Decision Report

North West Treatment Hub

Castle Hill and Rouse Hill Water Recycling Plants Compliance Upgrade

January 2022

Sydney WATER

Table of contents

Tables

1 Introduction

Castle Hill Water Recycling Plant (WRP) and Rouse Hill WRP provide wastewater services to Sydney's North West, and together with Riverstone Wastewater Treatment Plant (WWTP), form Sydney Water's North West Treatment Hub (NWTH). The NWTH services catchments within the North West Growth Centre and priority growth areas spurred by the Metro North-West Line.

Phased upgrades of the treatment plants are required to service Sydney's North West into the future and ensure continued compliance with environmental regulatory frameworks as the region develops. In particular, the NSW Environment Protection Authority's (EPA) Hawkesbury Nepean Nutrient Framework ('HN framework') imposes new nutrient load and concentration limits in our Environment Protection Licences (EPLs) effective from July 2024.

The framework specifically identified the need to upgrade Castle Hill WRP to reduce Total Nitrogen (TN) concentrations in treated wastewater toward compliant limits. Rouse Hill WRP is also subject to a wet weather overflow abatement Pollution Reduction Program (PRP) under its EPL. This condition requires work to be undertaken at Rouse Hill WRP to ensure compliance (by 30 April 2024) with the wet weather overflow limit of 12 overflows per 10 years. The continued provision of recycled water to existing customers from Rouse Hill WRP is reliant on meeting recycled water quality targets, including nitrogen (as ammonia).

We prepared a Review of Environmental Factors (REF) in August 2021 for upgrades to achieve these compliance requirements. The REF identified construction impacts including temporary erosion and sedimentation, biodiversity, noise and access change. It also identified operational impacts associated with noise and visual amenity as well as improved treated wastewater quality. The REF concluded that by adopting the mitigation measures listed, we are unlikely to have a significant impact on the environment.

We exhibited the REF from 16 August 2021 to 5 September 2021 where state government, local government, community members and other interested stakeholders were invited to comment on the project. We received four submissions, raising 17 comments about certain aspects addressed in the REF. This Decision Report responds to the submissions received.

1.1 The purpose of the decision report

This Decision Report:

- considers the issues raised in the submissions
- identifies and assesses any changes to the proposal that have resulted from Sydney Water's consideration of the submissions
- identifies whether any new mitigation measures, or changes to existing mitigation measures, are required
- recommends whether Sydney Water should proceed with the proposal.

1.2 Planning approval framework

The *Environmental Planning and Assessment Act 1979* (EP&A Act) provides the statutory context for the environmental assessment of the proposal. The proposal has been assessed under Part 5.1 of the EP&A Act, with Sydney Water as the determining authority. The State Environmental Planning Policy (Infrastructure) 2007 allows us to undertake the project without development consent.

The REF assessed the potential environmental impacts of the Castle Hill and Rouse Hill WRP Compliance Upgrade. We considered the potential impacts against matters listed in the clause 228 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). We concluded that the project is unlikely to have a significant impact on the environment.

This report outlines our consideration of the comments raised in submissions received during the public exhibition of the REF and whether our conclusion has changed as a result.

1.3 Summary of proposal from REF

The project, as described in the REF, involves upgrading Castle Hill WRP and Rouse Hill WRP to:

- bring the plants into compliance with the existing EPL conditions
- address wet weather overflow non-compliances
- meet impending nutrient targets that must be achieved by 2024.

In summary, the REF described the scope of works as:

Castle Hill WRP upgrade

- inlet works
- primary sedimentation tank (PST) cover replacement for odour control
- pumps and pipe installations in the existing bioreactor
- upgrades to anoxic tank, sodium hydroxide dosing system, sucrose dosing system, alum, dosing facility, chemical storage for sodium hypochlorite, citric and sulfuric acid and ultra-filtration (UF) for expansion of tertiary phosphorus removal
- ultraviolet (UV) disinfection system replacement
- reclaimed effluent system upgrade
- odour control facility (OCF) with ~5.5 m stack
- upgrades to switch rooms, transformers and transformer kiosks, switching stations located at the main access gate, first flush detention tank, bypass storm tank, storage building
- new internal access road along the western boundary

- retaining walls installation, including temporary retaining piled walls during construction
- WRP extension and new fence to enable installation of a HV switchroom, chemical storage, switching stations and future pump stations
- realignment of public access walking track
- additional discharge main to Cattai Creek and headwall
- various pipeline installations
- demolition of existing and redundant facilities.

Rouse Hill WRP upgrade

- inlet works
- wet weather PST conversion
- reclaimed effluent system upgrade
- OCF with 15 m vent stack and connections to the new inlet works and wet weather PST
- works to LV switch room, switch board and transformer kiosks
- upgrades to HV switch room, switch board and network reticulation via existing conduits
- upgrades to DN760 gravity pipeline, first flush tank, internal access road
- demolition of redundant education building and microfiltration building
- installation of new mechanical primaries
- decommissioning of mechanical equipment within existing inlet works.

In addition, the following is proposed to be delivered concurrent with the Castle Hill WRP upgrade:

- new sludge pump station and balance tank
- sludge screening – provision for ferrous dosing to the sludge balance tank to reduce the creation of corrosive and odorous gases in the sludge transfer system
- sludge flush tank for RE storage.

Due to the concurrent delivery timeframes, combined impacts to operational noise and odour as well as vegetation and visual amenity were considered in the compliance upgrade REF.

1.4 Project objectives

The principal objectives of this proposal are to protect public health and the environment. In implementing these objectives, Sydney Water will achieve the following outcomes:

- resolve current EPL non-compliances

- enable Castle Hill and Rouse Hill WRPs to meet 2024 EPL requirements
- improve reliability, availability and operability of the treatment processes
- minimise impacts to the surrounding environment and community.

1.5 Further environmental assessment

The REF was developed based on a reference design of the project. Since the REF was placed on public display, some changes to the proposal required further environmental assessment which is provided below in Table 1. Locations of the changes are shown in Figures 1 and 2. Supporting ecological studies are provided in Appendix B.

Table 1. Further environmental assessment of project changes

Supplementary assessment		
Scope of changes, justification and location	1. At Rouse Hill WRP, an additional compound area is required – review of the delivery plan identified a shortfall in compound areas available. This will be located within the Rouse Hill WRP. 2. At Rouse Hill WRP, installation of a 15m pipeline section and connection chamber is required – originally this was planned for delivery for the growth package, however, a revised peak wet weather flow rate of 2,305 L/s to 2026 identified a hydraulic restriction requiring this pipeline and connection chamber to be brought forward for delivery during the compliance upgrades. 3. At Castle Hill WRP, ferric chloride dosing will replace alum dosing which was originally proposed to decrease phosphorous during wet weather. This will reduce the risk of exceeding EPL limits for aluminium. A new alum dosing facility will no longer be required. Two existing tanks used for ferrous chloride storage will be replaced (due to poor condition) for ferric chloride storage.	
Environmental Impacts		
Aspect	**Any impacts different from approved REF? (Y/N). If Y, describe change to impacts**	**If Y, are any new mitigation measures required (Y/N)?**
Land use	N	NA
Topography, geology and soils	N – however, more than originally anticipated soil movements will be required associated with the additional compound site at Rouse Hill WRP. The potential for asbestos in soils was identified in the approved REF.	Y - existing safeguards under Sections 6.1 and 6.5 remain relevant. However, due to the known occurrence of asbestos in soils at the additional compound location, an Asbestos Management Plan (AMP) must be developed by an appropriately qualified Environmental

	However, at the location of the additional compound site, the soil is known to be contaminated with asbestos (Progressive Risk Management, 2017 and Sydney Water, 2021).	Consultant. The AMP should detail the appropriate safeguards to manage the potential risks associated with asbestos.
Water and drainage	N	NA
Flora and fauna	Y – installation of the pipeline will require the removal of additional vegetation. This will be 0.02 ha PCT 835 which forms a component of TEC River Flat Eucalypt Forest on Coastal Floodplains (Critically endangered under the EPBC Act and endangered under the BC Act). A consistency assessment (Biosis, 2022a) concludes that this additional removal is unlikely to result in any further significant impacts to flora and fauna. The additional compound area will be located in previously disturbed areas at Rouse Hill WRP. These areas are outlined in Biosis (2022b).	Existing safeguards under Section 6.3 remain relevant including offsetting in accordance with Sydney Water Biodiversity Offset Guideline (SWEMS0019.13) at a 1:1 ratio for this minor impact to threatened fauna habitat (Biosis, 2022a).
Air quality	N	NA
Noise and vibration	N	NA
Waste management	N	N – existing safeguards under Section 6.5 remain relevant.
Heritage – Aboriginal and non-Aboriginal	N	NA
Traffic and access	N – the additional compound site will introduce new access points, however these remain largely within the WRP. An entry point to the compound site may be	N – existing safeguard to provide a traffic and pedestrian management plan under Section 6.8 remains relevant and should consider access

	located along the main construction access road at Rouse Hill WRP, before the WRP gate.	arrangements for the additional compound area.
Social and visual	N	NA

The additional assessment of the proposed project changes will be approved as part of this Decision Report. The proposed changes can be managed with the above safeguards and existing safeguards in the approved REF. An Addendum is not required. Additional or amended permits are not required.

Further project refinements are expected during the detailed design phase. If later design changes involve environmental impacts not assessed in the REF or this Decision Report, an REF Addendum will be prepared.

Figure 1. Indicative location of project changes at Rouse Hill WRP (for details, refer to Appendix B). *Source Map – Nearmap*

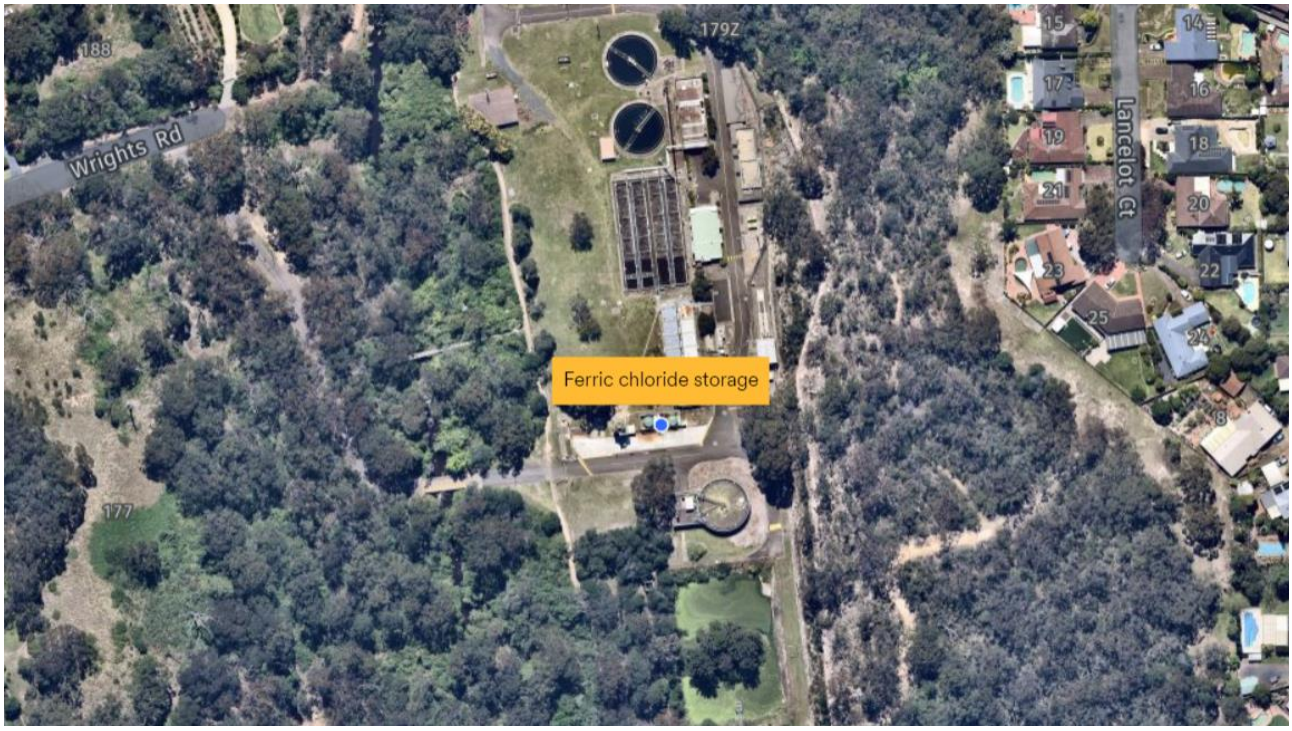


Figure 2. Location of existing ferrous chloride tanks and proposed ferric chloride tanks at Castle Hill WRP. *Source Map – Nearmap*

2 Consultation

Sydney Water engaged with the community, key stakeholders and property owners during the development of the proposal, preparation of the REF, REF display and preparation of this report.

Sydney Water is committed to ensuring that all information regarding the Castle Hill and Rouse Hill Water Recycling Plants Compliance Upgrade project is clear, accurate and timely.

Consultation with key stakeholders will continue throughout the upcoming project phases – detailed design, construction and operation – with community members being consulted where the project directly impacts them.

The project team will implement all relevant community relations policies and procedures. Consultation performance will be continually monitored throughout project delivery.

The following sections describe the consultation undertaken to date and proposed future consultation during upcoming phases of the project.

2.1 REF public display

The REF was on public display from 16 August 2021 to 5 September 2021.

We invited the community and stakeholders to provide written submissions on the REF by:

- delivering a community newsletter to about 600 households surrounding the Castle Hill and Rouse Hill WRP and proposed access routes. This informed the community of our proposed work and invited written submissions to NorthWestTreatmentHub@sydneywater.com.au
- publishing the REF on Sydney Water's website (www.sydneywatertalk.com.au)
- sending letters to relevant government agencies and councils advising of the REF display dates and the submission process. This included:
    - The Hills Shire Council
    - Member for Castle Hill, Mr Hon Ray Williams MP
    - Environment Protection Authority
    - Deerubbin Local Aboriginal Land Council
    - Cattai Hills Environment Network
    - Castle Hill BMX Club
    - Walking Volunteers Incorporated
    - Natural Resources Access Regulator
    - Department of Primary Industries (DPI) Fisheries.

Two community information sessions during the REF display period were offered online. However as only one registration was received for the information sessions, a discussion with the registered party was held instead.

2.2 Submissions

Four submissions were received during the REF public display period.

Key matters raised included potential impacts of the works on water quality, traffic and access, noise and vibration, social and visual, waste management as well as overall wet weather flows and environmental performance. Section 3 address the issues raised in the four submissions. Appendix A includes copies of the submissions received.

2.3 Further consultation

We are committed to engaging with the community and stakeholders. Our Contractors and Sydney Water staff will continue to consult throughout project design, construction and operation. This will ensure that the community remain informed and that we understand their issues and concerns.

We will revise and deliver the Community and Stakeholder Engagement Plan (CSEP) and action plans for the detailed design and delivery phases of the project, in line with our communications strategy and community and stakeholder engagement policy.

The Contractor, in consultation with Sydney Water, will keep the community informed throughout construction as well as manage issues and complaints. After commissioning, our standard policies and procedures for customer and community relations will apply.

3 Consideration of submissions

Four submissions were received during the display period. Submissions were received from DPI Fisheries, NSW EPA, The Hills Shire Council and The Walking Volunteers (a community group). Copies of submissions received are included in Appendix A.

Of the four submissions, 17 separate comments or questions have been identified, grouped based on aspect and addressed below.

The 17 separate comments are presented in boxes and our response is provided below each box. The text from each submission has been reproduced exactly as it was provided to Sydney Water. If a submission raised several comments, only the relevant parts of the submission have been presented for each issue.

3.1 Consultation

Submission 1 (DPI Fisheries): The installation of the additional discharge main, associated headwall and any scour protection will require notification to DPI Fisheries under s199 of the Fisheries Management Act 1994.

Submission 2 (DPI Fisheries): DPI Fisheries would like to review plans for the discharge main headwall and any associated works below the top of bank of Cattai Creek.

Once the detailed design of the discharge main, headwall and scour protection is prepared (anticipated by mid 2022), we will provide DPI Fisheries with a copy of the plans for their review, as well as submit formal notification under s199 of the *Fisheries Management Act 1994.*

3.2 Topography, Geology and Soils

Submission 3 (DPI Fisheries): The design and location of the discharge main headwall would need to consider potential bank instability and long-term erosion impacts in the Cattai Creek.

Submission 4 (The Hills Shire Council): Works in or immediately adjacent a waterway need to include work to prevent scour and instability to the watercourse. This will need particular consideration at the Castle Hill plant to the new discharge main.

The design of a new additional discharge main will be refined during the detailed design phase. Sydney Water has specified that the detailed design is to be guided by DPI's *"Guidelines for outlet structures on waterfront land".* This will guide the design to consider potential bank instability in Cattai Creek and prevent long-term erosion impacts or instability in Cattai Creek. Current discharges occur over bedrock and there have been no indications of long-term erosion impacts as

a direct result of discharge activities. In addition, the scope of works for this project does not involve an increase in volume of discharge from the Castle Hill WRP.

> *Submission 5 (The Hills Shire Council): Sydney Water assets exposed in local waterways due to scour, washout and erosion, should be rectified so they are no longer exposed or cause continued scour and instability within the waterway or continued risk to the Sydney Water asset itself.*

Assets exposed in local waterways or drainage lines due to scour, washout and erosion may include pipes and maintenance holes. We are aware this is an existing concern for The Hills Council, for certain wastewater pipelines in these catchments.

This REF does not address the existing concerns, however these risks are noted, and may be addressed during works adjacent to existing carriers as part of the 'NWTH growth package'.

> *Submission 6 (NSW EPA): The EPA strongly supports implementation of new treatment initiatives and works to achieve future compliance requirements and environmental outcomes.*
>
> *The EPA considers that the current scope of works may be challenging to achieve in the required timeframe and that excellent planning across the scope of works including identification of any barriers to works proceeding will assist in timely delivery.*
>
> *In general, the REF provides fairly basic information and limited details regarding the specifications and schematics of the works being proposed.*

We acknowledge the continued support from the EPA in our work to meet the challenges of servicing the community and at the same time, improving environmental outcomes.

We are aware there are challenges in meeting the required timeframe. To help alleviate this, following the Infrastructure NSW Assurance review of the NWTH program Strategic Business Case and subsequent recommendations, Sydney Water separated the 2024 compliance works at Castle Hill and Rouse Hill WRPs for accelerated delivery.

Sydney Water continues to commit the required resources to meet regulatory requirements, cost effectively whilst minimising overall environmental and community impacts.

The REF was prepared based on a reference design, which will be refined by the Contractor during detailed design. The potential environmental impacts of the proposed works, based on the construction footprint, and proposed technology components were considered in the REF. Figures 2 and 3 of the REF provide the geographical layout and footprint of the works against the environmental constraints.

Detailed specifications are not required to complete a comprehensive environmental impact assessment. Sydney Water can provide EPA further detail on specifications and schematics during

the latter stages of detailed design, including the amended process flow diagrams, which will support any required Licence Variation Applications (LVAs).

> *Submission 7 (The Hills Shire Council): Whilst work is being planned and carried out in the area, consideration should be given by Sydney Water to relocate its water main that is currently attached to the old Glenhaven Road bridge. This water main being attached to the bridge is preventing the full demolition of the bridge to make the area safe.*

The scope of the proposal assessed in this REF is limited to the Castle Hill and Rouse Hill WRP sites. This work is not near Glenhaven Road Bridge and does not propose any changes to the existing carrier.

We have passed this feedback on to Sydney Water's Systems and Asset Planning team for their consideration, in planning for future works in the catchment.

3.3 Water Quality

> *Submission 8 (NSW EPA): The REF acknowledges that the Castle Hill and Rouse Hill plants are operating at treatment capacity. The works proposed are described as nutrient reduction works, with future upgrades to address servicing requirements for growth as being assessed in a future REF. The REF also states that the current design has considered the need for future upgrades.*
>
> *The EPA is concerned that undertaking these works separately and not comprehensively planning these works concurrently may result in sub-optimal environmental outcomes, particularly in relation to management of wet weather flows, general delays, and potential bottlenecks in the treatment process.*
>
> *Delays in implementing capacity upgrades postpones addressing the cause of non-compliances occurring at these premises and draws out the completion of these works. There is a significant relationship between wet weather flows and management of discharge concentrations and loads. Bypasses should not be the default for wet weather flow increases prior to, during, and following the proposed works.*
>
> *The EPA has observed that plant capacity to accommodate large wet weather flows adequately, relative to average dry weather flows, is a reoccurring issue at Sydney Water's STPs and contributes significantly to environmental non-compliances. It is unclear whether the planned upgrades will undertake a site-specific assessment approach to wet weather flows and whether sufficient provisions have been made for factors such as growth and climate change, which increases the variability of wet weather flows and extremes in weather.*

Sydney Water's Major Projects Business Area is delivering the North West Treatment Hub (NWTH) program. The program addresses both environmental compliance and growth servicing

needs across Castle Hill, Rouse Hill and Riverstone wastewater treatment plants over our long term servicing horizon. The Castle Hill and Rouse Hill WRP compliance upgrades identified in the REF are being accelerated from the wider program to ensure we meet identified compliance requirements in 2024 and enable future stages of the program. Planning and design for both compliance and growth packages of work are happening concurrently and not in isolation. We have not delayed our growth package, rather, by separating into two packages for detailed design and delivery we are ensuring we don't delay delivery of the compliance works.

Management of concentrations and loads including during wet weather was considered during design development. Secondary treatment processes at both Castle Hill and Rouse Hill WRPs were designed to treat three times the average dry weather flow. Remaining additional wet weather flows will be dosed for phosphorus reduction and bypassed around the WRPs before disinfection.

TN and TP dry weather concentration targets for the upgrade designs have considered the additional TN and TP loads discharged in wet weather. Disinfection and dosing for phosphorous reduction will be provided.

Sydney Water's design considers climate change and expected wet weather flows over the planning horizon to 2056. Ongoing network planning will continue to inform the NWTH program as Sydney Water responds to growth realisation.

Submission 9 (NSW EPA): Although the purpose of the project stated in the REF is to meet future compliance requirements in relation to the Hawkesbury-Nepean Nutrient Framework and associated compliance needs, no information, specifics or modelling have been provided to demonstrate that the works are fit for purpose and will achieve their intended outcome of reducing nutrients at the level specified.

It is unclear whether the proposal has considered or explored any opportunities to reduce environmental risks or waterway impacts (whether positive or negative) posed by pollutants discharged other than nutrients. It is the EPA's expectation that these opportunities are considered and benefits implemented where reasonable and feasible, particularly where there are opportunities for integrated water management and improvement towards water quality objectives.

The EPA recommends that Sydney Water ensures that comprehensive due diligence is undertaken to ensure that current and projected environmental requirements will be met and any areas of uncertainty are minimised. This will significantly reduce any environmental regulatory risks as part of this project.

The EPA will require additional information to make a decision under section 45 of the Protection of the Environment Operations Act 1997 (POEO Act) in relation to the proposal and any related licence variation applications. These considerations are detailed at:

https://legislation.nsw.gov.au/view/html/inforce/current/act-1997-156#sec.45

For example, the proposal does not detail:

the impact of the proposal on water and its environmental values

consideration of the practical measures to prevent, control, abate or mitigate water pollution, and

consideration of the practical measures that could be taken to restore or maintain these environmental values.

The upgrades have been designed with the purpose for achieving future compliance requirements under the Hawkesbury Nepean framework. The design targets total nitrogen and total phosphorous load limits which are 10% higher than the load caps for Sydney Water treatment plants discharging into Sackville Subzone 3. Section 2.2.2 of the REF identified past load and concentration performance of TN and TP against target limits.

The design for secondary treatment at Castle Hill incorporates new treatment processes for improved TN removal and additional aerobic zone upstream of the new anoxic zone to remove additional ammonia during peak periods.

Biowin modelling (process modelling for nutrient concentration and loads) at Castle Hill and Rouse Hill WRPs demonstrated that the plant would be able to meet all treatment requirements for the nominated wastewater inflows and loads. The WRPs would also remain in compliance in the event of a break in a future dedicate sludge transfer pipeline from Castle Hill to Rouse Hill, being designed as part of the growth package.

The REF focussed on nutrient reduction as the key measures for mitigating water pollution, as these compliance works will not result in a change of discharge flow volumes to the waterways. The upgrades will enable ongoing supply of recycled water at Castle Hill WRP and expansion of the recycled water scheme at Rouse Hill. The REF has considered the potential for negative impacts imposed on waterways in Section 6.2 and this is largely in relation to construction activities. Section 6.2 of the REF lists out the safeguards in order to prevent, control, abate or mitigate the potential for water pollution.

We have not undertaken detailed waterway modelling for this compliance upgrade, as the proposal is designed to reduce current nutrient levels being discharged under the existing flow regime. This will reduce environmental risks and waterway impacts. Post construction monitoring will verify reduced nutrient levels.

Castle Hill and Rouse Hill WRP have been compliant for pollutants other than nutrients with the exception of copper levels at Castle Hill WRP in 2019/20. Preliminary results indicate that finer filtration with ultrafiltration is unlikely to remove any additional copper than current tertiary filtration. However, Sydney Water is investigating the optimisation of chemistry to increase copper removal.

There remain significant issues at tertiary treatment plants in removal of soluble metals. As water consumption declines (with water conservation), there is increasing risk that metal concentrations increase. The only solution to removal of soluble metals at low concentrations is potentially reverse osmosis which has a heavy environmental impact in terms of energy consumption, and

only a minor improvement in levels of contaminants given the already low levels. Copper chemistry is complex and investigations for optimising precipitation will run in parallel to the compliance works. Should a solution to the copper challenges at Castle Hill not be found, a licence variation application will be submitted on the basis that the small exceedances above the very tight levels do not warrant investment in a reverse osmosis system.

With diligent construction planning and deployment it is unlikely that a variation to the EPL for Castle Hill WRP is required. This will be confirmed during detailed design.

Waterway modelling and assessment is currently being undertaken for the growth package of works, where additional discharge volumes from Rouse Hill WRP and Riverstone WWTP are proposed. This will be included in our REF for the growth package. Increased flows from growth in the catchment are not considered in the compliance REF. Additional approvals will be sought when the treatment plants are upgraded for the growth scenarios.

Parallel to the NWTH upgrades, we are also investigating inflow and infiltration into the NWTH wastewater network. These investigations will seek to reduce the pressure on our treatment plants, especially during wet weather.

3.4 Noise and vibration

Submission 10 (NSW EPA): The EPA notes that the Noise and Vibration Assessment makes recommendations in relation to considering site-specific noise mitigation measures throughout the document, including under section 6.2.3. However, it is noted that the sound power levels used assume that these measures have been implemented.

It is therefore the EPA's expectation that the Castle Hill noise mitigation treatments detailed in Table 25 of the Noise and Vibration Assessment are implemented.

In addition to the above, the EPA recommends that Sydney Water's signage on the walking track and/or fire trail surrounding Castle Hill informs users of when they can use this track whilst unaffected by noise from construction works (e.g. Saturday afternoons and Sundays). Track users may not be local and therefore will not necessarily be informed in advance of the works being conducted and these respite periods.

The EPA recommends that Sydney Water considers whether it is reasonable and feasible to implement its QR code reporting system currently used at some STPs to enable real-time community feedback on the project and timely identification of any unexpected impacts or issues.

Noise mitigation treatments will be implemented as per the REF. It is noted that these are based on the adoption of the reference design. Where the design changes, noise impacts and mitigation treatments will be adapted as required to achieve Noise Policy for Industry requirements set by the EPA. Sydney Water will engage with the community throughout the construction period and respond to community concerns as per Section 6.7 of the REF.

We have engaged community groups about maintaining access to walking tracks on Sydney Water property surrounding WRPs. The Walking Group Volunteers Incorporated provided feedback to the REF and this is discussed in section 3.5.

The recommendation to incorporate times unaffected by noise and a QR reporting system for feedback and further information about the project on walking track signage will be considered.

Contact details will also be provided on signage at the WRPs for any unexpected impacts or issue reporting by the community.

3.5 Traffic and access

Submission 11 (The Walking Volunteers): The plan in the Community Newsletter of August 2021 and the REF (see below) shows the use of the maintenance trail from Withers Road to the south-western corner of the WTP as an access road for construction vehicles. The REF also states in Section 6.8 that "Pedestrian access is not permitted via the secondary access road; however, pedestrians were observed using this access road as it is directly adjacent to Russell Reserve."

On 12 May 2021, the Walking Volunteers met with Persephone Rougelis, Sydney Water Sustainable Cities & Communities Strategy Manager, where she gave a verbal approval to show the walking tracks and trails on Sydney Water land along Second Ponds Creek on our online maps including this maintenance trail.

This walking route is a critical component of The Hills Circle, a 63 km walking route, which we have proof-walked and mapped around the southern section of The Hills LGA and Hornsby LGA. When we walked the maintenance track in September 2020, there was no sign indicating that pedestrian access was not permitted and the maintenance trail is also shown as a walking route on Google Maps.

We realise the importance of the improvements to the Rouse Hill WTP and that vehicle access must be given priority but we would still like to show a walking route along Second Ponds Creek for the 54,000 people who access our online map that covers this area.

So we request Sydney Water erect a temporary 380 m fence along the eastern side of the maintenance trail from Withers Road to where the construction trucks will enter the WRP so that walkers can walk between this temporary fence and Second Ponds Creek for this section without interfering with construction traffic.

We recognise the community value of having access to this walking trail and that this access road to Rouse Hill WRP is visible as a walking route on Google Maps. Sydney Water is aware that members of the public use this road. We are committed to safety first in relation to the users of this access road. During construction, there will be variable light and heavy vehicle movements along this road which will be the main construction access road into and out of the Rouse Hill Water Recycling Plant. Without compromising safety of the community and our personnel, we will continue to engage with The Walking Volunteers during construction planning and use our best

endeavours to find a safe solution such as shared or alternative pedestrian access routes, to maintain connectivity of trail for the community. This will form part of the Traffic and Pedestrian Management Plan.

> *Submission 12 (The Hills Shire): During construction, Sydney Water and its contractors are to ensure continued access is available at all times along the full extent of fire trails. Post construction, fire trails need to be 'made good' to the satisfaction of Council and the fire service.*

A Traffic and Pedestrian Management Plan will be prepared and implemented during construction to ensure safe access is available along the fire trails. The fire trails are located on Sydney Water property and are maintained to meet fire service requirements. We will restore fire trails to the relevant fire service standard and following construction in consultation with Council.

3.6 Social and visual

> *Submission 13 (The Hills Shire): Any impact or damage to existing tracks, trails or pathways, as a result of constructing the planned works, must be rectified to the satisfaction of Council.*
>
> *Submission 14 (The Hills Shire): Any impact or damage to Council owned land or assets, as a result of constructing the planned works, must be rectified to the satisfaction of Council.*

Section 6.3 of the REF requires the preparation of a site restoration plan with regard to vegetation impacts and Section 6.8 of the REF requires that the relevant traffic authority will be consulted where pavement restoration is required. We will maintain ongoing consultation with the Hills Shire Council to ensure tracks, trails and Council owned land are appropriately managed.

3.7 Waste management

> *Submission 15 (NSW EPA): The REF does not provide details of the centralised biosolids treatment facility at Riverstone STP. It is unclear why this was not detailed in the REF proposal, or whether this will be covered under a separate proposal, given that centralised processing of biosolids is key to the option chosen.*
>
> *The EPA notes that biosolids handling has environmental risks, particularly in relation to offensive odours, which are potentially increased when co-treating imported food waste.*
>
> *As noted previously, the EPA has not undertaken any consideration of this facility or its regulatory requirements as part of its consideration of the REF.*

Upgrades at Riverstone, including centralised biosolids treatment are proposed as part of the NWTH growth package of works. A separate REF is currently being prepared to assess the potential impacts of these works. The EPA will have opportunity to provide comment on this REF when on public display in 2022.

3.8 Environmental performance and compliance

Submission 16 (NSW EPA): The REF involves substantial upgrades that interact with the majority of the treatment processes at the Castle Hill STP and a large part of the treatment processes at Rouse Hill STP. The proposal also includes an additional discharge main at Cattai Creek. The REF states that:

A licence variation to each EPL and revised process flow diagram to reflect the process improvements will be required for future operations. This will be prepared by the project team and submitted to the EPA prior to commissioning.

On the basis of the information provided, the EPA considers that other licence variation(s) may be required. Depending on the information provided, these could include:

A requirement to develop and conduct a post-construction water quality monitoring and testing program, that:

- *validates treatment performance against design parameters and/or projected results*
- *uses the full variability of operational conditions, including average or typical scenarios, through to worst case scenarios*
- *is linked to ongoing implementation of mitigation measures (such as regular routine maintenance)*

A requirement to develop and conduct a post-construction air quality monitoring and testing (validation) program in relation to the Odour Control Facility at Castle Hill and Rouse Hill.

A requirement to provide a full site schematic upon completion of works, showing stormwater and drainage infrastructure, including catchment areas, sizing details, surface water controls and treatment equipment, either separately or as part of the site-specific Pollution Incident Response Management Plans.

We will validate our potential impacts on water and air by conducting post construction monitoring. Water quality monitoring continues to be conducted as part of our Sewage Treatment System Impact Monitoring and under EPL requirements. We will also conduct post construction air monitoring at Castle Hill and Rouse Hill for twelve months after all works are completed to validate the design.

We will provide works as executed drawings for stormwater and drainage including sizing details, process flow diagrams to show the full site schematics and treatment trains as part of our Pollution Incident Response Management Plans (PIRMPs) for both WRPs.

We will continue to update the EPA during commissioning to advise when new processes are being activated and old processes taken off line. A detailed process flow diagram of all new flow processes will be provided at the end of commissioning.

> *Submission 17 (NSW EPA): Key environmental controls during construction works will include:*
>
> *Hours of operation in relation to the works*
>
> *The operation of dust, sediment, and erosion controls*
>
> *Implementation of noise mitigation measures as necessary.*
>
> *These can be addressed in part through preparation and implementation of a Construction Environmental Management Plan.*

Section 6.7 of the REF specifies environmental controls for the hours of construction in line with the EPA's Interim Construction Noise Guidelines. Section 6.4 of the REF specifies safeguards to manage dust during construction. Section 6.1 of the REF specifies sediment and erosion controls in accordance with Landcom's Managing Urban Stormwater, Soils and Construction. Section 6.7 of the REF specifies noise mitigation measures to be implemented as necessary.

The Construction Environmental Management Plan (CEMP) will detail environmental controls including as a minimum the above key controls noted by the EPA. The controls will be implemented during construction.

4 Environmental management

This section provides details on the additional mitigation measures for the proposal, in response to submissions received and changes to the proposal since the display of the REF. All other mitigation measures in the original REF will be incorporated into the CEMP and implemented during construction.

Table 2. Summary of additional mitigation measures

Aspect	Additional mitigation measures
Consultation	Detailed design of the discharge main at Castle Hill will consider DPI's *"Guidelines for outlet structures on waterfront land".* Plans will be provided to DPI Fisheries for review during detailed design (refer to Table 7 of the REF).
Topography, Geology and Soils	An Asbestos Management Plan (AMP) must be developed by an appropriately qualified Environmental Consultant. The AMP should detail the appropriate safeguards to manage the potential risks associated with asbestos at Rouse Hill WRP.
Water quality and drainage	The detailed design of the additional discharge main will adopt water sensitive urban design (WSUD) principles to minimise and mitigate potential bank instability and long-term erosion impacts in Cattai Creek. A post-construction water quality monitoring (validation) program will be developed to validate treatment performance in variable conditions and will include mitigation actions where treatment targets are not met.
Noise	Implement a notification or other system to inform the community in advance of any specific times that the walkway will be unaffected by noise. Pedestrian signage on the walking track will include a mechanism (such as a QR code) to enable community feedback and easy access to project information.
Air quality	A post-construction air quality monitoring (validation) program will be developed in relation to the odour control facilities at Castle Hill and Rouse Hill WRPs.
Traffic and Access	Maintain shared or establish alternative pedestrian access routes past the construction works, so far as is reasonably practicable and safe for all parties.

5 Conclusion

Sydney Water has assessed the potential environmental impacts of the proposal in accordance with the requirements of Part 5.1 of the EP&A Act.

The public consultation process undertaken for the proposal is outlined in Section 2 of this report. In response to the public display of the Castle Hill and Rouse Hill Water Recycling Plants Compliance Upgrade REF, four written submissions were received raising 17 comments.

We have considered and responded to the comments raised in the submissions. In considering the submissions, additional mitigation measures have been proposed in Section 5. These mitigation measures and all proposed mitigation measures listed in the REF will be incorporated into the CEMP for implementation during construction.

We will continue to work closely with the community and stakeholders as the project progresses into the next phases.

There have been changes in scope of work since display of the REF as outlined in Section 1.5 of this report. This has resulted in additional ecological impacts and disturbance of soils known to be contaminated with asbestos, which have been assessed in this Decision Report.

The project is not likely to result in a significant impact to the environment. It is recommended to proceed with the proposal as detailed within the REF and this Decision Report.

6 Recommendation

For the purposes of Division 5.1 of the EP&A Act, it is recommended that the Castle Hill and Rouse Hill Water Recycling Plants Compliance Upgrade project proceed, as described in the REF and as subsequently revised in this Decision Report. The project will be implemented in accordance with the mitigation measures listed in the REF and this Decision Report.

Prepared by:

Veronica Ku
Senior Environmental Scientist
Asset Lifecycle

Reviewed by:

Matthew Dignam
Senior Project Manager
Asset Lifecycle

Endorsed by:

Murray Johnson
Environment & Heritage Manager
Asset Lifecycle

Approved by:

Paul Plowman
General Manager
Asset Lifecycle

Appendix A – Submissions received

All great, but unfortunately due to competing priorities I haven't been able to move on it as much as I would have liked by now. Regardless, the intent and conversations are there and I will continue to progress as time and priorities allow.

Sensitive and/or information not relevant to this project has been removed.

Ok. Here's my thoughts for whatever it may be worth.

Works that I would like to have done by Sydney Water:

- Works in or immediately adjacent a waterway need to include work to prevent scour and instability to the watercourse. This will need particular consideration at the Castle Hill plant to the new discharge main.

- Sydney Water assets exposed in local waterways due to scour, washout and erosion, should be rectified so they are no longer exposed or cause continued scour and instability within the waterway or continued risk to the Sydney Water asset itself.

- During construction, Sydney Water and its contractors are to ensure continued access is available at all times along the full extent of fire trails. Post construction, fire trails need to be 'made good' to the satisfaction of Council and the fire service.

- Whilst work is being planned and carried out in the area consideration should be given by Sydney Water to relocate it's water main that is currently attached to the old Glenhaven Road bridge. This water main being attached to the bridge is preventing the full demolition of the bridge to make the area safe.

- Any impact or damage to existing tracks, trails or pathways, as a result of constructing the planned works, must be rectified to the satisfaction of Council.

- Any impact or damage to Council owned land or assets, as a result of constructing the planned works, must be rectified to the satisfaction of Council.

Not sure if that is the type of thing you were thinking [redacted] but it would be good if we could have them included by Sydney Water.

[redacted]

From: [redacted]
Sent: Monday, 16 August 2021 2:06 PM
To: [redacted]
Cc: [redacted]
Subject: FW: North West Treatment Hub - REF to improve treated water discharge.

I don't particularly think there's an impact on our lands, but you're welcome to advise differently.

Angelo, I'm still pretty keen to get water quality monitoring up and running in Cattai Creek, but I'd need your advice on a suitable location(s). I figure definitely at the confluence of Cattai Creek and Caddies Creek, but anywhere else?

From: North West Treatment Hub [mailto:NorthWestTreatmentHub@sydneywater.com.au]
Sent: Monday, 16 August 2021 7:55 AM
To: [redacted]
Subject: North West Treatment Hub - REF to improve treated water discharge.

Dear [redacted]

As discussed during our meeting in July, Sydney Water is progressing plans for the North West Treatment Hub. Our next stage of works will upgrade Castle Hill and Rouse Water Recycling Plants to improve the quality of treated water discharged into local creeks and waterways. We have prepared an REF for these works.

Please find attached a letter outlining this next stage and the REF display period. I have also attached a powerpoint presentation to aid internal communication, in particular when informing elected officials.

The final day for submissions to the REF is **Sunday, 5 September 2021.**

We are currently preparing the REF for the next stage of work (pipelines and capacity upgrades). We expect to issue this REF **late 2021**. I am also progressing Council's request regarding a bike path along the pipeline alignment.

Kind regards,

[redacted]
Engagement Lead – Major Projects
Community and Customer Engagement
Sydney Water, Level 14, 1 Smith Street, Parramatta NSW 2150

Mobile: [redacted]

[redacted]

From: [redacted]
Sent: Monday, 30 August 2021 12:21 AM
To: North West Treatment Hub
Cc: [redacted]

Subject: [External] Northwest Treatment Hub - Rouse Hill WRP

Dear Sir/Madam
We wish to make a submission on the planned improvements to the Rouse Hill Water Recycling Plant as part of the Northwest Treatment Hub REF.

The plan in the Community Newsletter of August 2021 and the REF (see below) shows the use of the maintenance trail from Withers Road to the south-western corner of the WTP as an access road for construction vehicles. The REF also states in section 6.8 that "*Pedestrian access is not permitted via the secondary access road, however, pedestrians were observed using this access road as it is directly adjacent to Russell Reserve.*"

On 12 May 2021 we met with [redacted] Sydney Water Sustainable Cities & Communities Strategy Manager where she gave us verbal approval to show the walking tracks and trails on Sydney Water land along Second Ponds Creek on our online maps including this maintenance trail. This walking route is a critical component of The Hills Circle, a 63 kilometre walking route which we have proof-walked and mapped around the southern section of The Hills LGA and Hornsby LGA. When we walked the maintenance track in September 2020 there was no sign indicating that pedestrian access was not permitted and the maintenance trail is also shown as a walking route on Google Maps.

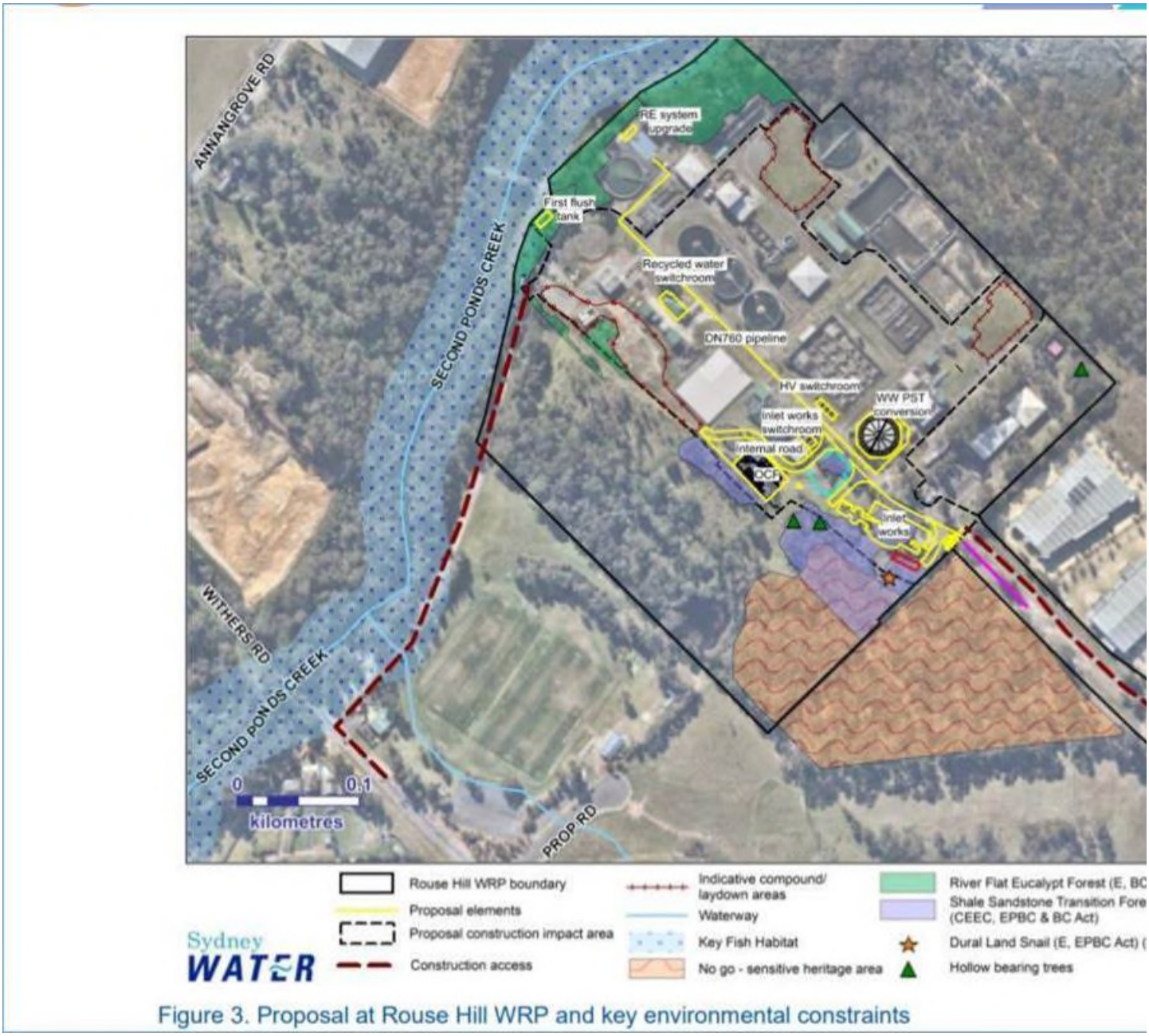
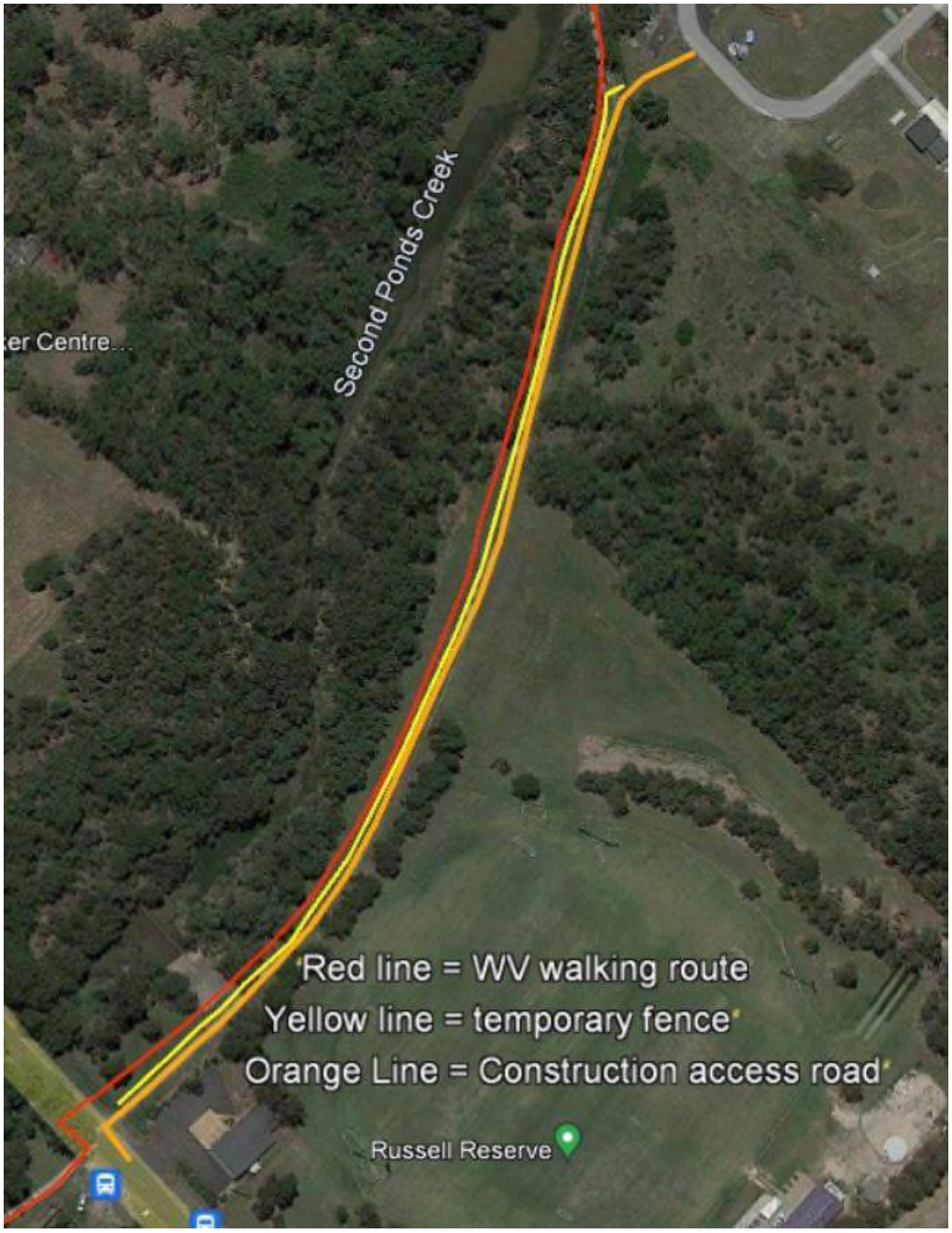


Figure 3. Proposal at Rouse Hill WRP and key environmental constraints

We realise the importance of the improvements to the Rouse Hill WTP and that vehicle access must be given priority but we would still like to show a walking route along Second Ponds Creek for the 54,000 people who access our online map that covers this area. So we request Sydney Water erect a temporary 380 metre fence (yellow line) along the eastern side of the maintenance trail from Withers Road to where the construction trucks will enter the WRP (see below) so that walkers can walk between this temporary fence and Second Ponds Creek for this section without interfering with construction traffic.



Regards
[redacted]
Secretary
The Walking Volunteers Inc.
[redacted]

Regards
[redacted]

[redacted]

From: [redacted]
Sent: Thursday, 9 September 2021 6:05 PM
To: North West Treatment Hub
Subject: [External] North West Treatment Hub - REF

Sydney Water,

Thank you for the opportunity to review the REF for the North West Treatment Hub. DPI Fisheries has no objections to this proposal. With regards to the Castle Hill WRP:

1. The installation of the additional discharge main, associated headwall and any scour protection will require notification to DPI Fisheries under s199 of the *Fisheries Management Act 1994*.
2. DPI Fisheries would like to review plans for the discharge main headwall and any associated works below the top of bank of Cattai Creek.
3. The design and location of the discharge main headwall would need to consider potential bank instability and long term erosion impacts in the Cattai Creek.

Kind regards,
[redacted]

[redacted] – Coastal Systems Unit
NSW Department of Primary Industries | Fisheries
12 Shirley Rd, Wollstonecraft NSW
ALL MAIL TO: DPI Fisheries, Attn: [redacted] NSW 2477
T: [redacted] | M: [redacted]

PERMIT APPLICATION FORMS & FISH HABITAT POLICIES AVAILABLE AT:
https://www.dpi.nsw.gov.au/fishing/habitat/protecting-habitats/toolkit

Submit permit applications via email to: ahp.central@dpi.nsw.gov.au

Turnaround times: from date of receipt of application, please allow up to 28 days for Land Owners Consent, Permits and Consultations. Please allow up to 40 days for Integrated Development Applications.

DPI Fisheries acknowledges that it stands on Country which always was and always will be Aboriginal land. We acknowledge the Traditional Custodians of the land and waters, and we show our respect for Elders past, present and emerging. We are committed to providing places in which Aboriginal people are included socially, culturally and economically through thoughtful and collaborative approaches to our work.

DOC21/743630-6

Sydney Water Corporation
North West Treatment Hub
Email: NorthWestTreatmentHub@sydneywater.com.au

Attention: [redacted]

Dear [redacted]

I refer to your email dated 16 August 2021 to the Environment Protection Authority (EPA) inviting the EPA's comments on the proposed Review of Environmental Factors (REF) for the North West Treatment Hub including the Castle Hill, Rouse Hill and Riverstone Sewage Treatment Plants (STP) regulated under Environment Protection Licences No. 1725, 4965 and 1796 respectively.

The EPA understands that the proposal is aimed at, amongst other things, ensuring compliance with the Hawkesbury Nepean Nutrient Framework and subsequent nutrient and load concentration limits, effective from July 2024.

These works include upgrading or installing new infrastructure at the Castle Hill plant including but not limited to the inlet works, dosing systems, chemical storage, pipelines, odour controls, high voltage plant and equipment, first flush tank, storm tank, new buildings and access roads. At the Rouse Hill plant, these works include but are not limited to inlet works, odour controls, first flush tank and high voltage and wet weather primary sedimentation tank conversion.

The EPA has reviewed the REF and considers that the key environmental protection issues associated with the proposal are plant capacity and management of wet weather flows, and implementation of environmental controls during construction works. The EPA's comments on these matters are attached to this letter (**Attachment A**).

If you wish to meet to discuss any of the matters raised in this letter, please contact [redacted] on [redacted] or [redacted]

Yours sincerely

[redacted] 10 September 2021

[redacted]
Unit Head Regulatory Operations Metro

Attachment A – EPA comments on the North West Hub Review of Environmental Factors

Attachment A

EPA comments on the North West Hub Review of Environmental Factors

The EPA has reviewed the information provided by Sydney Water in the *Review of Environmental Factors North West Treatment Hub Castle Hill and Rouse Hill Water Recycling Plants Compliance Upgrade* (August 2021) and the following documents:

- Sydney Water's letter on the REF dated 12 August 2021
- Traffic and transport technical report - Castle Hill Water Recycling Plant / Rouse Hill Water Recycling Plant Compliance upgrades (Aurecon Arup, August 2021)
- Noise and Vibration Assessment – North West Treatment Hub – Compliance Upgrade (AECOM, August 2021)
- Rouse Hill – Air Quality Impact Assessment (Jacobs, August 2021), and
- Castle Hill – Air Quality Impact Assessment (Jacobs, August 2021).

The EPA has not reviewed the *Flora and Fauna Assessment for North West Treatment Hub Project - Compliance Upgrade* (Biosis, August 2021). The EPA has not considered the centralised biosolids facility and any related impacts at Riverstone as this was not detailed in the REF.

General

The EPA strongly supports implementation of new treatment initiatives and works to achieve future compliance requirements and environmental outcomes.

The EPA considers that the current scope of works may be challenging to achieve in the required timeframe and that excellent planning across the scope of works including identification of any barriers to works proceeding will assist in timely delivery.

In general, the REF provides fairly basic information and limited details regarding the specifications and schematics of the works being proposed.

Wet weather flows

The REF acknowledges that the Castle Hill and Rouse Hill plants are operating at treatment capacity. The works proposed are described as nutrient reduction works, with future upgrades to address servicing requirements for growth as being assessed in a future REF. The REF also states that the current design has considered the need for future upgrades.

The EPA is concerned that undertaking these works separately and not comprehensively planning these works concurrently may result in sub-optimal environmental outcomes, particularly in relation to management of wet weather flows, general delays, and potential bottlenecks in the treatment process.

Delays in implementing capacity upgrades postpones addressing the cause of non-compliances occurring at these premises and draws out the completion of these works. There is a significant relationship between wet weather flows and management of discharge concentrations and loads. Bypasses should not be the default for wet weather flow increases prior to, during, and following the proposed works.

The EPA has observed that plant capacity to accommodate large wet weather flows adequately, relative to average dry weather flows, is a reoccurring issue at Sydney Water's STPs and contributes significantly to environmental non-compliances. It is unclear whether the planned upgrades will undertake a site-specific assessment approach to wet weather flows and whether sufficient provisions have been made for factors such as growth and climate change, which increases the variability of wet weather flows and extremes in weather.

Water quality impacts

Although the purpose of the project stated in the REF is to meet future compliance requirements in relation to the Hawkesbury-Nepean Nutrient Framework and associated compliance needs, no information, specifics or modelling have been provided to demonstrate that the works are fit for purpose and will achieve their intended outcome of reducing nutrients at the level specified.

It is unclear whether the proposal has considered or explored any opportunities to reduce environmental risks or waterway impacts (whether positive or negative) posed by pollutants discharged other than nutrients. It is the EPA's expectation that these opportunities are considered and benefits implemented where reasonable and feasible, particularly where there are opportunities for integrated water management and improvement towards water quality objectives.

The EPA recommends that Sydney Water ensures that comprehensive due diligence is undertaken to ensure that current and projected environmental requirements will be met and any areas of uncertainty are minimised. This will significantly reduce any environmental regulatory risks as part of this project.

The EPA will require additional information to make a decision under section 45 of the *Protection of the Environment Operations Act 1997* (POEO Act) in relation to the proposal and any related licence variation applications. These considerations are detailed at:
https://legislation.nsw.gov.au/view/html/inforce/current/act-1997-156#sec.45

For example, the proposal does not detail:

- the impact of the proposal on water and its environmental values
- consideration of the practical measures to prevent, control, abate or mitigate water pollution, and
- consideration of the practical measures that could be taken to restore or maintain these environmental values.

Centralised processing of biosolids

The REF does not provide details of the centralised biosolids treatment facility at Riverstone STP. It is unclear why this was not detailed in the REF proposal, or whether this will be covered under a separate proposal, given that centralised processing of biosolids is key to the option chosen.

The EPA notes that biosolids handling has environmental risks, particularly in relation to offensive odours, which are potentially increased when co-treating imported food waste.

As noted previously, the EPA has not undertaken any consideration of this facility or its regulatory requirements as part of its consideration of the REF.

Noise and Vibration – Castle Hill

The EPA notes that the Noise and Vibration Assessment makes recommendations in relation to considering site-specific noise mitigation measures throughout the document, including under section 6.2.3. However, it is noted that the sound power levels used assume that these measures have been implemented.

It is therefore the EPA's expectation that the Castle Hill noise mitigation treatments detailed in Table 25 of the Noise and Vibration Assessment are implemented.

In addition to the above, the EPA recommends that Sydney Water's signage on the walking track and/or fire trail surrounding Castle Hill informs users of when they can use this track whilst unaffected by noise from construction works (e.g. Saturday afternoons and Sundays). Track users may not be local and therefore will not necessarily be informed in advance of the works being conducted and these respite periods.

The EPA recommends that Sydney Water considers whether it is reasonable and feasible to implement its QR code reporting system currently used at some STPs to enable real-time community feedback on the project and timely identification of any unexpected impacts or issues.

Licensing requirements (POEO Act)

The REF involves substantial upgrades that interact with the majority of the treatment processes at the Castle Hill STP and a large part of the treatment processes at Rouse Hill STP. The proposal also includes an additional discharge main at Cattai Creek. The REF states that:

- "A licence variation to each EPL and revised process flow diagram to reflect the process improvements will be required for future operations. This will be prepared by the project team and submitted to the EPA prior to commissioning".

On the basis of the information provided, the EPA considers that other licence variation(s) may be required. Depending on the information provided, these could include:

- A requirement to develop and conduct a post-construction water quality monitoring and testing program, that:
    - validates treatment performance against design parameters and/or projected results
    - uses the full variability of operational conditions, including average or typical scenarios, through to worst case scenarios
    - is linked to ongoing implementation of mitigation measures (such as regular routine maintenance)
- A requirement to develop and conduct a post-construction air quality monitoring and testing (validation) program in relation to the Odour Control Facility at Castle Hill and Rouse Hill.
- A requirement to provide a full site schematic upon completion of works, showing stormwater and drainage infrastructure, including catchment areas, sizing details, surface water controls and treatment equipment, either separately or as part of the site-specific Pollution Incident Response Management Plans.

Environmental controls during construction works

Key environmental controls during construction works will include:

- Hours of operation in relation to the works
- The operation of dust, sediment, and erosion controls
- Implementation of noise mitigation measures as necessary.

These can be addressed in part through preparation and implementation of a Construction Environmental Management Plan.

Appendix B – Rouse Hill WRP supporting Flora and Fauna assessments

18 January 2022

Veronica Ku
Environmental Scientist
Sydney Water
Level 11, 1 Smith Street
Parramatta NSW 2150

Dear Veronica

Re: Consistency report for additional compliance upgrade works

Project no. 34968

Biosis Pty Ltd was previously commissioned by Sydney Water to undertake a flora and fauna assessment to describe the ecological values and constraints associated with the proposed compliance upgrade to the North West Treatment Hub (the project), including Castle Hill Water Recycling Plant (WRP, Stage 1) and Rouse Hill WRP (Stage 2) at Lot 1 DP553269, Castle Hill and Lot 2 and Lot 3 DP 251094, Lot 22 DP 830552, Rouse Hill, New South Wales (NSW).

Biosis understands that Sydney Water proposes to construct an additional 15 metres of piping in a localised area of the Rouse Hill WRP (the study area; Figure 1 in Appendix 1) which requires the removal of additional vegetation. Given the removal of this vegetation was not accounted for in the previous ecological impacts assessment, the objective of this consistency report is to assess any further impacts of the project on any threatened species, populations and/or ecological communities (entities), or their habitat, listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Biodiversity Conservation Act 2016* (BC Act). This proposal is to be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Identified constraints will be used to guide detailed design, with an emphasis on avoiding ecological impacts where feasible.

Background

The study area is approximately 0.09 hectares and is located within the Rouse Hill WRP, within Hills Shire Council Local Government Area (LGA). The surrounding land use is predominately infrastructure for the wastewater treatment plant, with the exception of Russell Reserve located to the west of the study area. The study area is located approximately 2.5 kilometres north-west of the Rouse Hill town centre.

Methods

Database and literature review

Information provided by Sydney Water as well as other key information was reviewed, including:

- Flora and fauna assessment for North West Treatment Hub Project (Compliance Upgrade) (Biosis 2021).

- Commonwealth Department of Agriculture, Water and Environment (DAWE) Protected Matters Search Tool for matters protected by the EPBC Act.
- NSW Environment, Energy and Science (EES) BioNet Atlas of NSW Wildlife, for items listed under the BC Act.
- NSW DPI *Biosecurity Act 2015* for Priority listed weeds for the Greater Sydney Local Land Services (LLS) area.
- EES Vegetation Information System (VIS) mapping, including.
  - *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands* (SCIVI) (DPIE 2010).
  - *Cumberland Plain Vegetation Mapping* (NPWS 2002, NPWS 2013).

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- *Local Land Services Act 2013* (LLS Act).
- *Biosecurity Act 2015.* (Biosecurity Act).
- *State Environmental Planning Policy (Vegetation in Non-Rural Areas)* 2017.
- *The Hills Local Environmental Plan 2019* (LEP).
- *The Hills Development Control Plan 2012* (DCP).

Field investigation

A field investigation of the study area was undertaken on 12 and 13 May 2021 by Averill Wilson (Ecologist) for the previous compliance upgrade assessment (Biosis 2021). Vegetation within the study area was surveyed using the random meander technique (Cropper 1993) over one hour.

General classification of native vegetation in NSW used in this report is based on the classification system in Keith (2004) which uses three groupings of vegetation: vegetation formation, vegetation class and vegetation type, with vegetation type the finest grouping. The grouping referred to in this report is Plant Community Type (PCT) as defined by the Biodiversity Assessment Method (BAM) (DPIE 2020).

The vegetation types, within the study area, were stratified into PCTs broadly based on previous vegetation mapping, and the vegetation boundaries marked with a hand-held GPS in the field. Appropriate PCTs were selected on the basis of species composition and structure, known geographical distribution, landscape position, underlying geology, soil type, and any other diagnostic features.

A habitat-based assessment was completed to determine the presence of suitable habitat for threatened species previously recorded (EES 2021) or predicted to occur (Commonwealth of Australia 2021) within 5 kilometres. This list was filtered according to species descriptions, life history, habitat preference and soil preference to determine those species most likely to be present within the study area.

Results

Regional soil landscape mapping indicates that the study area occurs on the Blacktown soils of the Penrith Soil Landscape (Bannerman & Hazelton 1990). The Blacktown geology typically consists of gently undulating

rises on Wianamatta Group shales and Hawkesbury shale, with the landscape characterised by broad rounded crests and ridges with gently inclined slopes. The study area does not contain any waterways or drainage lines, however the study area is located approximately 100 metres south-east from Second Pond Creek, which is a third order stream and 100 metres north-west of an unnamed dam.

Vegetation communities

The study area comprises entirely of one vegetation type and is consistent with PCT 835 *Forest Red Gum-Rough-barked Apple Grassy Woodland on Alluvial Flats of the Cumberland Plain, Sydney Basin* which forms part of *River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (Critically Endangered Ecological Community [CEEC] EPBC Act, and Endangered BC Act).

The structure, floristic composition and condition of this community was previously described in the flora and fauna assessment for North West Treatment Hub Project (Compliance Upgrade) (Biosis 2021).

Threatened species

Those species considered most likely to have habitat within the study area based on the background research are as follows.

Flora

- Juniper-leaved Grevillea *Grevillea juniperina* subsp. *juniperina* (Vulnerable, BC Act)
- *Dillwynia tenuifolia* (Vulnerable, BC Act).

Fauna

- Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Vulnerable, BC Act).
- Flame Robin *Petroica phoenicea* (Vulnerable, BC Act).
- Dural Land Snail *Pommerhelix duralensis* (Endangered, EPBC Act and BC Act).

As per previous field investigations, no threatened flora species were recorded within the study or are considered likely to occur. There is a low likelihood of occurrence of the above listed threatened flora. Large trees may provide habitat for a range of woodland bird species such as Dusky Woodswallow, Varied Sittella and Flame Robin. Assessments of potential impacts towards these species were considered in the previous biodiversity assessment (Biosis 2021). Given the proposed works are unlikely to result in any substantial further impacts, no additional assessment is required.

Impact assessment

This section identifies the potential impacts of the proposed additional works on the ecological values of the study area and includes recommendations to assist Sydney Water to design the development to minimise impacts on ecological values.

The ecological values impacted by the proposal are described in Table 1, which includes data requirements for Sydney Water to calculate any required non-statutory offsets.

Table 1 Expected impacts from the proposed additional works

Ecological value	Impacts	Recommendations
Threatened ecological	Removal of 0.02 ha of native vegetation/habitat consisting of the	• Offsetting to follow *Sydney Water Biodiversity Offset Guidelines*.

Ecological value	Impacts	Recommendations
communities. **Threatened flora/fauna habitat**	following TEC: – PCT 835 – *Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion* forming a component of TEC River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Critically Endangered EPBC Act and Endangered, BC Act).	– Offsetting to be undertaken at a 1:1 ratio for a minor impact to threatened fauna habitat. • Further risk of impacts to the TEC and individual native trees can be managed by implementing appropriate safeguards in further planning and carrying out the construction works including: – Avoid clearing of individual native trees if feasible. • Pre-clearance inspections for threatened species outlined in the previous compliance upgrade assessment (Biosis 2021).

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's key piece of environmental legislation. The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (NES) protected under the Act. Under the EPBC Act, activities that have potential to result in significant impacts on Matters of NES must be referred to the Commonwealth Minister for Environment and Energy for assessment.

One TEC listed under the EPBC Act was recorded or assessed to have a medium or greater potential to occur within the study area. The previous compliance upgrade report (Biosis 2021) included a Significant Impact Criteria (SIC) assessment (CoA 2013) for threatened entities that are deemed likely to be subject to negative impacts. An updated SIC assessment is provided in Appendix 2. The updated assessment has concluded that a significant impact is not likely to result from the additional works, as the upgrades will remove a small area of potential habitat from an area containing large tracts of more suitable habitat.

On the basis of criteria outlined in Commonwealth of Australia (2013) it is considered unlikely that a significant impact on a Matter of NES would result from the additional works. Therefore, a referral to the Australian Government Minister for Environment and Energy is not required.

Biodiversity Conservation Act 2016

One TEC listed under the BC Act has a medium or greater likelihood of occurring within the study area. The previous compliance upgrade assessment report (Biosis 2021) included Tests of Significance (ToS) for threatened entities that are deemed likely to be subject to negative impacts. An updated TOS is provided in Appendix 3. This assessment has concluded that a significant impact is not likely to result from the additional works as the upgrades will remove a small area of potential habitat, from an area containing large tracts of more suitable habitat, nor is the habitat to be removed considered important to the survival of the species and TEC.

Tests of Significance indicate that a significant effect is not likely to result from the proposal. A Species Impact Statement is therefore not required.

Local Environmental Plans

Local Environmental Plans (LEPs) are created by Councils in consultation with their community and guide planning decisions for LGAs. They apply either to the whole or part of a LGA and make provision for the protection or utilisation of the environment through zoning of land and development controls.

Elements of the LEP objectives are not relevant to this assessment, as the works relate to *Division 18 Sewerage Systems* under the *State Environmental Planning Policy (Infrastructure) 2007*, and under clause 106 are considered as 'development permitted without consent' and 'exempt development', respectively. Elements of the LEP objectives are not discussed further.

Conclusion and recommendations

The previous compliance upgrades assessment (Biosis 2021) required the removal of 0.54 hectares of native vegetation. The additional proposed works outlined in this report require an additional 0.02 hectares to be removed. This additional removal is unlikely to result in any further significant impacts to flora and fauna and therefore this consistency report is a sufficient additional assessment.

Given there are requirements for removal of native vegetation for the project, the focus of the recommendations is to minimise disturbance to any surrounding native vegetation and fauna habitat. These recommendations are:

- Clearing and trimming of vegetation should limited to the Urban Native/Exotic community, avoiding impacts to the *River-flat Eucalypt Forest* TEC (Appendix 1; Figure 1).
- No-go fencing should be installed prior to the commencement of works, demarcating the extent of the *River-flat Eucalypt Forest* TEC to be avoided.
- Relevant Sydney Water staff and any sub-contractors should be made aware of the no-go fencing and the requirement to limit clearing to areas of Urban Native/Exotic vegetation.
- Appropriate erosion and sediment control measures should be installed at all sites to avoid sedimentation of surrounding biodiversity values.
- Minimise vegetation clearance and disturbance, including impacts to standing dead trees. Where possible, limit clearing to trimming rather than the removal of whole plants.
- Physically delineate the 'limit of works' and vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing.
- If native fauna is encountered on site, stop work and allow the fauna to move away independently. Engage a licenced ecologist if assistance is required to relocate fauna.
- Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.
- To prevent spread of weeds:
  - Clean all equipment, including PPE, prior to entering or leaving the work sites.
  - Wrap straw bales in geofabric to prevent seed spread.

I trust that this advice is of assistance to you however please contact me if you would like to discuss any elements of this ecological advice further.

Yours sincerely

Jake Schwebel

Botanist

References

Bannerman SM & Hazelton PA 1990. *Soil Landscapes of the Penrith 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney NSW.

Biosis 2021. *Flora and fauna assessment for North West Treatment Hub Project (Compliance Upgrade)*, Report prepared for Sydney Water. Author: Wilson, A. and Heenan, C. Biosis Pty Ltd, Sydney, NSW. Project no. 34968.

Clark S 2009. 'A review of the land snail genus Meridolum (Gastropoda: Camaenidae) from central New South Wales, Australia', *Molluscan Research*, 29, 2: 61–120.

CoA 2013. Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999.

Commonwealth of Australia 2013. Matters of National Environmental Significance: Significant impact guidelines 1.1.

Commonwealth of Australia 2021. *Protected Matters Search Tool*, *Australian Government Department of the Environment, Water, Heritage & the Arts, Canberra*, https://www.environment.gov.au/epbc/protected-matters-search-tool.

Cropper S 1993. *Management of Endangered Plants*, CSIRO Publications Victoria, Melbourne, Victoria.

DAWE 2020. *Conservation Advice for the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria*, Department of Agriculture, Water and the Environment, Canberra, ACT, http://www.environment.gov.au/biodiversity/threatened/communities/pubs/154-conservation-advice.pdf.

DECCW 2010. Cumberland Plain Recovery Plan, Department of Environment, Climate Change and Water (NSW), Sydney.

DECCW 2018. Threatened Species Test of Significance Guidelines, New South Wales Government Office of Environment and Heritage.

DPIE 2010. Southeast NSW Native Vegetation Classification and Mapping - SCIVI. VIS_ID 2230, State Government of NSW Department of Planning, Industry & Environment.

DPIE 2020. *Biodiversity Assessment Method (BAM)*, Department of Planning, Industry & Environment, https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-2020.

DPIE 2021. *BioNet the website for the Atlas of NSW Wildlife*, http://www.bionet.nsw.gov.au/.

EES 2021. *BioNet the website for the Atlas of NSW Wildlife*, http://www.bionet.nsw.gov.au/.

NPWS 2002. *Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney*, Hurstville, NSW National Parks and Wildlife Service.

NPWS 2013. *Native vegetation of the Cumberland Plain, Western Sydney*, NSW National Parks and Wildlife Service, Hurtsville.

NSW Scientific Committee 2011. River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing- final determination, NSW Office of Environment and Heritage.

NSW Scientific Committee 2015. Dural Land Snail Pommerhelix duralensis Preliminary Determination.

OEH 2011. Southeast NSW Native Vegetation Classification and Mapping - SCIVI. VIS_ID 2230.

Ridgeway P, Lindsay K, Pou D, & Visintin 2014. 'Indications of diverse behavioural ecologies in the morphologically conservative Australia land snails Pommerhelix and Meridolum (Stylommatophora: Camaenidae)', *Molluscan Research*, 34, 1: 25–39.

RMS 2011. *Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects*, Roads and Maritime Services NSW.

Stanisic J, Shea M, Potter D, & Griffiths O 2010. *Australian Land Snails Volume 1 - A field guide to eastern Australian species*, Bioculture Press (for Australian Museum, Sydney).

TSSC 2014. Pommerhelix duralensis (Dural land snail) Conservation Advice.

Appendices

Appendix 1 Figure 1

Legend

- Study area
- Impact area
- Hydro area

Plant Community Type

- 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

Acknowledgements: Basemap © Land and Property Information 2016, Imagery Nearmap 2021

Figure 1 Ecological features

0 3 6 9 12 15

Metres

Scale: 1:300 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Matter: 34968,
Date: 12 January 2022 ,
Prepared for: JS, Prepared by: AM, Last edited by: amackegard
Layout: 34968_F1_EcoFeatures_RH_Jan22Area
Project: P:\34900s\34968\Mapping\
34968_NW_Hub.aprx

Appendix 2 Significant Impact Criteria assessment

The following section provides for Significant Impact Criteria assessments as outlined in the *Matters of National Environmental Significance: Significant impact guidelines 1.1* (CoA 2013) for all entities listed under the EPBC Act that have likelihood of impact or occurrence rated as medium or greater.

River-flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales and Eastern Victoria

River-flat Eucalypt forest occurs as a tall forest to woodland structured vegetation unit overlying alluvial soils associated with coastal river floodplains and other site where transient water accumulates (DAWE 2020). The community has been subjected to a significant reduction in extent and is continually threatened by ongoing process including vegetation clearing, weed invasion, livestock grazing and climate change (DAWE 2020, pp. 202)

River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria is listed as Critically Endangered under the EPBC Act. As such an assessment against the Significant Impact Criteria has been undertaken below.

Reduce the extent of an ecological community

The community extends from Sale in Victoria to Raymond Terrace in NSW (DAWE 2020). The extent of the community has been reduced by over 70 % within this area and is under further threat due to its location on productive areas of land subject to development (DAWE 2020).

The project will result in an overall reduction of less than 0.001 % of River-flat Eucalypt Forest that is likely to be directly and indirectly impacted by the current proposal, and a relatively localised impact of the TECs extent of occurrence. This has been assessed as unlikely to be a significant reduction of the extent of River-flat Eucalypt Forest.

Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines

The original proposed works required the removal of 0.07 ha of River-flat Eucalypt Forest. The additional works proposed in this report require an additional 0.02 creating a combined total of 0.09 ha to be removed.

This direct impact is likely to lead to minor increases in localised fragmentation impacts, particularly to the patches of retained vegetation immediately adjacent to the impact area. These impacts are not considered substantial and will not result is further decreases in connectivity of canopy vegetation. The increased fragmentation will not substantially reduce connectivity as the impacts occur within / adjacent to already fragmented patches of the TEC. Edge effects may increase as a result of the project, but these are again not expected to be substantial.

As the fragmentation impacts expected to occur as a result of the proposed works are localised and relatively minor in nature, they are not expected to increase impacts to Rive-flat Eucalypt Forest such that a significant impact to the TEC is likely to occur.

Adversely affect habitat critical to the survival of an ecological community

The Matters of National Environmental Significance Significant impact guideline (Commonwealth of Australia 2013) state the 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- For the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators),
- To maintain genetic diversity and long term evolutionary development, or
- For the reintroduction of populations or recovery of the species or ecological community.

No such habitat has been identified in a recovery plan for River-flat Eucalypt Forest, nor is it listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.

Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.

The project is not expected to result in substantial alteration to surface water patterns. Alterations to hydrological patterns may also occur, but the area of the TEC impacted in this is not expected to be substantial due to its occurrence further back from the riverbank and on higher parts of the floodplain.

Mitigation measures would ensure that downstream indirect impacts (such as sediment and nutrient transportation) would be controlled and would not impact remaining areas of River-flat Eucalypt Forest

As such, the project is not expected to result in impacts that modify or destroy abiotic factors necessary for the survival of the TEC.

Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting

The project will not result in specific impacts to characteristic and functionally important species, as neither the construction or operational impacts will result in alterations to fire or flood regimes that maintain (or would potentially impact upon) the diversity of the TEC in the impact area, or broader landscape. The project will not alter management regimes of any retained vegetation, such as increased under-scrubbing or grazing, and there is no likelihood of the project rustling in an increase in harvesting of flora species.

The composition of River-flat Eucalypt may be modified because of the proposal through weed invasion and vegetation removal. However, the local occurrence of this ecological community is currently suffering from altered composition caused by a reduction in ecological function, as indicated by:

- Altered species composition.
- Altered structure.
- Disruption of ecological processes (i.e. altered drainage and lack of understorey recruitment).
- Invasion and establishment of exotic species.

As the proposed works will removed 0.09 hectares of vegetation within a large (greater than 20 hectare) patch, it is unlikely that this impact will further exacerbate these pressures.

While modification of the ecological community will occur in and adjacent to the direct area of disturbance, the proposal is not considered likely to further modify the composition of the threatened ecological community such that its local occurrence is placed at risk of extinction. No flow on effects to other areas of the local occurrence will occur. The composition of the River-flat Eucalypt Forest within the study area is predicted to remain intact after the implementation of the proposal.

Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **Assisting invasive species, that are harmful to the listed ecological community, to become established.**
- **Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Weed introduction and spread and the infection of native plants by *Phytophthora cinnamomi* has been identified as being spread by construction machinery. Phytophthora infects the roots of plants and has the potential to cause dieback. Machinery associated with vegetation clearance and subsequent construction for the proposal has the potential to introduce and transmit weed propagules and Phytophthora to retained native vegetation. This is a potential indirect impact to River-flat Eucalypt Forest through the spread and transmission of weeds and pathogens into retained habitat.

This impact can be mitigated through the development and implementation of suitable control measures for vehicle and plant hygiene and is unlikely to have a significant impact. It is the intention to use current best practice hygiene protocols as detailed in RMS (2011) to prevent the introduction or spread of weeds and pathogens. The proposed mitigation strategy and environmental management procedures would include guidance for preventing the introduction and/or spread of weeds and disease-causing agents such as bacteria and fungi.

No regular mobilisation of fertilisers, herbicides or other chemicals will occur because of the project.

Interfere with the recovery of an ecological community

There is no Commonwealth adopted Recovery Plan for River-flat Eucalypt Forest. However, the TEC is included in the Cumberland Plain Recovery Plan (DECCW 2010), a multi-entity recovery plan that has been prepared for 20 threatened species, populations and ecological communities that occur within the 'Cumberland Plain' region in western Sydney. The recovery plan has the following objectives:

- To build a protected area network, comprising public and private lands, focused on the priority conservation lands.
- To deliver best practice management for threatened biodiversity across the Cumberland Plain, with a specific focus on the priority conservation lands and public lands where the primary management objectives are compatible with biodiversity conservation.
- To develop an understanding and enhanced awareness in the community of the Cumberland Plain's threatened biodiversity, the best practice standards for its management, and the recovery program.
- To increase knowledge of the threats to the survival of the Cumberland Plain's threatened biodiversity, and thereby improve capacity to manage these in a strategic and effective manner

The project will directly impact upon 0.09 hectares of the TEC.

Whilst the project will impact upon River-flat Eucalypt Forest in low condition, impacts to the community are limited to a small area of vegetation within the operations boundary of the Rouse Hill WRP where canopy has been previously thinned for construction and operation of the plant. This level of residual impact will not reduce the ongoing capacity of the intact TEC retained within adjacent properties.

The project will not result in impacts likely to be adverse to any of the other objectives of the Cumberland Plain Conservation Plan, nor will it impact on areas of high quality habitat which could support the TEC into the future, and as such it is not expected that the project will interfere with the recovery of an ecological community.

Conclusion

The proposal is predicted to result in the removal of approximately 0.09 hectares of the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria. When the proportional impact is considered, the small impact occurs within a larger patch of the TEC is large and a minimal amount of vegetation will be removed. This impact is not considered important in terms of its intensity, magnitude and geographic extent.

The proposal will result in some small-scale disturbances but no large-scale alteration to overall functionality of vegetation will occur. Therefore, habitat fragmentation is considered a minor impact of the proposal regarding its context and intensity. Alteration of abiotic factors is not considered a major impact. The proposal is not considered likely to further modify the composition of the threatened ecological community such that its local occurrence is placed at risk of extinction. Weed introduction and spread and the infection of native plants by pathogens can be mitigated through the development and implementation of suitable control measures for vehicle and plant hygiene.

The Department of the Environment indicates that a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the. While an area of the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria will be impacted, the intensity, magnitude and geographic extent of the impacts are insignificant.

After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant impact to the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria as the impact is not considered to be of significance having regard to its context and intensity.

Appendix 3 Tests of Significance

River-flat Eucalypt Forest Endangered Ecological Community

River-flat Eucalypt Forest is listed as an EEC under Schedule 2 of the NSW BC Act. River-flat Eucalypt Forest is found on river flats of coastal floodplains across eastern NSW and is characterised by tall open canopies of Eucalypts, typically occurring as part of a mosaic with other floodplain forest communities. The composition of the tree stratum varies considerably across the range of the community however the most widespread and abundant dominant trees include Forest Red Gum, Cabbage Gum, Rough-barked Apple, and Broad-leaved Apple, Blue Box *Eucalyptus baueriana*, Bangalay *Eucalyptus botryoides*, River Peppermint *Eucalyptus elata*, Swamp Gum *Eucalyptus ovata*, Sydney Blue Gum *Eucalyptus saligna* and Flooded Gum *Eucalyptus grandis* ((NSW Scientific Committee 2011).

As outlined in the Threatened Species Test of Significance Guidelines (DECCW 2018), the following key terms are relevant to this ToS:

- Impact area: the area directly affected by the proposal.
- Study area: the impact area and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (Appendix 1; **Error! Reference source not found.**.1 and **Error! Reference source not found.**.2).
- Local occurrence: the ecological community that occurs within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.

The local occurrence of River-flat Eucalypt Forest include vegetation mapped within the study area and extends east and west of the study area long the riparian corridor with contains greater than 20 hectares of vegetation.

The total direct impact to River-flat Eucalypt Forest as a result of the proposed works is expected to be approximately 0.09 hectares.

(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.

(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 small area of River-flat Eucalypt Forest forms part of a localised patch along the riparian corridors along Second Ponds Creek. The vegetation is located on the southern extent of the linear patch with large amounts of the TEC extending east and west from the impact area. Although, the proposed works will

reduce the overall extent of the TEC the impact will be localised and unlikely to place the local occurrence at risk of extinction. The patch directly impacted by the proposal is also considered unlikely to substantially modify the composition of the TEC in the locality, due to the degraded and edge effect nature of the vegetation within the proposed works footprint.

(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***
>
> ***(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***
>
> ***(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,***

Approximately 0.09 hectares of River-flat Eucalypt Forest may be permanently removed as a result of the proposed works this is a small portion of the habitat available to the local occurrence of the community along the Second Ponds Creek riparian corridor.

The patch of the TEC directly impacted by the proposed works has the potential to result in minor increases to fragmentation of the locally occurring TEC along the riparian corridors. The removal of a small amount of the TEC within a larger patch is unlikely to fragment or isolate the patch such that the local occurrence is at risk of extinction.

The area of habitat directly impacted by the proposed works is not considered important to the long term survival of the community in the locality.

(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 proposed works will not impact on an area declared as of outstanding biodiversity value (either directly or indirectly).

(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 works have the potential to result in the following key threatening processes which are listed under the Schedule 4 of the BC Act and which are considered relevant to River-flat Eucalypt Forest:

- Clearing of native vegetation.

The proposed works requires clearing of land where this community occurs. A total of 0.09 hectares of this community will be directly removed by the proposed works.

Conclusion

In consideration of the five factors listed above (a - e) the proposed works are unlikely to significantly impact River-flat Eucalypt Forest for the following reasons:

- The proposed works are localised and small-scale, and the study area has already been exposed to a number of disturbances which are unlikely to be further exacerbated by the proposed works.
- The proposed works is unlikely to significantly alter floristic or structural diversity of the retained portions of the EEC.

- The localised nature of the proposed works will not significantly trigger or exacerbate any key threatening processes.

Therefore, no further assessment is required and a SIS or BDAR is not required.

19 January 2022

Veronica Ku
Environmental Scientist
Sydney Water
Level 11, 1 Smith Street
Parramatta NSW 2150

Dear Veronica

Re: Flora and fauna constraints assessment for the North West Treatment Hub Project Compound Area
Project no. 34968

Biosis Pty Ltd was commissioned by Sydney Water to undertake a flora and fauna constraints assessment to describe the ecological values associated with the proposed construction of a compound area required for the upgrade to the North West Treatment Hub (the project), at the Rouse Hill Water Recycling Plant (WRP) Lot 1 DP251094, (the study area) (Appendix 1; Figure 1) in New South Wales (NSW).

Biosis understands that Sydney Water proposes to construct a compound area within the western section of the treatment plant to facilitate upgrade works required for the project Therefore, the objective of this assessment is to inform Sydney Water of any potential constraints with regards to impacts on threatened species, populations and/or ecological communities (entities), or their habitat, listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Biodiversity Conservation Act 2016* (BC Act).

Background

The study area is approximately 6.15 hectares and is located within the Rouse Hill WRP and Hills Shire Council Local Government Area (LGA). The surrounding land use is predominately infrastructure for the wastewater treatment plant, with the exception of Russell Reserve located to the west of the study area. The study area is located approximately 2.5 kilometres north-west of the Rouse Hill town centre.

Methods

Database and literature review

Prior to completing the field investigation, information provided by Sydney Water as well as other key information was reviewed, including:

- Commonwealth Department of Agriculture, Water and Environment (DAWE) Protected Matters Search Tool for matters protected by the EPBC Act.

- NSW Environment, Energy and Science (EES) BioNet Atlas of NSW Wildlife, for items listed under the BC Act.
- NSW DPI *Biosecurity Act 2015* for Priority listed weeds for the Greater Sydney Local Land Services (LLS) area.
- EES Vegetation Information System (VIS) mapping, including.
  - *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands* (SCIVI) (DPIE 2010).
  - *Cumberland Plain Vegetation Mapping* (NPWS 2002, NPWS 2013).

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- *Local Land Services Act 2013* (LLS Act).
- *Biosecurity Act 2015.* (Biosecurity Act).
- *State Environmental Planning Policy (Vegetation in Non-Rural Areas)* 2017.
- *The Hills Local Environmental Plan 2019* (LEP).
- *The Hills Development Control Plan 2012* (DCP).

Field investigation

A field investigation of the study area was undertaken on 21 of December 2021 by Jake Schwebel (Botanist). Vegetation within the study area was surveyed using the random meander technique (Cropper 1993) over one hour.

General classification of native vegetation in NSW used in this report is based on the classification system in Keith (2004) which uses three groupings of vegetation: vegetation formation, vegetation class and vegetation type, with vegetation type the finest grouping. The grouping referred to in this report is Plant Community Type (PCT) as defined by the Biodiversity Assessment Method (BAM) (DPIE 2020).

The vegetation types, within the study area, were stratified into PCTs broadly based on previous vegetation mapping, and the vegetation boundaries marked with a hand-held GPS in the field. Appropriate PCTs were selected on the basis of species composition and structure, known geographical distribution, landscape position, underlying geology, soil type, and any other diagnostic features.

A habitat-based assessment was completed to determine the presence of suitable habitat for threatened species previously recorded (EES 2021) or predicted to occur (Commonwealth of Australia 2021) within 5 kilometres. This list was filtered according to species descriptions, life history, habitat preference and soil preference to determine those species most likely to be present within the study area.

Results

Regional soil landscape mapping indicates that the study area occurs on the Blacktown soils of the Penrith Soil Landscape (Bannerman & Hazelton 1990). The Blacktown geology typically consists of gently undulating rises on Wianamatta Group shales and Hawkesbury shale, with the landscape characterised by broad rounded crests and ridges with gently inclined slopes.

The soil within the study area is known to contain asbestos contamination and 3 metres of fill that has been relocated to the area, indicating a relatively high degree of disturbance and modification.

The study area does not contain any waterways or drainage lines, however the study area is located approximately 100 metres south-east from Second Pond Creek, which is a third order stream and 100 metres north-west of an unnamed dam.

Vegetation communities

The study area comprises of three vegetation types (Appendix 1; Figure 1). The eastern boundary of the study area is consistent with PCT 835 *Forest Red Gum-Rough-barked Apple Grassy Woodland on Alluvial Flats of the Cumberland Plain, Sydney Basin* which forms part of *River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (Critically Endangered Ecological Community [CEEC] EPBC Act, and Endangered BC Act).

The western boundary of the study area is consistent with PCT 1395 *Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest of the edges of the Cumberland Plain, Sydney Basin Bioregion* which forms part of *Shale/Sandstone Transition Forest of the Sydney Basin Bioregion* (CEEC, EPBC Act and BC Act).

The remaining vegetation is considered to be highly disturbed, having been previously cleared and contaminated by introduced fill. As such, this vegetation would be considered new regrowth (urban native/ exotic) and primarily contains weed species including African Olive *Olea europaea* subsp*. cuspidata*, African Boxthorn *Lycium ferocissimum*, Blackberry *Rubus fruticosus*, Small-leaved Privet *Ligustrum sinense* and Lantana *Lantana camera.*

Threatened species

Background searches identified 23 threatened flora species and 41 threatened fauna species recorded (EES 2021) or predicted to occur (Commonwealth of Australia 2021) within 5 kilometres of the study area. Those species considered most likely to have habitat within the study area based on the background research are as follows.

Flora

- Juniper-leaved Grevillea *Grevillea juniperina* subsp. *juniperina* (Vulnerable, BC Act).
- *Dillwynia tenuifolia* (Vulnerable, BC Act).

Fauna

- Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Vulnerable, BC Act).
- Flame Robin *Petroica phoenicea* (Vulnerable, BC Act).
- Dural Land Snail *Pommerhelix duralensis* (Endangered, EPBC Act and BC Act).

No threatened flora species were recorded during the field investigation. Given the highly disturbed nature of the study area, combined with the underlying introduced fill material and disturbance from nearby urban areas, there is a low likelihood that any threatened flora species would occur within the study area.

No threatened fauna species were recorded during the field investigation. No hollow-bearing trees, rocky outcrops or coarse woody debris was evident within the study area. Therefore, none of the threatened species known or predicated to occur within the study area have been assessed as having more than a low likelihood of occurrence, on more than a temporary or transient basis. As such no further assessment of impacts to threatened species is required.

Based on the size of the study area, the survey effort is considered comprehensive to assess habitat presence for the species outlined as potentially occurring on site, based on the lack of habitat features and the previous modification and disturbance within the study area. Taking all of these factors into consideration, there is a low likelihood of impact for the above listed species.

The proposed works are not considered likely to result in a significant impact to threatened species or their habitats as listed under the EPBC Act or BC Act. Works should proceed as planned whilst implementing the recommendations outlined below to minimise and mitigate any residual impact to ecological values.

Priority weeds

Two priority weeds for Greater Sydney LLS, which includes The Hills Shire LGA, have been recorded in the study area, and are listed in Table 1, along with their associated Biosecurity Duty in accordance with the Biosecurity Act.

The Biosecurity Act provides for the identification, classification and control of priority weeds with the purpose of determining if a biosecurity risk is likely to occur. A priority weed is any weed identified in a local strategic plan, for a region that includes that land or area, as a weed that is or should be prevented, managed, controlled or eradicated in the region.

The General Biosecurity Duty as outlined in the Biosecurity Act states:

> *All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.*

Table 1 Priority weeds within the study area

Scientific name	Common name	Relevant biosecurity duty
Alternanthera philoxeroides	Alligator Weed	No relevant biosecurity measures, general biosecurity measures apply.
Lantana camara	Lantana	No relevant biosecurity measures, general biosecurity measures apply.
Lycium ferocissimum	African boxthorn	No relevant biosecurity measures, general biosecurity measures apply.
Olea europaea* subsp. *cuspidata	African Olive	Regional Recommended Measure Core infestation area: Land managers prevent spread from their land where feasible. Land managers reduce impacts from the plant on priority assets.
Rubus fruticosus	Blackberry	No relevant biosecurity measures, general biosecurity measures apply.

To prevent biosecurity impacts from occurring as a result of the presence of the above listed priority weeds within the study area, all practical steps should be taken to control and eradicated the weeds from the study area as per the relevant biosecurity duties outlined above, or prior to or during any future vegetation removal.

Constraints assessment

The ecological constraints within the study area are provided in Figure 1. These constraints are ranked as high and low, based on the justifications outlined in Table 2.

Table 2: Ecological constraints in the study area

Constraint	Value	Justification	Recommendations
High	• Native vegetation comprising of two TEC's including: – River Flat Eucalypt Forest – Shale/Sandstone Transition Forest	• Vegetation communities listed under BC Act and EPBC Act • The patches are contiguous with larger patches of native vegetation and are considered to form part of a larger patch • Potential habitat for threatened flora species.	• Impact to these areas should be avoided where feasibly possible. • If impacts cannot be avoided, further ecological assessment will be required.
Low	• Urban Native/Exotic vegetation	• Does not form part of an ecological community • Does not contain any hollow bearing trees • Is unlikely to provide potential habitat for threatened flora or fauna.	• Development of compound areas suitable in these areas.

Conclusion and recommendations

The flora and fauna constraints assessment has highlighted a range of values and constraints within the study area. Due to the nature and location of these constraints the following recommendations have been made regarding the impact area for the project:

- Clearing and trimming of vegetation should limited to the Urban Native/Exotic community, avoiding impacts to the *River-flat Eucalypt Forest* and *Shale/Sandstone Transition Forest of the Sydney Basin Bioregion* TECs (Appendix 1; Figure 1).
- No-go fencing should be installed prior to the commencement of works, demarcating the extent of the *River-flat Eucalypt Forest* and *Shale/Sandstone Transition Forest of the Sydney Basin Bioregion* TECs, to be avoided.
- If any impacts are identified as requiring to occur to native communities, works should stop and an additional ecological assessment must be completed.
- Relevant Sydney Water staff and any sub-contractors should be made aware of the no-go fencing and the requirement to limit clearing to areas of Urban Native/Exotic vegetation.
- Appropriate erosion and sediment control measures should be installed at all sites to avoid sedimentation of surrounding biodiversity values, in particular the *River-flat Eucalypt Forest* and *Shale/Sandstone Transition Forest of the Sydney Basin Bioregion* TECs.

- Minimise vegetation clearance and disturbance, including impacts to standing dead trees. Where possible, limit clearing to trimming rather than the removal of whole plants.
- Physically delineate the 'limit of works' and vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing.
- If native fauna is encountered on site, stop work and allow the fauna to move away independently. Engage a licenced ecologist if assistance is required to relocate fauna.
- Bag all plant parts and excavated topsoil that may be infested with weed propagules and dispose at a licensed waste disposal facility.
- To prevent spread of weeds:
  - Clean all equipment, including PPE, prior to entering or leaving the work sites.
  - Wrap straw bales in geofabric to prevent seed spread.

I trust that this advice is of assistance to you however please feel free to contact me if you would like to discuss any elements of this ecological advice further.

Yours sincerely

J. Schwebel

Jake Schwebel
Botanist

References

Bannerman SM & Hazelton PA 1990. *Soil Landscapes of the Penrith 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney NSW.

Commonwealth of Australia 2021. *Protected Matters Search Tool*, *Australian Government Department of the Environment, Water, Heritage & the Arts, Canberra*, https://www.environment.gov.au/epbc/protected-matters-search-tool.

Cropper S 1993. *Management of Endangered Plants*, CSIRO Publications Victoria, Melbourne, Victoria.

DPIE 2010. Southeast NSW Native Vegetation Classification and Mapping - SCIVI. VIS_ID 2230, State Government of NSW Department of Planning, Industry & Environment.

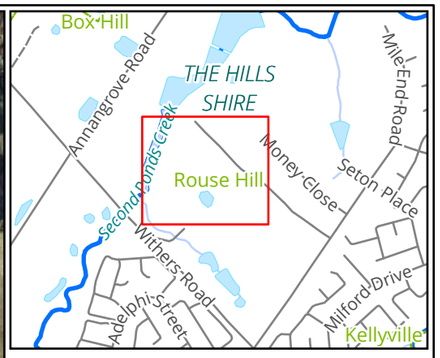
DPIE 2020. *Biodiversity Assessment Method (BAM)*, Department of Planning, Industry & Environment, https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-2020.

EES 2021. *BioNet the website for the Atlas of NSW Wildlife*, http://www.bionet.nsw.gov.au/.

NPWS 2002. *Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney*, Hurstville, NSW National Parks and Wildlife Service.

NPWS 2013. *Native vegetation of the Cumberland Plain, Western Sydney*, NSW National Parks and Wildlife Service, Hurtsville.

Appendix 1 Figure 1



Legend

- Study area
- Lot
- Hydro area
- Hollow-bearing tree

Plant Community Type

- Urban Native/Exotic
- 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion
- 1395 - Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest of the edges of the Cumberland Plain, Sydney Basin Bioregion

Figure 1 Ecological features of the study area

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System: GDA 1994 MGA Zone 56

N

biosis

Matter: 34968,
Date: 19 January 2022 ,
Prepared for: JS, Prepared by: AM, Last edited by: amackegard
Layout: 34968_F1_EcoFeatures_RHCompoundArea
Project: P:\34900s\34968\Mapping\
34968_NW_Hub.aprx

Acknowledgements: Basemap © Land and Property Information 2016, Imagery Nearmap 2021

Appendix C – References

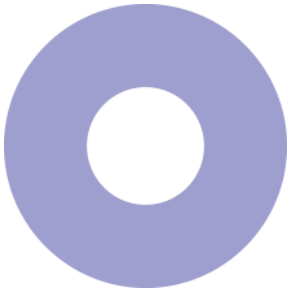
Biosis 2022a *Consistency report for additional compliance upgrade works*, January 2022

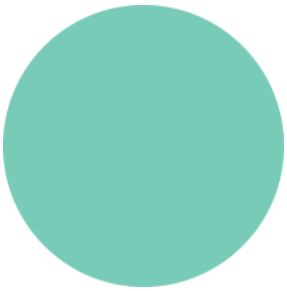
Biosis 2022b *Flora and fauna constraints assessment for the North West Treatment Hub Project Compound Area*, January 2022

Progressive Risk Management 2017. *Contamination Assessment, Rouse Hill Water Recycling Plant (ST0031), Mile End Road, Rouse Hill, NSW*, November 2017

Sydney Water 2021. *Rouse Hill Water Recycling Plant Upgrade Preliminary Site Investigation*, July 2021

Sydney Water 2021. *Review of Environmental Factors North West Treatment Hub. Castle Hill and Rouse Hill Water Recycling Plants Compliance Upgrade*, August 2021





SWEMS0025.05 Version 7

For more info email multimedia@sydneywater.com.au