



Your ref: SSD-5544-Mod-7
Our ref: DOC25/556747

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18 August 2025

Subject: Request for Advice on Modification 7 – Infrastructure consolidation and remediation (SSD-5544-Mod-7) (Sutherland Shire)

Dear Pamela,

Thank you for your email received on 7 July 2025, requesting advice from the Conservation Programs, Heritage and Regulation (CPHR) Group of the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEWS) on the above modification.

CPHR understands the modification includes preparing land for 'future uses', such as the State significant development (SSD) application for the Kurnell Energy and Industry Precinct (SSD-86799993), proposed within the Kurnell Refinery Conversion site. This latter SSD proposes the construction and operation of a Battery Energy Storage System, and site preparation for future energy and industrial land uses.

It is CPHR's view that the works proposed in the modification and the assessment of impacts should only be those related to the approved Kurnell Terminal project. Preparation of land for future uses should be assessed and considered as part of the development application for those future uses, not as part of the modification. Of particular concern to CPHR is the vegetation clearing proposed within the Refining Process Improvement Project (RPIP) Mountain area.

CPHR, in consultation with National Parks and Wildlife Service (NPWS), has reviewed the Modification Report prepared by AECOM (dated 12 April 2025) and recommends the applicant addresses the requirements at Attachment A. In summary, CPHR's key concerns are:

Biodiversity

- Insufficient consideration has been given to genuinely avoiding impacts to habitat for the Giant Dragonfly (*Petalura gigantea*) within the RPIP Mountain area.
- It is unclear whether any ecosystem credit species generated in the Biodiversity Assessment Method Calculator (BAM-C) were excluded from the BDAR.
- The BDAR does not explain how the split of credits for each stage was calculated.

National Parks Estate and Coastal management

- Insufficient detail has been provided to adequately assess the potential stormwater and overland flow impacts to Towra Point Nature Reserve and “proximity area for coastal wetlands” and suitable mitigation measures to minimise impacts have not been provided.

Flooding

- The Surface Water, Wastewater and Flooding Report relies on a flood modelling report and a site-wide assessment of oily water and stormwater management systems, which have not been provided to CPHR for assessment.
- The risk assessment has not included the risk to the site and the receiving environment due to a flood event during construction (remediation) or ongoing use of the facility.
- The change in catchments drained by the stormwater system post-remediation is underestimated.
- No detailed calculations or drawings have been provided for methods of protection of restoration areas during soil remediation works.
- Flood storage areas have been incorrectly identified in areas holding potentially contaminated water for transfer into the oily water management system.
- Parts of the proposed development which are to be prepared for future uses do not drain by a gravity drainage system.
- Discharge points for parts of the site are currently ineffective and will require rectification.
- The report does not provide a description of full stormwater management systems, therefore it is not possible to determine if the changes will impact existing offsite systems.
- Protection of critical infrastructure has not been assessed for the probable maximum flood (PMF).

Waterway Health and stormwater

- On site stormwater management includes limited pollution and sedimentation management measures and is not adequate for protection of the receiving areas.
- Multiple conflicting targets have been quoted for pollution treatments.
- Disturbance of contaminated soils during remediation has the potential to mobilise large quantities of contaminated sediment to sensitive receiving environments.
- Future use of the site may result in disturbance of capped contaminated soil.
- Site management does not provide adequate separation of clean and dirty water flows.

Please contact the Greater Sydney Planning team at rog.gsrplanning@environment.nsw.gov.au should you have any queries regarding this advice.

Yours sincerely



Louisa Clark
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CPHR comments on Modification 7 Infrastructure consolidation and remediation (SSD- 5544- Mod-7) (Sutherland Shire)

In preparing this advice CPHR has reviewed the following documents:

- *Modification Report* (AECOM, 12 May 2025)
- *Biodiversity Development Assessment Report* (BDAR) (Biosis, 13 May 2025)
- *Surface Water, wastewater and flooding report* (SWWFR) (AECOM, 12 May 2025)
- *Conceptual Remedial Action Plan* (RAP) (AECOM, 12 May 2025)
- *Soils Groundwater and Contamination Report* (AECOM, 12 May 2025).

Key assessment issues

Biodiversity

The spotlighting survey that informed part of the BDAR (Biosis, 13 May 2025) found the Giant Dragonfly (*Petalura gigantea*) adjacent to the subject site. This species is listed as endangered and a Serious and Irreversible impacts (SAIL) entity under the *Biodiversity Conservation Act 2016* (BC Act).

This modification does not trigger SAIL because the habitat that will be impacted is marginal or potential foraging habitat and not the swampy or boggy areas required for breeding and larval development. Suitable breeding and foraging habitats are available in adjoining areas to the south, east, and north, which will remain unaffected by the modification.

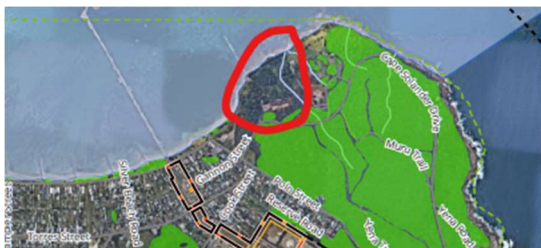
However, while a SAIL is not triggered, further avoidance and minimisation measures are required to be implemented for the Giant Dragonfly in accordance with the BC Act and Biodiversity Assessment Method 2020 (BAM), as discussed further below.

1.	<i>BDAR – avoid or minimise requirement</i>	The proposed impact on Giant Dragonfly habitat within the Refining Process Improvement Project (RPIP) Mountain area, as shown in Figure 4-2 of the BDAR, is not supported as insufficient consideration has been given to genuinely avoiding impacts to habitat for this species. Section 7.5.3.11 of the RAP (AECOM, 12 May 2025) states that remediation works are not required for the site's current and approved use. Instead, these works aim to prepare the site for the future Kurnell Energy and Industry Precinct (SSD-86799993). CPHR advises that site preparation for future commercial/ industrial development within the RPIP Mountain area would be more appropriately assessed as part of SSD-86799993. This will ensure habitat for an endangered species is not pre-emptively cleared for a future development that is not proposed under this modification. The requirement for developments to avoid impacts is in accordance with: • sections 6.2 and 6.12 of the BC Act • section 7 of the BAM • chapter 39 Natural Resource Management (Greenweb) of the <i>Sutherland Shire Development Control Plan 2015</i>. Recommended actions: • The modification is amended to avoid any impacts to the RPIP Mountain area shown in Figure 4-2 of the BDAR. Impacts to be avoided include, but are not limited to, excavation, capping, vegetation removal or construction of surface water infrastructure.
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		• A 'no remediation' approach should be adopted for the RPIP Mountain area as outlined in Appendix E of the RAP. • Site preparation for future commercial/industrial development within the RPIP Mountain area is assessed as part of SSD-86799993. • The BDAR, associated plans and relevant technical reports be updated accordingly.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

2.	<i>BDAR - Biodiversity Offsets and Agreement Management System (BOAMS) access</i>	CPHR is unable to complete a review of this modification due to not having access to the BDAR case and digital files via the BOAMS. Recommended action: • The ecological consultant adds 'Greater Sydney – Compliance & Regulation' as a Case Party in BOAMS, uploads the required digital files (refer to Appendix L – Table 27 in BAM (2020) for what is required), and submits the case to 'Greater Sydney – Compliance & Regulation' as the 'consent authority'.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

3.	<i>BDAR – ecosystem species</i>	It is unclear whether any ecosystem credit species generated in the Biodiversity Assessment Method Calculator (BAM-C) were excluded from the BDAR. Recommended actions: • Update the BDAR to clarify whether any ecosystem species were removed. • If ecosystem species were removed, provide a justification. • The ecological consultant provides access to BAM-C in the BOAMS by adding 'Greater Sydney – Compliance & Regulation' as a Case Party.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

4.	<i>BDAR - percentage of native vegetation cover</i>	Figure 3-1 of the BDAR ('native vegetation extent') may not have mapped all native vegetation in the north-eastern area of the Kurnell Peninsula as shown in red in the screen-capture below. 
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		Recommended action: The ecological consultant reviews the native vegetation mapping extent presented in Figure 3-1 of the BDAR and updates the mapping and calculations if required.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

5.	<i>BDAR - staging of offsets</i>	The BDAR and Modification Report request that credit offset requirements are staged in accordance with the modification's development stages. Tables 9-3 and 9-4 of the BDAR provides a summary of the number of credits to be offset for each stage. However, the BDAR does not explain how the split of credits for each stage has been calculated. Recommended action: Update the BDAR to provide justification and details on how the total number of credits to be retired is divided across each stage.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

National Parks Estate and Coastal management

6.	<i>Stormwater impacts to Towra Point Nature Reserve and coastal proximity wetlands</i>	The site the subject of the modification is adjacent to Towra Point Nature Reserve, which is identified as a coastal wetland under the <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> (Resilience and Hazards SEPP). It is also a declared Ramsar site under the <i>Environmental Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). The proposed stormwater discharge points are all located in the "proximity area for coastal wetlands" under the Resilience and Hazards SEPP with the northern proximity areas being adjacent to Towra Point Nature Reserve. The Modification Report acknowledges that works in this area may increase the dispersion of dust, soils, sediments and contaminants. The disturbance of contaminated soils during earthworks and remediation is concerning due to the proximity of downstream sensitive receiving environments. Preserving the ecological and hydrological integrity of coastal wetlands is important. Proposed management measures must form part of the risk assessment for the modification. The Modification Report, BDAR and SWWFR do not adequately assess the potential stormwater and overland flow impacts to Towra Point Nature Reserve and "proximity area for coastal wetlands" or provide suitable mitigation measures to minimise these impacts. Recommended action: Provide further details on the potential stormwater and overland flow impacts to Towra Point Nature Reserve and "proximity area for coastal wetlands" and identify suitable mitigation measures to minimise these impacts.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

Flooding

The site is subject to both overland and coastal flooding and drains to highly hydraulically constrained stormwater outlets. These outlets have limited capacity to accept flow without causing offsite impacts and drain via sensitive environmental areas which are unable to be modified to accept more stormwater.

The Kurnell Peninsula is severely flood impacted and is serviced only by Captain Cook Drive which has a poor level of flood immunity. Any adverse changes arising from the modification will need to be mitigated on site to ensure that there are no off-site flood impacts.

7.	<i>Documents cited in the SWWFR have not been provided for assessment</i>	The SWWFR describes findings from a flood modelling report completed for the Stormwater Separation Improvement Project by BPM Projects in 2024, however this report has not been provided. The adequacy of the provided flood modelling outputs cannot be determined without a review of assumptions made and model methods. Therefore, CPHR is unable to determine if the requirements to assess and manage flood risk have been met. The SWWFR also relies on a report prepared by MHL in 2016 for the site wide assessment of existing oily water sewer (OWS) and stormwater sewer (SWS) to estimate requirements for on-site detention (OSD). OSD will be a required mitigation measure on this site but based on the information provided CPHR is unable to assess if sufficient mitigation has been or will be provided. Recommended action: • Provide the Stormwater Separation Improvement Project report (BPM Projects, 2024) and the site wide OWS and SWS report (MHL, 2016) for review.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

8.	<i>Risk assessment has not included the risk to the site and the receiving environment due to a flood event during construction (including remediation) or ongoing use of the facility</i>	Section 7.2 of the Modification Report has considered a large range of risks during remediation of the site and for ongoing use of the facility. These risks have been ranked and mitigation strategies provided. The risk assessment does not include the following risks which are considered significant and require mitigation: 1) Risk of a flood of various magnitudes: a. during remediation of contaminated soils on the site b. overwhelming OWS/ SWS during ongoing operation of the site c. overwhelming bunded systems around storage tanks which then discharges to the stormwater system without being treated by the OWS. 2) Risk of breach of the OWS during remediation of the site. 3) Risk of failure of pumped systems used to discharge treated water to the ocean outfall. 4) Risk of failure of pumped systems proposed to be used to transfer water from the land proposed to be reprofiled to a stormwater basin (refer to Figure 5.4 of the SWWFR). <i>Note:</i> The Modification Report includes information related to a pollution event in 2022 where existing systems were overwhelmed during a flood event resulting in transport of untreated contaminated water off-site. This occurrence remains under investigation by NSW Environment Protection Authority (EPA).
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		Recommended action: Risk management be expanded to include the impact of flooding (overland and oceanic) on the construction and operational phases of the modification.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

9.	<i>The change in catchments drained by the stormwater system post remediation is underestimated</i>	The SWWFR indicates there will be a limited increase in areas draining to the stormwater system post-remediation. This is based on areas which currently drain via the OWS being added to the stormwater system after restoration. The site's stormwater management is extremely complex. The design intent is that all hydrocarbon contaminated water is collected by the OWS, transferred to the SWS and then discharged under an environmental protection license to an ocean outfall. The RAP does not clearly describe what changes are occurring to areas discharging via the OWS or SWS. All stormwater outflow points from the site are very constrained and it is critical that any change to the pre-SSD discharge regime be mitigated to ensure no adverse offsite flood impacts. Recommended action: Provide details of pre and post OWSs to justify claimed changes in discharge to stormwater systems.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

10.	<i>No detailed calculations or drawings have been provided for methods of protection of restoration areas during soil remediation works</i>	The SWWFR mentions the need to divert large overland flows around restoration areas during construction, however no details have been provided. The on-site and off-site catchment for the Kurnell facility generates extremely large flows and detailed plans and calculations need to be provided to determine appropriate staging of soil remediation and restoration. Recommended action: Provide detailed soil and water management plans.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

11.	<i>Flood storage areas have been incorrectly identified</i>	Flood mapping results have been provided from a separate report for the Stormwater Separation Improvement Project (BPM, 2024) which CPHR has requested to be provided in Item 8 of this response. A review of the maps indicates that the bunded areas holding potentially contaminated water for transfer to the OWS have been incorrectly identified as flood storage. These areas form part of the OWS which should not be discharging to stormwater systems and would not usually be identified as flood storage. The change in stormwater regime from OWS, which does not discharge to the flood impacted areas of Kurnell, to discharge via stormwater systems which do impact flooding, will require extensive on-site mitigation. This most likely will be in the form of on-site detention rather than flood storage.
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		Flood storage has also been used as a determining factor in setting of levels and determination of volumes of soil to be removed from site to enable existing levels to be maintained. This has significant impact on volumes of soil disturbance required to deliver the RAP. Recommended action: • Provide the Stormwater Separation Improvement Project (BPM, 2024) for review to ensure that flood storage is correctly identified.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

12.	<i>Parts of the proposed development which are to be prepared for other uses do not drain by a gravity drainage system</i>	Zone 2, as identified in Figure 4-1 of the Modification Report, is one of the areas to be prepared for future uses and is proposed to be drained via a pumped system. Pumped systems are not considered an appropriate drainage system for any area which is exposed to the elements due to the likelihood of failure during a storm event. The drainage design for Zone 2 also includes a storage basin near the western boundary adjacent to Captain Cook Drive which is the only road in and out of the Kurnell Peninsula. This road is already subject to flooding and any potential increase in flooding will require on-site mitigation that does not rely on pumped systems. Recommended action: • Demonstrate that all areas of the site except for OWS/ SWS can drain by gravity and that overflow from on-site treatment basins does not result in flood impacts on Captain Cook Drive. • Demonstrate that OWSs do not interact with stormwater systems.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

13.	<i>Discharge points for parts of the site are currently ineffective and will require rectification</i>	Stormwater plans indicate that part of the site will drain to Marton Park Wetland and to a discharge point adjacent to the electricity substation on the western side of Captain Cook Drive. However, following the 2022 flood event large amounts of gravel have accumulated at the outlet which serves this drainage, and it is currently ineffective. Sutherland Shire Council is currently working with Department of Primary Industries and Regional Development - Fisheries and the EPA to determine if restoration of the channel including removal of gravel and dead mangroves can occur. Until such time as this restoration work is carried out the discharge points to Marton Park and the substation drain cannot be relied upon for site discharge. Recommended action: • The applicant works with Sutherland Shire Council to facilitate drainage maintenance or find alternative discharge points.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

14.	<i>The report does not provide description of full stormwater management systems</i>	The site has very complex stormwater systems with multiple outlets and includes pumped systems, ocean outfalls and a siphonic system. It is very difficult to determine how each system will perform under normal operation or in a flood event. The Kurnell Peninsula is highly flood prone with most properties subject to flood planning requirements. Existing drainage infrastructure is impacted by shallow gradients and is tidal. Without full
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		descriptions and calculations of discharge and the capacity of outlets, it is not possible to determine if the changes proposed on site will impact existing off-site systems. Recommended action: • Provide details of all stormwater management systems.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

15.	<i>Protection of critical infrastructure has not been assessed for the probable maximum flood (PMF).</i>	Sutherland Shire Council has adopted special flood consideration clause 5.22 in the <i>Sutherland Shire Local Environmental Plan 2015</i>. This clause requires hazardous industries to be located above the PMF. While it would not be feasible to locate the existing development above the PMF, an assessment of flood events larger than the 1% AEP and consideration of the potential consequences of these floods should inform the level of protection provided to the wastewater treatment plant, the OWS and the bunding levels around storage facilities. Recommended action: • Assess risk and consequence of failure in large floods, up to the PMF to determine if proposed protection levels for upgraded water treatment on site are adequate.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

Waterway health and stormwater

This modification provides an opportunity to improve stormwater quality outcomes and reduce potential harm to the sensitive receiving environment, while maintaining the viability of the Kurnell facility. Management of waterway health is a critical consideration for this modification.

The Australian and New Zealand Environment and Conservation Council (ANZECC) guidelines should be the minimum acceptable standard. Additional consideration should be given to increasing the use of ocean outfall, particularly during the decontamination phase of the works, to further mitigate potential water quality impacts.

16.	<i>On-site stormwater management is not adequate for the protection of receiving areas</i>	During the operational phases of the Kurnell refinery, on-site water management has focussed on management of hydrocarbon contaminated water only. Very limited pollution or sediment management has been incorporated in stormwater management systems. Much of the site's roadways remain in an unsealed state where gravel and sediments are easily mobilised in flood events without adequate mitigation. The 2022 pollution incident resulted in deposition of gravel and other sediment at the stormwater outlet on the western side of Captain Cook Drive. This incident is currently being investigated by the EPA. While the submitted documents include commitments to address these issues there is very limited detail provided. No calculations or modelling have been provided, and no land has been allocated for the required infrastructure. Recommended actions: • Stormwater management for the restored site include adequate pollution and sediment management and provide permanent stabilisation of roadways together with temporary stabilisation of areas designated for future land use.
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		• Provide calculations and details for the proposed treatment and management infrastructure. • Consider alternative stormwater discharge options, including via sea outfall.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

17.	<i>Multiple conflicting pollution management targets have been quoted</i>	The SWWFR quotes pollution management targets that range from percentage reduction targets to waterway health targets. However, percentage reduction targets are not suitable for a development of this scale, particularly given its discharge to sensitive receiving waters. More suitable targets would be from the soon to be published review of NSW Water Quality Objectives and associated guidelines values. In the interim the ANZECC (2000) guidelines should be the adopted targets for waterway health, due to stormwater discharge from the site being in coastal proximity wetlands, and nearby a Ramsar wetland and important fish habitat. Recommended actions: • Update the SWWFR to have a single set of waterway health targets ensuring consistency and clarity of pollution management targets. • Ensure that stormwater management requirements in Item 17 are adequate to achieve those targets.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

18.	<i>Disturbance of contaminated soils during remediation has the potential to mobilise large quantities of contaminated sediment to sensitive receiving environments</i>	Remediation of contaminated soils is an important outcome of the modification and once completed can be expected to have beneficial impacts on waterway health. CPHR advises restoring the site to the extent required for the proposed future use under SSD-86799993 requires a greater degree of soil remediation and disturbance than originally proposed by this modification. The RAP estimates up to 123,000 m³ of disturbance for Per- and Polyfluoroalkyl Substances (PFAS) management alone with a further 274,695 m³ for flood storage management and capping. The total estimate being 398,295 m³. The SWWFR proposes managing the potential mobilisation of this material in accordance with the requirements of the NSW Blue Book. However, the Blue Book is intended for short-term disturbance of construction sites without contaminated soils. The remediation program proposed for this site is not yet fully formed due to an unknown extent of remediation required. CPHR advises the duration of remediation would exceed the usual short-term disturbance on a construction site and the contamination of the material being disturbed together with the sensitivity of the receiving waters will require more extensive management of soils and water on site than those provided in the Blue Book. The scale of extended on-site and off-site catchment on this site creates greater challenges than usually experienced in soil remediation. Recommended action: • Provide typical plans and justifying calculations to ensure that diversion of upslope water, protection of disturbed surfaces,
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		collection and treatment of contaminated runoff is quantified so that appropriate areas can be successfully treated in a staged manner. • Review removal of additional soil to allow for capping depth following review of flood reports. • Provide further details and calculations on the protection of the environment during the soil contamination remediation activities.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

19.	<i>Future use of the site may result in disturbance of capped contaminated soil</i>	The modification seeks to permit regrading of the site to support the future use of remediated land under SSD-86799993. The RAP indicates that in some areas it may not be possible to remediate the soil to an acceptable level for reuse and that this will be achieved by capping. Future use of the land is likely to require installation of additional infrastructure such as stormwater drainage, services trenches, slabs and footings and on-site detention to compensate for additional impervious runoff. If capping is used the depth of capping should consider future installation of services to ensure that additional disturbance of soil that has not been fully remediated does not occur. Recommended action: • Provide detailed design of the regraded and capped area to ensure that levels achieved do not require future disturbance of soil which has not been fully remediated.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

20.	<i>Site management does not provide adequate separation of clean and dirty water flows</i>	The site has separate OWS and SWS, however, no evidence is provided on the management of off-site flows. The site's catchment extends to the ridgeline of the adjacent Kamay Botany Bay National Park. The rear section of the site and the national park are very steep and have rapid runoff rates that would have erosive velocities. Allowing these flows to enter and pass across the site without appropriate management controls increases the volume of water passing over unstable or potentially contaminated surfaces. This places additional stress on the site's stormwater management system and increases the potential for pollution events. Recommended action: • Develop a strategy to manage off-site flows to reduce stress to on-site systems and reduce pollution management requirements.
	<i>Extent and Timing</i>	Prior to Response to Submissions.

End of Submission