

## FILE NOTE

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<b>PROJECT TITLE:</b>	Navigator Terminals CDOIF Assessment		
<b>PROJECT No:</b>	18145	<b>DATE:</b>	18/03/2021
<b>SUBJECT:</b>	Addition of Waste Processed Water to the Marine Terminal's Product Inventory		
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<b>DISTRIBUTION:</b>	Navigator Terminals		

### 1. Proposed Changes to Site Permit

NTNTL are proposing to add Waste Processed Water to their Control Of Major Accident Hazards Regulations 2015 (COMAH) site permit (ref. EPR/FR3433DX/T001). NTNTL requested that IKM undertakes an assessment of the properties of Waste Processed Water to determine if this product will alter the environmental risk associated with the site.

IKM understands that three existing diesel tanks have been identified within the Marine Terminal, to hold Waste Processed Water. The tanks and the proposed maximum inventories are given in Table 1 below.

**Table 1 – Waste Processed Water**

Tank	Maximum Working Volume (m3)
N2012FA	5,000
N2021FB	5,000
P154F (Tie in tank)	35,000
N2102FA (tie in tank)	15,000

Waste Processed Water will be imported / exported from Jetty 4 and will be delivered to / from the tanks via a pipeline (shown in NTNTL's Non-Technical Draft).

The addition of Waste Process Water will be included in the site's Safety Report submission, due in December 2021.

### 2. Hazardous Properties

Waste Processed Water is an oil and water mixture. The MSDS states that the:

*“product is a natural substance which contains water and minerals, primarily salt (NaCl). Product can kill vegetation and should not be ingested but is not generally considered hazardous. Product can become*

## FILE NOTE

*hazardous as it may contain hydrocarbons (oil), it may be flammable and may contain benzene which is a carcinogen.”*

IKM understands that the composition of the product to be held at the Marine Terminal will be 99% water and 1% crude oil. Based on this composition, a maximum of 350m<sup>3</sup> of crude oil could enter the environment in the event of a catastrophic failure.

NTNTL has advised that these tanks will be lined and will be fitted with overfill protection. NTNTL is also intending to install a recirculation system on the three tanks identified, to prevent the oil from floating to the surface within the tanks. This also makes it less likely that the product held within the tanks could lead to a boil-over. These tanks and the associated pipework and pumps would be subject to the same level of inspections and safety controls as all other products held onsite.

Using the MSDS provided by NTNTL, a comparison has been undertaken between Waste Processed Water and the terminal’s other duties and an overview of the findings is given in Table 2 below.

**Table 2: Comparison of Products held at the Marine Terminal**

Product	Maximum Credible Release (m3)	Dangerous to Environment	Benzene concentration %	Ecological Properties	Environmental fate	General Physical and chemical behaviour
Crude	53,284.25	Yes	0.5	Bio accumulates and bioconcentrates. Considering the benzene fraction: benzene is not expected to adsorb to sediment and suspended solids in the water. Benzene volatilisation half-life in a river model is 1hr and 5hrs in sea water. Bioconcentration potential of benzene is thought to be low. LC50 brown trout yearling 12 mg/l 1hr.	0.02% w/w solubility in water. This product contains a substance which is insoluble in water.	<b>Boiling Point</b> = 15-575oC <b>Flash Point</b> = <20oC <b>Vapour pressure</b> = 4 - 10p.s.i
Diesel	33,627.02	Yes	0.1	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  May cause bioaccumulation.	May cause bioaccumulation  Slightly soluble in soil.	<b>Boiling Point Range</b> = 170-370oC <b>Flash Point</b> = >55oC <b>Relative Density</b> = 820-845

### FILE NOTE

						kg/m <sup>3</sup> @ 15c <b>Vapour Pressure</b> ~<1kPA @ 20c
Kerosene	5,807.21	Yes	0.1	Toxic to aquatic organisms. It can be largely eliminated from the water by abiotic processes (water degradation 58.6% : 28days) e.g. mechanical separation. The product is biodegradable.	May cause bioaccumulation - substance is a hydrocarbon UVCB.  Product is insoluble in water and will spread on the water surface.	<b>Boiling range</b> - 148 - 293.5oC @760 mm Hg <b>Flash point</b> 38.5oC Closed cup <b>Density</b> = 0.745 @15oC
Waste Processed Water	35,000	No	0.005	It is not harmful for the environment	It is not bioaccumulating and is biodegradable  Soluble in water	<b>Density</b> 1 - 1.05kg/L @ 20oC

In the event of a loss of containment to the environment, the product is not thought to bioaccumulate. It is understood to be soluble in water and to be biodegradable. The MSDS also states that the product is not harmful for the environment.

Based on the above comparison and the fact that the product is composed of 99% water and 1% crude oil, we do not believe that Waste Processed Water will result in a significant greater harm to the environment (in the event of a loss of containment), when compared to the other products currently permitted to be held onsite.

#### Revision Control

Revision	Prepared by	Date	Change	Checked