



5.10 Local Implementation Plan: NPWS

A summary of the actions within the NPWS Implementation Plan are provided in Table 5-9. Maps depicting relevant actions are provided in Appendix B.

Table 5-9 Action Table – The NPWS Implementation Plan

CMP Strategy	S4 ID	Functional Zone	Locality	Action Name	Action Description	Lead	Support	Priority (Score)	Timing	Performance Criteria
Strategy 6: Coastal Hazard Resilience	S6.NPW.A	Pittwater	Station Beach	North Station Beach Coastal Protection Works - Sand Redistribution and Dune Building	Stage 2 coastal hazard mapping has indicated that key NPWS Assets at Station Beach are likely to be vulnerable to severe storm erosion over the coming decades - and 3 options have been considered and assessed as part of the Stage 3 Analysis. The preferred option involves the restoration and revegetation of 80m of foreshore in front of the assets. As per the CM Act, these works would be classified as Coastal Protection Works (CPW), as they are considered to be “activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters”. These coastal protection works form part of a strategic program to enhance the resilience and accessibility across the HNRS public foreshore. Beyond stabilising the site, they advance CMP objectives by protecting public assets, safeguarding public open space, and maintaining sustainable waterfront access. Scope of Works: Subject to actual erosion/recession rates observed, detailed design, environmental assessments and approvals, the works would include: > An ongoing program of beach scraping and dune building. As the longshore sediment transport at the sites moves from North to South (as identified in the Stage 2 Hazard Study), this action would include a beach scraping process to move sand from farther south along Station Beach - returning it northwards to build the beach and increase the dune buffer in front of the at-risk assets. > The dune building and buffer in front of the assets is expected to provide a buffer from a 100-year ARI storm event, providing an additional ~18m³/m of sand in front of the assets. > Sand could be won from a 250 m long stretch of foreshore located to the south of the assets. This would involve a shallow scraping of ~0.2 m of surface sand from the intertidal zone across the borrow area. > Revegetation and restoration works could be undertaken to help build the local dune and trap the nourished sand in place. > Ongoing program of works, likely required around every 5 years given the relatively low rate of longshore drift. > Monitoring of the beach profile and sand movement to inform the required frequency of scraping events. References: > Figure B-25 provides the location and indicative extent of the proposed CPW. > Figure C-8 provides a concept design cross-section. Note that key design parameters would be refined as part of detailed design investigations. Approvals Pathway: The foreshore works are categorised as CPW and will be undertaken using the streamlined approval pathways under Section 2.16(2)(a) of the R&H SEPP during action implementation.	NPWS	NBC, DPHI-Crown Lands	High (24)	Within 1-4 years	Design prepared and works completed. Improved foreshore resilience to coastal hazards.



CMP Strategy	S4 ID	Functional Zone	Locality	Action Name	Action Description	Lead	Support	Priority (Score)	Timing	Performance Criteria
Strategy 6: Coastal Hazard Resilience	S6.NPW.B	Pittwater	The Basin	The Basin Coastal Protection Works - Sand Redistribution Program	Erosion along the western foreshore of The Basin impacting safe recreational and emergency access and placing heritage assets at risk. This action involves undertaking periodic sand redistribution program - transferring sand from the Basin sand delta to the upper beach profile to stabilise the foreshore. This could include the formation of a dune and swale in order to mitigate impacts of overland flow on foreshore erosion. As per the CM Act, these works would be classified as Coastal Protection Works (CPW), as they are considered to be "activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters". These coastal protection works form part of a strategic program to enhance the resilience and accessibility across the HNRS public foreshore. Beyond stabilising the site, they advance CMP objectives by protecting public assets, safeguarding public open space, and maintaining sustainable waterfront access. Scope of Works: Subject to actual erosion/recession rates observed, detailed design, environmental assessments and approvals, including any required licences, the works would include: > A coastal process study and nourishment design - to confirm sediment transport dynamics, erosion rates, assess the suitability and sustainability of the sand source area, and determine optimal placement volumes and profile. > An ongoing program of sand redistribution - required a total volume of around 1,800m³ of sand to be sourced from the adjacent sand delta, and placed along the 180 m of foreshore to create an additional sand buffer-(10m³/m) along the foreshore to provide safe access and protection of trees. This would provide a 5 m width of dry beach sand at the current erosion scarp at high tide. Sand would be placed to match the existing foreshore slope for stability. > Ongoing works every 2-5 years. > A monitoring plan for the site to monitor beach profile, sand movement and existing seawall condition. Monitoring results will help inform the required frequency of scraping events, as well as assess the existing walls structural integrity and identify any areas requiring maintenance. > Revegetation and restoration works to help build the local dune and trap the nourished sand in place. References: > Figure B-25 provides the location and indicative extent of the proposed CPW. > Figure C-28 provides a concept design cross-section. Note that key design parameters would be refined as part of detailed design investigations. Approvals Pathway: The foreshore works are categorised as CPW and will be undertaken using the streamlined approval pathways under Section 2.16(2)(a) of the R&H SEPP during action implementation.	NPWS	DPHI-Crown Lands	Medium (21)	Within 4-8 years	Study completed, design prepared and works completed. Improved foreshore resilience to coastal hazards.



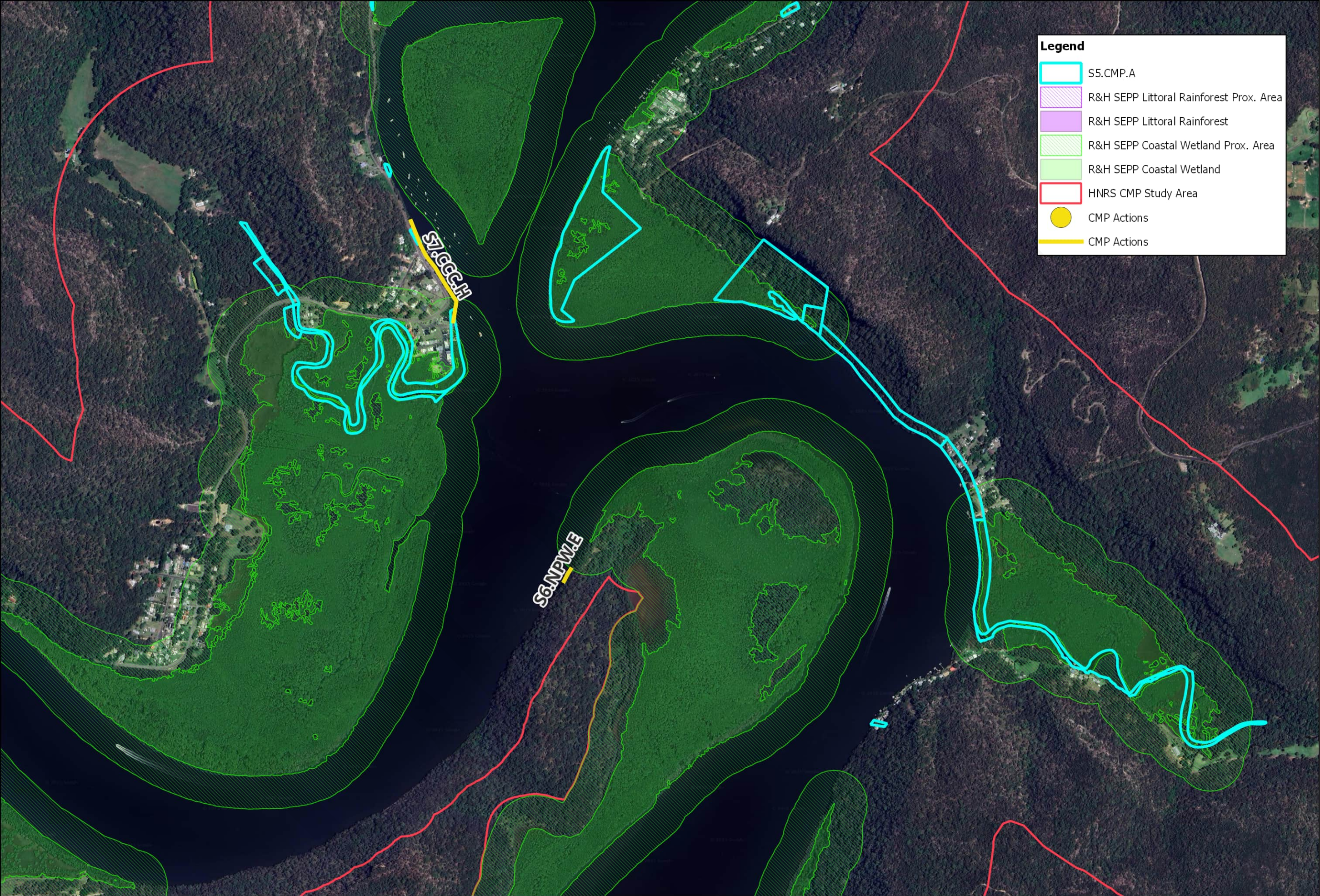
CMP Strategy	S4 ID	Functional Zone	Locality	Action Name	Action Description	Lead	Support	Priority (Score)	Timing	Performance Criteria
Strategy 6: Coastal Hazard Resilience	S6.NPW.C	Lower Estuary	Bobbin Head	Bobbin Head Foreshore Sea Level Rise Adaptation Study	Several low-lying areas around the Bobbin Head foreshore — including Orchard Park, Gibberagong Park, and the Wharf Area — are currently exposed to tidal inundation (commonly referred to as “sunny day flooding”). This issue was recognised in the Bobbin Head Masterplan (NPWS, 2006), which highlighted the negative impacts of saltwater inundation on the park’s aesthetic, recreational, and environmental values. The NSW Tidal Inundation Exposure Assessment (OEH, 2018g) also projects that the frequency and severity of tidal inundation will increase over time due to sea level rise. This action involves undertaking a detailed SLR adaptation options assessment followed by detailed investigations and design for key NPWS assets at Bobbin Head. This will include: 1. Detailed options assessment of potential sea level rise adaptation and coastal protection work options to replace the failing seawalls and investigate the need for raising the parkland, wharf area and seawalls to prevent continued inundation. This will recommend a preferred long-term solution, and be informed by: > Cowan Creek geomorphic and hydrodynamic assessment (Action S6.SGA.06) to inform hydrologic and geomorphic changes to the system with increased sedimentation and sea level rise. > Establish the rate of subsidence for the site through LiDAR and geotechnical assessments > Condition assessment of existing seawalls 2. Investigation and design for the preferred adaptation solution, including: > Concept design > Environmental assessments > Cultural and historic heritage assessments > Detailed design The investigation would build on and reassess concepts previously proposed in the Bobbin Head Masterplan (NPWS, 2006) in light of updated sea level rise projections, current infrastructure condition, and visitor use patterns. Outcomes will inform the prioritisation and planning of any future adaptation works.	NPWS	N/A	Medium (10)	Within 4-8 years	Study completed.
Strategy 6: Coastal Hazard Resilience	S6.NPW.D	Lower Estuary	Bobbin Head	Bobbin Head hydrodynamic assessment	The Cowan Creek system is experiencing ongoing direct, indirect, and cumulative impacts from riverine processes, flooding, bed and bank erosion, and geomorphological, hydrological, and hydraulic change – including the effects of sea level rise. An integrated assessment is required to better understand these processes and support effective precinct planning and adaptation responses. It would include the following: > Hydrodynamic modelling to simulate current and future flood behaviour under a range of climate and sea level rise scenarios. > Assessment of land raising and dredging options, including how these would affect flood storage, tidal exchange, and flow conveyance in the estuary. > Evaluation of sediment transport and erosion dynamics, including bank stability and the implications of any intervention on downstream or adjacent areas. > Assessment of cumulative impacts from past and potential future modifications (e.g. urban development, previous dredging, reclamation works). If feasible, this action could be undertaken in concurrently with Action S5.KRG.01 (Cowan Creek Catchment Study)	NPWS	KC	Medium (16)	Within 4-8 years	Study completed.



CMP Strategy	S4 ID	Functional Zone	Locality	Action Name	Action Description	Lead	Support	Priority (Score)	Timing	Performance Criteria
Strategy 6: Coastal Hazard Resilience	S6.NPW.E	Lower Estuary	Apple Tree Bay	Repair and renewal of the Bobbin Head Coastal Protection Works	The Bobbin Head foreshore is almost entirely flanked by seawalls, many of which are heritage-listed and dating from the original parkland in the early 1900s. Ongoing impacts from tidal inundation and flooding have resulted in numerous sections of the walls failing. These sections are posing a safety risk at the high visitation precinct with temporary fencing placed around the affected areas. NPWS will maintain and repair seawalls on a regular basis throughout the life of the CMP to maintain safety and functionality. Approximately 300m of the seawall requires immediate repair/replacement that is scoped in this Action, split into two separate repair design types: > 250 m of sandstone block work seawall requires repair. This is located along the immediate east and south of the creek bridge and comprises repacking/replacement of sandstone blockwork, with the additional of an aggregate filter layer, drainage features and geotextile underlay. This also include the raising of the crest level to mitigate tidal inundation impacts both under present day conditions and future SLR. > On the south-western bank of Cockle Creek, a section of cement grouted rock wall is failing, placing a footpath and carpark at risk. The proposed works include restoration of the existing rock protection and revegetation of planting new mangroves in the tidal flat in front of the structure. Scope of Works: > Structure Survey and coastal engineering condition inspection: To survey the structure and identify the nature of the required repair and renewal works > Repair and renewal design: To prepare a specific repair design - including the required armour materials, grades and levels. > Repair and renewal works: Implementation of the repair design, including a safety in design assessment, construction of the works and development of As-Constructed certification from a suitably qualified engineer for Council records. The works will likely comprise the installation of a filter layer and repacking of replacement of sandstone block units. The renewal will ensure long-term protection against coastal hazards and improve the overall safety and resilience of the infrastructure. References for Sandstone Blockwork Upgrade: > Figure B-29 provides the location and indicative extent of the proposed CPW. > Figure C-29 provides a concept design cross-section. Note that key design parameters would be refined as part of detailed design investigations. References for Rockwall Upgrade: > Figure B-29 provides the location and indicative extent of the proposed CPW. > Figure C-30 provides a concept design cross-section. Note that key design parameters would be refined as part of detailed design investigations. Approvals Pathway: The foreshore works are categorised as CPW and will be undertaken using the streamlined approval pathways under Section 2.16(2)(a) of the R&H SEPP during action implementation.	NPWS	N/A	High (24)	Within 1-4 years	Works completed.
Strategy 6: Coastal Hazard Resilience	S6.NPW.F	Lower Estuary	Coasters Retreat, Marramarra Creek, Cowan Creek, Gentlemans Halt, Berowra Creek, Mooney Mooney	Coastal Protection works for NPWS Bank Erosion Hotspot Sites	This Action involves implementing the finding of the NPWS Riverbank and Riparian Condition Assessment and Options Report (Alluvium, 2025). This erosion and bank condition assessment was undertaken across NPWS estate in the HNRS to identify erosion hotspots that are placing assets and infrastructure at risk, and to manage bank health. The NPWS assets at risk include a mix of walking tracks, cultural sites, heritage sites, campground infrastructure and mapped coastal wetlands. A total of 11 priority sites were identified for bank stabilisation works – of which 6 specific sites have been selected for short term implementation through the CMP. Works at these sites are classified as Coastal Protection Works (CPW) under the CM Act, as they are considered to be “activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters”. These CPW form part of a strategic program to enhance the resilience and accessibility across the HNRS public foreshore. Beyond stabilising the site, they advance CMP objectives by protecting public assets, safeguarding public open space, and maintaining sustainable waterfront access. Scope of Works: The selected CPW are to be undertaken at the following locations: > Cowan Creek: Two approaches have been developed that each cover different	NPWS	DPHI-Crown Lands	High (24)	Within 1-4 years	Design prepared and works completed. Improved foreshore resilience to coastal hazards.



CMP Strategy	S4 ID	Functional Zone	Locality	Action Name	Action Description	Lead	Support	Priority (Score)	Timing	Performance Criteria
					areas of the NPWS foreshore. This includes a combination of (a) the re-construction of the existing walking track using sandstone blocks to create a new walking surface and sandstone retaining wall, and (b) the construction of a rock revetment to protect the bank from further erosion caused by tidal flows and wave action. Figure B-33 provides the location and indicative extent of the proposed CPW. Figures C-16 and C-17 provide associated concept designs. > Coasters Retreat: Works at this site comprises stabilising the segments of eroding shoreline threatening the track using riprap rock protection, combined with rebuilding failing portions of the track, incorporating drainage where any flow path crosses the track. Figure B-26 provides the location and indicative extent of the proposed CPW. Figures C-18 and C-19 provide associated concept designs. > Mooney Mooney Creek: This design involves two processes, one aimed at stabilising the existing creek bank and protecting nearby assets, and the other at realigning the Hawkesbury Track to move it away from the high-risk area and protecting it with a larger “buffer” zone between it and the waterway. Stabilisation and protection of the banks will involve the placement of two rows of rock parallel to the bank and approximately 3 m apart. On either end of the site, additional rock walls perpendicular to the bank will connect the longer rows, thereby creating a rectangular “box” structure. The area within this box will then be graded back up to create a gently sloping bank. This will be revegetated with mangroves, creating a mangrove bar that will act to dissipate energy coming in from tides or boat wash, and stabilise the sediments to prevent further erosion. Figure B-30 provides the location and indicative extent of the proposed CPW. Figures C-20 and C-21 provide associated concept designs. > Berowra Creek: Rock armoured CPW are to be constructed across a 100 m stretch of foreshore. The rocks should be placed in front of the existing trees to provide them with protection. The rock protection should be 2 m wide and 1 m high and follow the contour of the bank around the entire site; however, it should be noted that care needs to be taken not to disturb the historic boat foundations. It is recommended that rock protection is placed around the outside of this asset. Figure B-31 provides the location and indicative extent of the proposed CPW. Figures C-22 and C-23 provide associated concept designs. > Marramarra Creek: The design presented for the site includes a mix of three approaches: revegetation, coir logs and a riprap toe. These are to be applied throughout the site according to the needs and constraints at the time of construction. Figure B-32 provides the location and indicative extent of the proposed CPW. Figures C-24 and C-25 provide associated concept designs - including a concept reference of where each solution is most applicable, noting the high value toilet asset that needs protecting, and the beach access that need maintaining. > Gentlemans Halt: CPW at this location consists of a rock revetment being constructed on either side of the existing wharf structure. The rock material being used for this should be placed along both the upstream and downstream sides of the wharf where the existing protection is failing. Figure B-11 provides the location and indicative extent of the proposed CPW. Figures C-26 and C-27 provide associated concept designs. Approvals Pathway: The foreshore works are categorised as CPW and will be undertaken using the streamlined approval pathways under Section 2.16(2)(a) of the R&H SEPP during action implementation.					



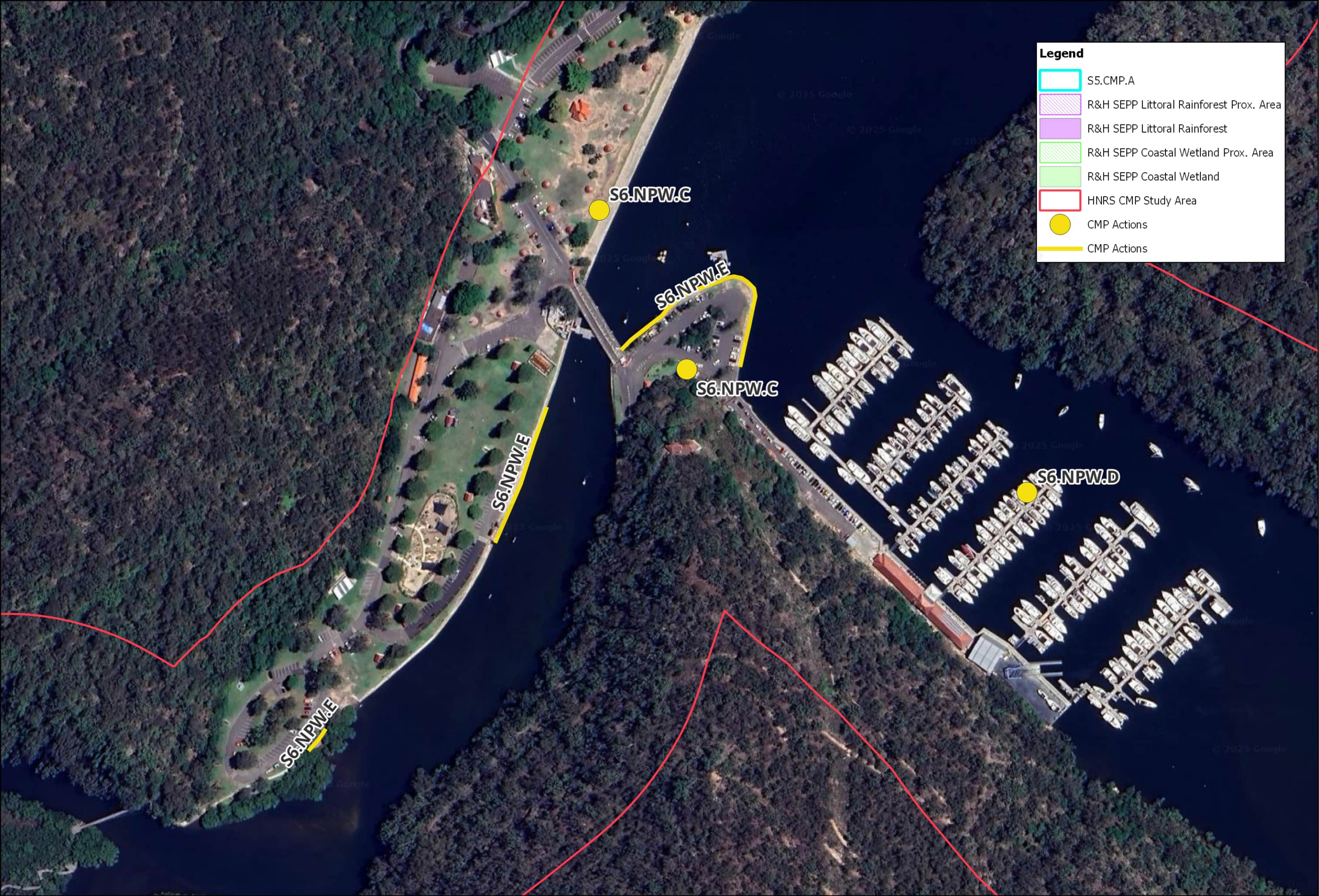
Legend

- S5.CMP.A
- R&H SEPP Littoral Rainforest Prox. Area
- R&H SEPP Littoral Rainforest
- R&H SEPP Coastal Wetland Prox. Area
- R&H SEPP Coastal Wetland
- HNRS CMP Study Area
- CMP Actions
- CMP Actions

Legend

- S5.CMP.A
- R&H SEPP Littoral Rainforest Prox. Area
- R&H SEPP Littoral Rainforest
- R&H SEPP Coastal Wetland Prox. Area
- R&H SEPP Coastal Wetland
- HNRS CMP Study Area
- CMP Actions
- CMP Actions



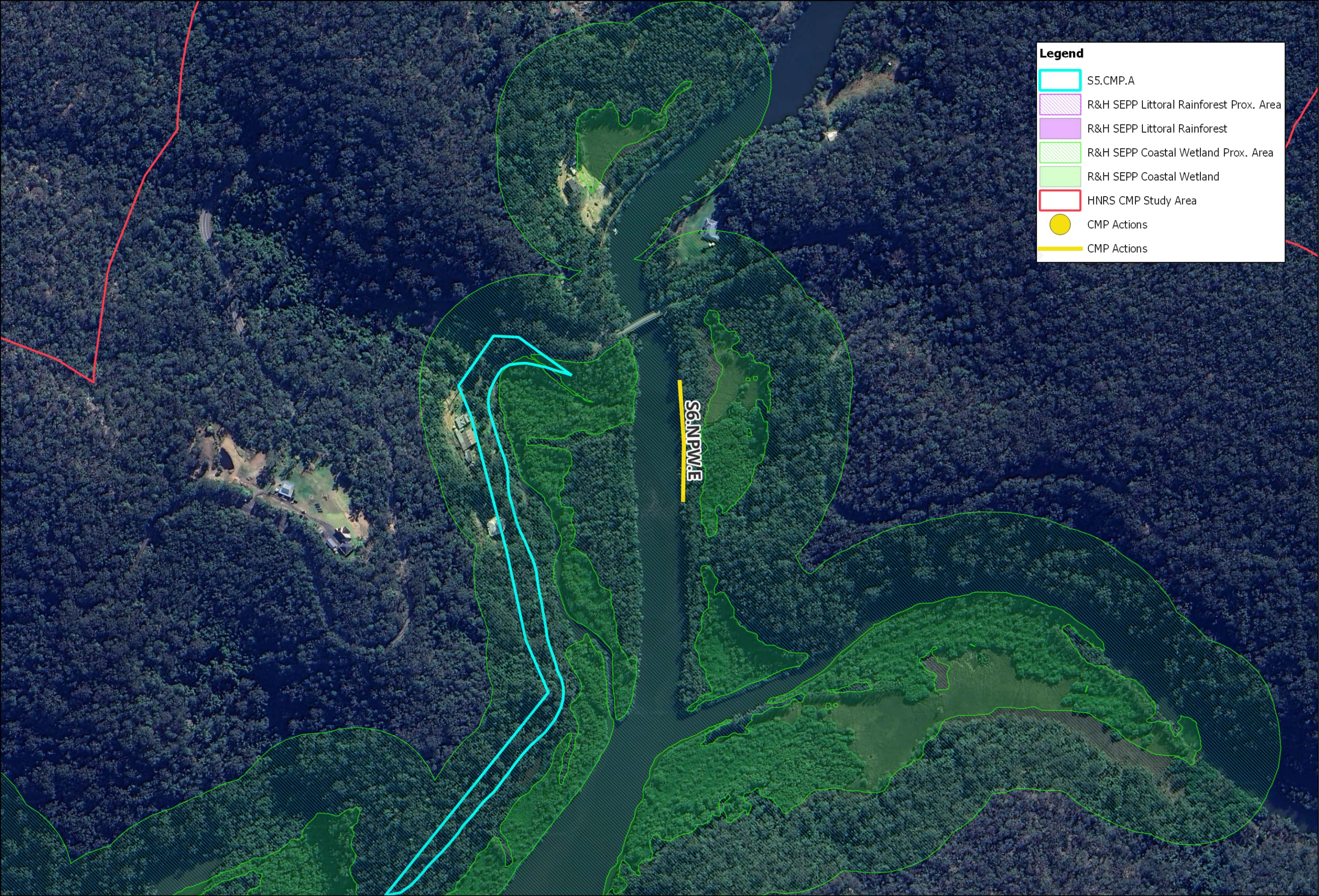


Data sources:
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0 50 100 m

Figure B29



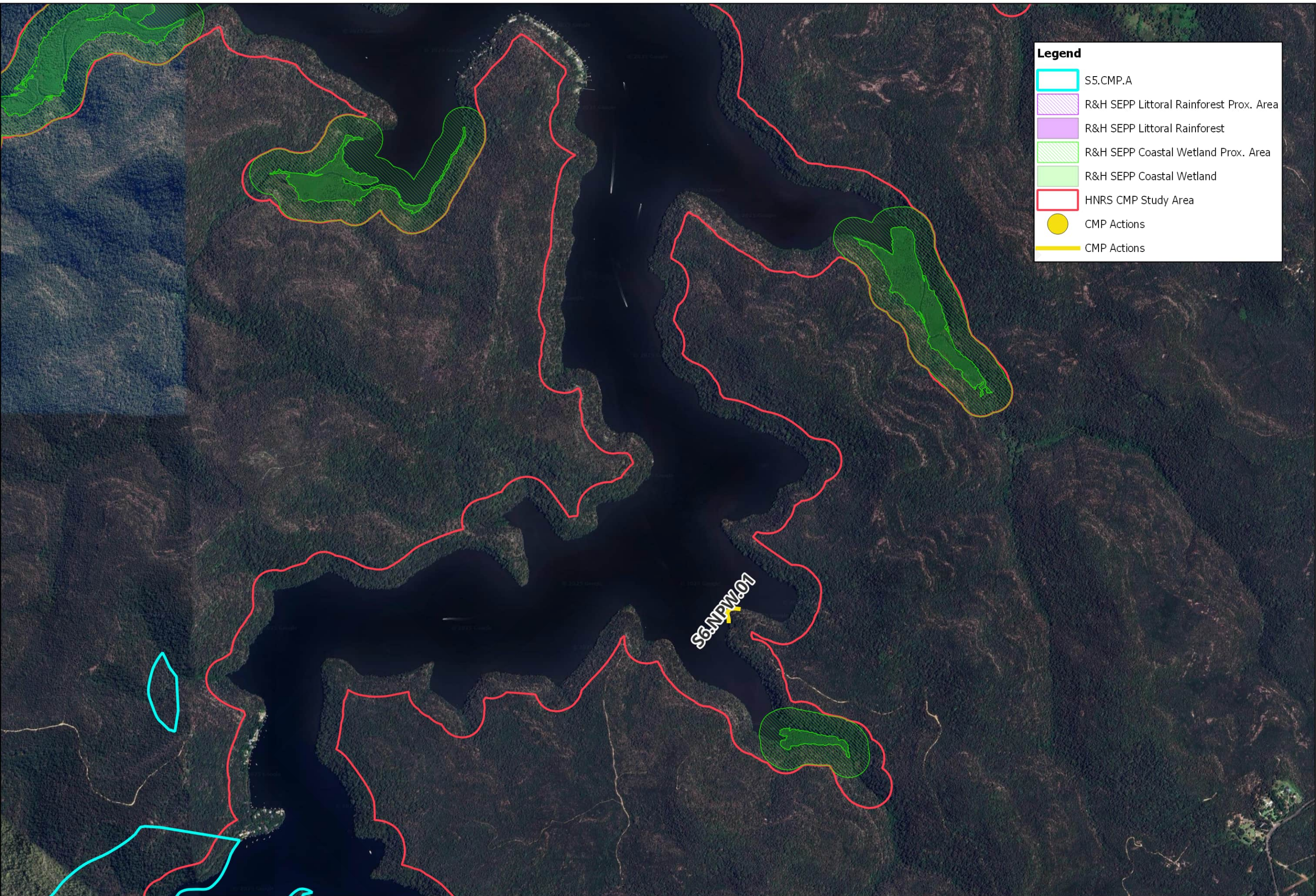


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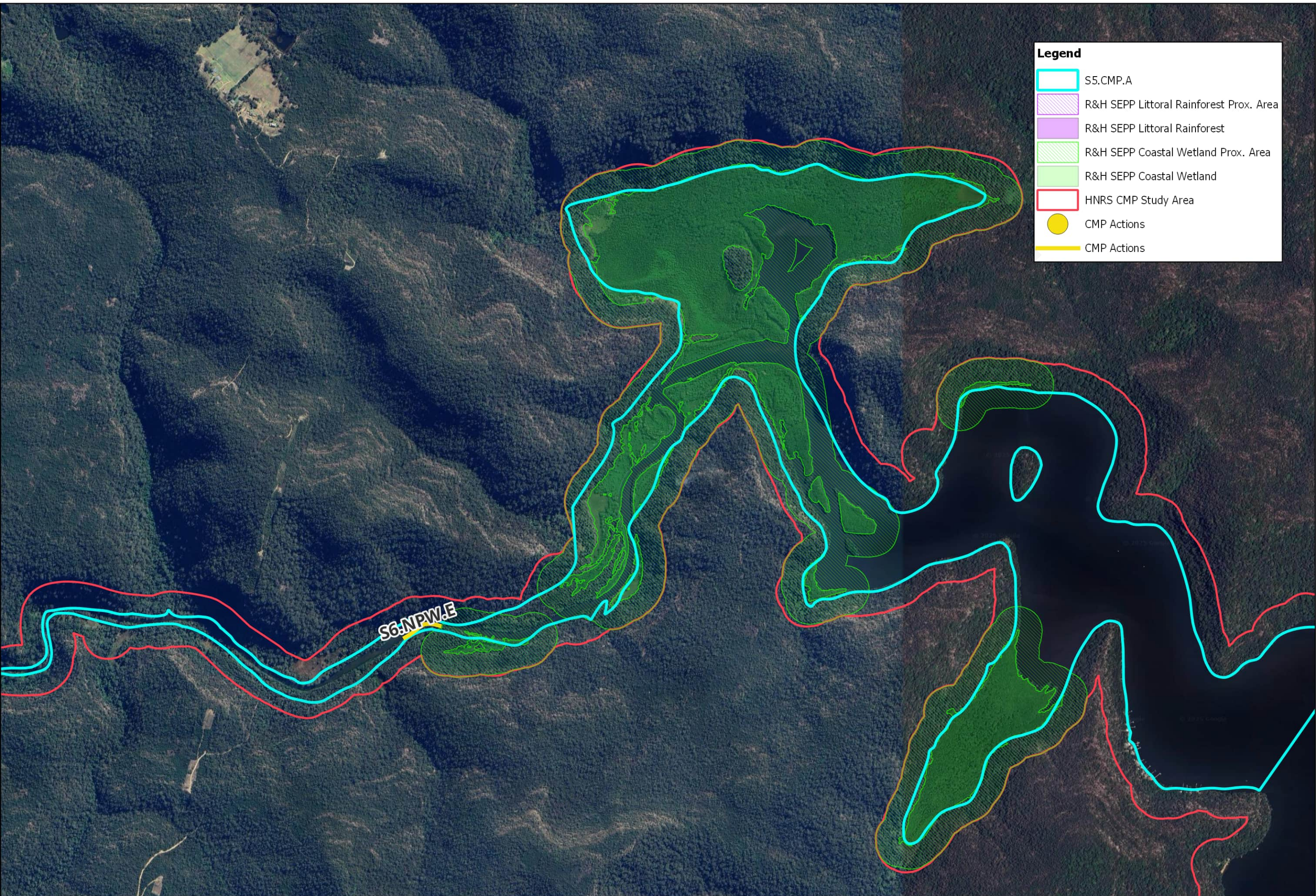
Figure B30





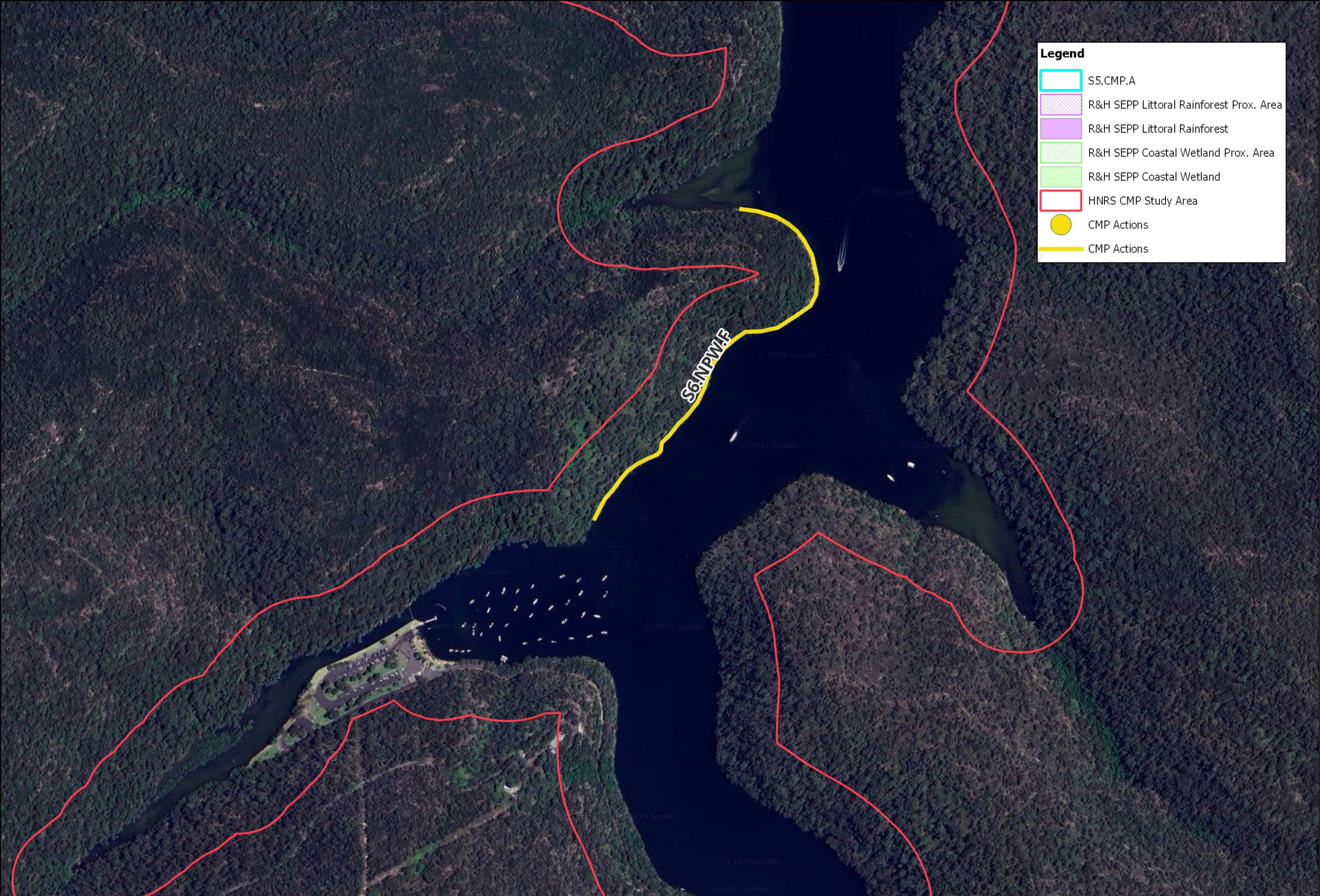
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- S5.CMP.A
- R&H SEPP Littoral Rainforest Prox. Area
- R&H SEPP Littoral Rainforest
- R&H SEPP Coastal Wetland Prox. Area
- R&H SEPP Coastal Wetland
- HNRS CMP Study Area
- CMP Actions
- CMP Actions



Legend

- S5.CMP.A
- R&H SEPP Littoral Rainforest Prox. Area
- R&H SEPP Littoral Rainforest
- R&H SEPP Coastal Wetland Prox. Area
- R&H SEPP Coastal Wetland
- HNRS CMP Study Area
- CMP Actions
- CMP Actions



Legend

- S5.CMP.A
- R&H SEPP Littoral Rainforest Prox. Area
- R&H SEPP Littoral Rainforest
- R&H SEPP Coastal Wetland Prox. Area
- R&H SEPP Coastal Wetland
- HNRS CMP Study Area
- CMP Actions
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Data sources:
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Figure B33



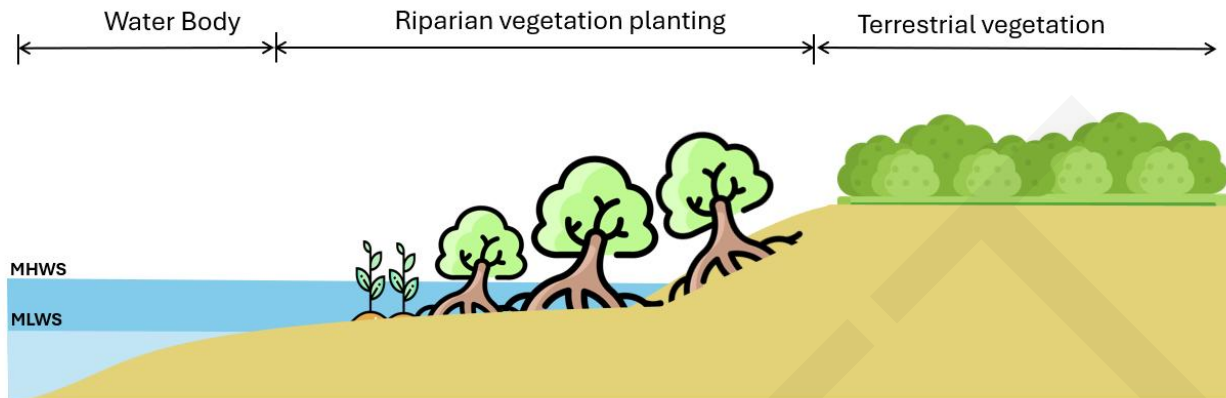


Figure C-6 Concept Design for CPW: Riparian vegetation planting

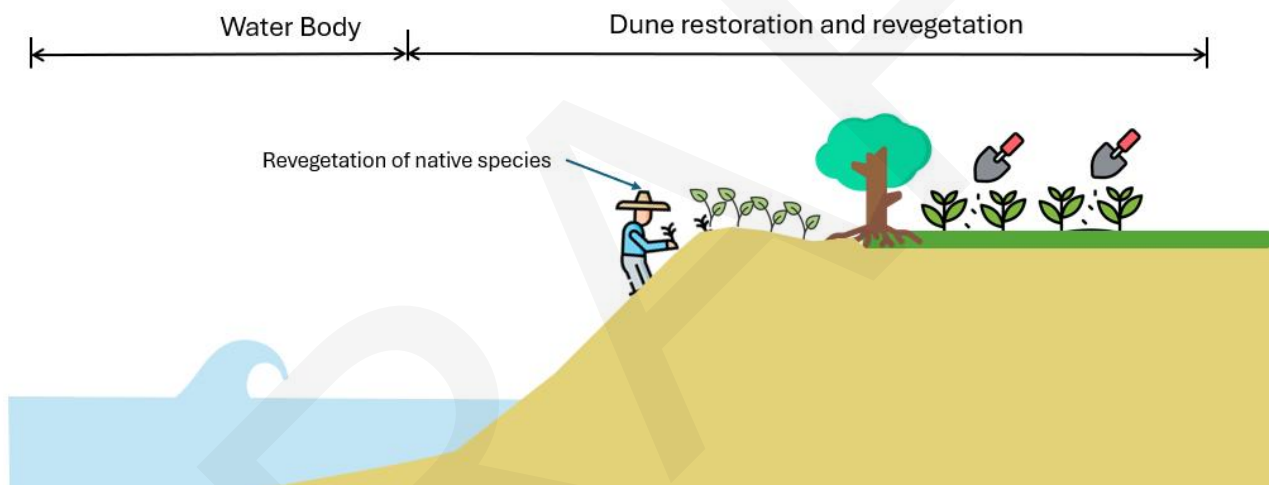


Figure C-7 Concept Design for CPW: Dune restoration and revegetation

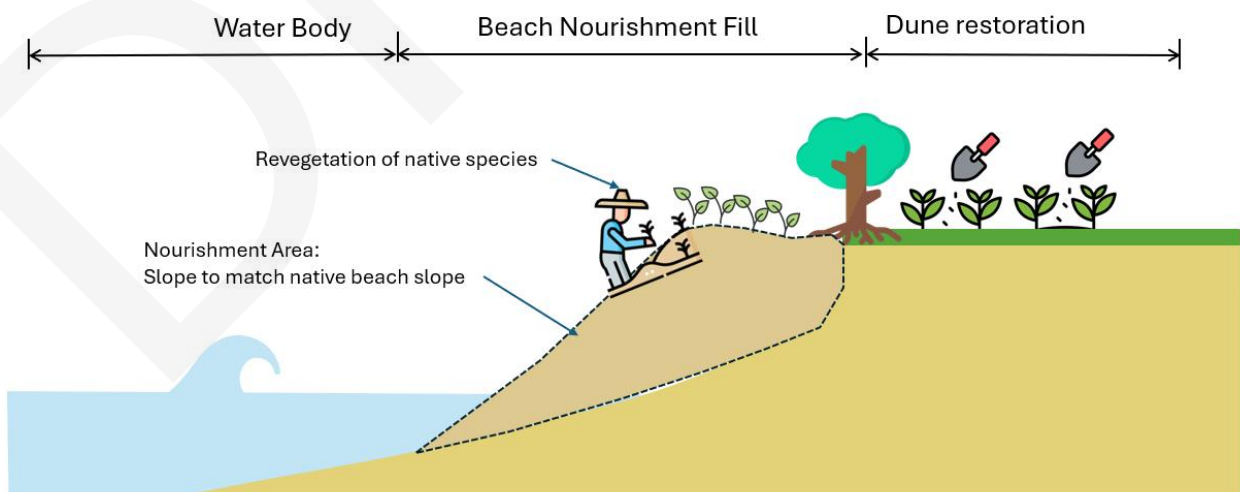


Figure C-8 Concept Design for CPW: Beach nourishment and dune restoration

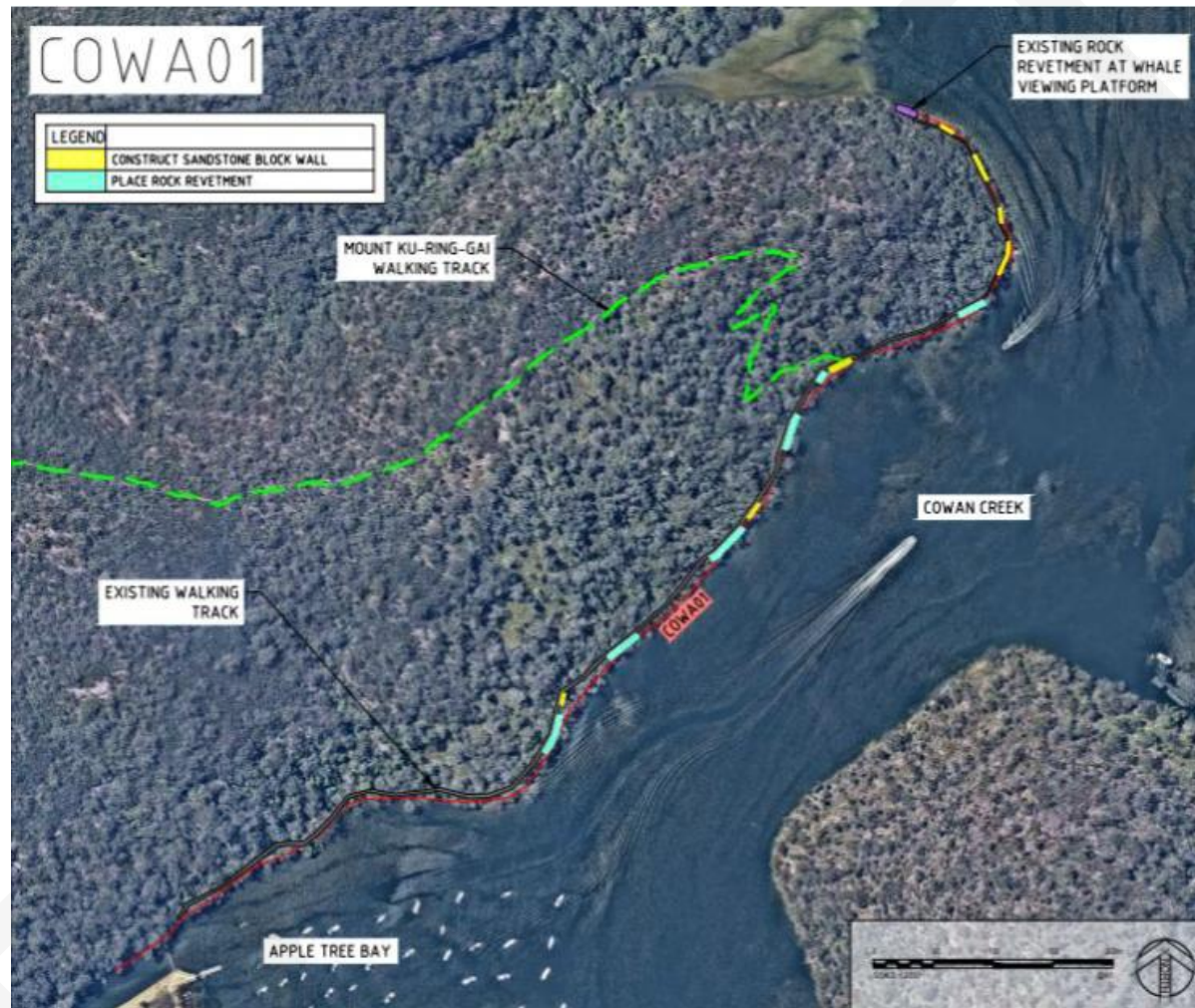
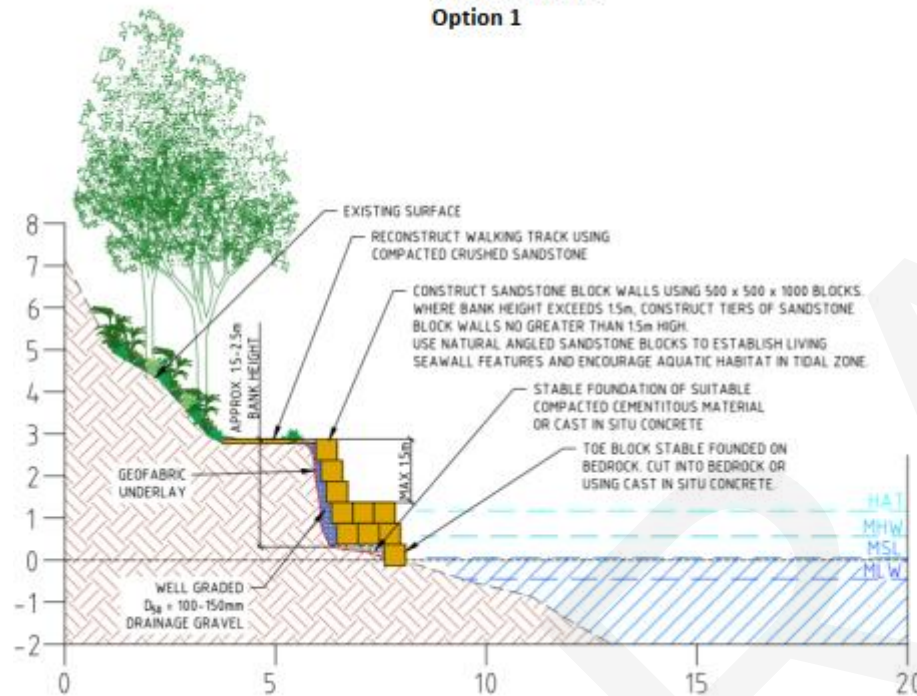


Figure C-16 Concept Design for Action S6.NPW.F at Cowan Creek. Source and further reference: (Alluvium, 2025)

**Cross-section of
proposed works.
Option 1**



**Cross-section of
proposed works.
Option 2**

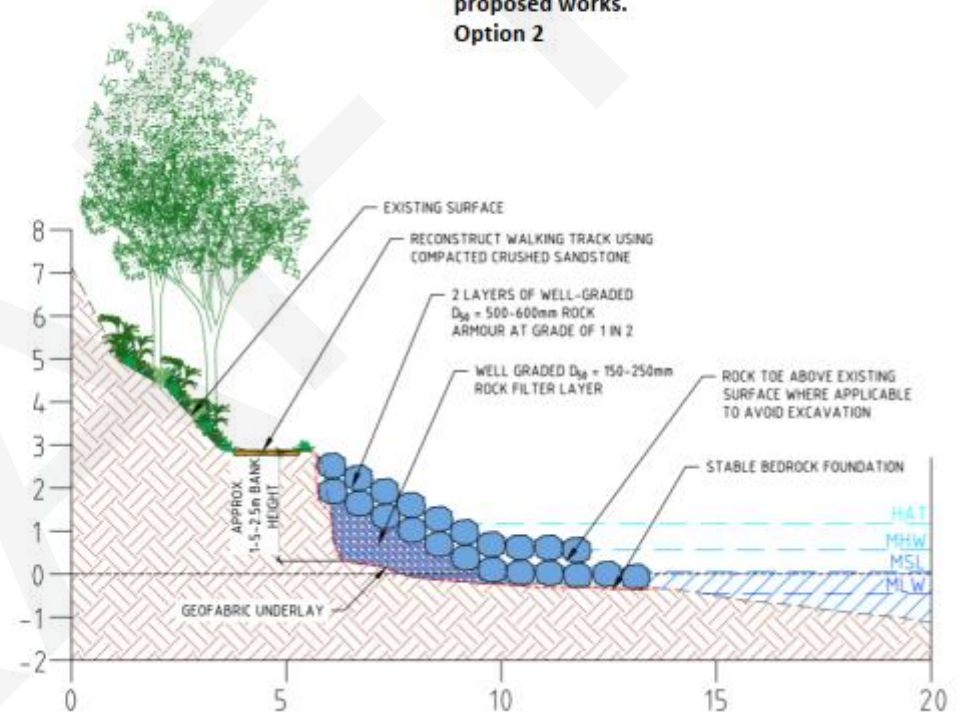


Figure C-17 Concept Design for Action S6.NPW.F at Cowan Creek. Source and further reference: (Alluvium, 2025)



Figure C-18 Concept Design for Action S6.NPW.F at Coasters Retreat. Source and further reference: (Alluvium, 2025)

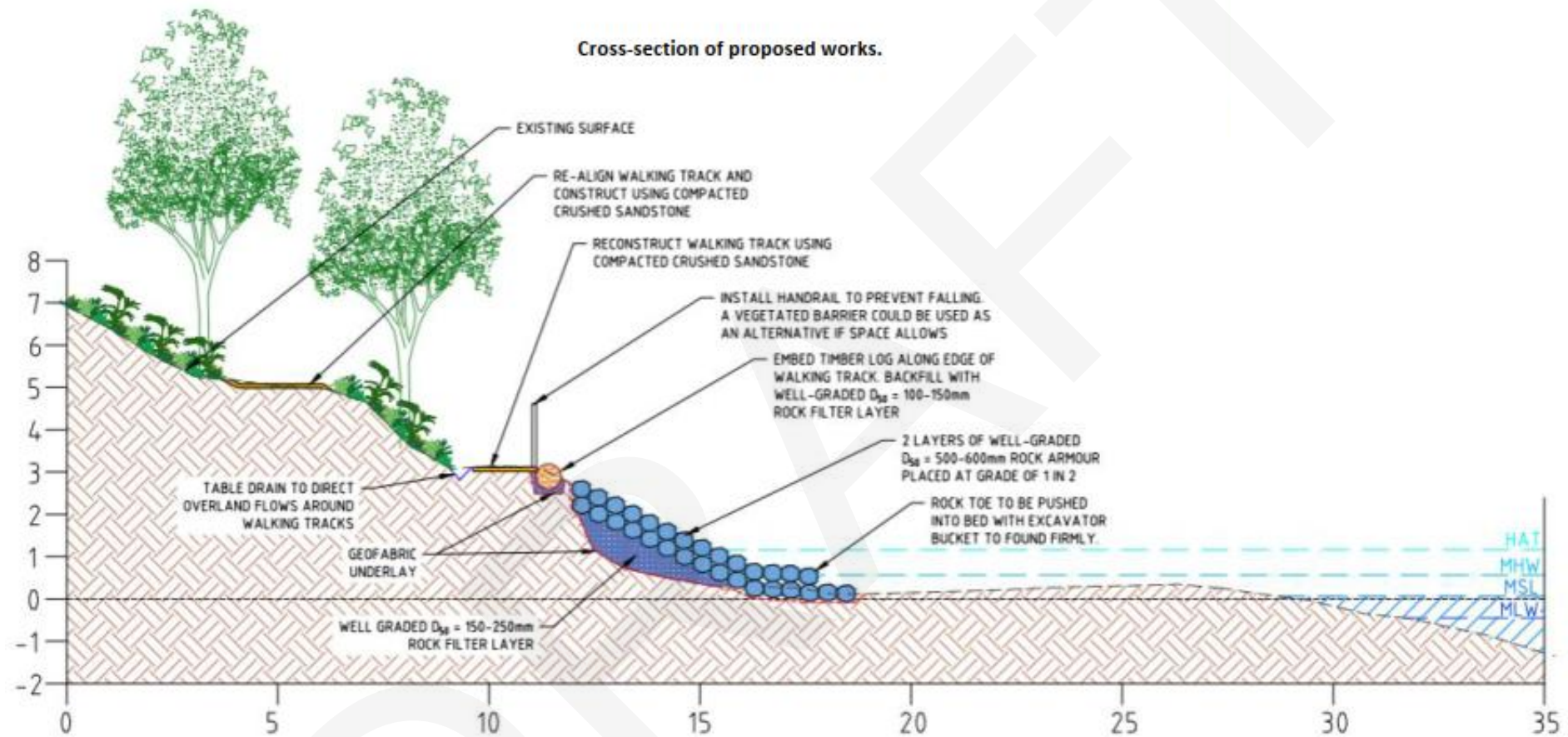


Figure C-19 Concept Design for Action S6.NPW.F at Coasters Retreat. Source and further reference: (Alluvium, 2025)



Figure C-20 Concept Design for Action S6.NPW.F at Mooney Mooney Creek. Source and further reference: (Alluvium, 2025)

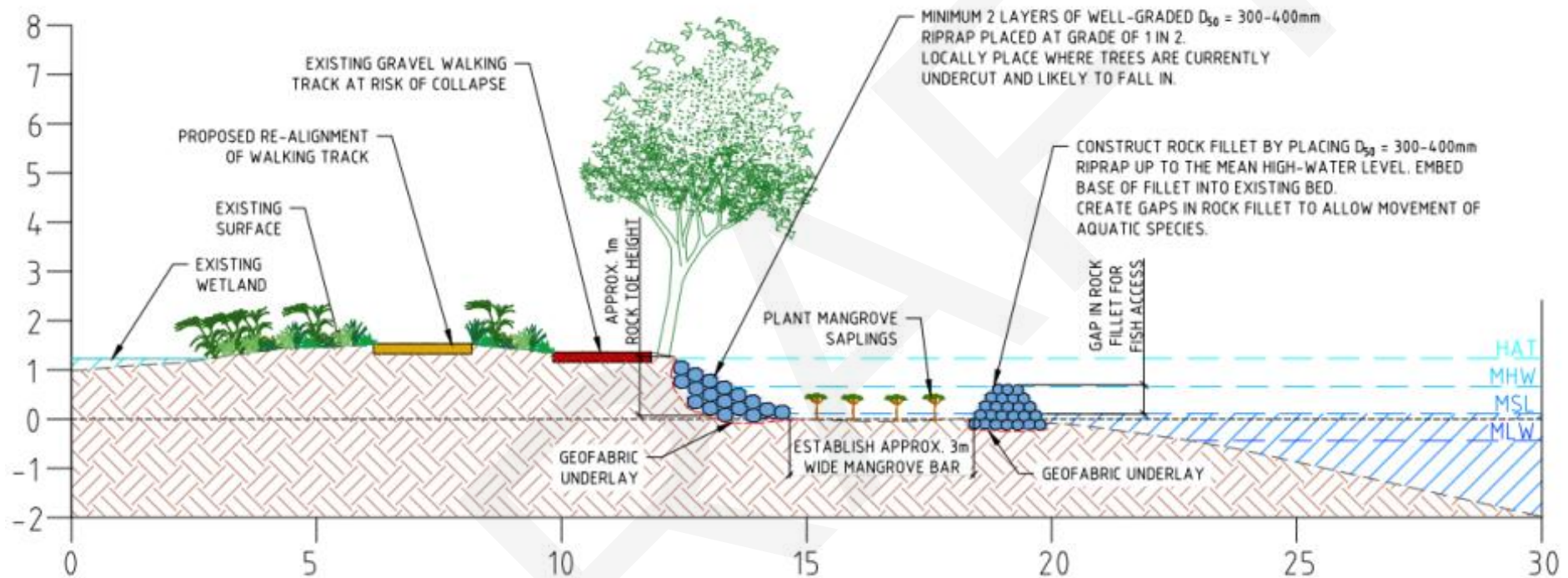


Figure C-21 Concept Design for Action S6.NPW.F at Mooney Mooney Creek. Source and further reference: (Alluvium, 2025)



Figure C-22 Concept Design for Action S6.NPW.F at Berowra Creek. Source and further reference: (Alluvium, 2025)

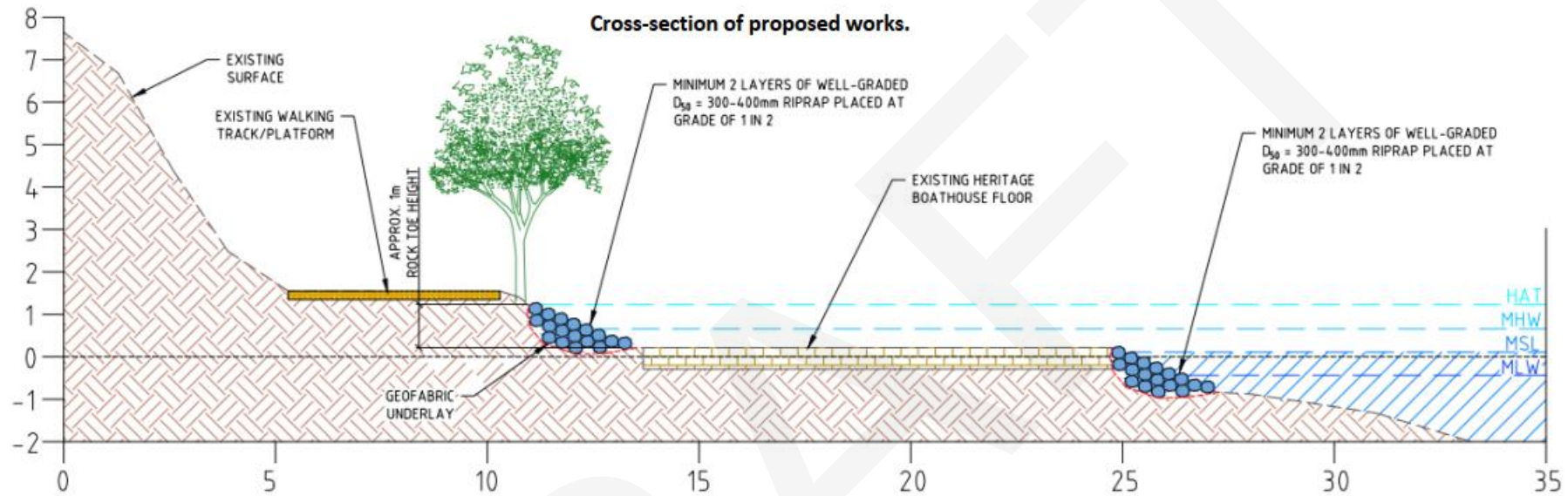


Figure C-23 Concept Design for Action S6.NPW.F at Berowra Creek. Source and further reference: (Alluvium, 2025)

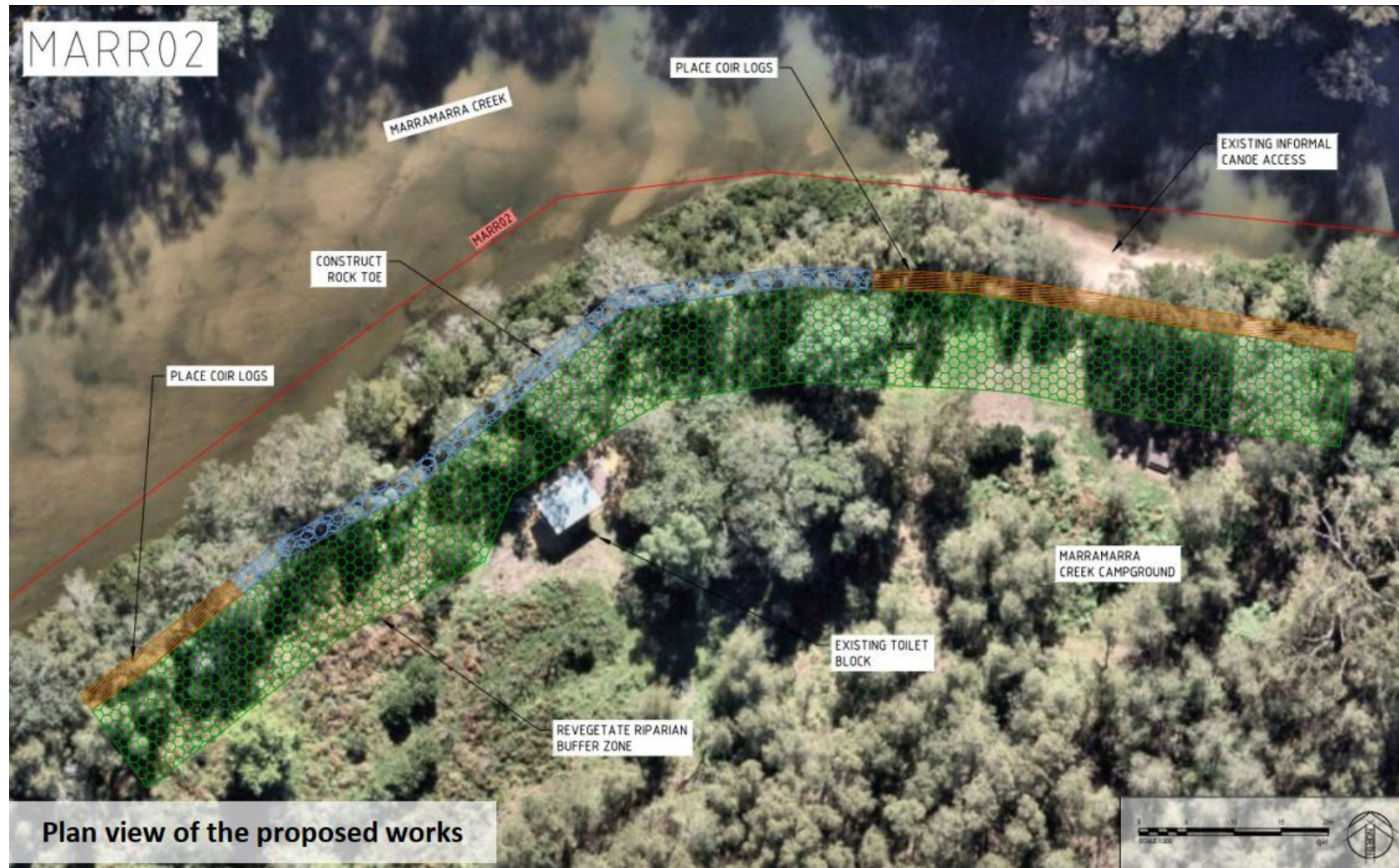


Figure C-24 Concept Design for Action S6.NPW.F at Marramarra Creek. Source and further reference: (Alluvium, 2025)

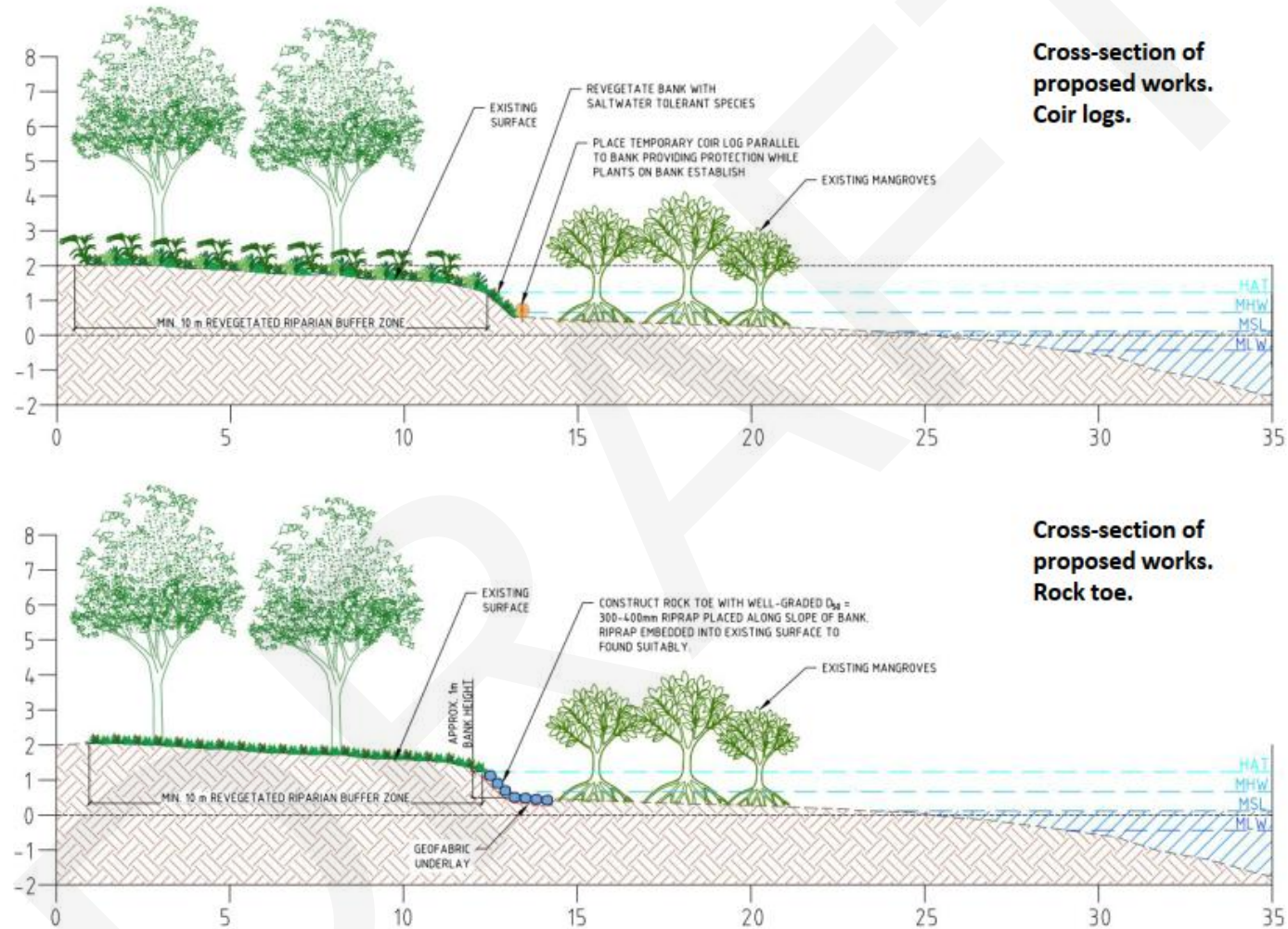


Figure C-25 Concept Design for Action S6.NPW.F at Marramarra Creek. Source and further reference: (Alluvium, 2025)



Figure C-26 Concept Design for Action S6.NPW.F at Gentlemans Halt. Source and further reference: (Alluvium, 2025)

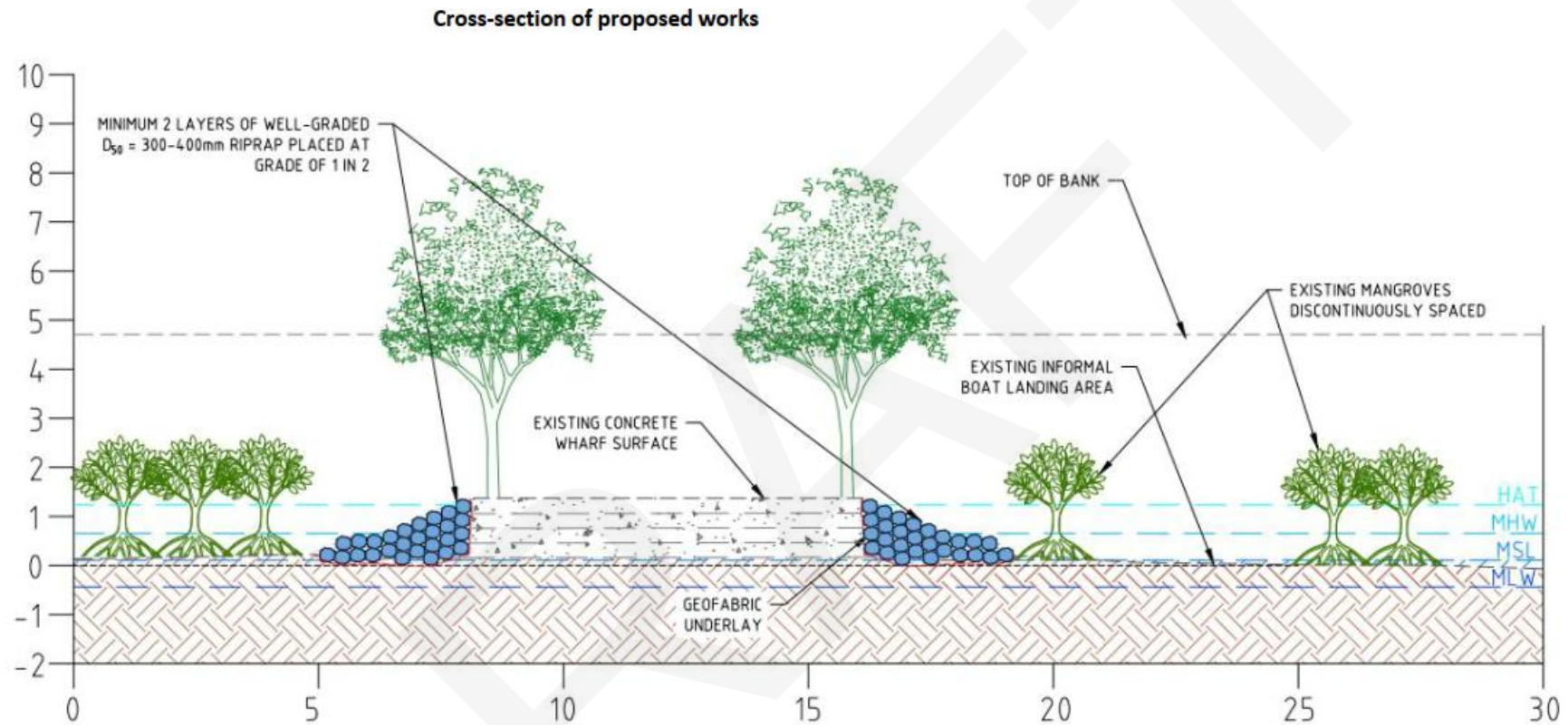


Figure C-27 Concept Design for Action S6.NPW.F at Gentlemans Halt. Source and further reference: (Alluvium, 2025)



Concept design option 1
Beach nourishment and revegetation
Import sand to form a sand dune, then revegetate
Pros: A nature-based solution that does not impact beach use
Cons: The need to import or scrape sand, and the risk of a major storm washing away the sand leading to a need to top up again.
Design life estimate: 5-10 years

Plan view of the proposed works

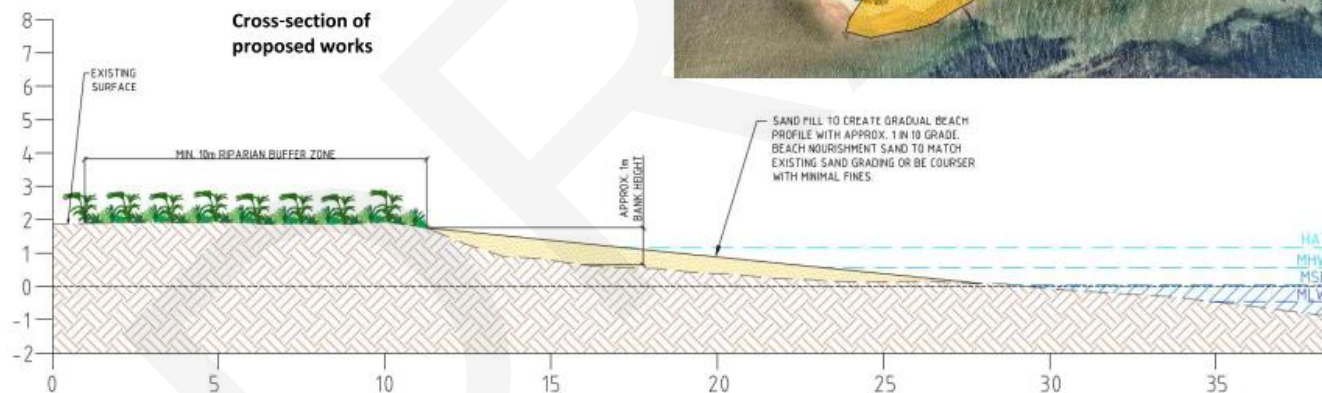


Figure C-28 Concept Design for Action S6.NPW.B at The Basin. Source and further reference: (Alluvium, 2025)



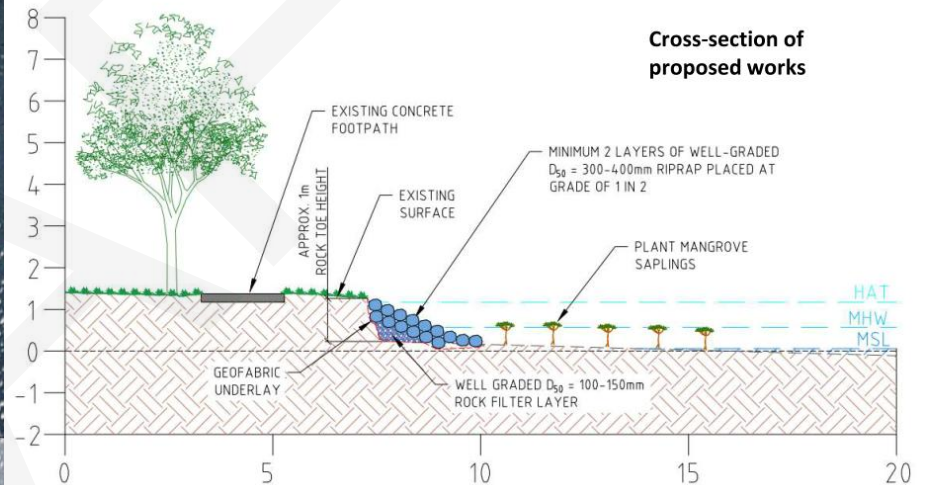


Figure C-30 Concept Design for Action S6.NPW.E at Bobbin Head (grouted rock wall section). Source and further reference: (Alluvium, 2025)