STOLTHAVEN TERMINAL

Bimonthly Report: July and August 2015

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Stolthaven Terminals

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Noise Monitoring – Yearly (November 2014)

Day, evening and night-time noise emissions were predicted to each of the required assessment locations and compared against the site noise limits, in accordance with the requirements of the Project Approval. Noise emissions were assessed under worst case wind and temperature inversion conditions in two different operations scenarios on site as required by the Project Approval. The results of this assessment are provided in **Table 1** and **Table 2.**

Analysis of Results

Compliance has been found for the assessments during all scenarios at all receiver locations, except for the following:

1. Receiver 2 (2 Crebert St, Mayfield) for day, evening and night reasonable 'worst' case 15-minute intrusive scenarios.
2. Receiver 4 (21 Crebert St, Mayfield) for day, evening and night reasonable 'worst' case 15-minute intrusive scenarios.

It should be noted that these two locations are essentially the same location, and are separated by approximately 40m. For the two above locations where exceedances are predicted, it is noted that the key noise contributor is the operation of the motor/pumps, followed by the operations of the trucks on site. However, with regards to the exceedances the following points should be noted as these exceedances are manageable and not considered significant:

Noise impacts are significantly below the background noise level at the receiver locations

The background noise level (LA90 15 minute noise level) at receiver R2, which is across the road from R4 was 49 dB(A) at 1:21am. The worst case noise emission result from the Site at the two receivers is below this level at 41 dB(A). Calculations for the background noise level did not take into account temperature inversion conditions and so the background noise level at the two receivers could increase even further.

Noise emissions comply during neutral meteorological conditions

The compliance noise emission results presented in Table 1 and Table 2 show compliance is achieved at all receivers under neutral meteorological conditions.

Since construction operations began in 2012, no noise complaints have been received by Stolthaven.

Table 1: Worst case condition 1: Three trucks filling during 15 min period

Period	Day/ Evening/ Night								
Assessed Meteorological Condition	Neutral			3/ms source to receiver winder			Temperature inversion (F-Class, 3°C/100 m)		
Receiver	Predicted noise level, LAeq(15min), dB(A)	Criteria dB(A)	Compliance with noise criteria, dB(A)	Predicted noise level, LAeq(15 min), dB(A)	Criteria dB(A)	Compliance with noise criteria db(A)	Predicted noise level, LAeq(15 min), dB(A)	Criteria dB(A)	Compliance with noise criteria, db(A)
R1	26	35	Yes	31	35	Yes	30	35	Yes
R2	36	35	Yes	41	35	No (+6)	40	35	No (+5)
R3	28	35	Yes	32	35	Yes	32	35	Yes
R4	36	35	Yes	41	35	No (+6)	40	35	No (+5)
R5	20	35	Yes	26	35	Yes	25	35	Yes
R7	27	35	Yes	32	35	Yes	31	35	Yes
R8	27	35	Yes	31	35	Yes	31	35	Yes
R9	33	45	Yes	38	N/A	N/A	37	N/A	N/A
R10	18	35	Yes	24	35	Yes	24	35	Yes

Table 2: Worst case condition 2: One truck filling during the 15 minute period, two trucks arrive and two leave the facility

Period	Day/ Evening/ Night								
Assessed Meteorological Condition	Neutral			3/ms source to receiver winder			Temperature inversion (F-Class, 3°C/100 m)		
Receiver	Predicted noise level, LAeq(15min), dB(A)	Criteria dB(A)	Compliance with noise criteria, dB(A)	Predicted noise level, LAeq(15 min), dB(A)	Criteria dB(A)	Compliance with noise criteria db(A)	Predicted noise level, LAeq(15 min), dB(A)	Criteria dB(A)	Compliance with noise criteria, db(A)
R1	28	35	Yes	32	35	Yes	32	35	Yes
R2	34	35	Yes	39	35	No (+4)	38	35	No (+3)
R3	30	35	Yes	34	35	Yes	33	35	Yes
R4	34	35	Yes	39	35	No (+4)	38	35	No (+3)
R5	20	35	Yes	25	35	Yes	25	35	Yes
R7	29	35	Yes	33	35	Yes	32	35	Yes
R8	29	35	Yes	33	35	Yes	32	35	Yes
R9	33	35	Yes	38	N/A	N/A	37	N/A	N/A
R10	17	35	Yes	23	35	Yes	23	35	Yes

Ground Water Monitoring – Quarterly (August 2015)

Monitoring Well 1

	25/02/2014	23/05/2014	11/08/2014	7/11/2014	26/02/2015	13/05/2015	27/08/2015
pH	9.01	9.46	9.51	9.41	8.01	8.79	9.39
Benzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
C6-C10	< 20	< 20	< 20	< 20	< 20	< 20	< 20
C6-C10-BTEX	< 20	< 20	< 20	< 20	< 20	< 20	< 20
>C10-C16 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C16-C34 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C34-C40 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C10-C16 Fraction Naphthalene	< 100	< 100	< 100	< 100	< 100	< 100	< 100

MW01 recorded a pH value of 9.39 and is within Site background conditions. Previous pH values at this location ranged from 8.33 to 9.79. Mann-Kendall analysis (MKA) concluded there was statistically significant evidence of a decreasing trend at the 95% confidence level.

TRH concentrations at MW01 were below the LOR for this GME and are in line with historical data trends at this location. TRH concentrations at MW01 have been consistently below the laboratory LOR since monitoring records began in October 2013.

Analytical results for all BTEX compounds were below LOR at the above monitoring locations and as such trend analysis was not undertaken. These results are generally consistent with background monitoring data and it appears that BTEX concentrations are typically stable at below LOR concentrations.

Monitoring Well 2

	25/02/2014	23/05/2014	11/08/2014	7/11/2014	26/02/2015	13/05/2015	27/08/2015
pH	7.73	7.76	7.91	7.85	7.73	7.61	7.68
Benzene	2	2	1	1	< 1	2	< 1
Ethylbenzene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
C6-C10	< 20	< 20	< 20	< 20	< 20	< 20	< 20
C6-C10-BTEX	< 20	< 20	< 20	< 20	< 20	< 20	< 20
>C10-C16 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C16-C34 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C34-C40 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C10-C16 Fraction - Naphthalene	< 100	< 100	< 100	< 100	< 100	< 100	< 100

A pH value of 7.68 was recorded at MW02 and is within Site background conditions. MKA determined statistically significant evidence of a decreasing trend was present within the dataset. It is noted that a limited dataset exists for MW02 and further data will be required to add confidence of the reliability of this trend.

TRH concentrations at MW02 were below the LOR for this GME and are typical of concentrations recorded during background monitoring. TRH fractions have not been recorded at MW02 since records began, apart from one recorded concentration in the >C16-C34 fraction (380µg/L) in an October 2013 background monitoring event.
Overall, TRH concentrations appear to be stable at below LOR concentrations.

Benzene was recorded at below the LOR during this GME, consistent with the GME undertaken in May 2015, which are below concentrations (typically 1 to 5µg/L) recorded in previous GMEs. It is noted that the LOR (1µg/L) was adopted as a default concentration for this monitoring program and previous GMEs to allow a meaningful statistical interpretation of the data. MKA determined that statistically significant evidence of a decreasing trend was evident in the dataset. Owing to the small dataset, further data is required to confirm the reliability of this trend.

Monitoring Well 3

	25/02/2014	23/05/2014	11/08/2014	7/11/2014	26/02/2015	13/05/2015	27/08/2015
pH	7.47	7.73	8.02	8.43	7.47	8.31	8.57
Benzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
C6-C10	< 20	< 20	< 20	< 20	< 20	< 20	< 20
C6-C10-BTEX	< 20	< 20	< 20	< 20	< 20	< 20	< 20
>C10-C16 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C16-C34 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C34-C40 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C10-C16 Fraction - Naphthalene	< 100	< 100	< 100	< 100	< 100	< 100	< 100

MW03 recorded a pH value of 8.57 which is slightly above readings from previous quarterly monitoring events but within the Site background range. The pH values at this location have increased steadily since records began.

TRH concentrations at MW03 were below the LOR for this GME and are typical of concentrations recorded during background monitoring. TRH fractions have not been recorded at MW03 since records began, apart from one recorded concentration in the >C16-C34 fraction (180 μg/L) in an October 2013 background monitoring event.
Overall, TRH concentrations appear to be stable at below LOR since October 2013.

Analytical results for all BTEX compounds were below LOR at the above monitoring locations and as such trend analysis was not undertaken. These results are generally consistent with background monitoring data and it appears that BTEX concentrations are typically stable at below LOR concentrations.

Monitoring Well 4

	25/02/2014	23/05/2014	11/08/2014	7/11/2014	26/02/2015	13/05/2015	27/08/2015
pH	8.81	8.37	8.74	8.63	8.81	8.29	8.29
Benzene	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene	< 2	< 2	< 2	< 2	< 2	< 2	< 2
C6-C10	< 20	< 20	< 20	< 20	< 20	< 20	< 20
C6-C10-BTEX	< 20	< 20	< 20	< 20	< 20	< 20	< 20
>C10-C16 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C16-C34 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C34-C40 Fraction	< 100	< 100	< 100	< 100	< 100	< 100	< 100
>C10-C16 Fraction - Naphthalene	< 100	< 100	< 100	< 100	< 100	< 100	< 100

A pH value of 8.29 was recorded at MW04, which is within the Site background range. The pH at MW04 has decreased overall, showing a downward trend since monitoring began in October 2013.

TRH concentrations at MW04 were below the LOR for this GME and are typical of historic concentrations at this location.

Analytical results for all BTEX compounds were below LOR at the above monitoring locations and as such trend analysis was not undertaken. These results are generally consistent with background monitoring data and it appears that BTEX concentrations are typically stable at below LOR concentrations.

Summary

Where appropriate, statistical trend analysis was undertaken on analytes using the MKA trend test with an upper confidence level of 95% at selected monitoring well locations. Trends in BTEX and TRH concentrations were largely non-calculable given the small dataset available and the high proportion of Non-Detect values in the data (caused by data points with results below LOR concentrations). Some preliminary trends were identified for pH at MW01 - MW04, and Benzene at MW02. However given the small dataset these trends are not considered scientifically robust at this stage of assessment and will continue to be assessed throughout the 2015 monitoring program.

While statistically significant trends were not available for TRH and BTEX results for MW01 - MW04, it is noted that all results for these analytes are well below the GAC (where adopted) and in most cases, below the LOR. These results are also consistent with historic TRH and BTEX data recorded by AECOM at the Site.

Further data from future monitoring events will be required to give credence to the preliminary trends identified above. While statistically significant trends were not available for TRH and BTEX results at MW01 - MW04, it is noted that all results for these analytes are below the GAC for the Site and in most cases, below the LOR. These results are also consistent with historic TRH and BTEX data at the Site. All parameters analysed were compliant with GAC criteria.

1) Groundwater level monitoring and groundwater sampling was conducted at the Site by AECOM on 12 May 2015. The analytical results of the groundwater quality monitoring indicate that there were no exceedences of the adopted GAC, or breaches of EPL conditions, relating to groundwater monitoring at Points 1 to 4;
2) Corrective action was not therefore required during this GME indicating that the operational facility has not had an impact on the quality of groundwater beneath the Site;
3) MW02 recorded a Benzene concentration below the LOR. In previous quarterly monitoring events, and during background monitoring, higher concentrations of Benzene were recorded at MW02. While Benzene has been identified in groundwater at MW02 prior to this GME, the concentrations recorded were appreciably low and below the GAC (500µg/L);
4) Trend analysis determined some preliminary trends were present in the dataset, however further monitoring data is required before reliable statistical trends in most analyte concentrations can be determined;
5) Comparison to historical analytical data confirmed that groundwater quality from this GME is comparable to pre-operational background conditions; and
6) On the whole it is considered that Stolthaven has complied with the groundwater monitoring requirements of their EPL and GMP. The next groundwater monitoring event is scheduled for August 2015.

It should be noted that Stolthaven carry out routine monitoring of surface water discharges emanating from the Site for compliance against the EPL.

Traffic Movement Assessment

The traffic movement assessment (TMA) is the collation of all transactions made at Stolthaven Newcastle. This is displayed in hourly intervals shown in the table below (Traffic Movement Assessment: July and August 2015).
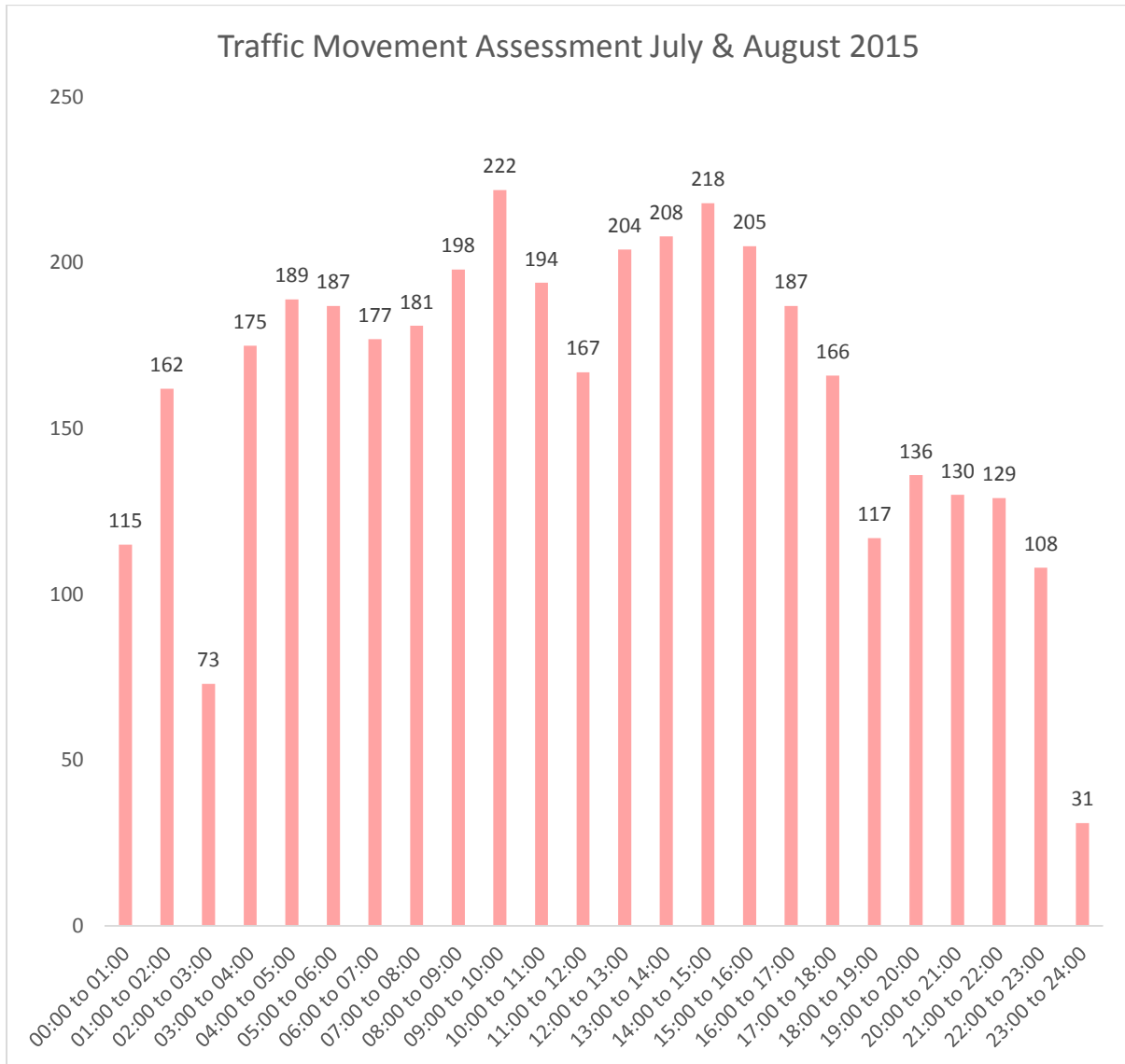
The data above indicates that there were 3,879 transactions that took place in months of July and August, which resulted in approximately 7,758 truck movements. The peak loading periods have been isolated between the following time brackets: 09:00 to 10:00 and 14:00 to 15:00.