Kurnell community update

1 June 2022

Agenda

Item	Presenter
Introductions	Andrew Brewer
Remediation program update	Jos Kusters
Testing update	WSP
Outcome of Ampol investigation	Andrew Brewer / Alan Colwell
Q&A	All

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Work on remediation has progressed well

Remediation progress by zone

Remediation works are well progressed, locations with remaining impacts will be addressed in the coming weeks – we expect completion to be reached around the middle of June

	Zone	% complete of bulk remediation	Comments
1	North side of Torres Street and Captain Cook Drive (includes soil testing)	90	Bulk remediation complete Validation shows remediation is successful – one BaP hotspot Working with residents to remediate driveways
2	Horse Arena Areas (includes soil testing)	100	Bulk remediation complete Validation shows remediation is successful
3	West: South west side of Torres Street and west side of Captain Cook Drive (includes soil testing)	100	Bulk remediation complete Validation shows remediation is successful
3	East: South east side of Torres Street and east side of Captain Cook Drive (includes soil testing)	95	Bulk remediation complete Validation (90%) shows remediation is successful – one BaP hotspot
4	East : Captain Cook Drive East side working from N to S (includes soil testing)	85	Bulk remediation complete Validation (85% returned) shows remediation is successful Driveways of Men's Shed and Girl Guide Hall are being replaced Remediation along northern side of Solander Street is continuing
4	West: Captain Cook Drive West side working from N to S (includes soil testing)	95	Bulk remediation complete along Captain Cook Drive Validation shows remediation is successful – two BaP hotspot
5	Girl Guide Hall Areas (includes soil testing)	100	Bulk remediation complete Validation shows remediation is successful
6	Captain Cook Drive from Bridges Street to Sub Station (includes soil testing)	95	Bulk remediation complete Validation shows remediation is successful - two locations BaP and hydrocarbon Management plan for location with hydrocarbon to be implemented
7	Captain Cook Drive from Solander Street to Rec Club (includes soil testing)	70	The section along Captain Cook Drive (~70% of the zone) has been remediated Awaiting validation results Works along the southern side of Solander Street will continue.
8	6-8 Torres Street (includes soil testing)	95	Bulk remediation complete Validation shows remediation is successful

Remediation validation sampling results

The number of samples so far

- Between 21 April and 27 May, 1042 samples have been sent for analysis as part of the remediation work
- Of the samples above, results for 546 samples have been released to the public, the remaining will be released as they are returned from the lab

The results

- A vast majority of samples had concentrations below guidelines
- 6 of the 546 samples had concentrations exceeding a guideline - 1.1 % of the data set.
- Hydrocarbon impact near footbridge: Approach is to monitor tree given that further excavation at the base could damage the tree roots. Assessment of this area will also be part of an ecological risk assessment. EPA is aware of the overall approach.
    - **Soil at the five (5) locations with BaP (Benzo(a)pyrene) exceedances are to be remediated**
- The high density of sampling gives confidence to the very low occurrence of locations with high concentrations

Current work…

- Excavation and validation work to continue in the final sections of Zone 7 along Solander Street
- Result sets to be released to the public as we collate and evaluate lab data

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Other testing - update

Private property sampling

- We have sampled at 30 residential properties
- Reports have been sent out to 27 properties

Ambient air sampling

- Results have been shared with the public – the results did not indicate any risk to human health
- Data for private properties have been sent out to residents

Ecological risk assessment

- Scope of work has been developed for a long-term ecological risk assessment of significant water bodies and ecosystems (Marton Park, Quibray Bay and Towra Bay Nature Reserve) that could have been impacted by the incident

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Events and our response to date

- On Thursday 7 April the wastewater separators at our Kurnell terminal overflowed following heavy rain. The overflow caused the discharge of hydrocarbon residues with storm water onto Captain Cook Drive and surrounding areas, including local waterways in Kurnell
- Events like this are unacceptable to Ampol. Ampol takes responsibility and again apologises to the Kurnell community for impacts and to ongoing disruptions as we deliver remediation works.
- Ampol recognises that community notification and engagement immediately following the incident did not meet community needs and Ampol commits to working with the community and emergency services to develop appropriate practices
- We are and will continue to deliver a comprehensive clean-up and remediation program to ensure all impacts are addressed. Ampol is also here for the long-term to build strong relationships with community and improve amenity in Kurnell for the future.
- Remediation work is now well progressed. We have taken immediate steps to prevent re-occurrence and there is further steps identified in our investigation that we will deliver.
- We continue to communicate on progress and look forward to working with the community to take our work forward.

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Positive progress on works in community

Ampol thanks for the community for working with us on a number of activities to improve amenity in Kurnell

- Beautification of the shopping centre garden
- New driveways installed for Men's Shed and Girl Guides Hall with an accessibility ramp for the Girl Guides Hall to come
- Agreement to complete upgrade works at the Scout Hall / Girl Guides Hall / Horse Arena
- Tennis court replacement works to be delivered

Communication channels well established and resource in place for any health concerns

- Ampol has appointed EnRiskS, human health risk specialists to support the community with independent human health risk advice. If you have any queries or concerns about health risks related to the wastewater overflow incident, you can contact Dr Jackie Wright and Therese Manning from EnRisks (0474 654 144)
- Dedicated 1800 number and email address well established
- Updates being delivered to website and through Facebook
- Fortnightly letter box drops to the community

Investigation – outline and introduction

The investigation was undertaken by a senior Ampol team located in a separate part of Ampol's business. Alan Colwell, Project Manager at our Lytton refinery, led the investigation and is here tonight

The investigation team interviewed key personnel involved in the incident response, considered the serious weather event in the area on the evening of the incident, and considered the design, maintenance and operation of key infrastructure and other information relevant to the Kurnell site

The final investigation report provides a summary of the event, a timeline on the incident response, an outline of the root cause of the incident, a conclusion on the volume and type of contamination discharged and recommendations on further actions to be taken to prevent re-occurrence

The investigation does not consider impacts to the community. However, Ampol recognises that community notification and engagement immediately following the incident did not meet community needs. Ampol commits to working with the community and emergency services to develop appropriate practices going forward.

Copies of this summary presentation are available tonight and will be posted on our website. If community members have issues accessing a copy, please call our community team and we will deliver a copy to you.

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Cause of incident

The following conclusions have been reached from the investigation:

- A 1 in 100-year rainfall major storm event, coupled with high groundwater levels and a peak high tide, combined to overwhelm the stormwater discharge capacity and the wastewater treatment plant
- Stormwater reached a peak height of approximately 0.8 metres above the wastewater separators
- The separators and the associated sumps are designed to remove trace concentrations of hydrocarbon and as such operate permanently with hydrocarbon inventory in the system
- As the floodwaters externally overcame the area, floodwater filled the vessels and caused the lower density hydrocarbon to be pushed up through gaps in the coverings, releasing into the stormwater
- The stormwater volumes were extremely high, with 95,000m3 received, of which approximately 35,000m3 is estimated to exceed processing capacity and contribute to onsite and then offsite flooding
- This led to the water overwhelming bunding at the Site's boundary on the corner of Solander St and Captain Cook Drive. As a concentration, the hydrocarbon released was approximately 0.025% of total floodwaters received

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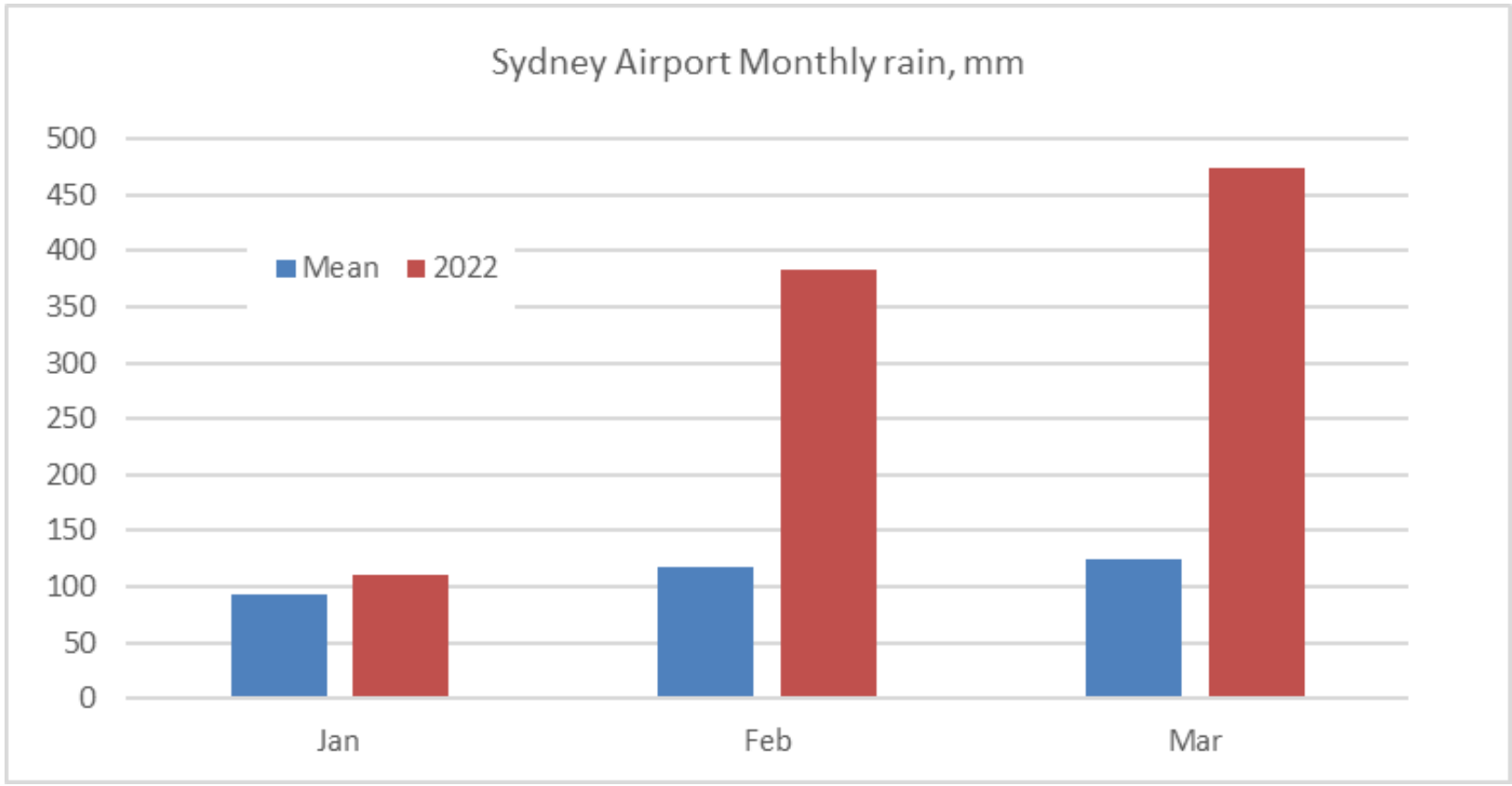
The investigation found Ampol's wastewater and associated systems worked largely as per design. The significant rainfall, high groundwater levels and peak high tide created excess stormwater which overcame the area.

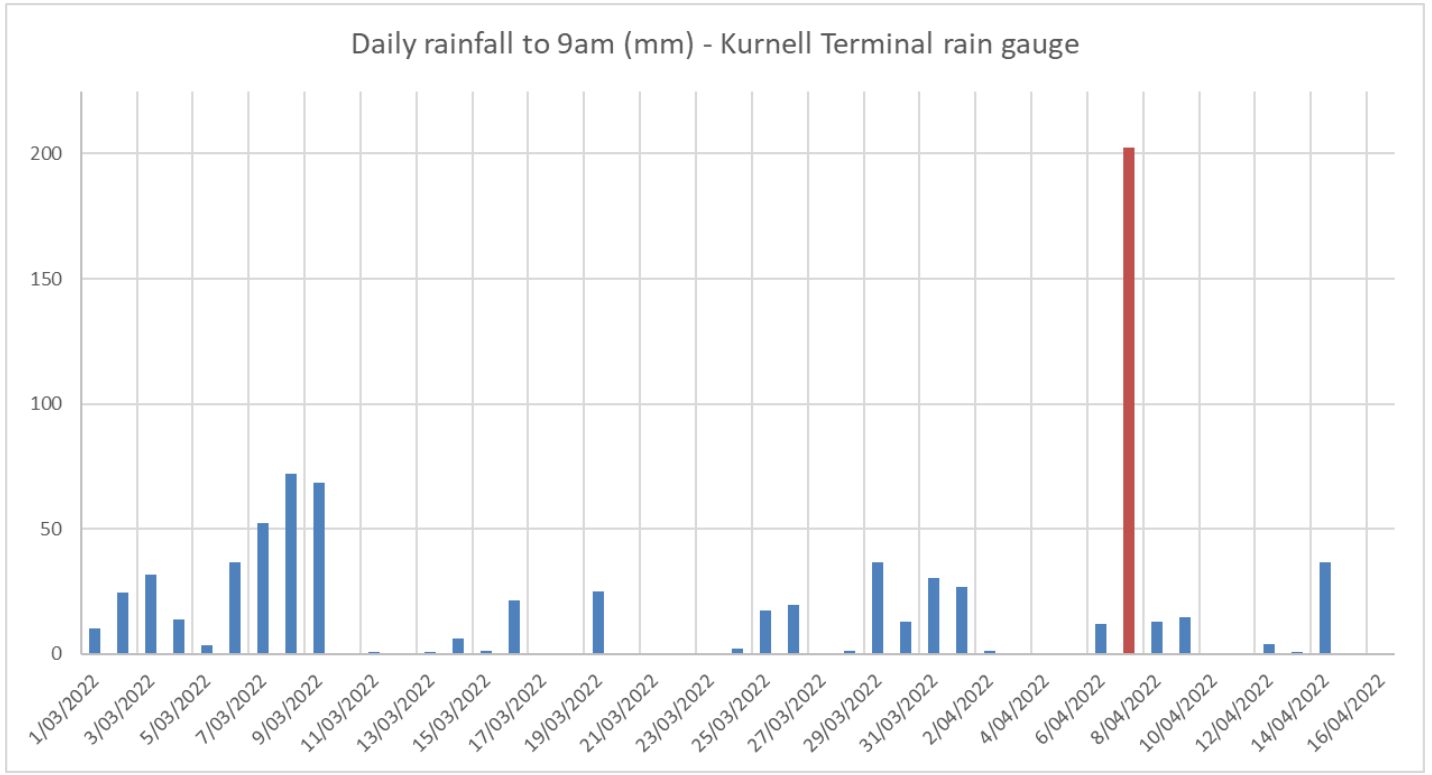
Rain and groundwater conditions

Rainfall at the start of 2022 well exceeded regular rain patterns. January-March 2022 received 968mm of rainfall compared to an historical mean of 336mm. This meant groundwater levels were high. Previous analysis shows that groundwater levels at Kurnell Terminal take approximately 4 weeks to return to pre-rain condition.



Daily rainfall at the Kurnell terminal

Kurnell terminal received solid rain volumes from 1-9 March and then again from 25 March – 1 April. Rainfall in the morning and afternoon of 6 April 2022 (39mm between 12.01am to 7.00pm) provided fresh surface water.
At the time of major storm event (between 9.10pm on 6 April 2022 to 1:10am on 7 April 2022), groundwater levels would have been high.
Ground infiltration of stormwater in the catchment area during the storm event on 6-7 April would have been essentially zero, with close to 100% stormwater run-off.



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Major storms event – 6-7 April 2022

- On the evening of 6 April 2022, a major storms event occurred over Kurnell
- Wide ranging rain and storms battered the greater Sydney region through the evening, with Kurnell experiencing the full brunt of the conditions
- The Kurnell Terminal rain gauge recorded very high levels of rainfall between 7:10pm on 6 April 2022 to 1:10am on 7 April 2022, with 146mm received.
- The investigation compared the storm intensity to Bureau of Meteorology (BOM) design rainfalls for the Kurnell area.
- The comparison showed that in Kurnell on the evening of 6 April:

A 1 in 100 year rainfall event occurred

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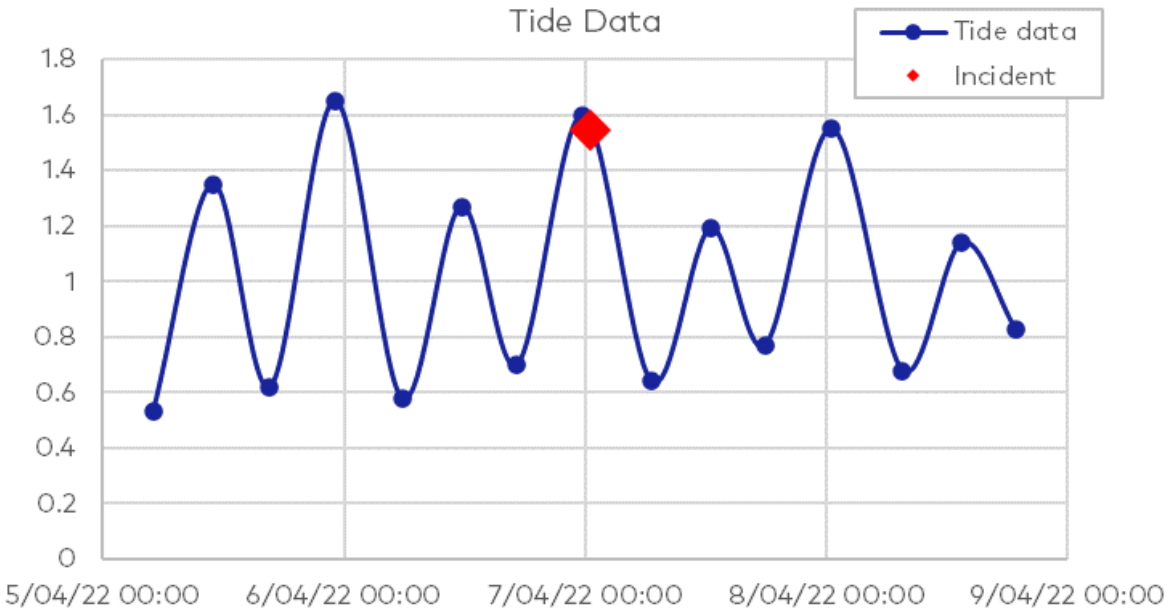
Tide in Botany Bay

- Tidal data from Botany Bay is shown in the figure below, with peak high tide of 1.60 metres on 6 April 2022 at 11:46pm
- The peak high tide coincided with the timing of the storm event at Kurnell. The stormwater discharge from the Ampol Terminal Catchment B drains to Quibray Bay wetlands, which contain a tidal water level
- The coincidental high tide and stormwater run-off would have exacerbated the stormwater accumulation and flooding at the Kurnell Terminal wastewater treatment plant



Summary of critical events

Time	Activity
12:00pm (6 April)	Light rain continues in Kurnell
7:10pm	Heavy rain starts, with a 13mm downpour 7:10-7:40pm. Major storm event, with 130mm between 9:10pm - 1:10am, equivalent to 1 in 100 year rainfall event as defined by the BOM
10:00 – 11:30pm	The stormwater flows from Terminal Catchment B exceeded the site stormwater capacity, with large amounts of run-off accumulating in the north-west part of the site
Operator response	Operators of the terminal respond by following existing procedures professionally and capably. Wet weather protocols were implemented and diversion systems operated. There was no meaningful contribution to the incident or consequence due to any human error. The team stopped all other activities on site to allow full focus on management of the WWTP and stormwater issues.
Process response	Equipment installed across critical systems in the WWTP activated and operate largely as per design. Pumps operated when required, although there were some minor delays in the order of minutes.

Summary of critical events

Time	Activity
11:00pm	Sykes pump started
11:06pm	Levels in the WWTP start to increase, indicating that stormwater flows starting to overcome cumulative processing & pumping capacity.
11:20pm	Wet weather bypass via IAFs started
12:06am (7 April)	Oily Water Separators and associated nearby equipment at the Ampol Kurnell Terminal WWTP became inundated with stormwater flow and experienced flooding of the entire operational area. Levels peaked at approx 0.8m height. Hydrocarbon leaks from Oily Water Separators, Wet Oil Sump, Oil Sump and Sludge Retention Basin through gaps in lids and covers as the stormwater volume flooded the area. Hydrocarbon was initially identified floating on the stormwater surface, while stormwater accumulation remained inside the terminal fenceline.
12:20am	Identified that the bunding between the Terminal Seps and the Recreation Club (Rec Club) had been washed away. Stormwater had begun flowing south to north towards Solander St.
12:25am	Stormwater flooding at a depth of approximately 0.3m was noted on Captain Cook Drive near the corner of Solander Street. The stormwater outside the terminal fenceline had no visible signs of hydrocarbon or odour at this time.

Summary of critical events

Time	Activity
12:30am	**Hydrocarbon breach of boundary.** Clear and strong smell of hydrocarbon was evident with hydrocarbon resting on the stormwater surface as it flowed South to North, towards intersection of Captain Cook Drive and Solander Street and into Marton Park wetlands. Hydrocarbon mixed with stormwater was carried into public areas
12:30am	Sykes pump discharge hose found dislodged and pump stopped, but this occurred after the area already flooded. All other pumps continuing to run at maximum capacity.
1:30am	Emergency services called by Ampol, arriving onsite at the Terminal at approximately 2:00am before moving to a staging area at the Kurnell RFS Station. Emergency Services assume operational control of the incident in the community.
2:50am	Rainfall effectively stopped and storm passed.
3:00am	Solander St free of water flooding after stormwater levels receding
3:50am	Sykes pump returned to service
6:11am	SUNRISE
6:15am	Flood levels around WWTP start to recede with sump levels back in control range

Summary of critical events

Time	Activity
4:00 – 9:00am	Ampol works to offer support with hydrocarbon mitigation on public land.
10:00am – 12:00pm	Site walk of Captain Cook Drive, Marton Park wetlands, Quibray bay wetlands between Ampol, EPA and HazMat. Hydrocarbon found in public lands.
12:00pm	EPA issue a formal Clean Up Notice requiring Ampol to start mitigation in public lands.
1:00 – 6:00pm	Completed installation of booms and adsorbent pads to contain hydrocarbon at Marton Park and creek to west of Captain Cook Drive. Vacuum trucks at roundabout and skimming from creeks.
2:00pm	WSP arrived at Kurnell to commence sampling
5:43pm	SUNSET

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Hydrocarbon spill volume

The original hydrocarbon spill volume notice of 700L calculated on the morning of the incident is no longer considered accurate. The investigation concluded that the hydrocarbon release volume can be estimated at 9,200L

- Initial notification and estimation by Ampol was based on preliminary calculation on the morning of the incident.
- The initial estimate was based on hydrocarbon release occurring only from the Oily Separator (Seps), based on a hydrocarbon depth of 1mm on the surface of the Separator.
- The investigation found the assumption of a hydrocarbon depth of 1mm on the Separator surface is considered very small and that the depth would have likely been greater.
- The investigation also identified other sources in the WWTP where hydrocarbons would have likely been released into stormwater flooding, not previously considered – this includes the Oil Sump, Wet Oil Sump and Sludge Retention Basin
- The investigation also looked at photos showing estimated volumes of hydrocarbons found in offsite locations following the incident and before clean-up commenced

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Hydrocarbon released in incident

Review of the hydrocarbon properties demonstrated the type of hydrocarbon released was more than 99% diesel

- It is recognised that the release had a black colour and sour odour. The black type appearance of the material is the result of approximately 0.5% of the product being a hydrocarbon heavier than diesel. Very small quantities of heavy oil remain in the Kurnell terminal in multiple sources, including in our slops tanks and from ongoing site remediation.
- The analysis of hydrocarbons released was delivered by an independent environmental consultant, with sampling commenced on the 7 April 2022 and targeting visually impacted surface soil, surface water bodies, and utility pits at the terminal and in the surrounding public areas. A significant number of samples were taken.
- The carbon number distribution for the hydrocarbon on "surface water" results contain the most meaningful number to characterise the hydrocarbon released.
- This analysis demonstrates material was greater than 99% diesel

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Changes implemented to prevent re-occurrence

The investigation found interim steps already taken by the Kurnell team to prevent re-occurrence link well with key findings of report.

Steps already taken by the Ampol Kurnell team include:

- Sourcing additional diesel driven pumps to keep stormwater pit levels as low as practical
- Better managing the flow of water from the Terminal to minimise any hydrocarbons entering the Seps
- Increased regularity of hydrocarbon removal from the Seps
- Increasing the height of the bund wall around the Seps from 300mm to 900mm

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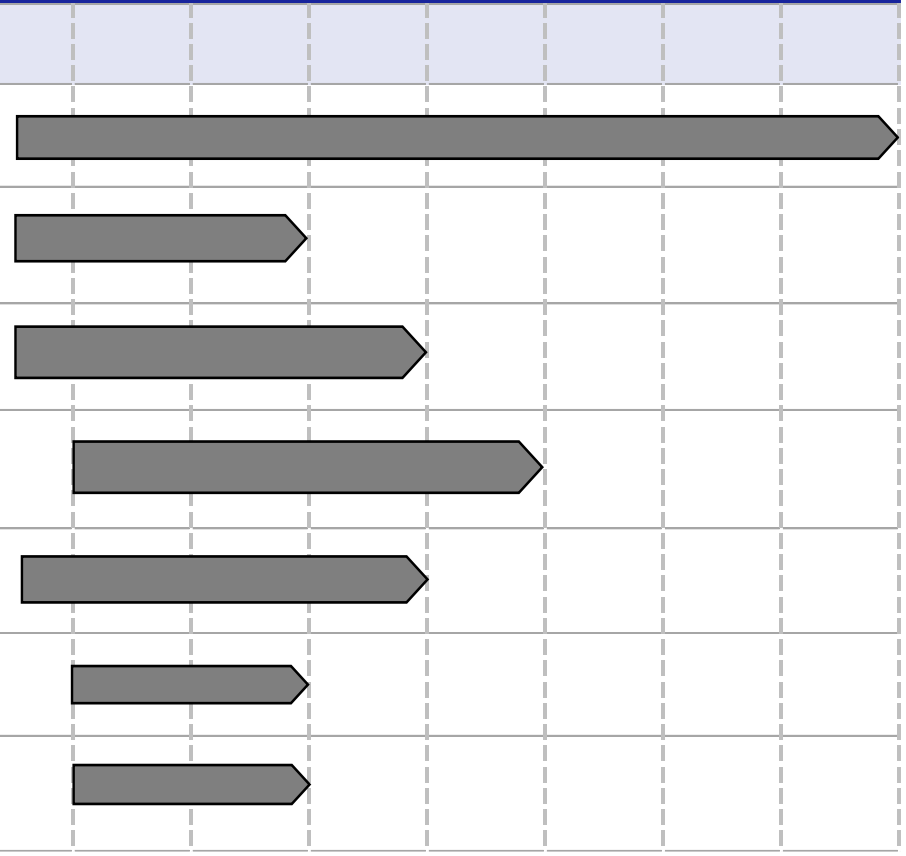
Ampol has commenced delivery of long-term corrective actions

Actions	Completion	Apr-22 May-22 Jun-22 Jul-22 Aug-22 Sep-22 Oct-22 Nov-22 Dec-22
Longer-term Actions to Prevent Re-occurrence	Dec-22	
Conduct design review of Storm Water System & Oily Water System & assess options to segregate the two systems	Dec-22	
Improve maintenance and cleaning frequency and processes for Separators and Retention Basin	Jul-22	
Review options to bund Wet Oil Sump, Oil Sump, Oily Water Separators & Retention Basin	Aug-22	
Review and implement operational improvements to Separators including the efficacy of skimmers	Sep-22	
Investigate water drawing practices of product tanks & identify efficiency improvements	Aug-22	
Investigate reliability of stormwater pumps and take action to improve reliability	Jul-22	
Improve Ampol procedures for incident notification to key stakeholders - Emergency Services, Regulators & Community	Jul-22	



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What's next

Ampol will continue to deliver on workstreams identified and communicated to the community

Environmental and Health Monitoring

- Develop and implement an EPA supported ongoing community environmental monitoring plan Commencing June 22
- Commission EPA supported periodic environmental impact assessments in the local community Commencing June 22

Community Engagement

- Recruit full time Community Relations Manager to liaise with community, organisations and emergency services. Underway (using WSP consultant) with Ampol resource picking it up when recruited (Jul 22)
- **Three working groups to be established :**
  1.Remediation, clean-up, testing
  2. Kurnell emergency management
  3. Community engagmt / 'brand Kurnell'
  To be established - June 22

Independent Investigation

- Focus on the root cause and contributing factors of the incident (Completed)
- Commission a Loss of Containment Risk Assessment for the Terminal. Assessment in progress

Loss of Containment Management

- Short Term Plan (0-3 months) being executed to prevent re-occurrence. Actions include hydrocarbon waste reduction, improved stormwater run off and redirection, improved capacity (Completed End July)
- Independent Investigation outcomes confirm the long term corrective actions (Commence Jun 22)

Odour Management

- Odour patrols are being conducted
- Ambient conditions and outdoor mitigations considered before works commence
- Immediate opportunities implemented when identified (Implemented)

- Commission an Odour management review to identify sustainable odour suppression / reduction actions (In progress)

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Thank you