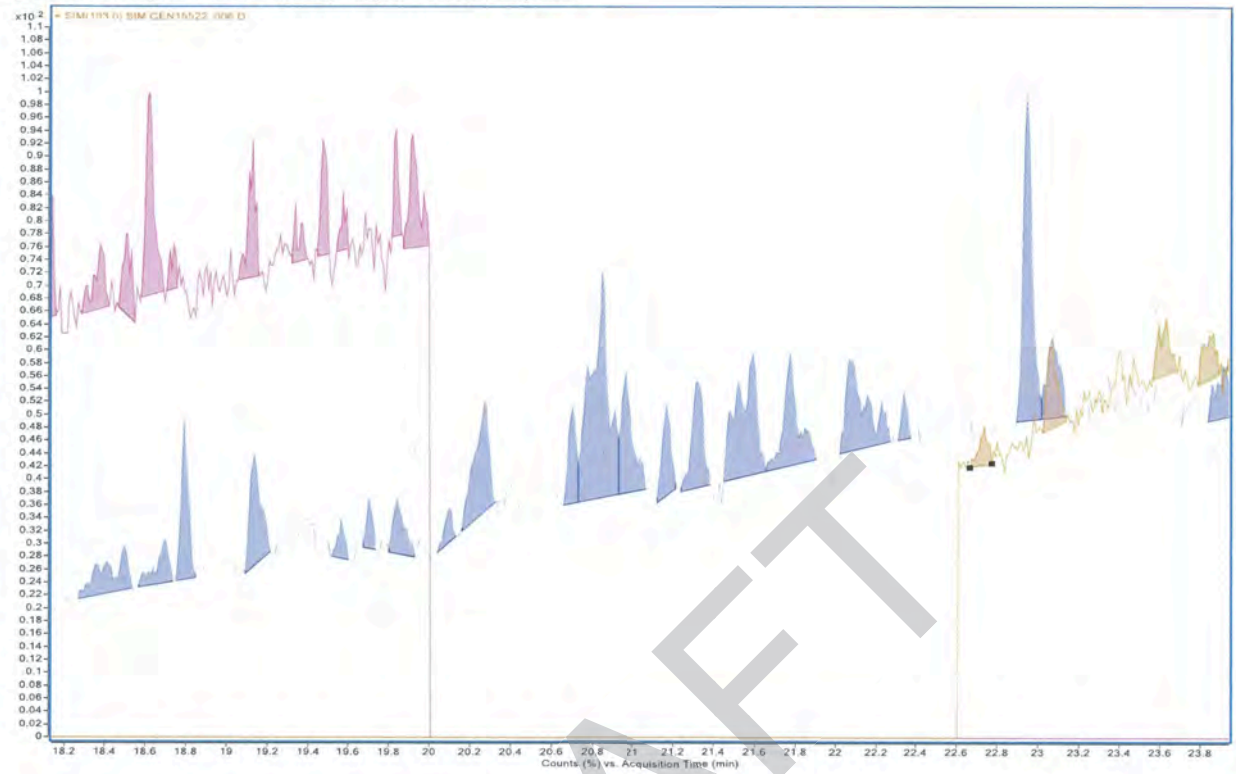


Figure 23: Reference diesel sample 20S0458/001, bicyclic sesquiterpanes

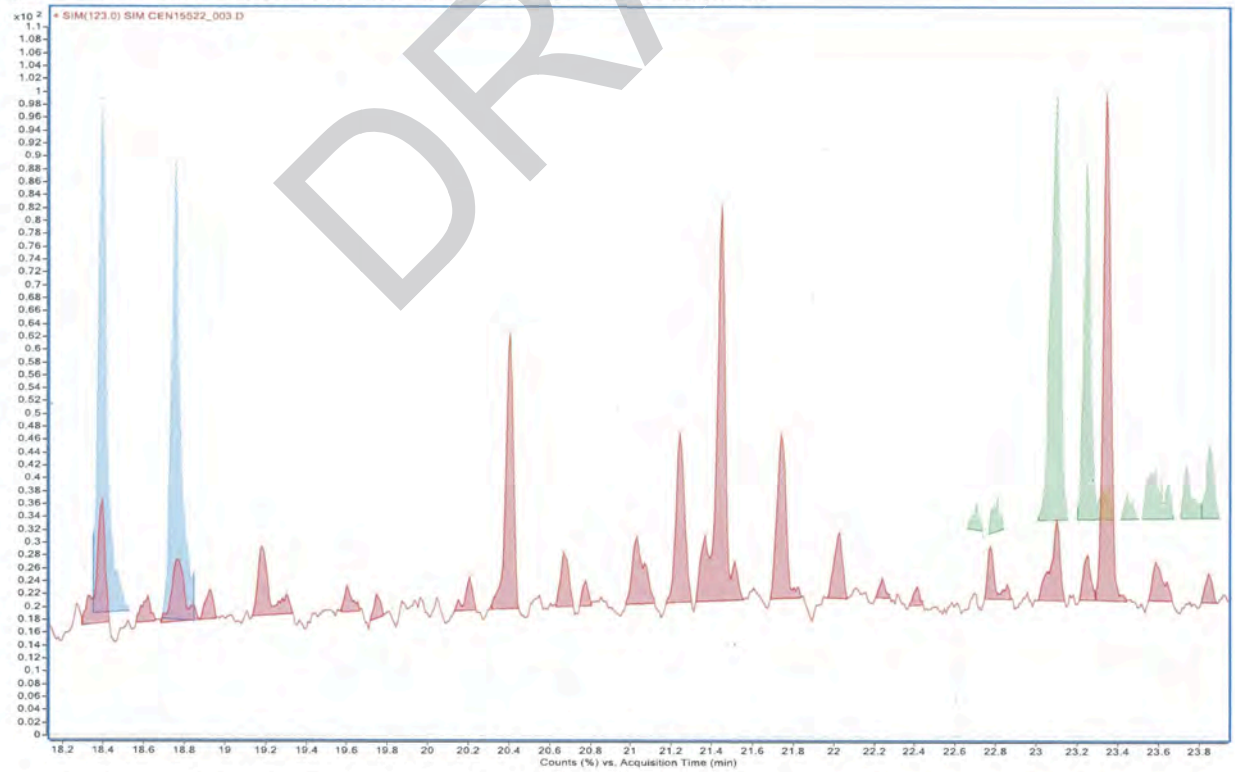


Figure 24: Sample 20S3454/001, methyl- and dimethyl-adamantanes

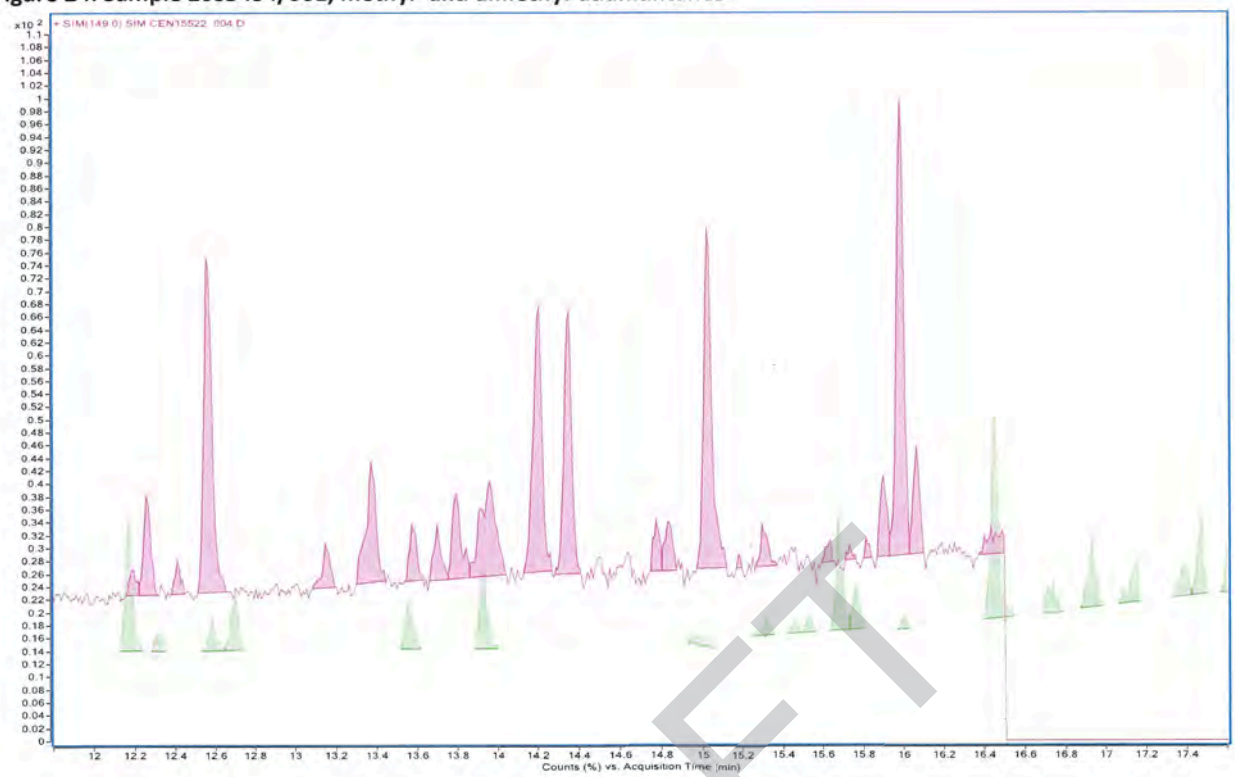


Figure 25: Sample 20S3454/002, methyl- and dimethyl-adamantanes

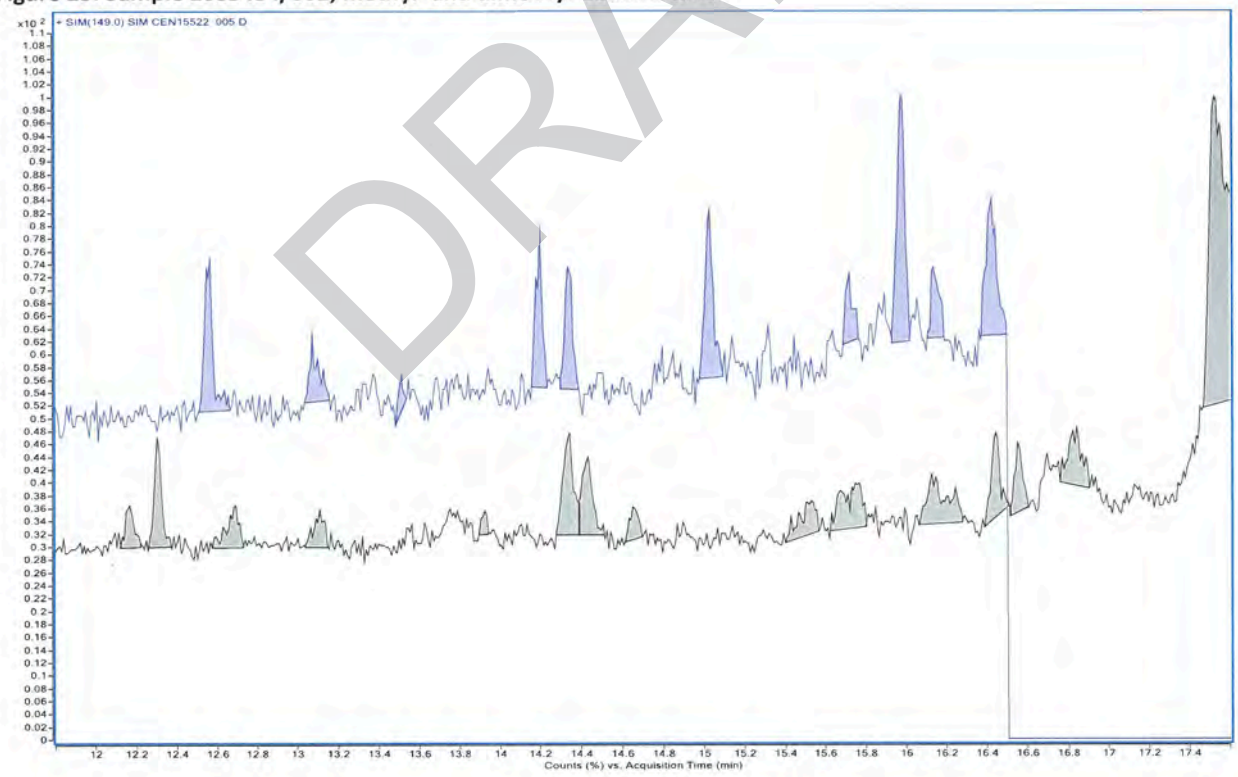


Figure 26: Sample 20S3454/003, methyl- and dimethyl-adamantanes

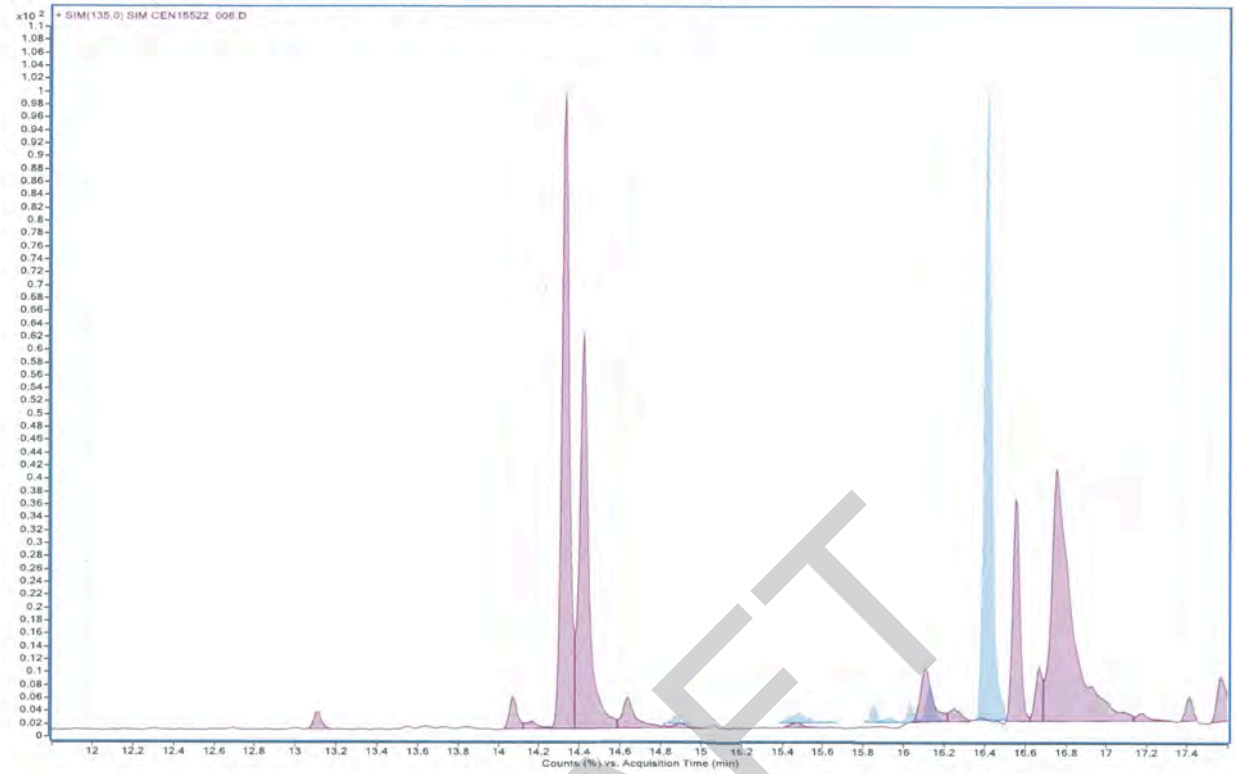


Figure 27: Reference diesel sample 20S0458/001, methyl- and dimethyl-adamantanes

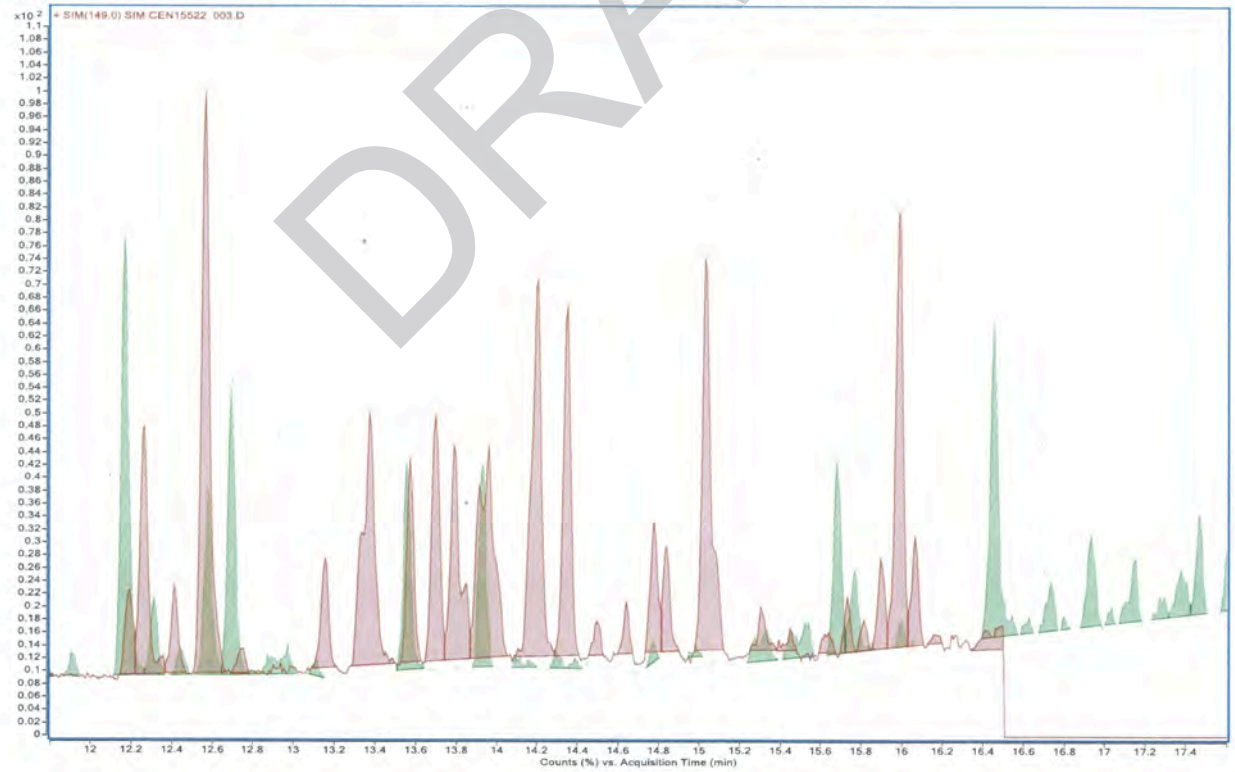


Figure 28: Sample 20S3454/001, C3- and C4-adamantanes

Figure 29: Sample 20S3454/002, C3- and C4-adamantanes

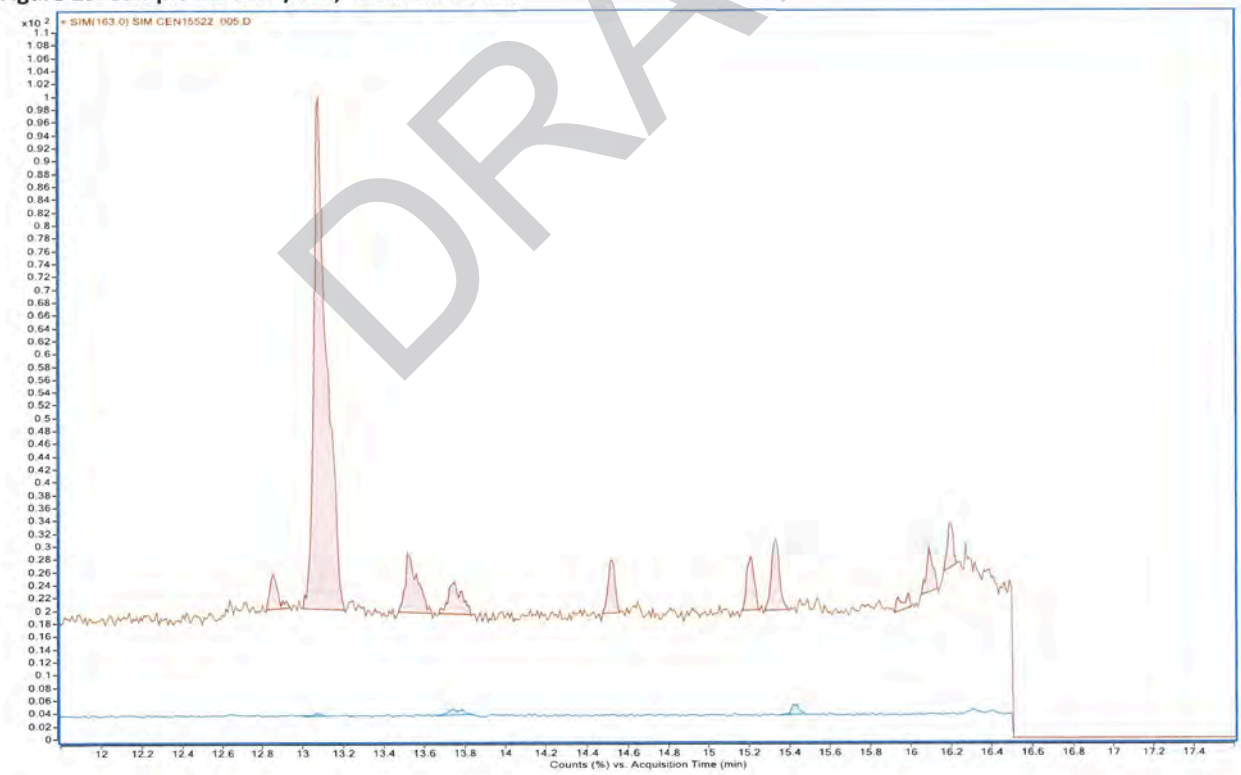


Figure 30: Sample 20S3454/003, C3- and C4-adamantanes

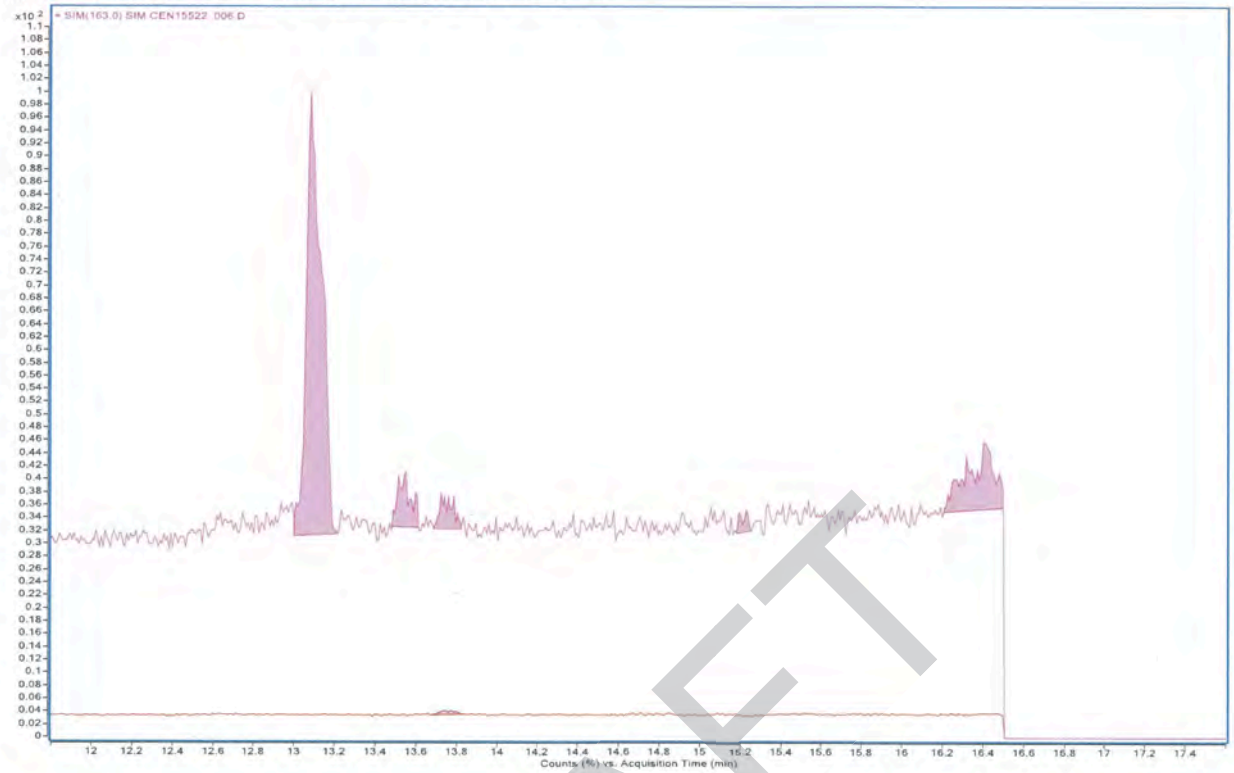


Figure 31: Reference diesel sample 20S0458/001, C3- and C4-adamantanes

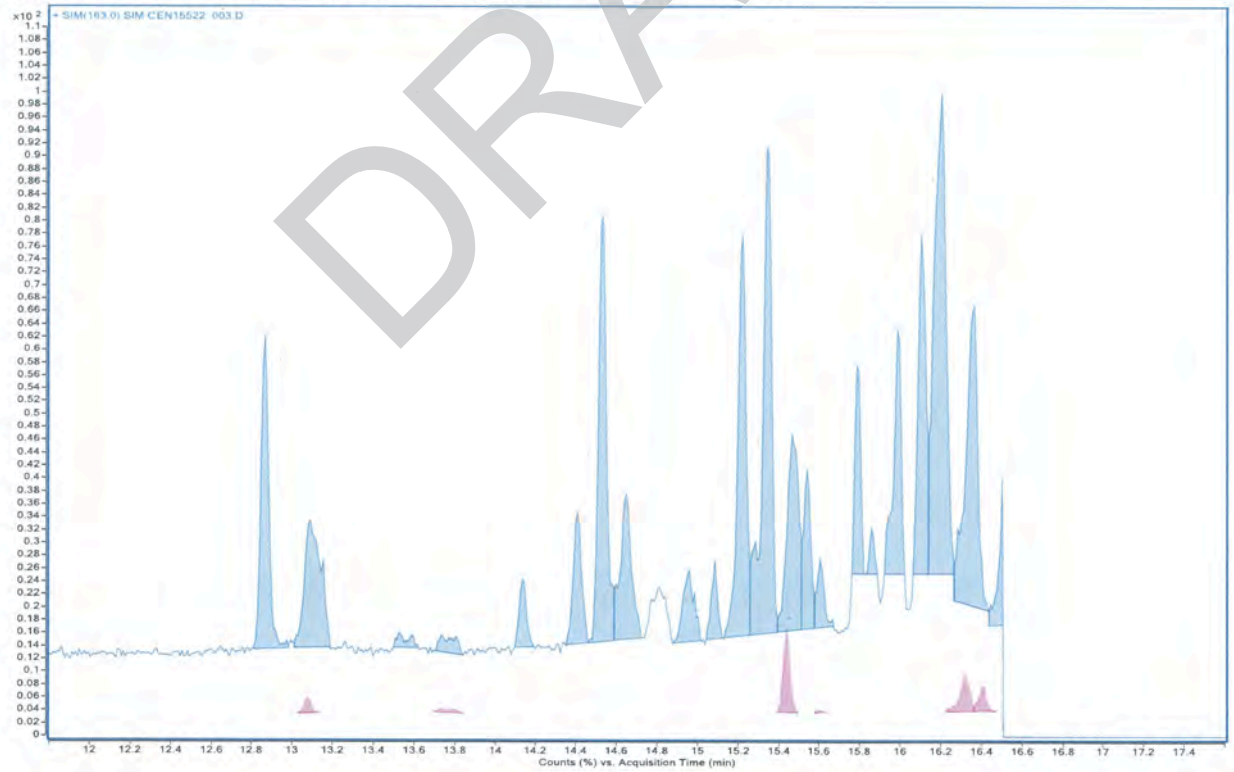


Figure 32: Sample 20S3454/001, C2- and C3-naphthalenes

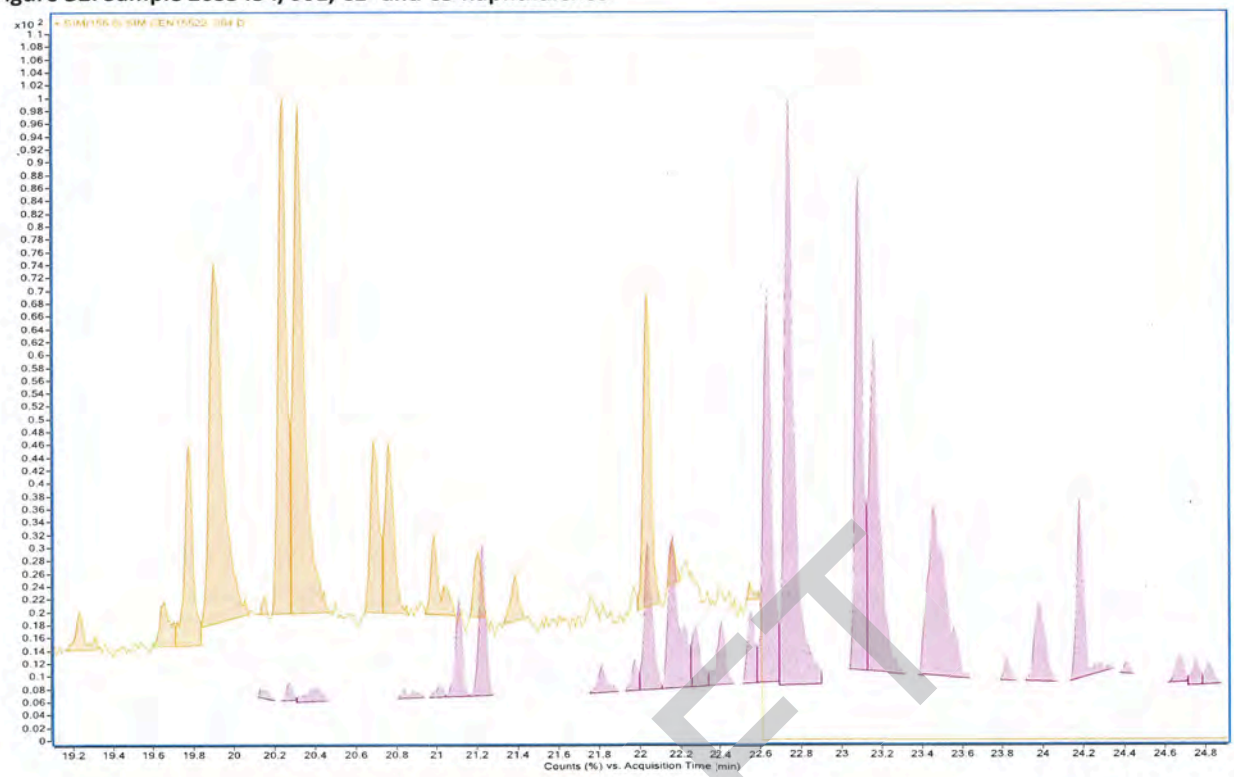


Figure 33: Sample 20S3454/002, C2- and C3-naphthalenes

Figure 34: Sample 20S3454/003, C2- and C3-naphthalenes

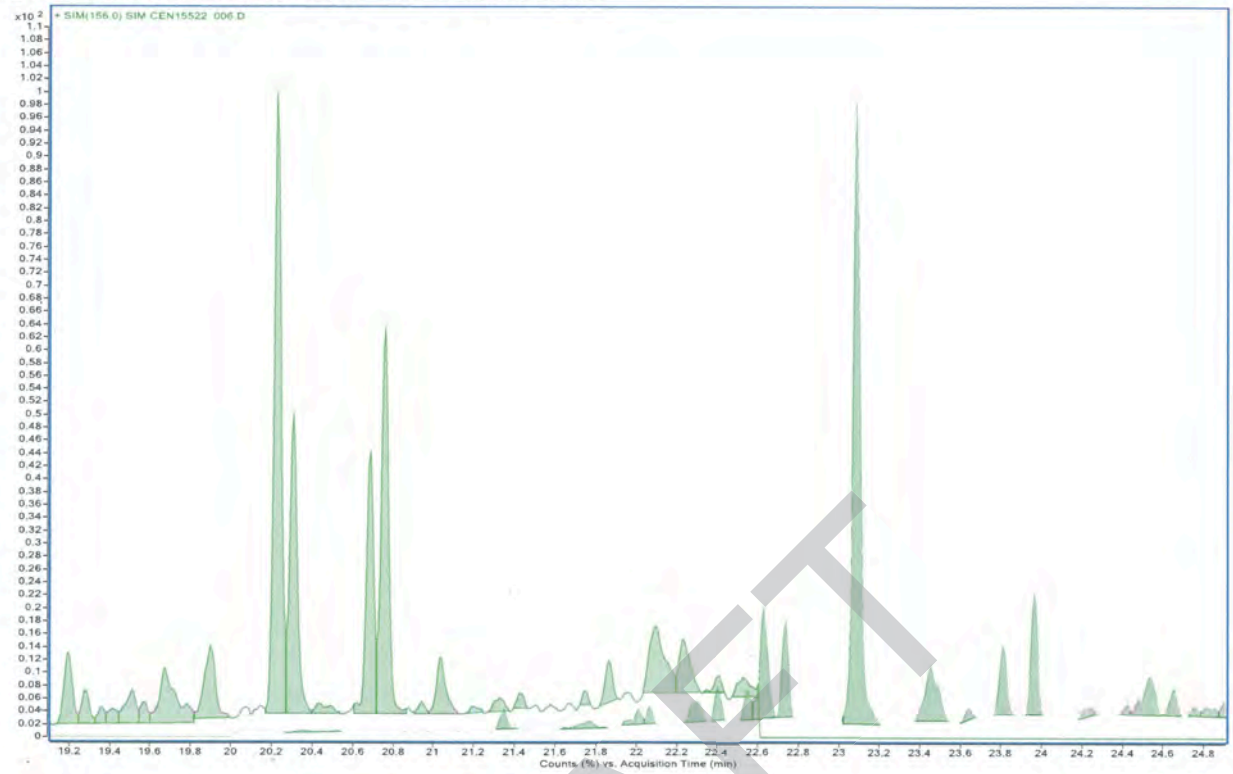
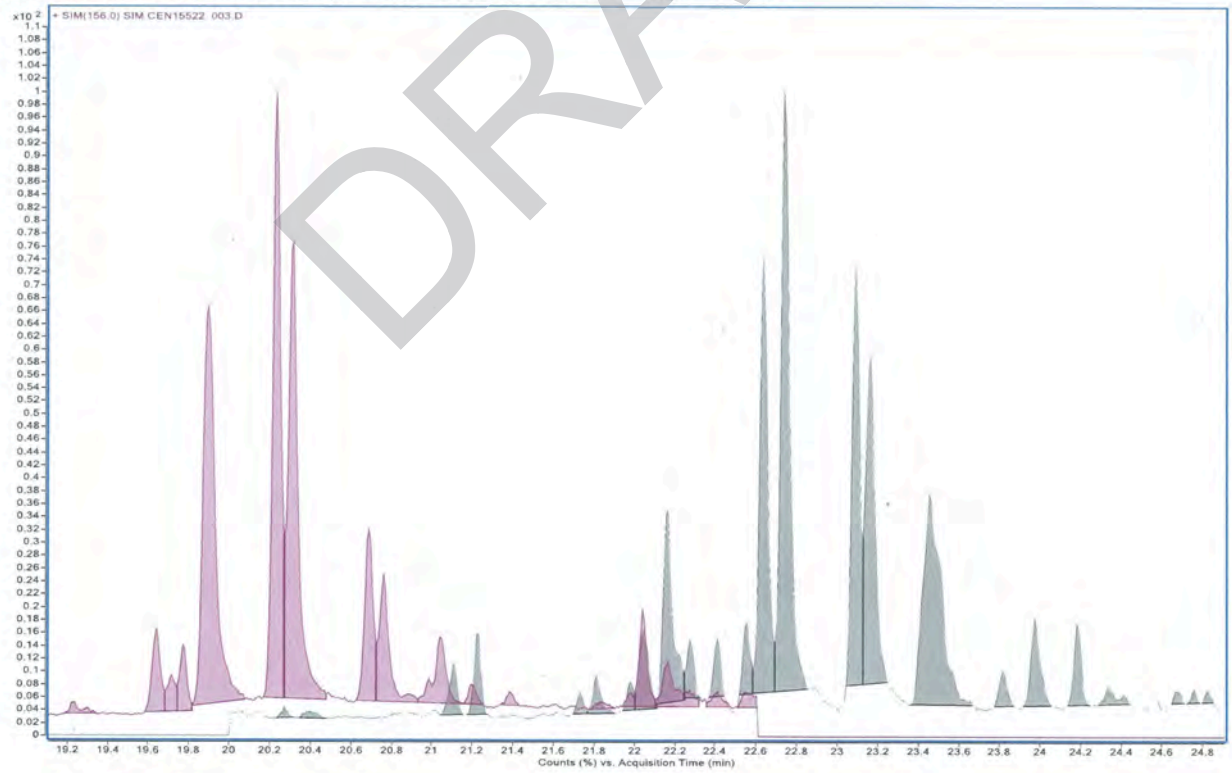


Figure 35: Reference diesel sample 20S0458/001, C2- and C3-naphthalenes



APPENDIX 5

Table 6 shows the PAHs and Biomarkers used for GC-MS SIM analysis, and GC-MS PW plots. The table also shows each compound's expected retention time when analysed under the conditions specified in Annex B of CEN/TR 15522:2, where the oven conditions are adjusted to ensure that 3-methylphenanthrene and 30ab hopane elute at 30.0 and 47.8 minutes respectively.

Table 6: PAH and biomarker compounds

Compound	RT (mins)
Decalin	10.9
1-Methyladamantane	12.1
1,3,5-Trimethyladamantane	12.8
C1-decalins	12.9
2-Methyladamantane	13.9
Tetralin	13.8
cis-1,4-Dimethyladamantane	14.2
Naphthalene	14.4
t-1,4-Dimethyladamantane	14.3
1,3,6-Trimethyladamantane	14.5
C2-decalins	15.5
1,2-Dimethyladamanatane	15.0
i-C13	15.2
2-Methyltetralin	15.3
c-1,3,4-Trimethyladamantane	15.2
t-1,3,4-Trimethyladamantane	15.3
1,2,5,7-Tetramethyladamantane	15.4
n-Hexylbenzene	16.4
i-C14	16.4
2-Ethyladamantane	16.4
1-Methylnaphthalene	17.7
Bicyclic sesquiterpane 1	18.4
m-hexyltoluene	18.7
C3-decalin range peak	18.8
Bicyclic sesquiterpane 2	18.7
n-Heptylbenzene	18.9
branched alkane 169-1	19.1
o-Hexyltoluene	19.1
i-C15 (Farnesane)	19.3
Biphenyl	19.3
2-Ethylnaphthalene	19.7
2,6- + 2,7-Dimethylnaphthalene	19.9
1,3- + 1,7-Dimethylnaphthalene	20.3
1,6-Dimethylnaphthalene	20.4
Bicyclic sesquiterpane 3	20.4
C2-Benzothiophenes	19.9

Compound	RT (mins)
Acenaphthylene	20.9
m-Heptyltoluene	21.1
1,2-Dimethylnaphthalene	21.1
branched alkane 169-2	21.1
i-C16	21.2
branched alkane 169-3	21.3
Bicyclic sesquiterpane 4	21.2
o-Heptyltoluene	21.5
Bicyclic sesquiterpane 5	21.4
Bicyclic sesquiterpane 6	21.7
n-C15	22.1
Diamantane	22.4
1,3,7-Trimethylnaphthalene	22.8
4-Methyldiamantane	22.6
1,3,6-Trimethylnaphthalene	22.8
n-Nonylcyclohexane	23.2
Bicyclic sesquiterpane 8	23.1
Bicyclic sesquiterpane 9	23.2
m-Octyltoluene	23.3
Bicyclic sesquiterpane 10	23.3
o-Octyltoluene	23.7
Norpristane	25.2
m-Nonyltoluene	25.5
n-Decylbenzene	25.8
o-Nonyltoluene	25.9
Octahydroanthracene	26.2
n-C17	26.3
Pristane (Pr)	26.4
1-Methylfluorene	26.4
Octahydrophenanthrene	26.7
n-Undecylcyclohexane	27.4
branched alkane 225-1	27.6
n-C18	28.2
Phytane (Ph)	28.4
C2-Fluorenes	28.7
branched alkane 225-2	29.3

Compound	RT (mins)
4-methyldibenzothiophene (4-MDBT)	29.2
branched alkane 225-3	29.4
m-Undecyltoluene	29.5
Dodecylbenzene	29.8
o-Undecyltoluene	29.8
n-C19	30.1
1-methyldibenzothiophene (1-MDBT)	30.0
2-methylphenanthrene (2-MP)	30.1
2-methylanthracene	30.3
1-methylphenanthrene (1-MP)	30.5
C2-dibenzothiophenes	31.5
C2-phenanthrenes	32.4
1-Ethylphenanthrene	32.2
1,7-Dimethylphenanthrene	32.8
C3-dibenzothiophenes	33.0
C21 Tricyclic diterpane	33.9
C3-phenanthrenes	34.4
2-Methylfluoranthene	34.9
C15-benzene	35.1
Benzo(a)fluorene	35.3
C4-phenanthrenes	36.8
Retene	35.4
2-Methylpyrene	35.7
4-Methylpyrene	36.1
1-Methylpyrene	36.2
Tetramethylphenanthrene	36.8
C2-fluoranthenes/pyrenes	37.9
Benzonaphthothiophene	37.9
C17-benzene	38.3
Phytanyltoluene	40.3
C1-chrysenes	40.8
Benzo(e)pyrene	44.2
Benzo(a)pyrene	44.4
C23Tr	36.7
C24Tr	37.6
C25Tr(ab)	39.2
C28 (22S)	43.1
C29 (22S)	44.0
27Ts hopane	44.7
27Tm hopane	45.2
28ab hopane	46.3
25nor30ab hopane	46.5
29ab hopane	46.8
29Ts hopane	46.9

Compound	RT (mins)
30O hopane	47.6
30ab hopane	47.8
30ba hopane	48.3
31abS hopane	48.9
30G hopane	49.4
32abS hopane	49.9
27dbS sterane	41.7
27dbR sterane	42.2
28aaR sterane	45.6
29aaS sterane	46.0
29aaR sterane	46.7
27bb(R+S) steranes	43.9
28bb(R+S) steranes	45.2
29bb(R+S) steranes	46.2
C20TA	38.7
C21TA	40.1
SC26TA	45.1
RC26TA + SC27TA	45.9
SC28TA	46.7
RC28TA	47.9

Table 7: Diagnostic ratios

1-M-Adam/1,2-DM-Adam	C23Tr/C24Tr †
1-M-Adam/2-E-Adam	27dbR/27dbS †
i-C13/2-M-tetralin	27bb/29bb †
c-1,3,4-TM-Adam/2-E-Adam	27Ts/30ab †
C6-/C7-Benz	SC26/ RC26+SC27 TA †
2-E-Adam/i-C14	27Tm/30ab †
BS1/BS2	28ab/30ab †
C3-de peak/BS2	SC28/RC26 + SC27 †
Bi/2-EN	29ab/30ab †
2-EN/2,6- + 2,7-DMN	30O/30ab †
BS4/BS5	RC28/RC26+SC27 †
Br-Alk 169-3/n-C15	31abS/30ab †
BS5/BS6	30G/30ab †
BS8/BS9	
m-/o-C8-Tol	
BS10/Norpri	
Norpri/m-C9-Tol	
n-C17/Pri	
Pri/Phy	
n-C18/Phy	
4-M-Dbt/1-M-Dbt	
Br-Alk-225-3/n-C19	
2-MPhe/1-MPhe	
MA/1-MP	
C2-dbt/C2-phe	
2-M-Fl/4-M-Py	
C15/C17-Benz	
BaF/4-M-Py	
Retene/ T-M-Phe	
2-M-Py/4-M-Py	
1-M-Py/4-M-Py	
BNT/ T-M-Phe	

Notes:
* These ratios can be affected by biodegradation, and have been removed from comparisons of weathered samples

NSW Site Auditor Scheme

Site Audit Notification

Section 53C of the *Contaminated Land Management Act 1997* requires auditors to notify the NSW Environment Protection Authority (EPA) of statutory site audits within seven days of their being commissioned.

Proposed site audit details

Site audit no. GM-NT01

This proposed site audit is a:

- ❑ statutory audit
- ❑ non-statutory audit

within the meaning of the *Contaminated Land Management Act 1997* (s. 47).

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

Name Graeme Miller

Company Senversa Pty Ltd

Address Level 5, The Grafton Bond Building, 201 Kent Street, Sydney NSW

Postcode 2000

Phone 0415 709 868

Email graeme.miller@senversa.com.au

Site details

Address Sections 5411 and 5641, Hundred of Bagot (known as Berrimah Freight Terminal, Export Drive, Berrimah NT).

Postcode 0822

Property description

(Attach a separate list if several properties are included in the site audit.)

Section 5641 (75 O'Sullivan Circuit, East Arm) and 5411 (338 Berrimah Rd, East Arm)

Local government area Darwin

Area of site (include units, e.g. hectares) 19 hectares

Current zoning Railway (NT Planning scheme)

Regulation and notification

To the best of my knowledge:

❑ **the site is** the subject of a declaration, order, agreement, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985,* as follows: (provide the no. if applicable)

- ❑ Declaration no.
- ❑ Order no.
- ❑ Proposal no.
- ❑ Notice no. *Draft Notice to Carry Out Environmental Audit Program (undated)*

❑ **the site is not** the subject of a declaration, order, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*.

To the best of my knowledge:

❑ the site **has** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*

❑ the site **has not** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*.

Site audit commissioned by

Name Adam Reed

Company One Rail Australia Pty Ltd.

Address Level 3, 33 Richmond Road, Keswick, SA

Postcode 5035

Phone 0458 628 406

Email adam.reed@1rail.com.au

Purpose of site audit

A1 To determine land use suitability

Intended uses of the land: residential and hotel including basement car parking

OR

☑ **A2** To determine land use suitability subject to compliance with either an active or passive environmental management plan

Intended uses of the land: Rail

OR

(Tick all that apply)

☐ **B1** To determine the nature and extent of contamination

☐ **B2** To determine the appropriateness of:

- ☐ an investigation plan
- ☐ a remediation plan
- ☐ a management plan

☐ **B3** To determine the appropriateness of a **site testing plan** to determine if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*

☐ **B4** To determine the compliance with an approved:

- ☐ **voluntary management proposal** or
- ☐ **management order** under the *Contaminated Land Management Act 1997*

☐ **B5** To determine if the land can be made suitable for a particular use (or uses) if the site is remediated or managed in accordance with a specified plan.

Intended uses of the land:

Nature of statutory requirements (not applicable for non-statutory audits)

☐ Requirements under the *Contaminated Land Management Act* 1997 (e.g. management order; please specify, including date of issue)

☐ Requirements imposed by an environmental planning instrument (please specify, including date of issue)

☐ Development consent requirements under the *Environmental Planning and Assessment Act 1979* (please specify consent authority and date of issue)

☐ Requirements under other legislation (please specify, including date of issue)

Section 48(1) of the *Waste Management and Pollution Control Act 1998 (Northern Territory*) – *Draft* Notice to Carry Out Environmental Audit Program (Undated)

Overall comments:

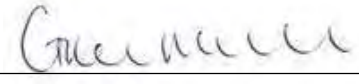
The environmental audit program is required to evaluate:

- The types, amount, distribution and mobility of contaminants and wastes present in the environment resulting from “the incident;” and
- The extent to which actions are required to be taken, or results required to be achieved, for waste management or the prevention, reduction, control, rectification or clean-up of pollution or environmental harm resulting from pollution have been taken or achieved as a result of the incident.

Auditor’s declaration

I certify that the information supplied in this form and any attached pages is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.

Signed 

Date 20 July 2021

Senversa Pty Ltd
Ground Floor, 190 Flinders Street, Adelaide, SA 5000
ABN 89 132 231 380 www.senversa.com.au

30 July 2021

Claudia Bennett
Environmental Officer
Environmental Operations – Environment Division
Department of Environment, Parks and Water Security
Northern Territory Government

Via email: Claudia.Bennett@nt.gov.au

Dear Claudia,

Re: Proposed audit program scope
One Rail Berrimah Rail Terminal

1. Introduction

I have been commissioned by One Rail Australia Pty Ltd (ORA) to complete audit tasks required under the *Notice to Carry Out Environmental Audit Program (NT EPA, 7 July 2021)* (Notice), issued to ORA in relation to a diesel fuel spill at the Berrimah Rail Terminal. A Site Audit Notification form was provided to the Northern Territory Environment Protection Authority (NT EPA) on 20 July 2021.

One of the requirements listed in Attachment B of the Notice is to submit a scope of works for the (audit) program – within two months of issue of the Notice. **Section 2** of this letter addresses this Notice requirement.

2. Proposed audit program scope

The following table details the anticipated tasks and associated scope for completing the audit program for the ORA Berrimah Rail Terminal – such that the audit:

- addresses the specific requirements set out in the Notice, and
- complies with the relevant guidance for preparation of a site audit report and statement in the Northern Territory.

The status of each task is also provided.

Proposed Audit Scope and Tasks

Task No.	Description	Scope	Status
1	Notification of commencement of audit	• Complete and submit an environmental audit notification form to the NT EPA, complying with the requirements of Northern Territory Contaminated Land Guidelines, Version 1.0 Nov 2017.	• Completed 20 July 2021
2	Site Visit	• Inspection of the site to confirm the current site conditions and provide an understanding of the scope of remediation and investigation conducted to date. A site meeting with ORA and its appointed consultant (Greencap) will be conducted during the inspection.	• Date to be confirmed – pending border restrictions
3	Report Review	• Allowance has been made for the review of the following: ▪ Relevant and available NT EPA and ORA correspondence ▪ The six investigation, remediation and monitoring reports prepared by Greencap. • If the auditor identifies information gaps which need to be addressed to meet the audit requirements, these will be communicated with ORA - along with suggested scopes of works and timeframes for implementation. These recommendations (if any) will be shared with NT EPA – so that the timeframe for completion of the audit program can be amended (if required).	• Commenced
4	Preparation of Environmental Audit Report	• Consistent with Section 11.5 of the *Northern Territory Contaminated Land Guideline (NT EPA, 2017)*, as the auditor is accredited in NSW, the audit report will be prepared using the guidance provided in the *Guidelines for the NSW site auditor scheme (3rd Ed.) (NSW EPA, 2017)*, with the audit deliverables consisting of the following: ▪ Site Audit Report (SAR). ▪ Site Audit Statement (SAS). • The determinations provided in the SAR and SAS will be based on the requirements and guidance set out in the following: ▪ *Notice to Carry Out Environmental Audit Program (NT EPA, 7 July 2021)* (Notice). ▪ *Northern Territory Contaminated Land Guideline (NT EPA, 2017).* ▪ *Guidelines for the NSW site auditor scheme (3rd Ed.) (NSW EPA, 2017).*	• Commenced

Task No.	Description	Scope	Status
		• In the context of the above, it is anticipated that the determinations in the SAR and SAS will consist of the following: ▪ The nature and extent of any contamination of the land - which addresses item (i) and item 9 (a) of Attachment B of the Notice. ▪ The appropriateness of a remediation / management plan - which addresses item (ii) and item 9 (b) of Attachment B of the Notice. ▪ Land suitability subject to compliance with either an active or passive environmental management plan. • As required by item 9 (c) of Attachment B of the Notice, the SAR and SAS will also provide recommendations for further investigation and remediation works (and associated timetables for implementation) if one or more of the following applies: ▪ The nature and extent of contamination has not been delineated (and further investigation is required). ▪ Further remediation is required to address potential risks to relevant segments of the environment posed by contamination associated with the ORA diesel spill. • The SAR and SAS will be delivered within six months of finalisation of the Notice, which includes a provision for a draft version of the SAR and SAS by NT EPA.	

I note that the audit scope may be subject to change – depending on:

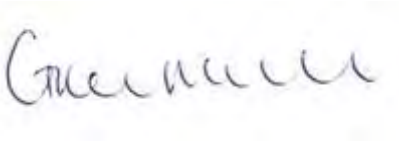
- the outcomes of the auditor's site inspection (Task 2) and review of existing reports (Task 4), and
- the quality of the primary consultant's work.

Any proposed changes to the audit scope and timeframe detailed in this letter will be provided in writing to NT EPA.

3. Closure

If you have any comments or questions, please do not hesitate to contact the undersigned at graeme.miller@senversa.com.au on 0415 709 868.

Yours sincerely,



Graeme Miller
NSW EPA Site Auditor (No.1509)

Limitations

Reliance *–This document has been prepared solely for the use of NT EPA and One Rail Australia. No responsibility or liability to any third party is accepted for any damages arising out of the use of this document by any third party.*

Simon Welsh

From: Claudia Louise Bennett <Claudia.Bennett@nt.gov.au>
Sent: Monday, 23 August 2021 2:14 PM
To: Graeme Miller
Cc: Pollution NTEPA; Adam Reed; Ian Lightfoot
Subject: RE: One Rail, Berrimah Freight Rail Terminal, Audit | Proposed Scope

Hi Graeme,

Apologies for my delayed response – I have been out of the office all month.

Thank you for providing the proposed S.48 scope, I have no further comments regarding the scope of works at this time.

If you could please keep us updated with the progress of the Audit it would be greatly appreciated.

As always please do not hesitate to reach out if you'd like to discuss.

Kind regards,
Claudia

Claudia Bennett
Environmental Officer
Environmental Operations – Environment Division
Department of Environment, Parks and Water Security
Northern Territory Government

Providing services for the
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ntepa Northern Territory Environment Protection Authority

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W: Northern Territory Environment Protection Authority
W: Department of Environment, Parks and Water Security
W: Parks and Wildlife Commission

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Please consider the environment before printing this email

From: Graeme Miller <Graeme.Miller@senversa.com.au>
Sent: Friday, 30 July 2021 4:41 PM
To: Claudia Louise Bennett <Claudia.Bennett@nt.gov.au>
Cc: Pollution NTEPA <Pollution.NTEPA@nt.gov.au>; Adam Reed <Adam.Reed@1rail.com.au>; Ian Lightfoot <Ian.Lightfoot@senversa.com.au>
Subject: One Rail, Berrimah Freight Rail Terminal, Audit | Proposed Scope

Hi Claudia,

Please find attached the proposed audit scope for the One Rail Australia Berrimah Rail Terminal - as required under Attachment B of *Notice to Carry Out Environmental Audit Program (NT EPA, 7 July 2021)*.

Don't hesitate to contact me if you have any questions.

Thank you,

Graeme

senversa

Graeme Miller
Senior Principal | CEnvP (SC) | Contaminated Sites Auditor (SA and NSW)

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Senversa acknowledges the traditional custodians of the lands and waters upon which we conduct our work, and pay our respect to the elders, past, present and those to come.