

CAMDEN COUNCIL

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Form NR-02

REVIEW OF ENVIRONMENTAL FACTORS

NOTE: This REF is for projects that have minor or predictable impacts and require a Part 5 assessment.

Project Name:	Nepean River Bass Habitat at Spring Farm	Proposal ID#:	
Project Location:	Nepean River, Spring Farm (Lot 6 DP 1132985)	File Ref#:	23/124581

NOTE: This project is in accordance with Section 4.1.1 of this document. It has been developed in accordance with the Department of Planning and Environment *Guidelines for Division 5.1 assessments*.

CONSTRUCTION WORK MUST NOT COMMENCE UNLESS:

- The person completing the REF has signed the completed document, verifying that each of the steps has been satisfied and no further assessment or investigation is required; AND
- The Determining Officer has signed the REF report to verify that the assessment has been adequately completed, the conclusion as to the likely environmental impact of the project is reasonable and the project can proceed subject to the relevant control measures and conditions in any approvals, licences or permits; and
- The required approvals, licences and permits have been obtained; AND
- All relevant construction personnel are aware of:
 - Their responsibilities identified in the REF
 - The project's Environmental Impacts
 - The project's specific Safeguard/Management Measures
 - The project's environmentally sensitive areas
 - The conditions in any approvals, licences or permits
 - The project details and likely impact of the project on the community.

NOTE: If any environmental issues are identified or if any safeguard and/or management measures are required, the following is to occur:

- Where a construction drawing is prepared as part of the construction work pack, the safeguard and/or management measures should be listed in the schedule on that drawing, and for more complicated projects,
- The safeguard and/or management measures should be included in a project specific environmental management plan

NOTE: If any approvals, licences or permits are required then copies of these **MUST** be included in the construction work pack that is submitted to the Construction Manager for the project.

NOTE: Projects may require a more detailed assessment of particular issues (e.g., specialist ecology report). In these cases, this document should accompany this report and the findings be considered in the assessment and identification of control measures.



1. Introduction

Camden Council was successful in its application to the “Habitat Action Grant Program 21/22” (\$40,000) funded by the NSW Department of Primary Industries Fisheries’ Recreational Fishing Trust.

The Nepean River, Spring Farm site (Burrell Road, Spring Farm) is one of the most upstream Nepean River sites in the Camden Local Government Area (LGA). The riparian corridor is high in ecological value, having remnant River Flat Eucalyptus Forest, Swamp Oak Floodplain Forest, and pockets of vulnerable Camden White Gum (*Eucalyptus benthamii*).

Through rapid riparian assessments conducted in June 2021 and the Fisheries NSW Spatial Data Portal, this site is identified as key fish habitat for the Hawkesbury-Nepean River, has a good freshwater fish community status, class 1 passage, and type 1 sensitivity. There are community reports of Australian Bass and freshwater eels in the river, with eDNA sampling further showing the potential for platypus in the downstream reaches of the Nepean River within the Camden LGA and upstream of this site at Menangle, within the Campbelltown LGA.

The site started to experience bank erosion after the February 2020 flood event and significantly deteriorated after the multiple flood events of 2022. There are also residents that use the area for passive, secondary and primary waterway recreation that have contributed to the site erosion through vehicle access resulting in overland flow. The bank erosion, through slumping and scour has resulted in native vegetation loss and contributes sand and sediment into the Nepean River. With multiple sites of bank erosion along the Nepean River, eroded sand has entered the river and blocked many WaterNSW weirs and fish ladders. As a result, residents have expressed concerns about blocked fish ladders, reduced fish passage and injured Australian Bass. These concerns have been reported to WaterNSW.

Camden Council’s residents have frequently expressed a desire to fish in the river and in surrounding lakes. Reduced water quality, reduced fish passage and increased inaccessibility to the river limit their ability to do so. This project seeks to stabilise an upstream site of bank erosion, add large woody debris back into the river as fish habitat and erosion control, and assist in improving the fish passage along the Nepean River.

This Review of Environmental Factors (REF) assesses the potential environmental impact associated with the Nepean River Bass Habitat at Spring Farm project and identifies safeguards that avoid or minimise potential impacts.

1.1 Proposal identification

Camden Council proposes to stabilise an upstream site of bank erosion, add large woody debris back into the river as fish habitat and erosion control, and assist in improving the fish passage along the Nepean River.

The proposal to stabilise bank erosion on the Nepean River is in line with Council’s Plan ‘Caring for the Nepean River: A guide for the Camden community’. In this Plan, it is identified that erosion has increased due to human impacts such as vegetation

removal and is leading to decreased water quality and loss of habitat for key native species, such as the platypus.

Under this Plan, Council will target bank erosion at priority erosion points, limit access to unofficial tracks, implement a bank erosion monitoring program, and enhance riparian vegetation to stabilise riverbanks and prevent further erosion at these priority erosion points.

Council's Community Strategic Plan 2036 also seeks to provide sustainable and responsible solutions that enhance heritage and the natural environment. This includes action B1.5.1 *to deliver works that maintain and enhance natural areas in Camden* and actions included in Council's Biodiversity Strategy and Biodiversity Masterplans. Undertaking erosion stabilisation works on the Nepean River is an outcome covered under multiple strategic plans for Council.

The eroding bank of the Nepean River will be stabilised by:

1. Rehabilitating bank instability caused by scour, slumping and overland flow erosion;
2. Maximising the habitat and geomorphic benefit of the large woody debris materials;
3. Minimising site disturbance during construction and ensuring disturbed areas are stabilised following construction; and
4. Ensuring all environmental protection measures identified by the REF are strictly followed by all personnel on site.

These works will occur over a 30 m section of the Nepean riverbank, with the fish habitat structures secured to the bank and extending approximately 2-3 m into the river, or up to where the bank toe allows construction. The construction works will be completed by Council's contractor, NSW Soil Conservation Service.

After the construction has been completed, a community planting event will be undertaken on the floodplain adjacent to the bank stabilisation site.

Major structural features will include:

- Rock protection on the bank to prevent retreat of knickpoint;
- Large woody debris (LWD) structures instream to provide fish habitat and bank protection;
- Revegetation of the regraded bank and immediate floodplain; and
- Lockable gate on the informal access track to the site to prevent unauthorised vehicle access.

1.2 Purpose of the report

This Review of Environmental Factors (REF) has been prepared by Aditi Verma on behalf of Camden Council. For the purposes of these works, Camden Council is the proponent and the determining authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The purpose of the REF is to describe the proposal, to document the likely impacts of the proposal on the environment, and to detail protective measures to be implemented.

The description of the proposed works and associated environmental impacts have been undertaken in context of clause 228 of the Environmental Planning and Assessment Regulation 2000 (EP&A Act), the Fisheries Management Act 1994 (FM

Act), and the Australian Government's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). In doing so, the REF helps fulfil the requirements of section 111 of the EP&A Act, that Camden Council examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF will be considered when assessing:

- Whether the proposal is likely to have significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Infrastructure under Part 5.1 of the EP&A Act.
- The significance of any impact on threatened species as defined by the Biodiversity Conservation Act 2016 and/or FM Act, and therefore the requirement for a Species Impact Assessment.
- The potential for the proposal to significantly impact a matter of national environmental significance or commonwealth land and the need to make a referral to the Australian Government Department of Sustainability, Environment, Water, Population and Communities for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

2. Need and options considered

2.1 Strategic need for the proposal

The Nepean River Bass Habitat at Spring Farm project seeks to stabilise an eroding bank of the Nepean River and reintroduce large woody debris into the river as fish habitat.

The proposal to stabilise bank erosion on the Nepean River is in line with Council's Plan 'Caring for the Nepean River: A guide for the Camden community'. In this Plan, it is identified that erosion has increased due to human impacts such as vegetation removal and is leading to decreased water quality and loss of habitat for key native species, such as the platypus.

Under this Plan, Council will target bank erosion at priority erosion points, limit access to unofficial tracks, implement a bank erosion monitoring program, and enhance riparian vegetation to stabilise riverbanks and prevent further erosion at these priority erosion points.

Council's Community Strategic Plan 2036 also seeks to provide sustainable and responsible solutions that enhance heritage and the natural environment. This includes action B1.5.1 *to deliver works that maintain and enhance natural areas in Camden* and actions included in Council's Biodiversity Strategy and Biodiversity Masterplans. Undertaking erosion stabilisation works on the Nepean River is an outcome covered under multiple strategic plans for Council.

2.2 Existing road/infrastructure

The Nepean River Bass Habitat at Spring Farm project will be completed along the bank of the Nepean River at Spring Farm. Site access is from the south-western end of Burrell Road, Spring Farm. The concrete maintenance access track around the biofilter basin can be navigated for around 200 meters before having to go off track and into the reserve and vegetated riparian corridor.

Other infrastructure that is present in the area is the Springs Lake Bike Skills Track located to the east of the access track and separated by concrete-fixed bollards. To the west of this facility is a biofilter basin, a stormwater treatment asset designed and constructed to treat the quality of stormwater before it enters waterways. A pedestrian footpath borders the southern edge of Burrell Road which can be crossed by vehicles using the rollover kerb from the road. A single, removable bollard is installed on the biofilter basin maintenance access track and there are multiple concrete stormwater pits in the immediate area. These assets are marked in Figure 1.

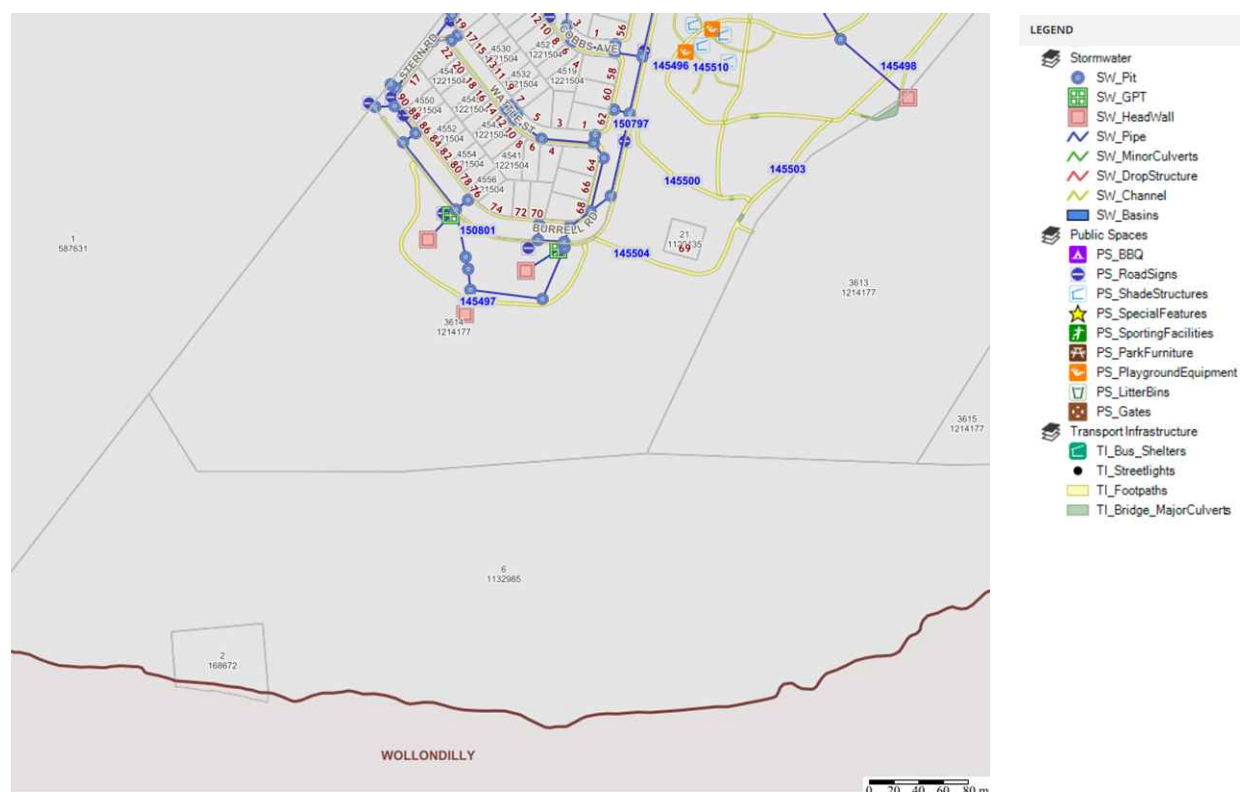


Figure 1: Stormwater, public spaces, and transport infrastructure around the project site from Council’s asset register.

2.3 Proposal objectives

The Nepean River Bass Habitat at Spring Farm project will achieve the following objectives.

- Enhanced native fish habitat (specifically designed for Australian Bass) and local aquatic biodiversity through the construction of LWD structures and erosion control;
- Improved geomorphic river condition and mitigation of potential adverse effects on local river condition; and
- Greater community connection to the local environment, with increased recreational fishing opportunities for the Nepean River.

The project is part of Council’s objective to target bank restoration and stabilisation at priority erosion points, as listed in Council’s Plan ‘Caring for the Nepean River: A guide for the Camden community’.

The project will also enhance the connectivity between riparian areas and instream aquatic environments and restore the Endangered Ecological Communities of Swamp Oak Floodplain Forest and River Flat Eucalyptus Forest.

2.4 Alternatives and options considered

2.4.1 Identified options

Do nothing

This option involves Council taking no action to prevent the eroding Nepean riverbank and to improve fish habitat. This option would result in continued loss of public reserve land, continued addition of sediment into the river and likely contribute to poor river health further downstream. The lack of action or acknowledgement by Council on the recreational fishing amenity of the river, would also negatively impact the fishing community. This option does not meet the needs and objectives of the proposal.

Install erosion control only

This option involves Council only installing erosion control measures on the eroding Nepean riverbank. This option would result in minimised bank erosion at the site, however an alternative source of funding would need to be sought, as the “Habitat Action Grant Program” by NSW Department of Primary Industries Fisheries’ (NSW DPI) primary purpose is to improve fish habitat and improve recreational fishing. This option would only meet some of the needs and objectives of the proposal.

Install fish habitat structures only

This option involves Council only installing fish habitat on the Nepean River at the Spring Farm project site. This option would result in improved fish habitat for the Nepean River and would be eligible for “Habitat Action Grant Program” funding by NSW DPI. However, the fish structures will likely be lost and filled with sediment if the eroding bank continues to fail. The construction of fish habitat requires heavy machinery to lift, place and lock in LWD material. With heavy machinery accessing the site, the eroding bank is likely to be left more exposed. This option meets some of the needs and objectives of the proposal, though misses the strategic direction for Council.

Install erosion control and fish habitat structures

This option involves remediation of the eroding Nepean riverbank and installation of fish habitat structures. This option would see the failing bank of the Nepean River stabilised, protected, and replanted and the installation of fish habitat structures restore natural snags back into the river. It would also prevent excess sediment and nutrients entering the river and potentially blocking the WaterNSW fish ladders and contributing to poor water quality. This project option satisfies the requirements of the NSW DPI “Habitat Action Grant Program” and would also see replanting of the bank by community volunteers. With improved habitat for Australian Bass in the river, it will encourage the migration and population of the species and provide improved recreational potential for the fishing community. This option meets all the needs and objectives of the proposal and aligns with Council’s strategic direction.

2.4.2 Analysis of options

The options were assessed based on their merits, construction and post-construction impacts to the environment, and funding availability.

The “do nothing” option would be unfavourable to Council as the riverbank would have continued to fail and contributed sediment to downstream sections of the river. The continued addition of sediment into the river would exacerbate water quality issues and block the WaterNSW fish ladders, which are key navigation pathways for Australian Bass.

The “install erosion control only” option would align with Council’s strategy to minimise riverbank erosion and would limit the amount of sediment entering the river and having downstream impacts. This option can be grant funded by the appropriate sources, however, would miss the opportunity to address the desire for recreational fishing in Camden.

The “install fish habitat structure only” option does not align strategically with Council’s objectives, however, would address the desire for recreational fishing in Camden. With the construction of these works, there would be significant disturbance to the riverbank. This disturbance could be mitigated with native revegetation, though would not address the steep gradients contributing to bank failure or prevent the knickpoint retreat caused by overland flow.

2.5 Preferred option

The preferred option is to “install erosion control and fish habitat structures” as this aligns with Council’s strategic objectives, has the best environmental outcome, enhances the recreational fishing quality of the Nepean River, and has available funding through the NSW DPI’s “Habitat Action Grant Program”. This option would prevent the riverbank from continued failure, prevent sediment entering the river and contributing to downstream water quality issues, and provide habitat for Australian Bass. All construction related disturbance to the site will be remediated for an overall beneficial environmental outcome.

2.6 Design refinements

The Initial Concept Design, specified below, is the first design proposal for the site. It is expected that a Final Concept Design will be issued for construction, however, this plan will be made following geomorphic assessment of the site.

3. Description of the proposal

3.1 The proposal

The Nepean River Bass Habitat at Spring Farm project aims to improve native fish habitat in the Nepean River.

Through a fluvial geomorphic assessment, concept plan and methodology, the Nepean River at Spring Farm project will include earthworks to regrade the bank, the construction of fish habitat structures using large woody debris (LWD), installation of erosion control measures and revegetation.

A community planting event will re-establish native vegetation on the floodplain adjacent to the project site. This will provide further stability to the bank, overhanging vegetation, and habitat for insects which are part of an Australian Bass’ diet.

Access to the site will be limited to Council maintenance staff through the installation of a lockable access gate. This will help control resident vehicle access to the site and prevent further degradation of the site caused by overland flow.

3.2 Design

Initial Concept Plan

The Nepean River Bass Habitat at Spring Farm project concept plan will be designed through fluvial geomorphic assessment to identify the most effective locations and positioning of large woody debris (LWD) for the site. The geomorphic assessment will maximise the benefits of improved bank stability and local geomorphology for the project.

The concept plan proposes to reshape the existing bank to achieve a stable and safe gradient along the 30 m section of the Nepean riverbank, install LWD for fish habitat, and rehabilitate the eroding gully. The fish habitat structures will be secured into the bank using forestry pins and extend approximately 2-3 m into the river, or to where the bank toe allows for construction. The initial concept design is detailed in Figure 2.



Figure 2: Initial concept design for the Nepean River Bass Habitat at Spring Farm project, as supplied by NSW Soil Conservation Service.

Bank stabilisation at the site will be achieved through reshaping the bank profile to grades that deter slumping and future bank failure, and revegetation with endemic species. The LWD placed at the bank toe will provide fish habitat and mitigate continuing scour erosion by dissipating flow energy and redirecting flow away from the bank. Forestry pins will be driven into the channel bed around the logs to further secure the fish habitat structures. The structures will be further secured by interlocking each log and positioning the logs in a way that they are keyed into the bed/bank further if shifted by high flows. The gully perpendicular to the bank will be

rehabilitated using jute matting and sandstone rock to treat the existing knickpoint and provide protection against overland flow.

The concept plan will primarily seek to achieve:

- Rehabilitation of bank failure caused by scour, slumping and overland flow erosion;
- Maximisation of habitat and geomorphic benefit from use of LWD materials;
- Minimisation of site disturbance during construction and ensuring disturbed areas are stabilised immediately after construction; and
- That all environmental protection measures identified by this REF are strictly followed by all personnel onsite.

The final concept design plan will propose reshaping the bank and installing LWD structures to provide fish habitat and bank stabilisation. The final concept plan will incorporate design considerations specific to Australian Bass, which are the target species for this in-stream habitat creation. The fluvial geomorphic assessment will also be considered in the final concept design to ensure the structures and bank gradient provide maximum benefit to the Nepean River. The construction component of the project is limited to the extent show in Figure 2.

A community planting event will be undertaken on the immediate floodplain near the bank stabilisation project to encourage overhanging vegetation which provides habitat and shelter for Australian Bass and other native fish species. This vegetation will also provide habitat for insects which can provide a food source for fish when they fall into the water. The area proposed for this planting is shown in Figure 3.



Figure 3: Community planting area marked in green, with constructed area of the project marked in pink.

Material Sources and Considerations

Timber materials that will be introduced to the site include LWD in the form of logs with root balls attached and forestry pins. Logs with root balls attached will be

sourced from local road construction or upgrade projects in the south-west Sydney area. Timber pins will be sourced from forestry thinning due to cost, availability, and size consistency of material.

Sandstone rock will be obtained from a local quarry or supplied from road construction projects in the south-west Sydney area. Sandstone is preferred over other materials, such as basalt, due to its local availability and the Spring Farm site's underlying geology. The sandstone material will aesthetically help the rehabilitated site appear to be part of the natural landscape.

Large Woody Debris (LWD) for Australian Bass

LWD will be used on site to provide direct aquatic ecosystem benefits for the Nepean River through improved aquatic species habitat and supporting aquatic food webs. Many native fish species, including Australian Bass, rely on LWD for shelter, spawning, rearing young and food supplies. It also provides the secondary benefits of protecting the riverbank from erosion and encouraging riparian vegetation to re-establish on disturbed banks. LWD can also promote the formation of deep pools on the channel bed, which are important shelter for native fish species, and provide channel roughness which encourages flow resistance and reduced flow velocities that aid upstream fish passage.

As Australian Bass prefer deeper pool habitats with low flow velocities and overhanging vegetation shelter, these habitat traits will be incorporated into the final concept design. The form and function of the LWD structures will also be made specific to the Nepean River Catchment.

Geomorphic Considerations

LWD provides geomorphic benefits to a river system in addition to the aquatic habitat and ecosystem benefits listed above. LWD increase flow resistance (roughness) in a channel and therefore reduces flow velocity. Reduced flow velocities are essential for lowering the erosivity of flows and helps protect in-channel, bank and floodplain vegetation and structures. Increasing channel and riparian roughness of waterways on a large scale can result in quantifiable improvements to flood velocities and protect downstream communities.

LWD can also improve the geomorphic complexity of waterways by promoting areas of deposition in low-flow or eddying flows typical within or adjacent to LWD structures and promote the creation of deep pools in 'pool and riffle' sequences. Pool and riffle sequences are formed when water accelerates as it passes over the obstruction, scours the channel bed (pool) and slows as it exits the pool, encouraging deposition (riffle). Re-establishing geomorphic complexity is key for supporting a broad range of aquatic species and provides a greater variety of habitats.

3.3 Construction activities

3.3.1 Work methodology

Council and Council's contractor will complete the work in accordance with the actions, safeguard and management measures listed within this REF, contract documentation and any other applicable regulations and permits.

Work activities will include:

- Project planning and site investigations;
- Installation of temporary access track;
- Delivery of large woody debris timber materials and sandstone rock;
- Installation of erosion and sediment control measures as per the Erosion and Sediment Control Plan;
- Removal of undercut *Casuarina* trees on the bank;
- Earthworks and regrading of the bank and knickpoint;
- Installation of instream large woody debris as fish habitat and erosion control;
- Installation of rock and geofabric for protection of the knickpoint;
- Planting of endemic plant species on the bank;
- Reinstatement of temporary access track to natural conditions;
- Community planting of endemic plant species on the immediate floodplain;
- Installation of lockable gate;
- Installation of project and blue-green algae information signs; and
- Ongoing maintenance of the site, once a month for almost 3 years, which includes replanting, weed spraying and litter removal.

The contracted activities will include the project planning and site investigations through to the reinstatement of temporary access track to natural conditions. Council and the community will undertake the remaining work activities from the above list.

Council's contractor will provide a Construction Environmental Management Plan (CEMP) to ensure all project activities are conducted in a manner that minimises impacts to the physical, biological, and social environment. It also ensures employees and contractors involved in the project are aware of their responsibilities to environmental management and the mitigation measures identified in the REF. NSW Department of Primary Industries Fisheries (NSW DPI) may need to review the CEMP to ensure construction activities are undertaken in a considered manner.

The Erosion and Sediment Control Plan (ESCP) outlines the controls and mitigation measures put in place during the project to ensure erosion is prevented or reduced and sediment is contained with the site. The ESCP will also include controls for site decommission and provisions for emergency response (Attachment 1).

All tasks associated with the project methodology will also be completed as per the SWMS and task-specific risk assessment. The SWMS will also address the risk of working in and around creeks and waterways.

A community planting event will be held after the bank construction works have been completed. This will involve the local fishing club, schools and residents planting endemic species into the floodplain closest to the project site. A lockable gate will also be installed at a narrow point on the resident access track to prevent unauthorised vehicles entering the site and exacerbating overland flow erosion.

3.3.2 Construction duration and working hours

Construction will take less than 4 weeks from site establishment through to revegetation and make-safe of the site. These works will be limited to standard noise-restriction regulations listed in the Protection of the Environment Operations Act 1997, being 7 am to 5 pm Monday to Friday. Construction works will not be carried out on weekends or Public Holidays.

Further to this, the floodplain near the Spring Farm Nepean riverbank will be planted with natives by local volunteers. This activity will occur on a day, or across two days, during the week that is suitable for local schools, residents, and fishing clubs. These planting days could occur on a weekday or weekend and would be limited to the hours of 8 am to 8 pm. Community and neighbouring consultation will occur with letterbox drop notification, social media, and Council website updates.

Upon project completion, project information signs, blue-green algae warning signs and any access gates will be installed on weekdays (Monday to Friday) between 7 am and 5 pm.

These on-ground works are expected to commence in May 2023 and be completed by October 2023.

Maintenance of the site will continue for 33 months after the on-ground works have been completed. This will be for maintenance, weed control and in-fill planting after the establishment period and will involve two people for half a day per month. These maintenance works will be limited to weekdays (Monday to Friday) between 7 am and 5 pm.

In all instances vehicles and machinery will comply with industry noise guidelines and any machinery or equipment not in use will be switched off.

3.3.3 Plant and equipment

The following plant and/or equipment will be required:

- 23T excavator with bucket, hydraulic grabs, post driver;
- 9T site dumper;
- 10-wheeler tipper truck;
- Hand tools – chainsaw, brush cutter;
- Utility vehicles;
- Post-digger;
- Shovels; and
- Water cart for revegetation maintenance.

Materials that would be introduced to the site include:

- Approximately 60 hardwood timber pins (200-300 mm diameter, 6 m in length);
- Approximately 25 large coarse woody debris (trunks with root balls attached) that will be sourced from local road upgrade projects undertaken by Transport for NSW or Sydney Metro;
- Sandstone including spalls, 1-2 man rocks, bobcat boulders;
- Erosion and sediment control materials including coir logs, sediment boom, geofabric and jute meshing/matting;
- Native revegetation with cardboard plant guards and timber stakes; and
- Natural or alloy fence posts and gate;
- Alloy fabricated post and signs.

3.3.4 Earthworks

The Nepean River Bass Habitat at Spring Farm project will have an earthwork footprint of 490 m² along the immediate bank of the Nepean River. Up to 100T of rock will be imported to the site. No fill will be imported to the site and no soil will be

exported from the site. The riverbank will be reshaped to a stable batter that will extend up to 3 m landward of the current bank crest.

No soil or sediment will be imported for the community planting event.

3.3.5 Traffic management and access

The project area is accessed via Burrell Road, Spring Farm. No road closures are required nor will the proposed works impact access to private properties.

During the construction period, there will be minor changes to the makeup of vehicle classification on the road network leading towards the project site. No adverse effects on local traffic are expected.

A temporary access track to the project site will be established to permit movement of machinery. This will start from the south-western end of Burrell Road, Spring Farm, circle around the concrete maintenance access track for the biofilter basin and follow the unofficial access track that has been created by residents frequenting the area. Once construction of the project has been completed, the access track will be made safe, and grass seeded with sterile rye grass. A gated or permanent barrier against future vehicle traffic will also be installed to prevent residents accessing the site and contributing further overland flow and gulley erosion.

To protect the pedestrian footpath and biofilter basin maintenance access track from heavy vehicle damage, 200 mm thick crushed sandstone (75mm minus) will be placed over geofabric in these areas. This material can be used later to rehabilitate the access track. Steel plates will be used for footpath protection when the machinery is being removed from the site and the rollover kerb may be protected using a plastic ramp, if required.

As the access track to the project site tracks over a section of pedestrian footpath, adequate warning signs will be in place and a spotter used to ensure safe vehicle and pedestrian movement.

An access plan, including any exclusion zones, will be provided by the Contractor as part of the CEMP prior to construction commencing.

A community planting event will be held at the site as part of the project. This will be coordinated as a Council event, with traffic management implemented in accordance with Council standards. This is likely to include street parking on Burrell Road and signage directing residents to the project site via foot.

3.4 Ancillary facilities

To support the construction of the Nepean River Bass Habitat at Spring Farm project, a temporary stockpile of resources will be created. This stockpile will consist of the LWD timber material obtained from regional road construction projects, any sourced timber pins, and quarried or salvaged sandstone rock. Smaller stockpiles for jute matting, coir logs and planting may be created near this larger stockpile, however this will be kept to a minimal and only held temporarily due to the risk of vandalism or theft by residents.

The proposed location for this stockpile is one that is already heavily disturbed and modified by residents using the area. There is no vegetation present at the

suggested stockpile site, and the size and shape of the stockpile location would allow for dumper trucks and diggers to enter and exit the site safely and easily. No removal of vegetation will be required with use of this ~1,100 m² stockpile location. A map of the suggested stockpile location is provided in Figure 4.



Figure 4: Temporary stockpile location for materials for the Nepean River Bass Habitat at Spring Farm project.

The stockpile for the project will be accessed from the south-western end of Burrell Road, Spring Farm on the western side of the biofilter basin. The track to the stockpile will cross over the pedestrian footpath, around the biofilter basin maintenance access track to the right, and then south and along the informal access track created by residents that frequent the area. The access track from the stockpile location to the project site will follow the informal access track created by residents. The full access track route is shown in Figure 5.



Figure 5: Access track route for the project site on the Nepean River.

These ancillary facilities will only be used during the standard construction hours for this project (see 3.3.2 Construction duration and working hours).

3.5 Public utility adjustment

No public utilities are affected by this project.

Near the project access track, is a Sydney Water Pumping Station and piped sewer system. These will not be affected by the scope of these project works.

A Before You Dig Australia report was lodged with plans from Sydney Water, Endeavour Energy, Jemena Gas West, and Telstra NSW Central provided in Attachments 2-5.

4. Statutory and planning framework

4.1 State Environmental Planning Policies (SEPPs)

4.1.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

The Nepean River Bass Habitat at Spring Farm project is defined as “waterway or foreshore management activities” in the State Environmental Planning Policy (Transport and Infrastructure) 2021. The SEPP specifies the inclusion of “riparian corridor and bank management, including erosion control, bank stabilisation, resnagging, weed management, revegetation and the creation of foreshore access ways” can occur by or on behalf of a public authority without consent on any land (Division 25, Section 2.165, Part 1).

The installation of the lockable gate on the access track to the project site is also exempt development under the SEPP with the construction or maintenance of

“walking tracks, raised walking paths (including board walks), ramps, stairways or gates” permitted (Division 12, Section 2.74, Part 1 (a)).

These works can be carried out without a Development Application as the Part 5 approval process is being followed and Council is the public authority conducting these works.

4.1.2 Other SEPPs

Chapter 2, Part 2.6, Section 4 of the SEPP (Biodiversity and Conservation) 2021 relating to the clearing of vegetation in non-rural areas applies as the site is within the Camden LGA and is zoned C2 Environmental Conservation. Section 2.4 specifies that this chapter does not affect the provisions of any other SEPP.

Chapter 6 of the SEPP (Biodiversity and Conservation) 2021, applies as the project site is located within the Hawkesbury-Nepean Catchment, however, as development consent is not required, no specified requirements are identified. The project site is in the Upper Nepean River and is not affected by development controls for Hawkesbury-Nepean conservation area sub-catchments, as specified in Division 3, Section 6.13. Measures will be put in place to ensure that the project has a neutral or beneficial effect on water quality and includes safeguards to minimise erosion and sedimentation and protect aquatic ecology.

The SEPP (Precincts – Western Parkland City) 2021 does not apply as this project site is outside the South West Growth Centre Precinct, Wilton Growth Area Precinct, and Greater Macarthur Growth Area Precinct.

4.2 Camden Local Environmental Plan (LEP)

The project site is with the land zoned E2 Environmental Conservation in the Camden Local Environmental Plan (LEP) 2010 (Attachment 6). The objectives of this zone are to:

- protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values;
- prevent development that could destroy, damage or otherwise have an adverse effect on those values; and
- protect and enhance the ecology, hydrology and scenic views of waterways, riparian land, groundwater resources and dependent ecosystems.

The Nepean River Bass Habitat at Spring Farm project aligns with the objectives of E2 land. The project seeks to stabilise an eroding Nepean riverbank and create fish habitat, therefore restoring, protecting and managing an area of high ecological value. The works will also help to protect and enhance the ecology and hydrology of the waterway and surrounding riparian area.

The project site is located on the Nepean River, such that the fish habitat structures will be partially or entirely under water almost all the time. The erosion control and planting area are likely to be impacted by flooding as the project site is within the mapped 50% Annual Exceedance Probability (AEP) area in the recent Nepean River Flood Risk Management Study and Plan (Attachment 7).

The project site is near Heritage Item (I148) being Thurns Weir on the Nepean River, under Schedule 5, Part 1.

4.3 District Plans

Western Sydney District Plan

The project site is located within the Western Sydney District where the Western Sydney District Plan applies. The vision for Greater Sydney includes the Western Parkland City and improvements in the District's lifestyle and environmental assets. One of the objectives is to enhance and protect the Hawkesbury-Nepean River system and maintain and improve the health of the river to contribute to cooling the environment and providing habitat for aquatic ecosystems. This project helps achieve those targets for the Western Sydney District.

4.4 Other relevant legislation

Biodiversity Conservation Act 2016

A desktop search on NSW Department of Planning and Environment BioNet Atlas on 14 March 2023 showed 32 endangered and vulnerable animal and plant species in or around the project area. The Endangered Ecological Communities of Swamp Oak Floodplain Forest and River Flat Eucalyptus Forest are also mapped for this location. As the planned project does not have a significant effect on critical habitat or a threatened species, population or ecological community, Section 4.11 of the *Biodiversity Conservation Act 2016* applies. Remediation works are permitted without consent under the SEPP and prior notice is not required as Council is undertaking the works on public land.

Environmental Planning and Assessment (EP&A) Act 1979

Camden Council is the determining authority under the EP&A Act. The project does not require development consent and is not classified as State Significant Infrastructure. The works will be considered until Division 5.1 of the EP&A Act, where Council must satisfy Sections 5.5, 5.6 and 5.7.

The NSW Government's Biodiversity Values Map and Threshold Tool identifies the site being within area mapped as having biodiversity value. However, as this project is an activity under Part 5 of the EP&A Act, it does not need to be assessed under Section 7.2 of the Biodiversity Conservation Act. It was also assessed under Section 7.3 of the Biodiversity Conservation Act and does not test as likely to significantly affect threatened species or ecological communities or their habitats, and therefore can continue the Environmental Assessment process and seek approval under the EP&A Act. A Species Impact Statement does not need to be prepared nor Biodiversity Offset Scheme entered, or Biodiversity Development Assessment Report (BDAR) prepared. A Biodiversity Values Map and Report is available in Attachment 8.

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

A desktop search on NSW Department of Planning and Environment BioNet Atlas on 14 March 2023 showed 15 Commonwealth listed animal and plant species in or around the project area. The Significant Impact Guidelines of the EPBC Act were used to assess these works and suggests that the proposal would not significantly impact these identified species. As this project is not a matter of national environmental significance, it does not need approval from the Australian Government environment minister.

Fisheries Management Act 1994

The Nepean River is mapped as Key Fish Habitat. Macquarie Perch were not detected in the Nepean River during eDNA sampling in 2021, however, are listed as endangered under the EPBC and Fisheries Management Acts. Part 7 Division 3

relates to 'dredging and reclamation' and applies for this proposal. Section 200 of the Act requires Council to obtain a permit issued by the Minister.

A Part 7A Division 12 Section 221ZV of the Fisheries Management Act assessment was made for the potential occurrence of Macquarie Perch. It was determined that the proposed project is unlikely to significantly affect threatened species, population, or ecological community. Therefore, Section 221ZX specifies a species impact statement (SIS) is not required.

Heritage Act 1977

A desktop search on the Australian Heritage Database, State Heritage Inventory and Camden LEP 2010 in March 2023 found no non-Aboriginal heritage items listed for the project site. Near the project site, is Thurns Weir on the Nepean River, which is listed as local Heritage Item I148 in Schedule 5 of the Camden LEP and is also listed on the State Heritage Inventory. Thurns Weir is located on property owned by WaterNSW.

Protection of the Environment Operations (POEO) Act 1997

Parts 5.3 Water Pollution, 5.4 Air Pollution, 5.5 Noise Pollution, and 5.6 Land Pollution and Waste are relevant to this project. All work potentially resulting in pollution must comply with the POEO Act. No required licences are identified.

National Parks & Wildlife Act 1974

A desktop search on NSW Department of Planning and Environment BioNet Atlas for endangered populations on 14 March 2023 showed several species protected under the *National Parks & Wildlife Act 1974*.

An Aboriginal Heritage Information Management System (AHIMS) search was conducted on 28 February 2023 and identified no sites or places within the proposed scope of works (Attachment 9).

The project site is not located on land owned or managed by National Parks and Wildlife Service.

Water Management Act 2000

This project is considered a controlled activity under the Water Management Act. Works of this kind would typically require a controlled activity approval as per Section 91E, however, the Water Management (General) Regulation 2018 Section 41, states that public authorities are exempt from this requirement. Approval under the Water Management Act is not required for this project.

4.5 Confirmation of statutory position

The Nepean River Bass Habitat at Spring Farm project does not require development consent, is not State Significant Development or State Significant Infrastructure and is subject to a Review of Environmental Factors (REF) under Division 5.1 of the EP&A Act.

The REF is legislatively required to be published on Camden Council's website or the NSW planning portal as it does require approval or permit under section 200 of the *Fisheries Management Act 1994*. These works are also in the public interest.

Approval through the Part 7 *Fisheries Management Act 1994* permit, under Section 200, is required as the works involve 'dredging or reclamation' of a waterway classified as Key Fish Habitat (KFH) with the works being undertaken by a local government authority.

5. Stakeholder and community consultation

As part of Camden Council's application to the "Habitat Action Grant Program", a letter of support for the project was provided by Macarthur Fishing Club. In this letter, Macarthur Fishing Club provides support for the Nepean River Bass Habitat project stating it will support the club operations and other fishing community members. Macarthur Fishing Club will also assist in the revegetation activities and encourage others in the fishing community to be involved in projects that promote the recreation.

Other external experts and organisations that were consulted with include:

- Habitat Action Grant Coordinator at NSW DPI;
- Bushland Management Coordinator at Penrith City Council;
- Environmental Officer at Soil Conservation Service;
- Senior Land Services Officer (Biodiversity) at Greater Sydney Local Land Services;
- Environmental Representative at Ausconnex; and
- Stephen Toohey and Stuart Dench at Macarthur Fishing Club.

Within Camden Council, several subject matter experts were consulted with during the planning of this project. These staff members include:

- Team Leader Floodplain Management;
- Team Leader Open Spaces;
- Team Leader Sustainability;
- Natural Resource Project Officer;
- Client Side Project Manager; and
- Volunteer Program Coordinator.

Camden and regional community members that fish on the Nepean River are also supportive of the bank stabilisation and fish habitat installation outcomes proposed by the project. Furthermore, many residents have enquired into the degraded condition of the fish ladders and obstruction to fish passage on the Nepean River. These concerns have been expressed through enquiries to Council and on social media (Attachment 10). The Nepean River Bass Habitat at Spring Farm project seeks to stabilise an eroding bank and will help prevent excess sediment entering the river and blocking these fish ladders. The installation of fish habitat structures at this location will provide further habitat and refuge for Australian Bass. With both outcomes, the health and passage of Australian Bass will improve and with that, the recreation and fishing appeal of the Nepean River.

Further consultation on the project will be guided by Council's Communications and Community Engagement Strategy. The community will have the opportunity to provide feedback on the project, with all communication and engagement being open and inclusive, easy to understand, relevant, timely, meaningful, and innovative.

A Communications Plan for the project has already been drafted. This includes media releases, social media posts, a Let's Connect Newsletter article, Sustainability eNewsletter articles, corflute signage, permanent project sign, project flyer, and website updates. The project and community planting event will also be promoted to local fishers and verbally at community events earlier in the year.

6. Environmental Assessment

This chapter of the REF provides an analysis of all possible impacts from the proposed activity and a description of any proposed safeguards and or management measures.

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Is any vegetation going to be impacted due to the works (i.e. removal of trees and shrubs)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Removal of seven small <i>Casuarina glauca</i> trees on top of riverbank with one dead			✓		No shrubs or ground covers will be removed. The removal of these seven trees passes the Test of Significance defined in s7.3 of the Biodiversity Conservation Act (Attachment 11). No nests, hollows, or roosts were identified at the time of assessment (9 March 2023). An Arboricultural Assessment is available in Attachment 12.	Site will be reassessed for nests, hollows, or roosts immediately before works commence on site. The trees planned for removal will be spray marked or taped to ensure correct removal of specified trees. Trees to be retained will be protected with armouring or stakes and para webbing fencing.
Are the works likely to require removal of any mature trees with a girth of more than 100mm?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Trees have DBH between 150-300 mm			✓		Seven trees are planned for removal. The DBH is between 150-300 mm.	The trees planned for removal will be spray marked or taped to ensure correct removal of specified trees. Trees to be retained will be protected with armouring or stakes and para webbing fencing.

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Are there any tree hollows, hollow logs in the likely project footprint (identified in the site inspection)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					There are no tree hollows or hollow logs in the project footprint.	-
Are there any crevices or other locations (such as on bridges and culverts) for potential bat habitat likely to be disturbed by the works?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					There are no crevices, bark or other locations that would allow for suitable bat habitat.	-
Are the works in or near a conservation area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works are not in or near a conservation area.	-
Are there known threatened species, endangered ecological communities, critical habitat etc. in or near the likely project footprint?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Swamp Oak Floodplain Forest and River Flat Eucalyptus Forest Camden White Gum Macquarie Perch		✓			The mapped Endangered Ecological Communities will be rehabilitated and restored through completion of this project. Competing weeds in the area will be removed, thus improving on the condition of the vegetation communities. The Camden White Gums near the project site have been mapped and included in this REF (Attachment 13). These trees are not in the project site and will not be affected by these works.	The native vegetation on site will be identified and preserved. No vegetation will be removed without Council permit to ensure no habitat for native wildlife or trees of environmental or cultural significance will be removed. The site is heavily degraded, and the removal of native vegetation is limited to the seven trees identified in the Arboricultural Assessment (Attachment 12). Temporary stockpile to be in existing mown/degraded areas away from mapped areas of Endangered

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								Macquarie Perch were not detected in the Nepean River during eDNA sampling in 2021, however, are being assumed as likely present.	Ecological Communities. Replanting of native species local to the site will be undertaken to rehabilitate the degraded ecological communities.
Are the works in or near a bio-certified area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works are not in or near a bio-certified area.	-
Are the works in or near land identified on the Biodiversity Values Map?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes, works are in land mapped with Biodiversity Values			✓		The project site is on land mapped with Biodiversity Values (Attachment 8). These works are under Part 5 of the EP&A Act and do not need to be assessed under Section 7.2 of the Biodiversity Conservation Act. The works pass the Test of Significance outlined in Section 7.3 and therefore can continue the Environmental Assessment process and seek approval under the EP&A Act (Attachment 11).	A Species Impact Statement does not need to be prepared nor Biodiversity Offset Scheme entered into, or Biodiversity Development Assessment Report prepared.
Are the works on or near bushfire prone land?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes, on mapped Bushfire Prone Land	✓				The project site is mapped as Bushfire	The temporary stockpile of timber pins and logs will be

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								<p>Prone Land – vegetation category 1, vegetation category 3 and vegetation buffer (Attachment 14). The bank stabilisation and replanting will not change the current mapping.</p> <p>Proposed works will not significantly impact on bushfire ratings as the project involves planting in areas of existing vegetation on the riverbank and floodplain. The area will remain category 1 and there will be no changes to the surrounding buffer.</p>	frequently inspected and maintained to ensure it does not increase bushfire risk to the site.
Are the works in an asset protection zone (APZ)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works are not in the vicinity of an asset protection zone (APZ).	-
Are the works likely to disturb natural waterways or aquatic habitat?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Moderate disturbance to the bank structure of the Nepean River			✓		Earthworks will restore the bank to grades less prone to bank failure. This will see the current steep grades softened. The newly formed knickpoint will be jute	Sediment controls will be established prior to works commencing. These will be installed on the downslope side of the works in accordance with the Erosion and Sediment

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								<p>matted and rock lined to protect further erosion.</p> <p>LWD, also known as re-snagging, will be installed to create fish habitat, restoring the river to pre-settlement conditions.</p>	<p>Control Plan (ESCP) in Attachment 1.</p> <p>The site will be jute matted and revegetated using native species. The native species planted will assist in the stability of the bank and provide a long-term erosion and sediment control measure. The rock used on the knickpoint and LWD on the toe of the bank will also remediate the site from excessive sediment loss.</p> <p>Any occurrence of a pollution incident will be reported to the NSW EPA.</p> <p>No existing snags in the waterway are to be removed, realigned or relocated without written authority of the Senior Fisheries Manager,</p> <p>A daily inspection of the waterway must be undertaken for dead or</p>

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
									distressed fish. Observations of dead or distressed fish are to be immediately reported to the Fisheries Contact Officer.
Is there potential risk of introducing weeds and pathogens?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Potential introduction of weeds and Phytophthora		✓			Weeds and Phytophthora may be introduced to the project site with the introduction of material or plant with traces of sediment or plant material.	<p>The sourced material will be checked for signs of Phytophthora dieback. Stockpile locations will be regularly inspected and maintained to prevent weed growth.</p> <p>Before entering the work site, workers will remove excess soil and mud from shoes and plant. Boots, tools, gloves, and small equipment will be spray disinfected.</p> <p>Avoid tracking into areas outside of the project site.</p> <p>As part of the project works, Balloon vine and other emerging weeds will be controlled.</p>
Is there impact on other fauna, habitat and animal welfare?	<input type="checkbox"/>	<input checked="" type="checkbox"/>		✓				No habitat features were identified, including	The site will be reinspected for new habitat at site

Flora and fauna	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								wombat dens.	establishment and during construction.

*If yes, all columns need to be completed.

Soil and water	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Are there any sensitive receiving environments that are located in or nearby the likely project footprint or that would likely receive stormwater discharge from the project?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Nepean River		✓			<p>The project is on the bank of the Nepean River and proposes earthworks to stabilise the eroding bank and install fish habitat.</p> <p>All works will occur in accordance with the Erosion and Sediment Control Plan (ESCP) in Attachment 1. All on ground staff will be inducted to the site with these plans. Sediment controls will be assessed and maintained throughout the construction of the project. Once the works are complete, the Nepean River will receive less detrimental stormwater impacts from this location, as flow velocities will be reduced, and sediment kept on site.</p> <p>The final concept plan will be designed with consideration of overland flow impacts.</p>	
Would the works be carried out near a waterway (i.e. within 50 meters)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Within the channel and on the bank of the Nepean River			✓		<p>The project is within the channel and bank of the Nepean River. Works will include bank stabilisation and the installation of fish</p> <p>All works will occur in accordance with the Erosion and Sediment Control Plan (ESCP) in Attachment 1. All on</p>	

Soil and water	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								<p>habitat structures, to reintroduce natural snags into the river.</p> <p>ground staff will be inducted to the site with these plans. The final concept plan will be developed from the geomorphic assessment conducted for the site. This will assess river hydrology, erosion patterns, geomorphic units, and flow velocities for the project site and in consideration of the reach of the Nepean River.</p> <p>Only clean rock (no fines) is to be used for this project, especially in the case of the overland flow gulley.</p> <p>Works will only commence once an approved Part 7 <i>Fisheries Management Act 1994</i> permit has been obtained. All on ground staff will be inducted to the site with the controls specified in the permit.</p>	

Soil and water	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Is the location known to flood or be prone to water logging?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Nepean River floodplain and catchment		✓			<p>The project site is located within the channel and bank of the Nepean River. The fish habitat structures will be partially or entirely under water almost all the time. The erosion control and planting area are likely to be impacted by flooding as the project site is within the mapped 50% Annual Exceedance Probability (AEP) area in the recent Nepean River Flood Risk Management Study and Plan (Attachment 7).</p> <p>The final concept plan will be developed from the geomorphic assessment conducted for the site. The fish habitat structures will be designed and installed to withstand flows from both directions due to the localised eddy flows caused by the failed Thurns Weir. These logs structures will be pinned in place using forestry thinning logs and cables. The root balls will be oriented such that any movement caused by floods further keys the logs into the bed and bank of the river.</p> <p>The knickpoint caused by overland flow will be stabilised using sandstone rock and geofabric. Planting on the site will only include vegetation endemic to the area that can withstand sandy soils and are resilient to flood events. These species will</p>	

Soil and water	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
									be from the Swamp Oak Floodplain Forest and River Flat Eucalyptus Forest Endangered Ecological Communities.
Is the proposal likely to impact on soil quality or land stability?	■	□	The eroding Nepean riverbank will be stabilised as part of the project works through earthworks and revegetation				✓	<p>The project proposes to stabilise the eroding riverbank of the Nepean River. To achieve this, the bank will be regraded to prevent future bank failure.</p> <p>The knickpoint caused by overland flow will also be protected with geofabric and sandstone rock.</p>	<p>As earthworks will be needed to regrade the bank to safer and more stable gradients, all on ground staff will be inducted to the ESCP in Attachment 1.</p> <p>The weather forecast will be checked before on ground works commence to ensure no forecasted rain impacts the site. The earthworks will be completed in the shortest time practicable, and the bank jute matted and revegetated immediately after. If a rainfall event is predicted, earthworks will be postponed until weather conditions are more suitable and all stockpiles will be consolidated and</p>

Soil and water	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								<p>covered.</p> <p>Vehicle access to the site will be via existing temporary road.</p> <p>Potential pollution incidents that cause harm to the environment will be reported to the NSW EPA. Spill kits for appropriate products will be on site and readily available.</p> <p>The land will be further stabilised with deep rooted vegetation endemic to the area from the Swamp Oak Floodplain Forest and River Flat Eucalyptus Forest Endangered Ecological Communities. Council will maintain the vegetation and/or jute matting until plants and bank are well established.</p>	
Is there any evidence within or nearby the likely project footprint of potential contamination? This might include dip sites, service	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					No evidence of potential contamination.	-

Soil and water	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
stations, fuel storage, industrial land uses nearby the land.									
Is the location known to be subject to acid sulfate soils?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					There are no Acid Sulfate Soils marked for this location on the NSW SEED portal (Attachment 15).	-
Is the location known to be affected by mine subsidence?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					No mine subsidence development, mine subsidence district, or underground coal mining mapped for the project site (Attachment 16).	-
Is the location known to be affected by salinity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Project site is mapped as low overall salinity hazard for state-wide hydrogeological landscapes.	-
Are the works likely to result in more than 2.5ha (area) of exposed soil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Works will temporarily result in 0.07 ha of exposed soil.	-
Is there sufficient land available as part of the likely project footprint that would allow the future implementation of appropriate erosion and sedimentation control measures (e.g., basins)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Not applicable for this project type or outcome.	-

*If yes, all columns need to be completed.

Aboriginal heritage	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Would the likely works involve any disturbance in any area that has not been subject to previous ground disturbances?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project site has previously been disturbed by erosion caused by floods and vehicles, pedestrians, motorbikes, and possibly with the construction of Thurns Weir in the late 1800s.	-
Will the likely works disturb the ground surface or any culturally modified trees?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Disturbance of ground surface.			✓		The project will disturb the ground surface but not any culturally modified trees.	If any unexpected Aboriginal objects are found, works will be immediately stopped, and the Tharawal Local Aboriginal Land Council contacted. Harming, damaging, or relocating the artefacts will not be permitted.
Will the likely works affect known Aboriginal objects or Aboriginal places?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					AHIMS search conducted on 28 February 2023 found no Aboriginal sites or places (Attachment 9).	The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales will be followed.

*If yes, all columns need to be completed.

Non-Aboriginal heritage	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Are works likely to occur in or near a listed heritage item or conservation area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Thurns Weir on the Nepean River is listed as local Heritage Item I148 in Schedule 5 of the Camden LEP and is listed on the State Heritage Inventory	✓				<p>The remnant portion of Thurns Weir is approximately 76m from the eastern edge of the project site. The project site is approximately 14 m from the boundary of the property owned by WaterNSW.</p> <p>Thurns Weir is on the Camden LEP as a local heritage item.</p> <p>Thurns Weir is not present on the Australian Heritage Database (date searched 13/03/2023).</p> <p>Thurns Weir is listed in the State Heritage Inventory (date searched 14/03/2023).</p>	<p>The project site boundary and all heritage areas will be clearly marked on a site map. All on-ground staff will be inducted to the project site with this map and informed of the conservation value of those areas.</p> <p>If any items are found, a stop work protocol will be implemented.</p>
Are works likely to occur near a potential heritage item or conservation area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Works are unlikely to occur near a potential heritage item or conservation area.	-
Are works likely to occur in or near features that may indicate potential archaeological remains?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Works are not near any features that may indicate potential archaeological remains.	-

*If yes, all columns need to be completed.

Noise and vibration	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Are there any residential properties or sensitive receivers within 200 meters of the likely project footprint?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works are approximately 450 m away from any residential properties.	-
Will the likely works alter the line or level of an existing carriageway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works will not alter any existing carriageways.	-
Will the likely works result in a change in traffic flow?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works will not change traffic flow.	-
Is it likely that the works would require activities to be carried out outside the POEO regulations standard working hours?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Works will occur within the standard noise permitted hours of the Protection of the Environment Operations (Noise Control) Regulations 2017.	Works will occur within the standard noise permitted hours of the Protection of the Environment Operations (Noise Control) Regulations 2017. These controlled operation times will be noted in the CEMP and be part of site induction.

*If yes, all columns need to be completed.

Air quality	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Will the likely works involve the emission of dust or odours?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					No dust or odours will result from the project works.	-
Will the likely works involve exposure of large areas of soil (greater than 2.5ha)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project will temporarily expose 0.07 ha of soil.	-
Will the likely works involve the generation or disposal of gaseous, liquid or solid wastes or emissions?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works will not involve the generation or disposal of gaseous, liquid or solid wastes or emissions. No soil or vegetative material will be taken offsite.	-

*If yes, all columns need to be completed.

Landscape and visual character	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Is the likely project footprint over or near to any important physical or cultural elements or landscapes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The Nepean River	✓				The project works are on the riverbank of the Nepean River which has been mapped as an area for scenic protection.	The riverbank is heavily eroded and will be restored to natural conditions with bank stabilisation and large woody debris used as fish habitat. The final concept plan will be designed with consideration for the visual and physical landscape of the Nepean River. Sandstone which is local to the Sydney basin will be used for scour protection. The area will also be replanted using species endemic to the area.
Is the likely project footprint over or near any valued landscape or urban area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The Nepean River	✓				The project works are on the riverbank of the Nepean River which has been mapped as an area for scenic protection.	Same as above.
Is it likely that the works will affect the visual or scenic landscape?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The scenic landscape of the Nepean River		✓			The works will restore an eroding bank of the Nepean River and seek to reinstate the bank to natural conditions.	Same as above.

*If yes, all columns need to be completed.

Flooding and Stormwater	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Is the likely project footprint over or near flood prone land?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The Nepean River and floodplain	✓				The project site is mapped to be likely impacted by flooding at the 50% Annual Exceedance Probability (AEP) area in the recent Nepean River Flood Risk Management Study and Plan (Attachment 7).	The weather forecast will be checked before on ground works commence to ensure no forecasted rain impacts the site. The earthworks will be completed in the shortest time practicable, and the bank jute matted and revegetated immediately after. If a rainfall event is predicted, earthworks will be postponed until weather conditions are more suitable.
Is the likely project likely to be impacted by flooding?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The Nepean River and floodplain	✓				The project site is located within the channel and bank of the Nepean River. The fish habitat structures will be partially or entirely under water almost all the time. The erosion control and planting area are likely to be impacted by flooding as the project site is within the mapped 50% Annual Exceedance Probability (AEP) area in the recent Nepean River Flood Risk Management Study and Plan	The final concept plan will be developed from the geomorphic assessment conducted for the site. The fish habitat structures will be designed and installed to withstand flows from both directions due to the localised eddy flows caused by the failed Thurns Weir. These logs structures will be pinned in place using forestry thinning logs and cables. The root balls will be oriented such that any movement caused by

Flooding and Stormwater	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								(Attachment 7).	floods further keys the logs into the bed and bank of the river. The knickpoint caused by overland flow will be stabilised using sandstone rock and geofabric. Planting on the site will only include vegetation endemic to the area that can withstand sandy soils and are resilient to flood events. These species will be from the Swamp Oak Floodplain Forest and River Flat Eucalyptus Forest Endangered Ecological Communities.
Is it likely that the works will contribute to flooding?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					No additional stormwater generated from this project as no impervious surfaces are being made. No impediment to the channel capacity or flow of flood waters.	-
Is the project likely to impede urban run-off and stormwater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					Not impacting run-off or stormwater generated from urban areas as the project is within bushland adjacent to the Nepean River.	-

*If yes, all columns need to be completed.

Traffic and transport	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Will the likely project impact on the road environment – vehicle movement?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works will not impact vehicle movement in the road environment. There may be a slight change to the distribution of vehicle class in the immediate area, however, this will not affect vehicle movement on roads.	-
Will the likely project impact on pedestrian or cycle movement?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Footpath on the southern boundary of Burrell Road, Spring Farm		✓			The pedestrian and cycle traffic using the footpath on the southern boundary of Burrell Road will be impacted.	The footpath will be temporarily closed or controlled by traffic management to allow the thoroughfare of vehicles and trucks. A CEMP will be in place whenever the footpath needs to be used by vehicles. The Contractor will install signage and barriers to prevent pedestrians crossing the haul route. Road plates or crushed sandstone will also be installed over footpath areas that vehicles will frequent over.
Is it likely that the works will involve construction of a new bridge or intersection or result in a substantial change	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The works do not include construction of any bridge or intersection.	-

Traffic and transport	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
to the appearance of an existing bridge or intersection?									

*If yes, all columns need to be completed.

Social and economic	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Will the likely project affect community services or infrastructure?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					There will be no impacts to community services or infrastructure with this project.	-
Does the likely project affect sites of importance to local or broader community for their recreational or other values or access to these sites?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Access to the Nepean River and kayaking amenity		✓			The project site is within bushland and riparian area that is not formalised with access to the Nepean River. Residents currently recreating in this area have exacerbated localised bank erosion on the Nepean River. The kayaking community frequents past the project site and the recreational fishing community will see improvements on the river.	Project signage, flyers, social media, and information on the website will keep residents up to date on the project and the benefits it provides the river and Australian Bass. The broader community, especially fishing community, will be provided an opportunity to assist in the site remediation through a community planting event.
Will the likely project reduce access or reduce visibility to any business or tourist destination?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					There are no business or tourism destinations in or around the project site.	-
Will the likely project have an impact on the safety of the community?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Community safety during construction Improved access to the river, recreational fishing, and greater awareness of water		✓			Pedestrian safety management will be in place when trucks are crossing the pedestrian footpath along Burrell Road, Spring Farm.	The CEMP will assist with managing traffic and vehicle movement when vehicles need to cross the pedestrian and cycle footpath.

Social and economic	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
			quality					<p>The project works will see restricted vehicle access to the site, improved recreational fishing in the river and a greater awareness of water quality, all improving the safety of the site.</p> <p>Project information board and water safety signage will be installed as part of these project works. The current steeply eroded bank of the Nepean River will be stabilised, and gradients made safer. Residents will be kept informed via project signage, flyers, social media, and information on the website.</p> <p>A Safe Work Method Statement (SWMS) will in place to highlight safety measures for contractors and the public.</p>	

*If yes, all columns need to be completed.

Land use and property	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Will the likely project influence land use changes in the locality or in response to emerging land use changes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project will not influence land use changes as it is on the riparian corridor of the Nepean River.	-
Will the likely project impact on accesses to private property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project site is not near private property access routes. The project is situated on public land.	-
Will the likely project reduce access or reduce visibility to any business, property, or tourist destination?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project is not near businesses, properties, or tourist destinations.	-
Will the likely project have an impact on the safety of the community?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Community safety during construction Improved access to the river, recreational fishing, and greater awareness of water quality		✓			<p>Pedestrian safety management will be in place when trucks are crossing the pedestrian footpath along Burrell Road, Spring Farm.</p> <p>The project works will see restricted vehicle access to the site, improved recreational fishing in the river and a greater awareness of water quality, all improving the safety of the site.</p>	<p>The CEMP will assist with managing traffic and vehicle movement when vehicles need to cross the pedestrian and cycle footpath.</p> <p>Project information board and water safety signage will be installed as part of these project works. The current steeply eroded bank of the Nepean River will be stabilised, and gradients made safer. Residents will be kept informed via project</p>

Land use and property	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
									signage, flyers, social media, and information on the website.

*If yes, all columns need to be completed.

Environment	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Will the likely project result in any long-term effects on the environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Restoration and rehabilitation of eroding riverbank with rock, large woody debris, and revegetation		✓			<p>A project outcome is to restore and rehabilitate the eroding Nepean riverbank. This will be done through permanent solutions such as rock rip rap protection on the overland flow path, large woody debris as fish habitat and erosion protection, and revegetation.</p>	<p>The project works will remain within scope through the CEMP and through this REF document.</p> <p>The site will be jute matted and revegetated using native species. The native species planted will assist in the stability of the bank and provide a long-term erosion and sediment control measure. The rock used on the knickpoint and LWD on the toe of the bank will also remediate the site from excessive sediment loss.</p>
Will the likely project degrade the quality of the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					<p>The project seeks to remediate and rehabilitate the quality of the environment.</p>	-
Will the likely project risk the on-ground safety of the environment, such as public health or contamination?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					<p>The project seeks to reduce the risk of the on-ground safety of the environment by rehabilitating a site of active erosion. The works will also prevent vehicular access to the</p>	-

Environment	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
								site which reduces the risk of vehicles entering the water and any contamination associated with vehicles entering riparian areas (weeds, oils, compaction).	
Will the likely project risk the climate safety of the environment, such as storms, wind speeds, extreme heat, urban heat or climate change adaption?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project does not have any impacts on the climate safety of the environment.	-
Will the likely project reduce the range of beneficial uses of the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>			✓			<p>The project seeks to install fish habitat on the Nepean River to increase the recreational fishing potential of the river.</p> <p>The site has evidence of being used for trail biking, however the Springs Lake Bike Skills Track is near the project site and can be used safely and with less environmental impact.</p>	-
Will the likely project result in light pollution?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project generates no light pollution.	-
Will the likely project have a cumulative environmental effect with other existing or	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bank restoration and rehabilitation		✓			The Nepean River Bass Habitat at Spring Farm project is one of many	The bank stabilisation projects have a positive cumulative environmental

Environment	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
likely future activities?								bank stabilisation projects Camden Council is undertaking, with the likely cumulative environmental impact being reduced sediments entering the Nepean River, and with that reduced nutrient pollution and increased fish passage and habitat.	impact on the health of the Nepean River. All projects will be constructed with their individual environmental impacts assessed, and safeguards or management measures considered.
Will the likely project impact on coastal processes and coastal hazards, including those projected under climate change conditions?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					The project is not based on the coast or estuary.	-

*If yes, all columns need to be completed.

Resources	Applicable*	Not Applicable	Item	Likely impact				Reasoning	Safeguard and/or management measure
				Negligible	Low	Medium	High		
Will the likely project create environmental problems associated with the disposal of waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	-					No waste is being generated from these project works.	-
Will the likely project increase demands on resources (natural or otherwise) that are, or are likely to become, in short supply?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Logs and rocks			✓		The project will use logs and root balls salvaged from the Transport for NSW M12 construction works. This material is in high demand when bank stabilisation works are occurring in Sydney, however, is not a guaranteed or always available resource. These materials have already been obtained from Transport and are ready for use.	The project will use minimal resources required to complete to the best standard. The material obtained from Transport would otherwise be mulched or disposed of as waste, thus reducing the waste generated from other projects. Virgin material will be used where waste material is not available, with the exception of large woody debris.

*If yes, all columns need to be completed.

7. Environmental Management

A number of safeguards and/or management measures have been identified in order to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the likely works. Should the proposal proceed, these safeguards/management measures will be incorporated into the detailed design and applied during the construction and operation of the proposal.

7.1 Summary of safeguards and/or management measures

The safeguards/management measures are summarised in the table below.

No.	Impact	Safeguard/Management Measure	Responsibility	Timing
1	Erosion and sediment	Erosion and Sediment Control Plan (ESCP) in line with Landcom's Managing Urban Stormwater: Soils & Construction Guidelines (Landcom 2004) – to be available onsite	Contractor and Council Project Manager	Construction
2	Traffic	Construction Environmental Management Plan (CEMP) – to be available onsite	Contractor and Council Project Manager	Construction, operation and ongoing maintenance
3	Social and Economic	Safe Work Method Statement (SWMS) – to be available onsite	Contractor and Council Project Manager	Construction, operation and ongoing maintenance
4	Soil and Water	Permit PN23/185 - Part 7 <i>Fisheries Management Act 1994</i> permit – to be available onsite	Contractor and Council Project Manager	Construction and maintenance
5	Aboriginal heritage	Due Diligence Code	Contractor and Council Project Manager	Construction

7.2 Guidelines, licences and approvals

Licence/Permit/ Notification/ Approval	Description	Further information
Biodiversity Conservation Act 2016	The regulatory framework for assessment and approvals for development and clearing activities that impact on biodiversity.	https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/overview-of-biodiversity-reform/legislation
Environment Protection and Biodiversity Conservation Act 1999	A person must not take an action that has, will have or is likely to have a significant impact on any of the matters of environmental significance without approval from the Australian Government Minister for the Environment, Heritage and the Arts (the Minister). An action is a project, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things.	http://www.environment.gov.au/epbc/assessments/processes.html
Camden DCP 2019	B1.10 Bushfire Risk Management	https://dcp.camden.nsw.gov.au/general-land-use-controls/bush-fire-risk-management/
Planning for Bushfire Protection	This document has been developed to assist applicants in determining whether their proposed development can potentially be considered 'Complying Development' under the Codes SEPP. It provides a guide to the assessment process and submission requirements whilst also providing an application form for submission.	https://www.rfs.nsw.gov.au/planning-and-prepare/building-in-a-bush-fire-area/planning-for-bush-fire-protection
Managing Urban Stormwater: Soils & Construction Guidelines (Landcom 2004)	Guideline document for sediment and erosion control measures and Erosion and Sediment Control Plans.	https://www.environment.nsw.gov.au/research-and-publications/publications-search/managing-urban-stormwater-soils-and-construction-volume-1-4th-edition
Part 7 Fisheries Management Act 1994 Permit	A Part 7 Fisheries Management Act permit is required for activities involving dredging and reclamation work, activities temporarily or permanently obstructing fish passage, using explosives and other dangerous substances, and/or harming marine vegetation.	https://www.dpi.nsw.gov.au/fishing/habitat/help/permit

The licences and/or approvals required prior to works proceeding are summarised below.

Requirement	Timing
Part 7 Fisheries Management Act 1994 Permit	Council to adhere to conditions of Permit for entirety of construction and maintenance.

8. Conclusion

The proposed Nepean River Bass Habitat at Spring Farm project at Burrell Road, Spring Farm is subject to assessment under Part 5 of the EP&A Act. This REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

In conclusion, the proposed activity is not likely to significantly affect the environment, provided the safeguards identified in this report are properly implemented. Therefore, an Environmental Impact Statement (EIS) or Species Impact Statement (SIS) and Biodiversity Development Assessment Report (BDAR) is not required.

9. Certification

This REF provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposal.



Name: Aditi Verma
Position: Waterways Project Officer
Organisation: Camden Council
Date: 10/05/2023

I certify that I have reviewed and endorsed the contents of this REF document, and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.

The proposed activity is not likely to have a significant impact on the environment and therefore an EIS is not required.

The proposed activity will not be carried out in a declared area of outstanding biodiversity value and is not likely to significantly affect threatened species, populations or ecological communities, or their habitats or impact biodiversity values, meaning a SIS and BDAR is not required.

The proposed activity may proceed for the reason of overall environmental benefit to the aquatic ecosystem and riparian corridor of the Nepean River.

Mitigation measures are required to eliminate, minimise or manage environmental impacts as per Section 6 – Environmental Assessment and Section 7 – Environmental Management of this REF document. A Part 7 *Fisheries Management Act 1994* Permit is required before works commence.



Name: Rob Corby
Position: Natural Resource Officer
Organisation: Camden Council
Date: 22 May 2023

Terms and acronyms used in this REF

Term/Acronym	Definition
AEP	Annual Exceedance Probability
AHIMS	Aboriginal Heritage Information Management System
BDAR	Biodiversity Development Assessment Report
CEMP	Construction Environmental Management Plan
DBH	Diameter at Breast Height
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning & Assessment Act 1979</i> (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
ESCP	Erosion and Sediment Control Plan
IBRA	Interim Biogeographic Regionalisation for Australia
ISEPP	State Environmental Planning Policy (Infrastructure) 2007
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act
LWD	Large Woody Debris
NSW DPI	New South Wales Department of Primary Industries
POEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
REF	Review of Environmental Factors
SEPP	State Environmental Planning Policy. A type of planning instrument made under Part 3 of the EP&A Act
SIS	Species Impact Statement
SWMS	Safe Work Method Statement

Attachment 1 – Erosion and Sediment Control Plan (ESCP)



Soil Conservation Service



April 2023

Erosion Sediment Control Plan

Nepean River Bass Habitat – Spring Farm



The Soil Conservation Service acknowledges the traditional custodians of the land where we live and work and pays respect to Elders past, present and emerging. Through our work on what was and always will be Aboriginal land, we commit to our shared responsibility to heal and protect Country for all future generations.



Connect with us

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Title – Erosion and Sediment Control Plan. Nepean River Bass Habitat – Spring Farm.

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0.1	12/04/23	Laura Phandita	Rebecca Mabbott 	Camden Council
0.2	17/04/23	Laura Phandita	Rebecca Mabbott 	Camden Council

Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing, April 2023. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Soil Conservation Service or the user's independent adviser.

1. Introduction

Planning for erosion and sediment control is required for land that will be disturbed or cleared of vegetation due to the potential for erosion by stormwater runoff. Erosion of soil can result in the downslope transport of sediment, which can enter adjacent watercourses, wetlands and lands. Adverse environmental impacts can result from erosion and sedimentation including:

- Reduction in water quality, increased turbidity and nutrient enrichment of water bodies
- Damage to vegetation communities
- Disturbance to aquatic flora and fauna
- Reduction in recreational and aesthetic values of waterbodies
- Increased maintenance costs
- Promotion of weed growth

This erosion and sediment control plan (ESCP) aims to minimise on-site erosion and off-site sedimentation to prevent adverse environmental impacts.

2. Project description

Camden Council was successful in its application for the Fish Habitat Action Grant 2021/22 funded by the NSW Department of Primary Industries Recreational Fishing Trust. The project seeks to stabilise an upstream site of bank erosion, add large woody debris (LWD) to the river as fish habitat and erosion control, and assist in improving the fish passage along the Nepean River.

The Spring Farm site has been identified as Key Fish Habitat for the Hawkesbury-Nepean River through rapid riparian assessments conducted in June 2021. The site has class 1 passage, type 1 sensitivity, and good freshwater fish status, including reports of Australian Bass and freshwater eels in the river. Additionally, eDNA sampling shows the potential for platypus in the surrounding reaches. The riparian corridor is high in ecological value, comprising remnant River-Flat Eucalypt Forest, an endangered ecological community (EEC), and includes the vulnerable Camden White Gum (*Eucalyptus banthamii*).

The site started to experience bank erosion after the February 2020 flood event which was exacerbated following multiple flood events in 2022. Use of the land by residents has contributed to erosion from vehicle access resulting in overland flow. The influence of a redundant weir located approximately 90 m upstream likely contributes to erosion at the site, due to flow being directed around the left bank of the weir and rebounding towards the erosion site. With significant erosion occurring along the Nepean River, eroded sand has been deposited on riverbanks, blocked fish ladders, and injured Australian Bass. Council's residents have expressed a desire to fish in the local waterways and reduced water quality, fish passage, and increased inaccessibility limit the ability for this activity. Bank failure from slumping and scour processes has exposed a top layer of fill material and large rock/boulders deeper in the bank profile. Formation of a knickpoint suggests bank erosion will continue to progress following flood/rain events.

Council and community volunteers will revegetate part of the bank to support the proposed fish habitat and erosion control structures.

The scope of works covered by this ESCP include:

- Establishment of a stockpile site
- Reshape river bank to ensure appropriate gradient
- Gully rehabilitation
- Installation of large woody debris to stabilise the bank and rock armouring to rehabilitate gully erosion

3. Supporting publications

This ESCP meets the requirements, guidelines and recommendations of:

- Landcom (2004). Managing urban stormwater: soils and construction, Volume 1 (Blue Book)
- Landcom (2004). Managing urban stormwater: soils and construction, Volume 2C Unsealed Roads (Blue Book)
- NSW Office of Environment and Heritage (2012) Erosion and sediment control on unsealed roads

4. Key strategies

The following sections outline the principles and control measures that will be employed on this project for minimising erosion and sedimentation.

4.1. Training and induction

Training and induction of all on-site personnel and subcontractors must be undertaken to ensure they are familiar with this ESCP, its implementation and their responsibilities. The importance of documenting erosion and sediment control during the project duration must be emphasised to ensure compliance with this ESCP. Regular toolbox meetings should be held during the course of the project to review this ESCP and address any arising matters relevant to erosion and sediment control. Any matters arising from a toolbox talk indicating insufficient erosion and sediment control should be revised and included in a progressive ESCP to ensure effective erosion and sediment control for the entire duration of the project.

4.2. General site principles

General site principles of erosion and sediment control:

- Keep clean water and turbid runoff separate by diverting clean water around areas being disturbed
- Construct erosion control measures as close as possible to the potential sources of sediment
- Divert runoff off disturbed surfaces as regularly as possible to reduce surface flow lengths and surface water accumulation
- Control dust by reducing vehicle speeds, limiting vehicle movements and limiting works during high winds.
- Confine machinery and vehicles to established access paths to avoid damaging roadside vegetation and disturbing soil.
- Control the spread of sediment onto sealed public roads washing down vehicles or limiting vehicle movements in wet conditions.

4.3. Minimising disturbance and clearing, and delineating limits of clearing

General measures should be implemented to ensure effective erosion and sediment control during works. These measures include:

- Timing construction and off-road driving to avoid wet weather
- Minimising the extent and duration of soil disturbance
 - Clearly mark the limits of clearing

- Progressively install temporary erosion and sediment controls as areas of work are disturbed (e.g. sediment fences, diversion banks, etc.)
- Drainage structures are to be stabilised as quickly as possible following their construction or installation

4.4. Development of work method statements for works around watercourses and/or sensitive areas

Work areas should be kept tidy to limit the number of sediment sources by minimising the number of stockpiles on site and removing unwanted spoil stockpiles progressively and quickly where practicable. Placing material directly in place as it is being excavated will reduce stockpiling as a potential source of sediment on site. If stockpiles are required, they should be located away from areas prone to inundation and drainage lines.

4.5. Revegetation and site stabilisation

All disturbed areas should be stabilised as soon as practicable, and revegetation encouraged in areas not to be utilised (i.e., stockpile area). Erosion and sediment control structures (e.g., sediment fence) are to remain in place until the disturbed area is considered stable.

4.6. Establishment of an inspection and maintenance program

The following procedures should be implemented to regularly inspect erosion and sediment control measures:

- Erosion and sediment control measures must be inspected regularly and following rain events to ensure they continue to function effectively. Any necessary maintenance to controls must be undertaken promptly.
- Document progress of erosion and sediment control measures and maintenance undertaken.

5. Conclusion

The strategies included in this plan will address erosion and sediment control issues appropriately and mitigate potential erosion and sedimentation impacts of the project. Planning, adhering to this ESCP, training and completing progressive ESCPs (if needed) will be key in ensuring good erosion and sediment control outcomes.

The scope of works will result in a relatively small area of disturbance, which can be managed effectively to mitigate erosion and sediment transport if this ESCP is adhered to.

6. Attachments

6.1. Concept Erosion and Sediment Control Plans

Erosion and Sediment Control Plan



Notes:

1. All Staff MUST be inducted into the environmental requirements of the work,
2. Erosion & sediment controls must available & be installed before site vegetation is cleared (or when excavation works/soil disturbance occurs),
3. Water to be monitored for signs of sediment plume and work to be halted until the sediment has settled
4. Topsoil/gravel must be stripped only from approved areas & stockpiled for re-use during site rehabilitation &/or landscaping,
5. Any spills of oil, fuel & other liquids must be cleaned up promptly & immediately reported to the site representative. All spills must be reported to relevant regulators in accordance with legislation,
6. Environmental Spill Kits of suitable material must be kept at all work sites & with all designated refuelling facilities,
7. Stockpiles must have sediment fence installed (min) & must be covered with geofabric if in place for more than 10 days and be kept clear of drainage, kerb or road surfaces to prevent sediment leaving the work site,
8. Where contamination is proven or suspected, stockpiles MUST be covered with builders plastic,
9. All surplus soils from excavations must be removed from site by covered trucks/containers & disposed of at an appropriately licensed facility.
10. Off-site ('clean') runoff should be intercepted up-slope & diverted around all disturbed areas & areas likely to be disturbed. Runoff diversion works must be adequately stabilised,
11. Stormwater inlets & drains must have controls installed where there is a risk of sediment entering stormwater infrastructure,
12. Runoff detention &/or sediment interception measures must be applied to disturbed areas where a risk is identified (ie rainfall/wind),
13. The capacity & effectiveness of runoff & erosion control measures must be maintained regularly,
14. Measures must be applied to prevent site vehicles tracking sediment & other pollutants onto any sealed roads,
15. Paved surfaces & public roads must be kept clean by removing any site materials immediately preferably by broom & shovel. Vehicles & equipment must remain on existing roads & defined site access tracks. Designated entry & exits with shaker grid or similar if required,
16. Site rehabilitation must be undertaken to restore disturbed areas to a stable state, temporary ESC to be left in place until 70% (or better) cover is achieved,
17. Revegetation should be undertaken to restore disturbed areas to pre-disturbance conditions. Grassed areas should be reinstated with non-invasive grass mix,
18. Changes to the ESCP must be marked up by the Site Supervisor & a Revised ESCP dated & remain current on site.
19. Vehicles/Machinery must keep to well defined access routes

NOTE

- Sediment boom should be inspected regularly during the works to ensure no low points are allowing 'seepage' of contaminants/pollution/sediment laden water.
- The location of the sediment boom is indicative and will be finalised on site.

SHUT DOWN

If works are shut down due to wet weather or other constraints:

1. Ensure stockpiles are consolidated/covered,
2. Disturbed areas are consolidated (protected from erosion),
3. All sediment controls are installed where needed and fit for use.

NEPEAN RIVER BASS HABITAT – SPRING FARM	Sheet 1 of 3
EROSION AND SEDIMENT CONTROL PLAN	Revision 1.1
Site Overview	Not to scale



No access to riverbank outside of work area

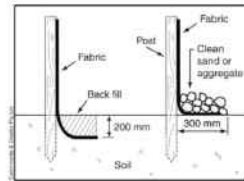
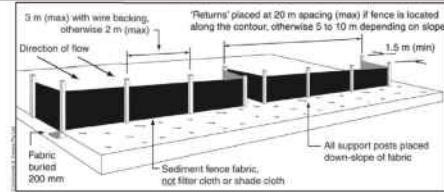
Disturbed soil to be smoothed and compacted at the end of each day to prevent erosion

Marine Spill Kit & First Aid Kit

Sediment Fence
 - Sediment fence to be installed at base of gully if rain is predicted mid-works and area has not yet been compacted or armoured.
 - Geofabric can also be used as temporary protection if rain is predicted mid-works

Temporary floating sediment boom
 - To remain in place for the duration of works.
 - To be removed upon completion of works and stabilisation of riverbank.

NEPEAN RIVER BASS HABITAT – SPRING FARM	Sheet 2 of 3
EROSION AND SEDIMENT CONTROL PLAN	Revision 1.1
Site Detail	Not to scale

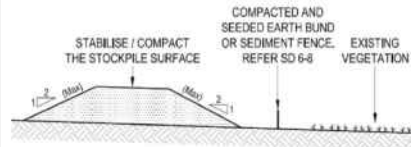


Silt/Sediment Fences

Sediment fence is a temporary permeable textile barrier which captures sediment on site whilst allowing water to flow off-site. Sediment fence is installed in a trench (or buried by clean fill) and supported by vertical posts.

Key notes:

- Do not use sediment fence in concentrated flow
- Install across the contour and include returns at max. 20 m intervals
- Ensure the bottom edge of the sediment fence is sufficiently buried in soil or clean fill by at least 200 mm
- Compact the trench after backfilling
- Anchor the sediment fence to the vertical posts using staples or wire
- Multiple fences can be installed parallel to each other if high volumes of sediment or discharge are expected. An additional sediment barrier can be placed upslope of the sediment fence using coir logs, straw bales or similar to capture the bulk of sediment prior to it reaching the sediment fence.
- Sediment fences must be checked regularly, maintained if damaged and sediment build-up removed regularly.



Stockpiles

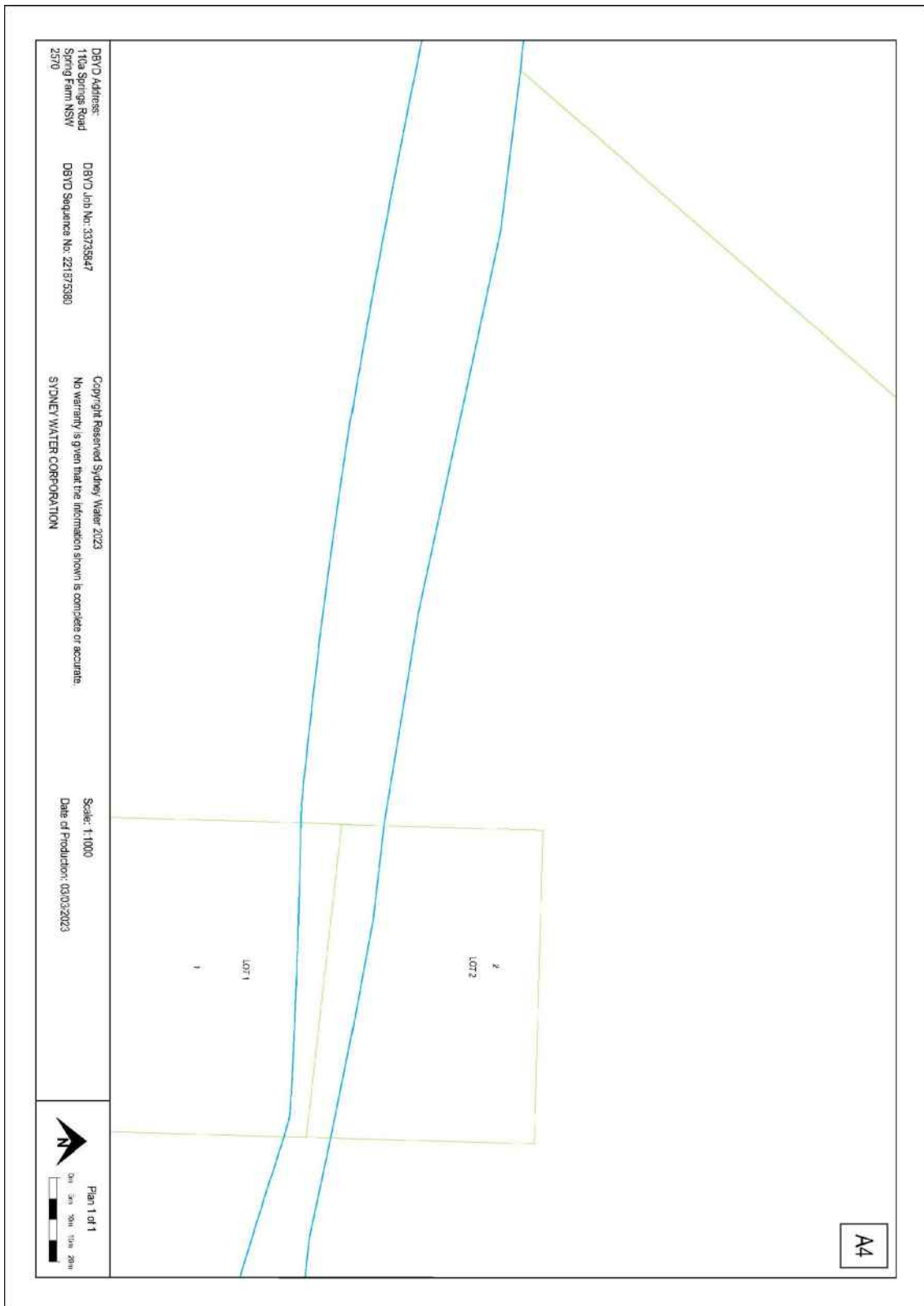
Stockpiles should be situated away from existing vegetation, concentrated water flow lines, roads and sensitive areas. Stockpiles should be low with battered sides and positioned across the contour where possible.

Notes:

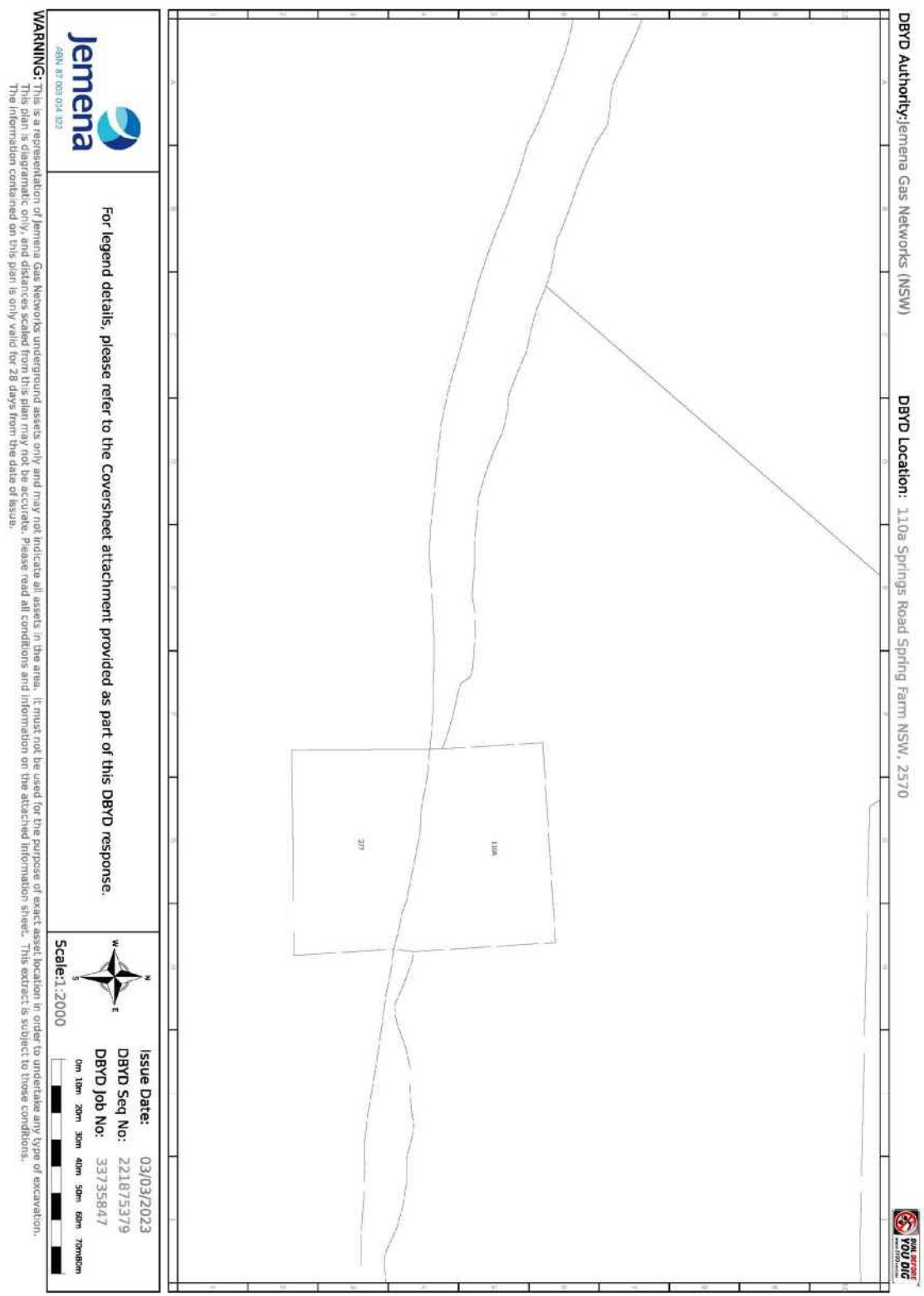
1. All Staff MUST be inducted into the environmental requirements of the work,
2. Erosion & sediment controls must available & be installed before excavation works/stockpiling commences,
3. Stockpiles must have sediment fence installed (min) & must be covered with geofabric if in place for more than 10 days and be kept clear of drainage, kerb or road surfaces to prevent sediment leaving the work site. Stockpiles will not be established on slopes greater than 2:1.
4. If necessary (such as in periods of strong winds), dust suppression techniques must be implemented, such as water spraying of surfaces, covering stockpiles and/or application of polymer/tackifier over exposed soils.
5. Off-site ('clean') runoff should be intercepted up-slope & diverted around all disturbed areas & areas likely to be disturbed. Runoff diversion works must be adequately stabilised,
6. Stormwater inlets & drains must have controls installed where there is a risk of sediment entering stormwater infrastructure,
7. Disturbed surfaces would be compacted prior to the end of the work day or before rainfall to minimise potential for erosion and sedimentation during construction.
8. Runoff detention &/or sediment interception measures must be applied to disturbed areas where a risk is identified (i.e. rainfall/wind),
9. The capacity & effectiveness of runoff & erosion control measures must be maintained regularly,
10. Ongoing visual monitoring of drainage lines and watercourses (e.g. for turbidity) will take place throughout the activity to ensure construction activities are not resulting in sediment laden water.
11. Measures must be applied to prevent site vehicles tracking sediment & other pollutants onto any sealed roads,
12. Paved surfaces & public roads must be kept clean by removing any site materials immediately preferably by broom & shovel. Vehicles & equipment must remain on existing roads & defined site access tracks. Designated entry & exits with shaker/rumble grid or similar if required,
13. Site rehabilitation must be undertaken to restore disturbed areas to a stable state and temporary ESC to be left in place until areas are considered stable.
14. Changes to the ESCP must be marked up by the Site Supervisor & a Revised ESCP dated & remain current on site.

	NEPEAN RIVER BASS HABITAT – SPRING FARM	Sheet 3 of 3
	EROSION AND SEDIMENT CONTROL PLAN	Revision 1.1
	Erosion and Sediment Control Methods – Stockpile Site	Not to scale

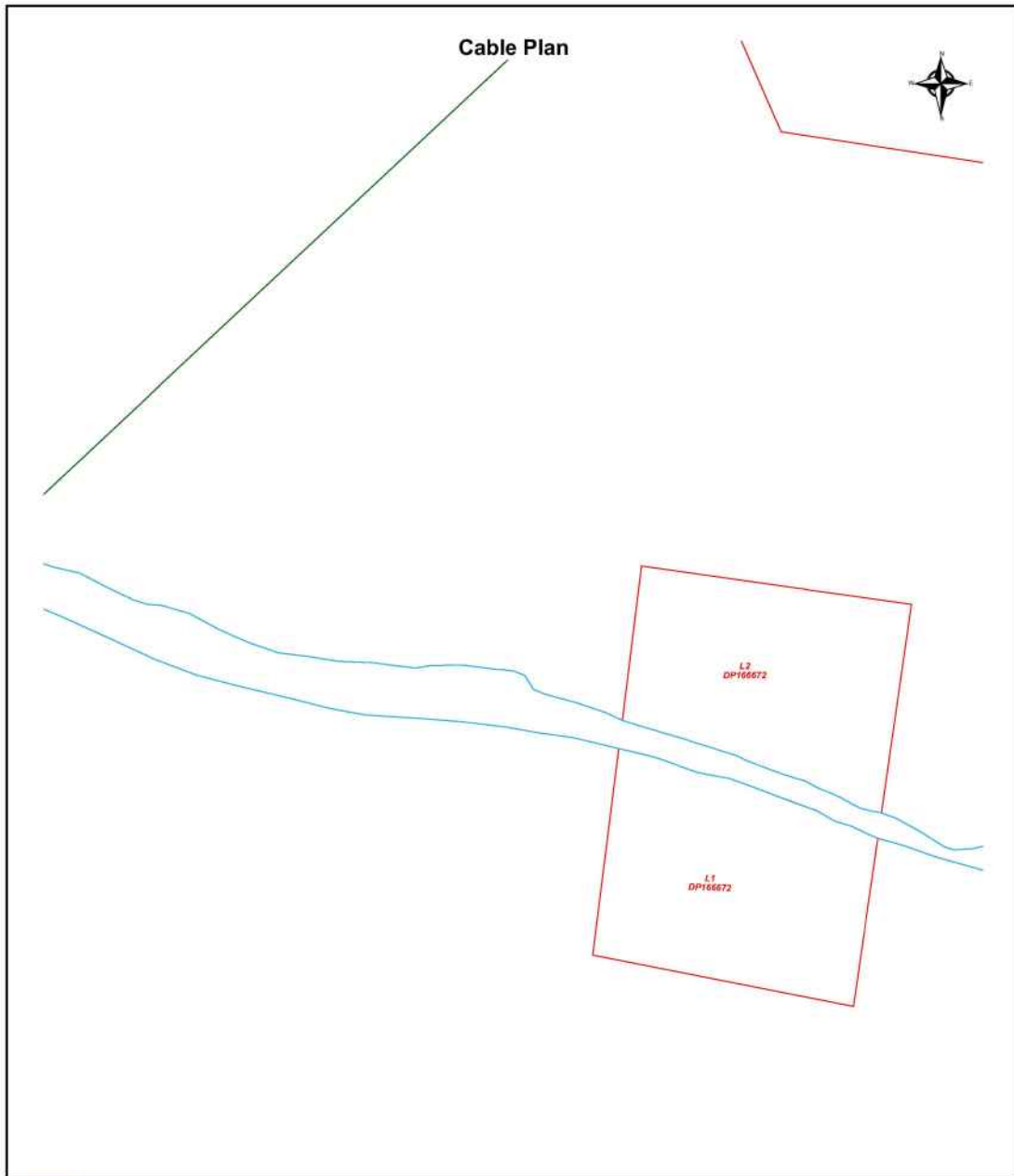
Attachment 2 – Sydney Water services in Before You Dig Australia report



Attachment 4 – Jemena Gas West services in Before You Dig Australia report



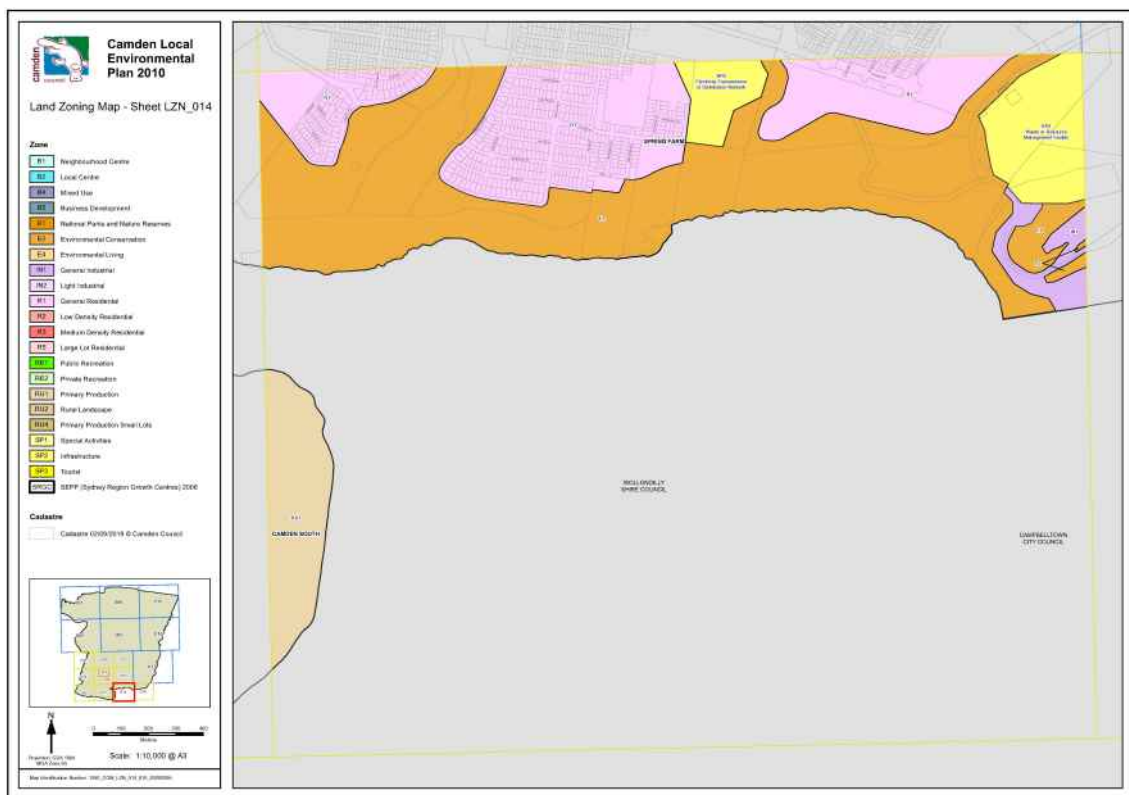
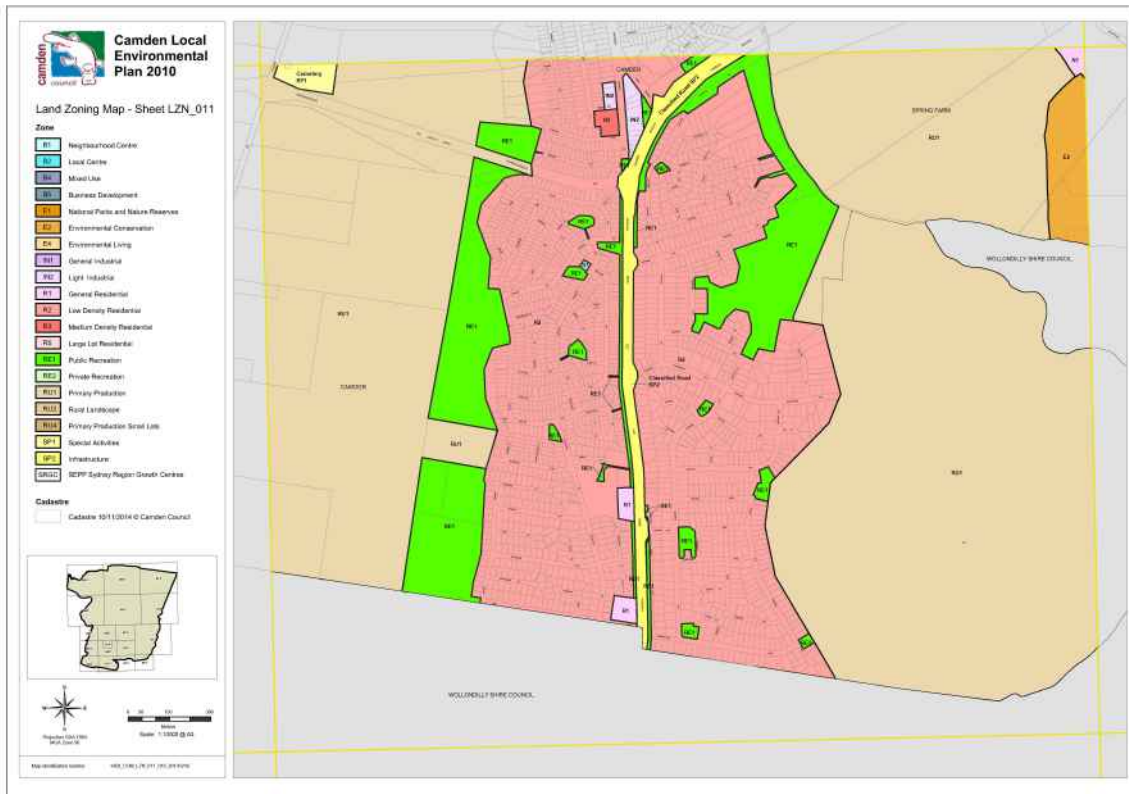
Attachment 5 – Telstra NSW Central services in Before You Dig Australia report



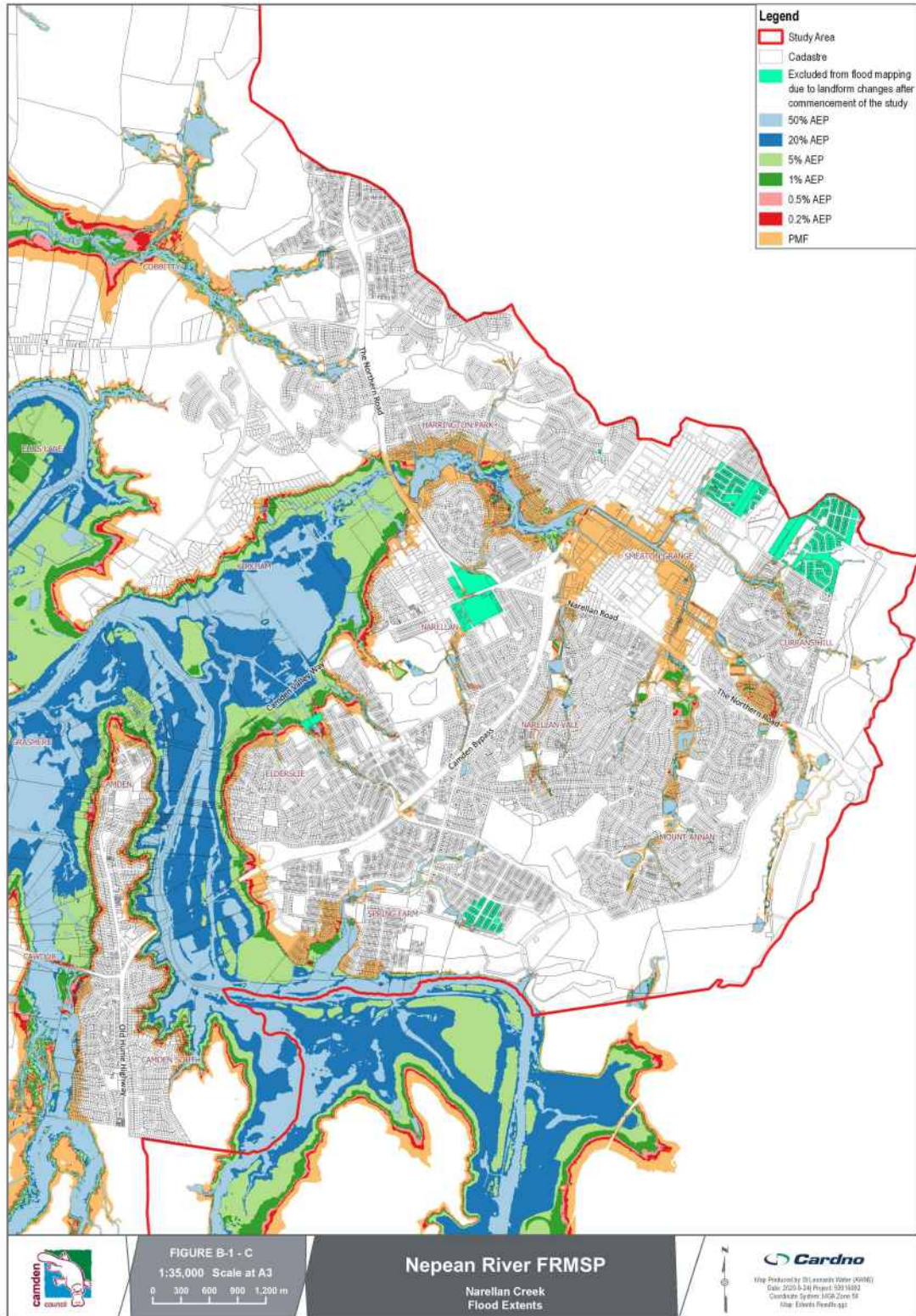
	Report Damage: https://www.telstra.com.au/customer/general/submit-report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries	Sequence Number: 221875382
	TELSTRA LIMITED A.C.N. 086 174 781	Please read Duty of Care prior to any excavating
Generated On 03/03/2023 10:01:06		

WARNING
 Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
 As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D.
 Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
 Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
 Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
 A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.
 See the Steps- Telstra Duty of Care that was provided in the email response.

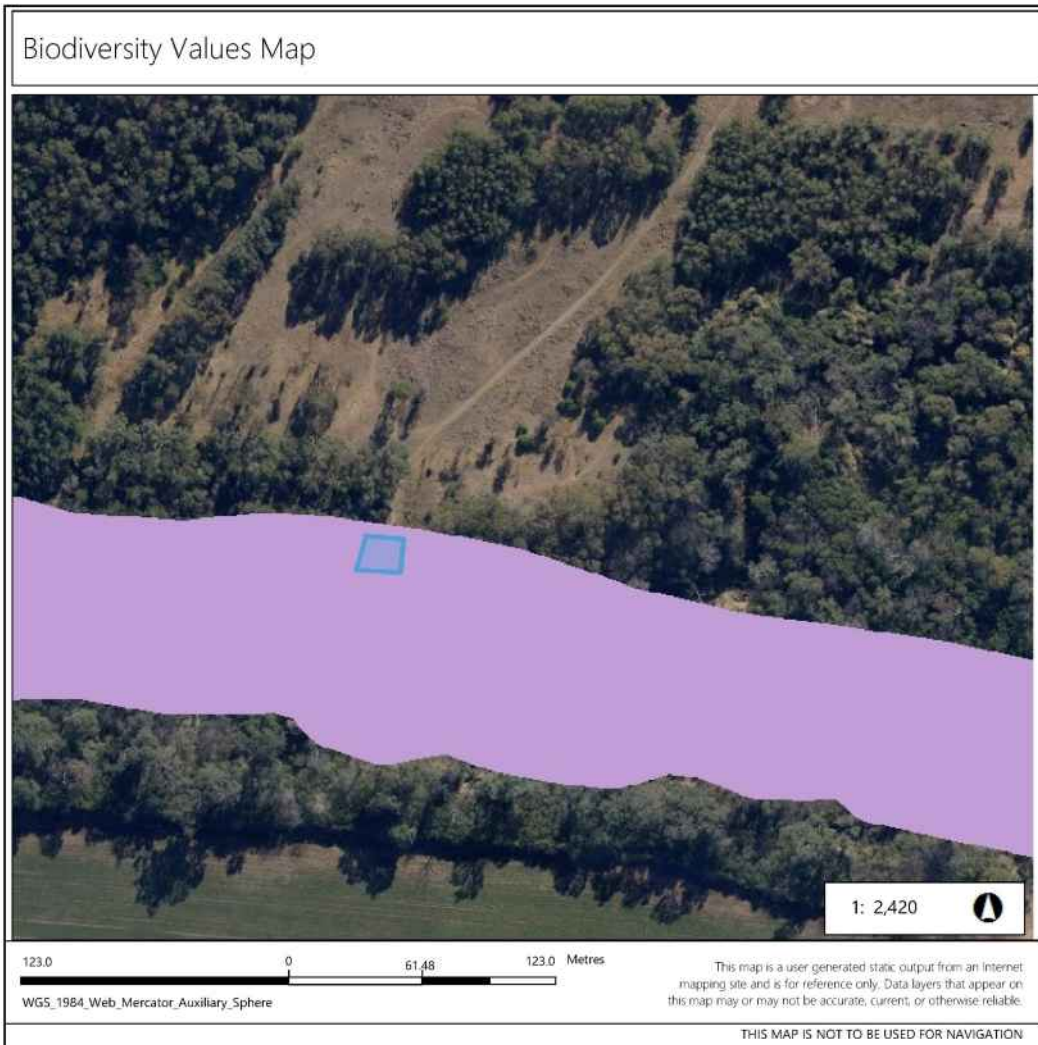
Attachment 6 – Camden Local Environmental Plan land zone mapping for the project site





Attachment 7 – AEP and Probable Maximum Flood Mapping for the Spring Farm area, from the Nepean River Flood Risk Management Study and Plan



Attachment 8 – Biodiversity Values Map Report for project site



Legend

-  Biodiversity Values that have been mapped for more than 90 days
-  Biodiversity Values added within last 90 days

Notes

© NSW Department of Planning and Environment



Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	27/03/2023 10:40 AM	BDAR Required*
Total Digitised Area	204.5 sqm	
Minimum Lot Size Method	Lot size	
Minimum Lot Size 10,000sqm = 1ha	207,884 sqm	
Area Clearing Threshold 10,000sqm = 1ha	5,000 sqm	
Area clearing trigger Area of native vegetation cleared	no	no
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	yes	yes
Date of the 90 day Expiry	N/A	

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor> to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "likely to significantly affect threatened species" as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BMAT user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Department of Planning and Environment and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies with all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature _____ Date: 27/03/2023 10:40 AM

Attachment 9 – Aboriginal Heritage Information Management System (AHIMS) report

Aditi Verma

Date: 28 February 2023

70 Central Ave

Oran Park New South Wales 2570

Attention: Aditi Verma

Email: aditi.verma@camden.nsw.gov.au

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -34.0819, 150.7056 - Lat, Long To : -34.073, 150.7211, conducted by Aditi Verma on 28 February 2023.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location.*


If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette](https://www.legislation.nsw.gov.au/gazette) (<https://www.legislation.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search


- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Attachment 10 – Nepean River Fishing and Kayaking at Camden Facebook Post: Screenshot of Facebook post showing Camden’s fishing community expressing concerns about the blocked WaterNSW fish ladders.

 **Nepean river fishing/kayaking At Camden**

6 October · 🌐

Upper Nepean river bass have a major migration prob with Brown low loop weir fish ladder still blocked with sand. This is a ongoing prob since the fish ladders were built. Sydney water a fully aware of the prob.



👍🙄😡 16

40 comments

Attachment 11 – Threatened Species and Test of Significance in Biodiversity Conservation Act 2016

Assessment of Impact of Development on Threatened Species

1. Proposed Activity

The concept plan proposes to reshape the existing bank to achieve a stable and safe gradient along the 30 m section of the Nepean riverbank, install LWD for fish habitat, and rehabilitate the eroding gully. The fish habitat structures will be secured into the bank using forestry pins and extend approximately 2-3 m into the river, or to where the bank toe allows for construction. The initial concept design is detailed in Figure 1.



Figure 1: Initial concept design for the Nepean River Bass Habitat at Spring Farm project, as supplied by NSW Soil Conservation Service.

Bank stabilisation at the site will be achieved through reshaping the bank profile to grades that deter slumping and future bank failure, and revegetation with endemic species. The LWD placed at the bank toe will provide fish habitat and mitigate continuing scour erosion by dissipating flow energy and redirecting flow away from the bank. Forestry pins will be driven into the channel bed around the logs to further secure the fish habitat structures. The structures will be further secured by interlocking each log and positioning the logs in a way that they are keyed into the bed/bank further if shifted by high flows. The gully perpendicular to the bank will be rehabilitated using jute matting and sandstone rock to treat the existing knickpoint and provide protection against overland flow.



Figure 2: Community planting area marked in green, with constructed area of the project marked in pink.

2. Threatened Flora – Potential to Occur

Scientific Name	BC Act	EPBC Act	Potential to Occur	Potential Impact
<i>Eucalyptus benthamii</i>	Critically Endangered	Vulnerable	Does not occur at the site. Occurs downstream and upstream	No direct impact. No indirect impact as proposed activity
<i>Pomaderris brunnea</i>	Endangered	Vulnerable	Does not occur at the site. Occurs upstream	No direct impact.

3. Threatened Fauna - Potential to Occur

Common Name	BC Act / FM Act	EPBC Act	Potential Likelihood and Impact
Grey-headed Flying Fox (<i>Pteropus poliocephalus</i>)	Vulnerable	Vulnerable	No impact as not a roosting site.
East Coast Freetail Bat (<i>Micronomus norfolkensis</i>)	Vulnerable		No impact as development site not suitable habitat for roosting (hollows, bark or man-made structures).
Eastern Falsistrelle (<i>Falsistrellus tasmaniensis</i>)	Vulnerable		No impact as development site not suitable habitat for roosting (hollows, bark)
Little Bentwing Bat (<i>Miniopterus australis</i>)	Vulnerable		No impact as development site not suitable habitat for

Common Name	BC Act / FM Act	EPBC Act	Potential Likelihood and Impact
			roosting (hollows, caves, or man-made structures such as culverts, tunnels, etc)
Little Eagle	Vulnerable		No impact as trees to be removed not suitable for roosting and foraging.
Varied Sittella	Vulnerable		No impact as not suitable impact
Yellow- bellied Sheath-tail-bat (<i>Saccolaimus flaviventris</i>)	Vulnerable		No impact as development site not suitable habitat for roosting (hollows, or man-made structures.
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	Vulnerable	Vulnerable	No impact as development site not suitable habitat for roosting (caves).
Greater Broad-nosed Bat (<i>Scoteanax ruepellii</i>)	Vulnerable		No impact as development site not suitable habitat for roosting (hollows, buildings.)
Large Bent-winged Bat (<i>Miniopterus oriane oceanensis</i>)	Vulnerable		No impact as development site not suitable habitat for roosting (Caves, or man-made structures)
Southern Myotis (<i>Myotis Macropus</i>)	Vulnerable		No impact as development site not suitable habitat for roosting (hollows, caves, or man-made structures such as bridges). Potential foraging habitat of Nepean River not part of development site and development not negatively impacting on water quality
Powerful Owl (<i>Ninox strenua</i>)	Vulnerable		Very low potential as trees to be removed not suitable habitat for roosting and foraging
White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>)	Vulnerable		No impact as trees to be removed not suitable for roosting and foraging.
Red Knot (<i>Calidris canutus</i>)		Endangered	No impact as site not suitable habitat

4. Endangered Ecological Community

River-flat Eucalypt Forest on Coastal Floodplains (RFEF) – The site forms part of RFEF that occurs along the riparian corridor of the Nepean River.

5. Endangered populations

- No flora
- No fauna

6. River-flat Eucalypt Forest on Coastal Floodplains (RFEF) – Assessment of Significance of the Impact of the Proposed Activity

RFEF occurs along the Nepean River Corridor in varying condition. The impact of the bank stabilisation and the removal of 7 small remnant trees is considered.

Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats as per S7.3 of the Biodiversity Act NSW 2016

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats—

- (a) *in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,*

Not applicable as RFEF is an Endangered Ecological Community

- (b) *in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—*
- (i) *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- (ii) *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,*

The bank stabilisation occurs in an area that is eroded, and 7 small remnant trees will be removed. Given the nature and size of these works, the composition of the ecological community and the local occurrence of RFEF is not likely to be placed at risk of extinction.

- (c) *in relation to the habitat of a threatened species or ecological community—*
- (i) *the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*

Approximately 225m² of eroded riverbank will be directly impacted. The direct impacts include bank stabilisation.

- (ii) *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and*

The proposed activity will not fragment RFEF along the Nepean River.

- (iii) *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,*

This habitat is not considered to be important in the long-term survival of RFEF as the site is currently eroded and devoid of native vegetation.

- (d) *whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),*

The area is not a declared area of outstanding biodiversity value (AOBV) and no AOBV would be directly or indirectly impacted.

- (e) *whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.*

The proposed activity is not part of a key threatening process or likely to increase the impact of a key threatening process.

Attachment 12 – Arboricultural Assessment for seven trees assessed for removal.

Powered by **SafetyCulture**



Arboricultural Assessment - General

Habitat Action Grant - Spring Farm / 9 Mar 2023 /
Luke Peacock

Complete

Conducted on	09/03/2023
Prepared by	Luke Peacock
Task Type	Internal
Stormwater Project Officer	
Task ID	Habitat Action Grant - Spring Farm
Location	110A Springs Road, Spring Farm NSW 2570, Australia (-34.078219, 150.7125926)

Assessment Profile

Species Profile

Species

Casuarina glauca

7x small trees along top of river bank with 1x dead

Add Photo



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

DBH

150-300mm

Height

5-10m

Average height of trees impacted. 4-14m

Spread

5-10m

Average measurement taken

Other Details

Inspection Limitations

Access

Top of bank under mined and unstable

Comments

Significant bank erosion resulting in several Casuarina trees undermined. An assessment using Biodiversity Values Map and Threshold Tool has identified no area clearing triggered however Biodiversity values map triggered. Merit based assessment of current site attributes aligned with proposed works suggest the impact to be low to the existing tree canopy however would be offset by replacement planting. I provide concurrence for the removal the 7x Casuainra trees identified at time of assessment.

[BMATReport Spring Farm.pdf](#)

Risk Categorisation	
Target description	Other
Describe	
Riverbank and Nepean River	
Existing Risk Rating	
Area of concern	Root plate
Currently root plate however whole tree failure considered in assessment	
Likelihood of Failure & Impact	Possible & Low
Consequence of Failure	Negligible
Overall Residual Risk Rating	
Mitigation Options	Remove & replacement
Residual Risk (after part mitigated)	Low

Appendix



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6

[BMATReport_Spring Farm.pdf](#)

Attachment 13 – Camden White Gums located near project site

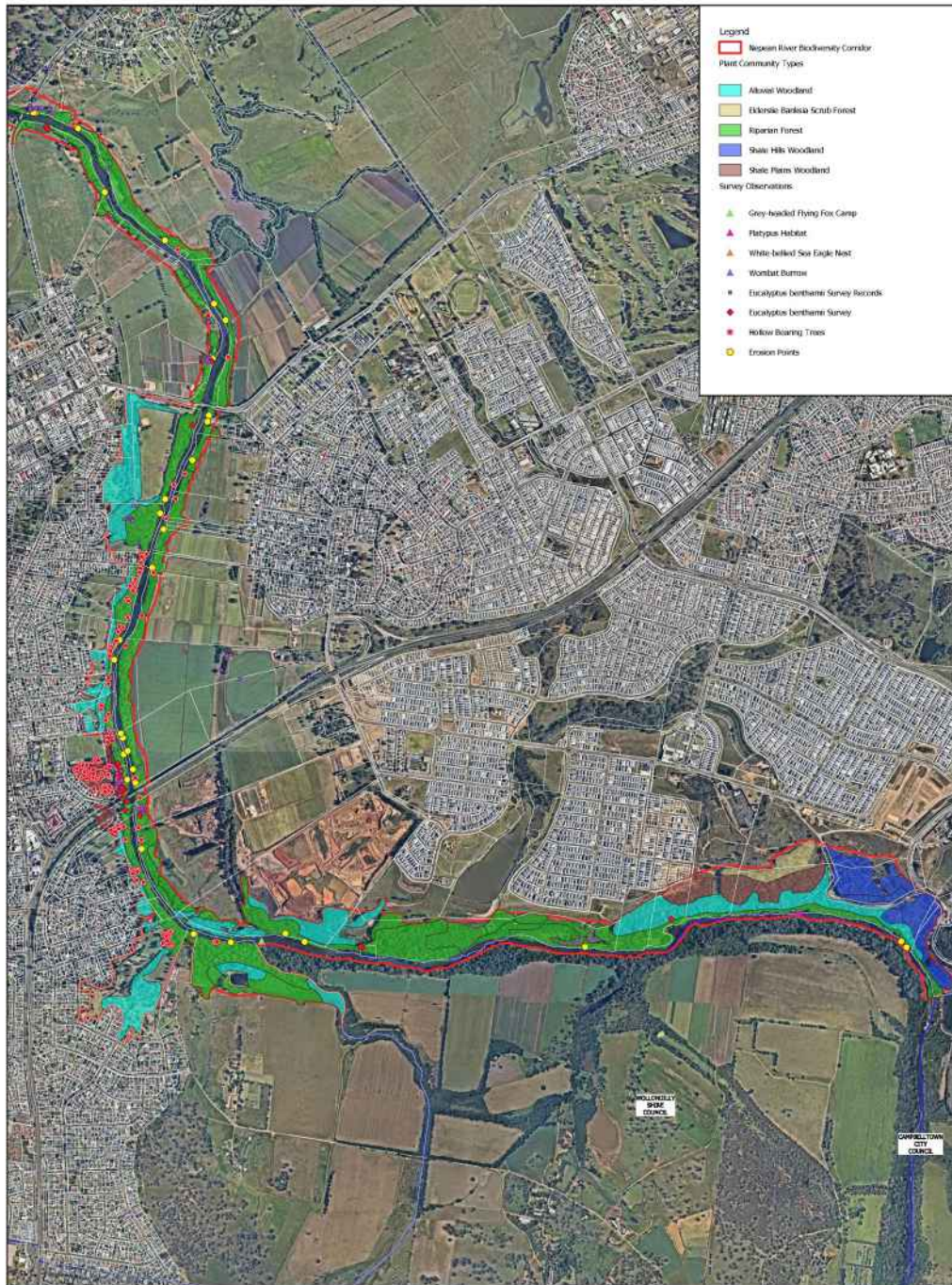
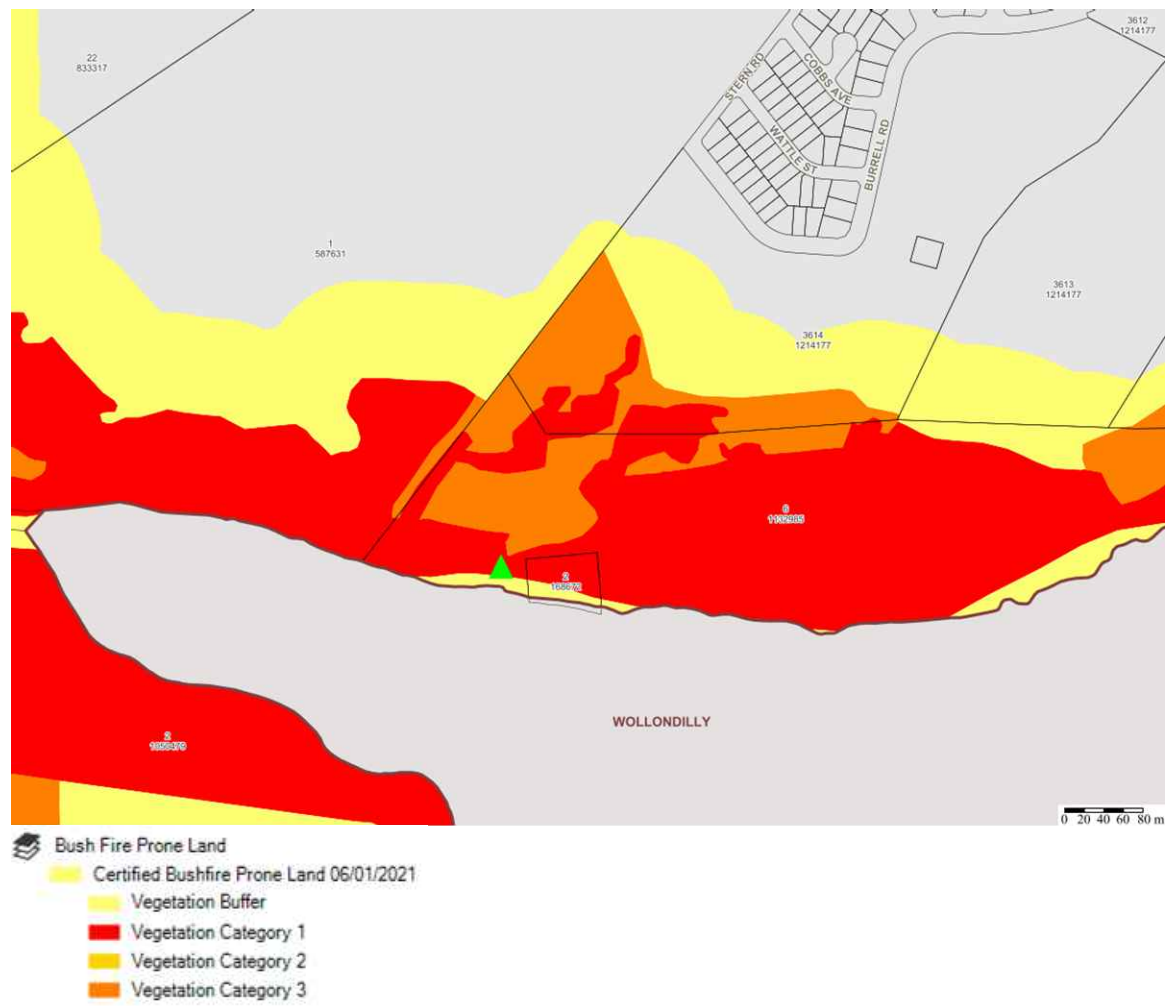
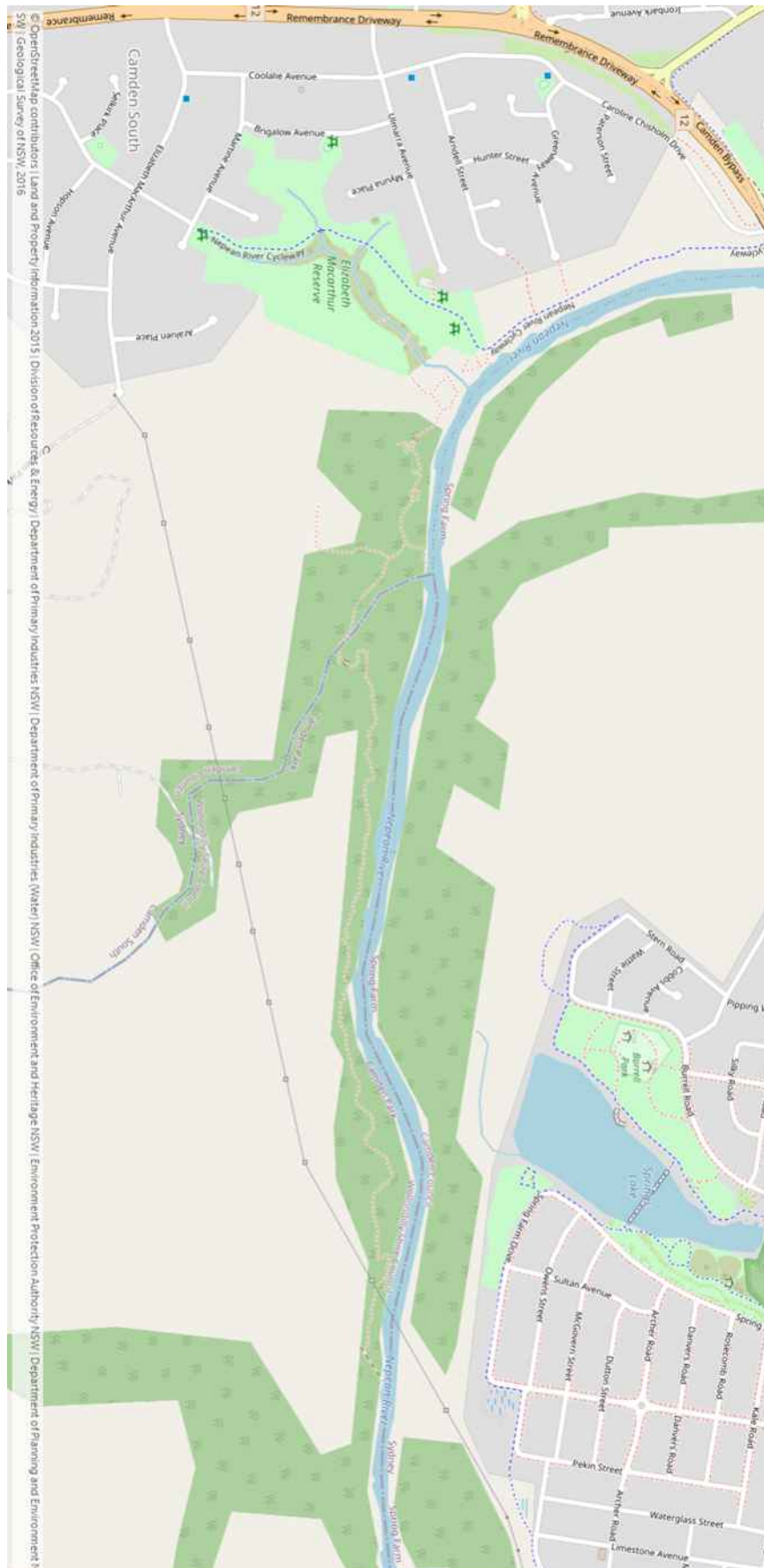


Figure 5: Map showing the distribution of vegetation communities throughout the southern section of the Nepean River biodiversity corridor.

Attachment 14 – Bushfire Prone Land mapping for the project site



Attachment 15 – Acid Sulfate Soils map by NSW SEED Portal



Attachment 16 – Property Report showing no mapped mine subsidence for lot 6 DP 1132985



Property Report

40 WICKER STREET SPRING FARM 2570



Property Details

Address: 40 WICKER STREET SPRING FARM 2570

Lot/Section	1/-/DP1241595	100/-/DP1121639	102/-/DP1121699
/Plan No:	104/-/DP1121699	105/-/DP1121699	105/-/DP1241598
	1155/-/DP112150	191/-/DP1129688	192/-/DP1129688
	6	23/-/DP1120602	24/-/DP1120602
	201/-/DP1150933	26/-/DP1120602	267/-/DP1234179
	25/-/DP1120602	3611/-/DP121417	3612/-/DP121417
	28/-/DP1234183	7	7
	3613/-/DP121417	3614/-/DP121417	3615/-/DP121417
	7	7	7
	503/-/DP1220069	504/-/DP1220069	505/-/DP1220069
	510/-/DP1241596	6/-/DP1132985	91/-/DP1121639
	92/-/DP1121639	93/-/DP1121639	94/-/DP1121639
	X/-/DP442742		

Council: CAMDEN COUNCIL

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Camden Local Environmental Plan 2010 (pub. 18-3-2022) Wollondilly Local Environmental Plan 2011 (pub. 1-10-2021)
Land Zoning	C2 - Environmental Conservation: (pub. 5-11-2021) R1 - General Residential: (pub. 16-11-2012) R1 - General Residential: (pub. 18-1-2013) R1 - General Residential: (pub. 28-2-2014) RU1 - Primary Production: (pub. 3-9-2010) SP2 - Infrastructure: (pub. 3-9-2010)
Height Of Building	9.5 m
Floor Space Ratio	NA
Minimum Lot Size	300 m ² 40 ha

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

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1 / 4



Property Report

40 WICKER STREET SPRING FARM 2570

Heritage	NA
Land Reservation Acquisition	Future Classified Road Widening (SP2) Local Road Future Classified Road (SP2)
Foreshore Building Line	NA
Additional Permitted Uses	Clause 24
Land Reclassification	Operational Land
Local Provisions	30 km Metropolitan Rural Area
Riparian Lands and Watercourses	Sensitive Land
Scenic Protection Land	Local significance
Urban Release Area	Urban Release Area
Greenfield Housing Code Area	Complying Development Code: https://www.planningportal.nsw.gov.au/greenfield-housing-code Building type: 1-2 storey homes, residential alterations and additions Development consent authority: Council or accredited certifier Note: Applications which meet all relevant requirements in the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 may be approved within 20 days. Exclusions may apply. https://legislation.nsw.gov.au/#/view/EPI/2008/572/full

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

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2 / 4

- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Excluded (pub. 21-10-2022)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Hawkesbury Nepean Catchment (pub. 21-10-2022)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Hawkesbury-Nepean Sub-Catchments (pub. 21-10-2022)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Strategic Conservation Planning Area (pub. 9-12-2022)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Subject Land (pub. 2-12-2021)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Greenfield Housing Code Area (pub. 6-5-2018)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing) 2021: Land Application (pub. 26-11-2021)
- State Environmental Planning Policy (Industry and Employment) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Planning Systems) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Primary Production) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resilience and Hazards) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resources and Energy) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

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3 / 4



Property Report

40 WICKER STREET SPRING FARM 2570

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

1.5 m Buffer around Classified Roads	Classified Road Adjacent
Biodiversity Value (BV) Map	Clearing native vegetation for a development on an area on the BV Map may require a Biodiversity Development Assessment Report. Consult your local council.
Bushfire Prone Land	Vegetation Buffer Vegetation Category
Local Aboriginal Land Council	THARAWAL
Regional Plan Boundary	Greater Sydney
Special Infrastructure Contributions	Western Sydney Growth Centres SIC
Sydney Trains Infrastructure Protection Zone	Clause 45/Referral

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

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4 / 4

Attachment 17 – Images of the project site

Image 1: Overland flow erosion gulley looking upstream (1 May 2023)



Image 2: Overland flow erosion gulley looking towards floodplain (1 May 2023)



Image 3: Overland flow erosion gulley looking towards Nepean River (1 May 2023)



Image 4: Floodplain near project site looking downstream (1 December 2022)



Image 5: Erosion gulley site looking upstream (1 December 2022)



Image 6: Bank toe looking upstream (1 December 2022)



Image 7: Bank looking downstream (1 December 2022)



Image 8: Bank looking upstream with Thurns Weir in background (1 December 2022)



Image 9: Floodplain near project site (1 December 2022)



Image 10: Overland flow erosion gulley alongside vehicle access track looking towards Nepean River (1 December 2022)

