28ºS ENVIRONMENTAL

Settlement Picnic Area and Purling Brook Causeway – Springbrook National Park

Ecological Assessment Report

2024-187

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Document History and Status

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Approval for Issue

Name	Position	Date
Mark Barnett	**Technical Director**	**30/09/2025**

Table of Contents

Table of Tables

Table of Plates

Table of Figures

Table of Attachments

Acronyms, Abbreviations & Definitions

28 South	28 South Environmental Pty Ltd
ADR	Accepted Development Requirements
AHT	Ancillary Habitat Tree
Biosecurity Act	Biosecurity Act 2015
CEMP	Construction Environmental Management Plan
CoGC	City of Gold Coast
CTRP	Conceptual Tree Retention Plan
DA	Development Application
DAF	Department of Agriculture and Fisheries
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, Environment and Water
DNRMMRRD	Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development
DES	Former Department of Environment and Science
DESI	Former Department of Environment, Science and Innovation
DETSI	Department of Environment, Tourism, Science and Innovation
DPI	Department of Primary Industries
EAR	Ecological Assessment Report
EOP	Environmental Offsets Policy 2012
EPBC Act	The Environment Protection and Biodiversity Conservation Act 1999
ESCP	Erosion and Sediment Control Plan
Ha	Hectare
KHA	Koala Habitat Area
Koala Plan	Nature Conservation (Koala) Conservation Plan 2017
LGA	Local Government Area
LIKT	Locally Important Habitat Tree
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
N/A	Not Applicable

NC Act	The Nature Conservation Act 1992
NC Reg	*Nature Conservation (Wildlife) Regulation 2006*
NHP	National Heritage Property
NJKHT	non-juvenile koala habitat trees
Planning Reg	*Planning Regulation 2017*
PMST	Protected Matters Search Tool
QPWS&P	Queensland Parks and Wildlife Service and Partnerships
RE	Regional Ecosystem
RVMM	Regulated Vegetation Management Map
SARA	State Assessment Referral Agency
SDAP	State Development Assessment Provisions
SIMP	Species Impact Management Plan
SPP	Queensland State Planning Policy 2017
TEC	Threatened Ecological Communities
TPZ	Tree Protection Zone
TTW	TTW (QLD) Pty Ltd
WHA	World Heritage Area
WWBW	Queensland Waterways for Waterway Barrier Works

1. Introduction

1.1 Background

Queensland Parks and Wildlife Service and Partnerships (QPWS&P), which is part of the Department of Environment, Tourism, Science and Innovation (DETSI), is progressing the upgrade of the Settlement Picnic Area and Purling Brook causeway, lookouts and walking track at Springbrook National Park (referred to as the 'Project'). The intention for the upgrade works is to remedy the access, safety and maintenance issues that are currently present QPWS&P officers managing the area and visitors to the park.

The site is in the western portion of Lot 5 on AP19371 and accessed at the existing visitor carpark via Forestry Road through the township of Springbrook, into the Settlement Day Use Area off Carrick's Road.

The context of the site's position within the surrounding locality is in **Figure 1**.

The proposed works area encompasses approximately 2.16 hectares (ha) within the Springbrook National Park and forms the Study Area for this EAR Report. The Project is situated within the City of Gold Coast (CoGC) Local Government Area (LGA) and is mapped within the Conservation Zone. The northern components of the Study Area are located within the Gondwana Rainforests of Australia World Heritage Area (WHA) and National Heritage Properties (NHP). The extent and scale of the Project is shown in **Figure 1** and **Figure 2**.

28 South Environmental has been engaged by TTW (QLD) Pty Ltd (the Client) on behalf of the Proponent, QPWS&P, to prepare this Ecological Assessment Report (EAR) in support of a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).

For context, the Queensland Department of National Parks, Recreation, Sport and Racing previously referred a similar development in the same locality to the Australian Government's Department of the Environment in 2014, which received a referral decision of 'not a controlled action'. Copies of the referral decision and documentation are provided in **Attachment 1**.

1.2 Report Purpose

The purpose of this EAR is to:

- Describe the existing environmental and ecological characteristics of the site
- Assess the potential impacts of potential design options and encroachment into mapped ecological overlays
- Determine relevant Commonwealth, State and local government legislation, policy and planning instruments, and advise on compliance where necessary
- Identify ways through which development of the site can avoid, minimise and mitigate the potential impacts on environmental characteristics.

2. Description of the Action

2.1 Project Infrastructure

Since its inception in 2020, the Settlement Picnic Area and Purling Brook causeway, lookouts and walking track upgrade design has undergone rigorous and thoughtful development, with focus placed on minimising environmental impacts. A key objective throughout the design process has been to ensure the surrounding Gondwana Rainforests of Australia World Heritage Area (WHA) is subject to the least possible disturbance. This approach has been consistent with QPWS&P's core principles of:

- minimising impact on and disturbance of existing vegetation and ecology
- minimising visual impact
- applying a low-impact approach during the design process.

The project refinement process for the six key project elements (**Figure 2**) is summarised in **Table 2.1**.

Table 2.1: Project refinement process for key project elements

Project Element	Design Approach
Revitalised Look-out Structures	▪ Re-use of existing concrete viewing platforms as a working platform during construction and to mitigate the extent of disturbance of adjacent vegetation, trees and the associated root systems, soil and rock build up ▪ Multiple arrangement options were investigated (single level, double level, cantilevered) with the final option being an amalgamation of these options, providing additional capacity for visitors ▪ Look-outs are designed as elevated structures with pier footings to minimise on ground construction and associated impacts ▪ The footprint of the revitalised structures extends minimally from those of the existing look-outs ▪ The design of low seating/retaining walls to the rear of both look-out structures, were designed to minimise extent of regrading and disturbance to vegetation, and to also provide a barrier to discourage traversing through vegetation.
Visitor Hub & Amenities Building	▪ Positioned to: ○ avoid existing trees that are to be retained ○ minimise earthworks and regrading to tie in with adjacent levels and minimise disturbance areas ○ provide opportunities for re-planting & re-vegetation to tie in with adjacent revegetation areas ○ be open and transparent, with organic roof structure to tie in with the existing landscape, tree canopy and enhance views to existing vegetation ▪ The Visitor Hub roofed structure has an open guttering system, so that overland flow from the roof passively irrigates the adjacent planted areas ▪ The proposed planting palette that is reflective of the site, native and endemic where possible and maximise biodiversity.
Walking Track Upgrades	▪ Plan alignment and grade optimised to best suit existing track alignment, site contours, tree retention and mitigate required earthworks ▪ Track was widened minimally (additional 550mm) to ensure accessibility while minimising disturbance ▪ Elevated boardwalk (i.e. suspended structure) section near the causeway to reduce earthworks, providing step-free access and the flexibility for pier locations to avoid structural tree roots

Project Element	Design Approach
	▪ Elevated boardwalk is aligned above the existing track, to minimise disturbance and secure its use during construction ▪ The existing track in this location is to be retained to minimise further disturbance (like the approach taken with the look-outs).
New Causeway Bridge Crossing	▪ Alignment optioneering to best suit landing locations to each embankment of the causeway, minimising the extent of vegetation clearing and disturbance. An example of the options analysis undertaken as part of the feasibility study is **Plate 2.1** ▪ Bridge typology chosen based upon minimising works required within the causeway, and available locations for foundations. Typology options were worked through, with the final option adopted due to reduced impact on the causeway / Purling Brook Creek and adjacent embankments ▪ Bridge alignment is based on the shortest possible length of the bridge design options, and visual impacts considered ▪ The proposed bridge is expected to have a single span measuring 40 m and elevated approximately 7m – 8m above the creek ▪ Bridge height is designed to be above Q500 flood levels (0.2% Annual Exceedance Probability), to ensure visitor safety and clearance of waterway.
Visitor Carparking	▪ Re-use of cleared extent of the existing site. ▪ Integration of the appropriate carparking capacity, bus/coach accessibility while utilising opportunities for re-planting & re-vegetation ▪ Alignment of the access carriageway from Carricks Road to visitor carparking planned to promote retention of significant existing trees and create central planted spine with additional native planting ▪ Native revegetation planting has been adopted with the aim to screen the carpark from Carricks Road and the pedestrian path from the Settlement Carpark Area ▪ Maximise tree planting to carpark area to supplement retention of existing trees ▪ Flush kerbs and planted swales to passively irrigate new planting to assist with plant establishment and ongoing growth.
Carricks Road Upgrades	▪ Widening works to allow anticipated increase in visitation, bus/coach and medium rigid vehicle access ▪ Grading & alignment developed to reduce disturbance extents within road corridor and to neighbouring land parcels.
Planting Palette	▪ Investigating opportunities for seed collection of locally endemic species to contract grow plant supply for construction ▪ Planting palette has been based on maximising biodiversity, locally endemic species, reintroducing species and ecology back into Settlement Day Use Area which is currently a disturbed grassed area (previously owned by City of Gold Coast (CoGC)).

Plate 2.1 Causeway crossing options analysis

2.2 Timeframes

The applicant anticipates construction to commence in September 2026, with completion by July 2027.

2.3 Project Construction

A detailed construction methodology will be prepared by the appointed construction contractor(s) following contract award and completion of the final design. Construction activities are likely to involve the steps described in the sections that follow.

2.3.1 Site Establishment

- Establish site access, hoarding and compounds at the Settlement Picnic Area Athletic Field including provision of adequate temporary sediment control measures
- Install heavy-duty sediment fencing to perimeter of all work areas involving earthworks.

2.3.2 Enabling Works

- Install concrete supply pump lines, if deemed necessary by Contractor. Supply pump lines are to be aligned along the existing walking track or if through vegetated areas, final alignment to be reviewed and approved by an Arborist, Ecologist and QPWS&P
- Where necessary, use of a proprietary piling mat product (DuraBase or similar) is to be adopted to avoid requirement for ground works.

2.3.3 Bridge Crossing

- Prepare bridge site with selective removal of identified vegetation and trees as shown on the landscape package and agreed with QPWS&P. This is to include trimming of any upper tree canopies as required to allow helicopter installation of bridge mast
- Installation of access highline along bridge alignment. Arborist input, as necessary, to identify adequate trees for highline anchoring
- Undertake ground anchoring and bored pile works
- Locally excavate for western landing abutment, eastern mast pile cap and back-stay cable anchorage foundation
- Construct reinforced concrete foundations and cast-in main cable anchorages
- Install bridge mast to eastern abutment via helicopter lift. Secure in place whilst connected to helicopter
- Unspool back-stay cables from back-stay anchorage towards bridge mast. Utilise highline to lift cables to connection point at top of mast
- From the western embankment, unspool main cables using access highline to carry cables across causeway. Install cables to defined profile and secure to mast and western abutment
- Install hangers
- Install deck stringers and bracing, working from eastern abutment towards western bridge landing. Flange splices on stringers to be fully tightened once all stringers installed
- Install fibre reinforced polymer (FRP) deck and handrails
- Grout main tower base plates.

2.3.4 Look-out Structures

- Undertake necessary clearing of vegetation
- Excavate to allow construction of retaining wall to rear of look-outs. Excavation to be undertaken using tight access track mini excavator
- Excess spoil to be removed via walking track to Settlement Picnic Area Oval via wheelbarrow or similar
- Pour retaining wall footing slab
- Install blockwork retaining wall and grout fill cores
- Apply waterproofing to rear face of wall, install drainage and backfill
- Erect look-out steelwork via mini-crane and helicopter lifts. Any construction machinery to be tracked in via walking track access. Personnel to work from rope access for safety near cliff edge at all times.
- Install FRP decking and perimeter balustrading.

2.3.5 Walking Track Upgrades

- Demolition of existing hard surfaces along existing walking track. If jackhammering is required, similar methodology to demolition of the existing causeway is to be followed. Refer **Section 2.4**.
- Pruning/clearing of vegetation along walking track as necessary. Selected removal of identified vegetation and trees as shown on the landscape package and agreed with QPWS&P

- Undertake track grading works and prepare sub-base
- Install dry-stack retaining walls where required by the civil engineering design
- Pour new concrete walking track.

2.3.6 Amenities Building & Visitor Hub

- Undertake necessary clearing of vegetation to building footprints
- Excavate to form building pad. Detailed excavation to form pad footings and ground beams
- Install reinforcement to raft foundation and footings
- Pour raft slab and pad footings, casting in hold down bolts and post stirrups
- Erect steelwork posts to Visitor Hub structure; fix in place
- Install timber framing to Amenities Hub. Install roof sheeting
- Install roof beams to Visitor Hub, roof and ceiling purlins. Install insulation and sheet
- Fit-out services to Amenities Building.

2.3.7 Settlement Picnic Area Carpark & Carricks Road Works

- Clearing of vegetation to carpark and Carricks Road as necessary. Selective removal of identified vegetation and trees as shown on the landscape package and agreed with QPWS&P
- Undertake grading works. Establish temporary drainage
- Install retaining wall structures and stormwater drainage as per civil engineers' documentation
- Prepare sub-base
- Construct road surface
- Install electrical poles, signage, road furniture and line marking
- Revegetate as per landscape documentation

2.3.8 Elevated Boardwalk Structures

- Excavate for post foundations to structural engineers' documentation
- Install 150 mm diameter pine posts into ground at intervals as noted on the structural documentation
- Post holes backfilled and compacted in maximum 150 mm layers
- Install bearers to posts. Install timber floor joists as per structural documentation
- Install FRP decking and fixings to manufacturers' specifications
- Install balustrading and kick-rails

2.3.9 De-mobilisation Works

There will be progressive disassembly and removal of all construction machinery, equipment, and materials from site, which includes but is not limited to:

- Demolition of existing causeway crossing (**Section 2.4**)
- Removal of concrete supply pump lines, re-vegetating any disturbed areas as required
- Removing site hoardings & compounds
- Revegetation of and making good all areas, as necessary

A Construction Environmental Management Plan (CEMP) will be prepared for the Project, setting out procedures and management actions for Project construction activities. An Erosion and Sediment Control Plan (ESCP) will also be prepared ahead of construction commencement.

2.4 Demolition and Removal of Existing Bridge

A detailed methodology for demolition and removal of the two existing footbridge crossings will be prepared by the appointed construction contractor(s) following contract award. However, this scope of work is currently anticipated to involve the following activities:

- Un-bolt causeway barrier fencing, leaving base stubs in ground. Grind base stubs off 10 mm below surface level, being careful to protect surrounding rock base
- Contain disturbed sediment by installing sandbags and mitigation measures such as silt curtains parallel to the existing crossing on all sides (0.5 m offset)
- Demolition of concrete topping slab with use of jackhammer fitted with dust extraction. Remove pieces via walking track in wheelbarrow or similar
- Disassembly of existing timber beams for the footbridge crossings and removal via walking track. This will be achieved by using a wheeled trolley or cutting timber into small sections for lifting by personnel
- Demolition of concrete kerbs using a similar methodology to that proposed for the removal of the topping slab
- Grout fill base stub holes, matching grout colour to surrounding rock base of causeway.

3. Legislative framework

The following sections provide an overview of the legislative framework for the ecological aspects of the Project.

3.1 Matters of Commonwealth Interest

3.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides the legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places. These are defined under the EPBC Act as MNES. Under the EPBC Act, a referral to the Department of Climate Change, Energy, Environment and Water (DCCEEW) is required if the Proposed Development is likely or has potential to cause a Significant Impact on MNES. The determination of whether a Significant Impact will arise is made with reference to the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* and other EPBC Act policy statements.

A search of the Protected Matters Search Tool (PMST) indicates the likely or potential occurrence of MNES or their habitats in the locality (**Attachment 2**). A search of the DETSI Wildlife Online database provides confirmed records of MNES within the same search radius (**Attachment 3**). These records indicate that the species listed in **Table 4.3**, which are MNES, have been recorded within the immediate locality, 2 km of the centroid.

Further discussion regarding the potential for the Proposed Development to have a significant impact on MNES is provided in **Section 8**.

3.1.2 World Heritage Area with Natural Heritage Values

The proposed action is partly located within the Springbrook National Park, part of the Gondwana Rainforests of Australia World Heritage Area (WHA). This WHA is also recognised as a national heritage place. Without careful design and the application of avoidance and minimisation measures, such a project could adversely affect the natural heritage values of this World Heritage property. Consequently, the Project has been assessed against these values (DOE, 2013), which are discussed in **Section 8.2** and **Section 8.3**.

3.1.3 EPBC Act Environmental offset policy 2012

Where a significant residual impact on a MNES cannot be avoided, an environmental offset may be required to counterbalance the impact. The *EPBC Act Environmental Offsets Policy 2012* (EOP) outlines the Australian Government's approach to the use of environmental offsets under the EPBC Act. The EOP applies to both project-specific assessments and approvals under Parts 8 and 9 of the Act. It establishes the framework for determining when offsets are required, how they can be delivered, and the principles under which they operate.

3.2 Matters of State Interest

3.2.1 Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) provides the legal framework for protecting and managing Queensland's native plants, animals, ecosystems, and protected areas.

Of relevance to this assessment, the NC Act establishes approval triggers and an assessment process for clearing protected plants. The site is not identified as a High-Risk Trigger Area (**Attachment 4**). However, given the known presence of protected plants in the locality, a detailed botanical survey, generally in accordance with the Flora Survey Guidelines for Protected Plants, was undertaken on 23 April 2025 to identify the presence of protected

plants and/ or suitable habitat. The results of this assessment are provided in **Attachment 5,** and a discussion of the implications is provided in **Section 6.2** of this Report.

Due to the presence of critically endangered and vulnerable specimens within the vicinity of the Project, a Protected Plants Clearing Permit will be required if clearing or other works are proposed within 100 m of the any of the identified specimens. The documentation associated with the Protected Plants Clearing Permit must be prepared in accordance with the Protected Plants Assessment Guidelines, demonstrating that any impacts to these specimens can be avoided, minimised, and mitigated (i.e. will require the preparation of an Impact Management Plan). If impacts to these specimens cannot be avoided, any significant residual impacts will trigger the requirement for an environmental offset in accordance with the *Environmental Offsets Act 2014*.

Avoidance of the critically endangered specimens is of highest priority for the chosen design option. Further the onsite ground truthed assessment to date has identified the species listed in **Table 4.3**, with these species located within the Project Area but outside of the development footprint. These species will be protected and maintained through construction and will be fenced off and avoiding through construction methodologies.

A tree survey plan of the development footprint and associated botanical and arboricultural data has been included in **Attachment 6**.

The NC Act regulates activities that impact animal breeding places and potential impacts to fauna species listed under the Nature Conservation (Wildlife) Regulation 2006 (NC Reg. If breeding places are identified and may be subject to disturbance, then the compilation of a Species Management Program (SMP) for proposed "tampering" with a used or potentially returning native animal breeding site is required prior to the commencement of works.

3.2.2 Nature Conservation (Koala Conservation Plan 2017)

The *Nature Conservation (Koala) Conservation Plan 2017* (Koala Plan) was prepared in accordance with section 112 of the NC Act, which outlines the steps the Minister for Environment must follow when preparing and making a conservation plan for native wildlife.

The Koala Plan comprises two parts:

- Koala Conservation Plan – subordinate legislation made under the NC Act, and
- Koala Management Program 2006–2016 – a policy document setting out the legislative and policy context for koala conservation in Queensland.

Under the Koala Conservation Plan, Queensland local government areas are divided into three districts, each with mapped priorities for koala habitat. The Investigation Area is within **Koala District A**, the implications of which are discussed in **Section 3.2.3**.

3.2.3 Planning Act 2016

3.2.3.1 Exempted Development

Schedule 24 of the *Planning Regulation 2017* (Planning Reg) defines exempted development as:

> *(d) development for infrastructure stated in schedule 5, if the development is carried out by or for the State or a public sector entity; and*
>
> *(g) development in any of the following protected areas under the Nature Conservation Act 1992… (ii) national park'*

Schedule 5, Part 2 (Other Infrastructure), Item 11 is relevant to the Project being for facilities for parks[1] and recreation.

As such, any proposed clearing of native vegetation and koala habitat as part of the Project is exempted development under the Planning Reg.

Regardless of the above, the development will require assessment against the provisions of the State Government Supported Infrastructure Koala Conservation Policy 2023 with assessment provided in **Section 7.2.1** of this Report.

3.2.3.2 State Development Assessment Provisions

The Queensland Government defines matters of State Interest with referral triggers and responsible agencies set out in Schedule 10 of the Planning Regulation. Whilst the development is considered exempt development and therefore does not require consideration of the State Development Assessment Provisions (SDAP), for thoroughness of assessment this Report includes a summary of this framework regarding proposed development opportunities over the site.

Environmental matters of State Interest which have been considered as a part of this assessment are summarised in **Table 3.1** which identifies there are four mapped or identified MSES over or adjoining the site. Further design consideration is required as outlined in **Section 8.1**.

3.2.4 Biosecurity Act 2014

The *Biosecurity Act 2014* (Biosecurity Act) legislates the management of pest flora and fauna, diseases, and environmental contaminants in Queensland to protect the agricultural sector, economy, environment and community from biosecurity risks. The Act requires a general biosecurity obligation by everyone to ensure that pests, diseases and contaminants are not spread. Under the Act, pest plants and animals are recognised as presenting a particular agricultural or environmental risk and are specifically listed as prohibited or restricted matters. Each matter requires specific actions relating to reporting, containing, controlling, reducing and minimising the relevant biosecurity risk.

In relation to the Project, actions must not be taken that are reasonably likely to exacerbate the biosecurity threat posed by prohibited species and all sightings of prohibited species are to be reported to Biosecurity Queensland within 24 hours under the Act. All reasonable and practical measures must be taken to minimise the biosecurity risks associated with restricted species, as a general biosecurity obligation under the Biosecurity Act.

3.2.5 State Planning Policy 2017

The Queensland *State Planning Policy 2017* (SPP) nominates matters of state interest, which include biodiversity. The state becomes involved in assessing development applications if it affects a state interest and this is done through the State Assessment and Referral Agency (SARA) using criteria from the SDAP. The SDAP includes codes for various aspects of development such as State Code 16: Native Vegetation Clearing and State Code 18: Constructing or raising waterway barrier works in fish habitats. These codes are required to be addressed and submitted with any application for development approval.

[1] Schedule 24 defines a park as 'means the use of a premises, accessible to the public free of charge, for sport, recreation and leisure activities and facilities'.

Table 3.1: Relevant Environment Legislation and Environmental Matters

Matter of Interest	Relevant Legislative Instrument or Policy	Referral Agency Assessment Matters for Further Assessment	Relevant Mapping/ Database Searches
MNES	EPBC Act DCCEEW	The Study Area is situated partly within the Gondwana Rainforests of Australia WHA, which is also a National Heritage Place. The Study Area is approximately 2.16 hectares or 0.04% of the broader Springbrook National Park estate which is greater than ~6,000 hectares. In-field surveys did not detect any Threatened Ecological Communities (TEC); however, two (2) threatened flora species were identified in the Study Area as identified in Table 1. While no threatened fauna species were observed during in-field surveys; it is considered that the Study Area and its surrounds are likely to support habitat and resources for conservation significant species. The project design has been assessed against the EPBC Act controlling provisions, with particular consideration of whether it may result in significant residual impacts on MNES. A comparable project in the locality, referred in 2014 (EPBC 2014/7290) for a bridge and new tracks, adopted similar construction methods and was designed to avoid impacts wherever possible. Consistent with that approach, the current proposal has been deliberately developed to avoid and minimise impacts to the ecological values of the site. The bridge design, in particular, has been refined through an iterative process to reduce the need for extensive footings and earthworks. As a result, significant residual impacts to MNES are not expected.	Protected Matters Search Tool **Attachment 2**
Queensland Waterway for Waterway Barrier Works	Queensland *Fisheries Act 1994* Planning Reg (Schedule 10, Part 6, Division 2, Table 1 &	Purling Brook and its southeastern tributary are mapped as 'Low' and 'Moderate' value Queensland Waterways for Waterway Barrier Works (WWBW). As part of the project, the removal of two existing causeway crossings is proposed, alongside the construction of a new suspension bridge. The new suspension bridge will span the creek, will not involve disturbance within the bank and therefore will not constitute WWBW.	**Figure 3**

Matter of Interest	Relevant Legislative Instrument or Policy	Referral Agency Assessment Matters for Further Assessment	Relevant Mapping/ Database Searches
	Divisions 4, Table 1)	Removal of the two existing causeway crossings should be conducted in a manner that is considerate of the provisions of the *Accepted Development Requirements for Operational Work that is Constructing or Raising Waterway Barrier Works* (ADR). If the ADR cannot be adhered to, then the application will require referral to SARA / Department of Primary Industries (DPI) and a response to State Code 18.	
Native Vegetation Clearing	Planning Reg (Schedule 10, Part 3, Division 4, Table 3)	The Study Area supports Category B and Category C Regulated Vegetation as well as Essential Habitat (see **Attachment 3**). The development has been sited to avoid and minimise impact to MSES regulated vegetation wherever possible. **Refer to Section 8.**	Vegetation Management Report **Attachment 3**
Koala Habitat Areas	Planning Reg (Schedule 10, Part 10, Division 2, Table 1)	The Study Area is situated within a Koala Priority Area and supports mapping of Core Koala Habitat Areas synonymous with Category B Regulated Vegetation, as described above. The extent of impact to koala habitat is presented in **Table 8.5**. As a Government funded project, located within Koala habitat, the Project will need to comply with *State Government Supported Infrastructure, Koala Conservation Policy (DES, 2023b)*. The development has aimed to minimise impact to koala habitat, with any significant residual impact to be delivered in accordance with the requirements of the current *Queensland Environmental Offsets Policy(DESI, 2024)*. Clearing of koala habitat trees are undertaken under the guidance of a koala spotter where koala habitat trees have a trunk of a diameter of more than 10 cm at 1.3 m above the ground.	-
Wetland Protection Area	Planning Reg (Schedule 10, Part 20)	**Not applicable** – there is no Wetland Protection Area Mapping on the Project site.	-

Matter of Interest	Relevant Legislative Instrument or Policy	Referral Agency Assessment Matters for Further Assessment	Relevant Mapping/ Database Searches
Coastal Protection Area	Planning Reg (Schedule 10, Part 17)	**Not applicable** – the Project Area is not in a Coastal Protection Area and there is no Coastal Protection Mapping on the Project site.	-
Protected Plant **Special Breeding Places**	NC Act	While the Project Area is not identified on the Protected Plants Flora Survey Trigger Map, a survey was undertaken to identify Protected Plants. As detailed in **Section 4.2, Section 6.2 and Table 4.3,** protected plants listed under the NC Act were identified as part of the on-site investigations. The Study Area is mapped as containing MSES wildlife habitat (endangered or vulnerable) and MSES wildlife habitat (Special least concern animal). No fauna breeding places were observed during the survey.	**Attachment 4**

3.3 Matters of Local Interest

QPWS&P is a State / public sector entity and, as per Schedule 6, Section 8 of the Planning Reg, operational work undertaken by a public sector entity is not assessable development. Therefore, assessment of the Project against CoGC City Plan is not required. Any state interests may trigger a referral to the SARA, and for thoroughness and from a due diligence perspective, can be included in a future DA for applicable state matters.

4. Desktop Assessment

The following publicly available sources of information have been accessed to establish ecological and environmental constraints that are mapped across the site:

- Protected Matters Search Report, under the *Environment Protection and Biodiversity Conservation Act 1999* (DCCEEW, 2025) (**Attachment 2**)
- Species list generated from the Queensland Government's WildNet database (2 km radius) (DETSI, 2025b)(**Attachment 3)**
- Vegetation Management Property Report, generated by Department of Resources (DNRMMRRD, 2025)(Queensland) (**Attachment 4**)
- Mapping of MSES (DNRMMRRD, 2025) (Queensland Globe)
- Protected plant trigger mapping, under the *Nature Conservation Act 1992* (**Attachment 4**)
- CoGC City Plan - environmental overlays

Following review of the above-listed sources, ecological values and other environmental constraints of relevance for the Proposed Development have been defined with reference to Commonwealth and State legislation, as well as the City Plan (CoGC, 2016).

4.1 Historical Aerial Photography Analysis

To provide insight into landscape change over time, an analysis of historic aerial photography was undertaken (**Table 4.1**). This process identified historic change in land use and vegetation cover, helped establish baseline environmental conditions, supported habitat and species assessments and inform the process of identifying and mitigating potential impacts to MNES.

Table 4.1: Historical aerial photography

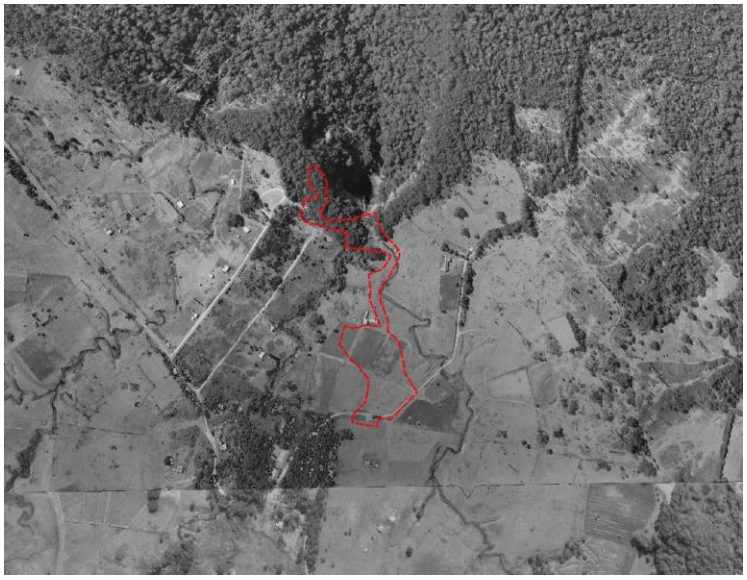
Image & Year	Historical Analysis
 **1961**, Source: Queensland Government, QImagery.	The site and surrounds to the east, south and west was predominantly cleared by 1961. Farming use and agriculture appear to be the dominant land use, with land in the northern area of the site and further north appearing relatively unchanged or modified. Rural residential housing and associated farming infrastructure is evident on surrounding land, with the site appearing to have been used for cropping in the southern and mid-section at this time.

Image & Year	Historical Analysis
 **1981,** Source: Queensland Government, QImagery.	By 1981 additional housing and structures are evident within aerial mapping mainly to the west of the Site. Larger rural lots appear to have been subdivided around this time, increasing the residential density to the west of the Study Area. Additional vegetation has been cleared to the east of the Site, while land along the National Park boundary appears to have regrown extensively in line with the boundary alignment. Vegetative cover has also increased within the rural residential lots reflecting planted specimens within manicured gardens and yards.
 **1993,** Source: Queensland Government, QImagery.	The boundary alignment for the National Park and conservation area is distinct in aerial mapping by 1993 as surrounding land is further used for rural residential purposes. From 1981 vegetative cover as planted landscape specimens appear to have increased within the township of Springbrook to the west. Further built form is evident in aerial mapping with an increase in housing along the National Park boundary. Vegetative cover within the National Park appears to be consistent with 10 years prior.

Image & Year	Historical Analysis
 **2013,** Source: Queensland Government, QImagery.	By 2013 vegetative cover and plantings has increased further from 20 years prior in 1993. Vegetation has regrown along waterway corridors, and the land directly to the east and south of the Site. Additional built form is also evident in aerial mapping. Clearing appears to have been undertaken to the north of the Study Area, with clearly defined pathways and roads in the south of the Site. Land adjoining the Site to the east contains various forms of regrowth as compared to the maintained appearance in 1993.
 **2025,** Source: Nearmap.	Current aerial mapping shows extensive vegetation and canopy cover over the Springbrook township and adjoining land. Less land appears to be utilised for rural and cropping purposes, with an established residential community to the west of the Site. Evidence to indicate additional built form is lacking in the area.

4.2 Site Condition

The Study Area is characterised by surface geology described as Binna Burra Rhyolite[2] that forms the Springbrook plateau.

The Study Area supports a mix of non-remnant, high value regrowth and remnant vegetation (**Table 4.2**). The northern components of the Study Area are mapped to support remnant vegetation comprised of 'Least Concern'

[2] Volcanic and Metamorphic sediments from the Oligocene to Miocene.

Regional Ecosystem (RE) 12.8.1 and small areas of 'Of Concern' RE 12.8.8. The edge of the plateau/escarpment face is mapped to support RE 12.8.19. The central areas of the Study Area are also mapped to support RE 12.8.8 as high value regrowth and the balance of the Study Area is mapped to support non-remnant vegetation. Pre-clear mapping illustrates that the Study Area more broadly supported RE 12.8.8 centrally and RE 12.8.5 within its southern components.

Table 4.2: Regional ecosystem descriptions

Regional Ecosystem	Description
12.8.1	*Eucalyptus campanulata* tall open forest with shrubby to grassy understorey. Other canopy species include *Eucalyptus microcorys*, *Syncarpia glomulifera subsp. glomulifera, E. acmenoides, Corymbia intermedia, E. carnea and E. resinifera*. Patches of *Eucalyptus pilularis* sometimes present on ridges and crests. Occurs in high rainfall areas above 580 metres altitude on Cainozoic igneous rocks especially rhyolite. Not a Wetland. (BVG1M: 8b). Vegetation communities in this regional ecosystem include: 12.8.1a: *Eucalyptus montivaga* open forest +/- *Corymbia intermedia, E. pilularis*. Occurs on elevated Cainozoic igneous rocks. Not a Wetland. (BVG1M: 8b).
12.8.5	Complex notophyll vine forest. Characteristic species include *Argyrodendron actinophyllum, Sloanea australis, S. woollsii, Cryptocarya erythroxylon, Ficus watkinsiana, Dysoxylum fraserianum, Ackama paniculosa, Karrabina benthamiana, Orites excelsus, Acmena ingens, Syzygium corynanthum, S. crebrinerve* and *Citronella moorei*. Occurs on Cainozoic igneous rocks especially basalt and lateritised basalt usually >600m altitude. Not a Wetland. (BVG1M: 6a).
12.8.8	*Eucalyptus saligna* or *E. grandis* tall open forest often with vine forest understorey ('wet sclerophyll'). Other canopy species that may be present and at times locally dominate include *Eucalyptus pilularis, E. microcorys, E. acmenoides, Lophostemon confertus and Syncarpia glomulifera subsp. Glomulifera*. Occurs on Cainozoic igneous rocks and areas subject to local enrichment from Cainozoic igneous rocks. Not a Wetland. (BVG1M: 8a). Vegetation communities in this regional ecosystem include: 12.8.8a: *Eucalyptus siderophloia, E. microcorys, Corymbia intermedia +/- Eucalyptus propinqua, E. carnea* open forest on Cainozoic igneous rocks. Occurs on Cainozoic igneous rocks and areas subject to local enrichment from Cainozoic igneous rocks. Not a Wetland. (BVG1M: 9a).
12.8.19	Heath and rock pavement with scattered shrubs or open woodland. Occurs on Cainozoic igneous rocks especially rhyolite and trachyte. Not a Wetland. (BVG1M: 29b).

The PMST data (**Attachment 2**) indicates the potential occurrence of MNES plant communities and species in the locality of the Study Area using a 5 km and 10 km radius. The Wildlife Online data also indicates confirmed records of EVNT species in the locality (**Attachment 2**) using the same search radius. The flora species of conservation significance known to occur within 5 km for the site in **Table 4.3**.

Conservation-significant species identified by these database searches were targeted during the baseline botanical surveys undertaken by 28 South botanical and ecological staff in April 2025. The ENVT species shaded in **Table 4.3** were identified onsite during site survey works and are also identified within the Tree Retention Plan (**Attachment 6**).

Table 4.3: Recorded conservation significant flora species (Wildlife Online Extract 5km)

Scientific Name	Common Name	EPBC Act Status	NC Act Status
Alloxylon pinnatum	-	N/A	Near Threatened

Scientific Name	Common Name	EPBC Act Status	NC Act Status
Ardisia bakeri	Ardisia	N/A	Near Threatened
Eucalyptus codonocarpa	Mallee ash	N/A	Near Threatened
Baloghia marmorata	Jointed baloghia	Vulnerable	Vulnerable
Cassia marksiana	-	Vulnerable	Vulnerable
Corynocarpus rupestris subsp. arborescens	Southern corynocarpus	N/A	Vulnerable
Coleus nitidus	-	Endangered	Endangered
Cyperus rupicola	-	N/A	Vulnerable
Cyperus semifertilis	-	Vulnerable	Vulnerable
Cryptocarya foetida	Stinking cryptocarya	Vulnerable	Vulnerable
Cupaniopsis newmanii	Long-leaved tuckeroo	N/A	Near Threatened
Davidsonia johnsonii	Smooth davidsonia	Endangered	Endangered
Diploglottis campbellii	Small-leaved tamarind	Endangered	Endangered
Endiandra hayesii	Rusty rose walnut	Vulnerable	Vulnerable
Fawcettia tinosporoides, *(Tinospora tinosporoides)*	Arrow-head vine	N/A	Vulnerable
Floydia praealta	Ball nut	Vulnerable	Vulnerable
Fontainea australis	Southern fontainea	Vulnerable	Vulnerable
Gossia hillii	-	N/A	Critically Endangered
Helicia ferruginea	Rusty oak	N/A	Vulnerable
Hicksbeachia pinnatifolia	Red bopple nut	Vulnerable	Vulnerable
Leichhardtia longiloba	-	Vulnerable	Vulnerable
Lenwebbia prominens	-	N/A	Near Threatened
Lenwebbia lasioclada	Velvet myrtle	N/A	Critically Endangered
Lepiderema pulchella	Fine-leaved tuckeroo	N/A	Vulnerable
Macadamia integrifolia	Macadamia nut	Vulnerable	Vulnerable
Macadamia tetraphylla	-	Vulnerable	Vulnerable
Niemeyera whitei	-	N/A	Vulnerable
Ochrosia moorei	Southern ochrosia	Endangered	Endangered
Olearia heterocarpa	Nightcap daisy bush	N/A	Near Threatened
Owenia cepiodora	Onion cedar	Vulnerable	Vulnerable
Parsonsia tenuis	Slender silkpod	N/A	Vulnerable

Scientific Name	Common Name	EPBC Act Status	NC Act Status
Phlegmariurus varius	-	N/A	Vulnerable
Pittosporum oreillyanum	Thorny pittosporum	N/A	Near Threatened
Pomaderris crassifolia	-	N/A	Vulnerable
Pterostylis bicornis	Horned greenhood	Vulnerable	Vulnerable
Ricinocarpos speciosus	-	-	Vulnerable
Rhodamnia maideniana	**Smooth scrub turpentine**	**Critically Endangered**	**Critically Endangered**
Rhodamnia rubescens	Scrub turpentine	Critically Endangered	Critically Endangered
Sarcochilus fitzgeraldii	Ravine orchid	Vulnerable	Endangered
Symplocos baeuerlenii	Small-leaved hazelwood	Vulnerable	Vulnerable
Syzygium hodgkinsoniae	Red lilly pilly	Vulnerable	Vulnerable
Syzygium moorei	Rose apple	Vulnerable	Vulnerable
Wahlenbergia scopulicola	-	N/A	Vulnerable
Westringia rupicola		**Vulnerable**	**Vulnerable**
Taeniophyllum lobatum	-	-	Near Threatened
Species identified during ground truthed survey and included on WildNet Search (Appendix 2).			

One *Davidsonia jerseyana* (Davidson's plum) was identified during the survey but is not included in the results of the WildNet search (**Attachment 2**). *Davidsonia jerseyana* is listed as critically endangered under the EPBC Act but Conservation advice for the species confirms that this species is found in coastal and lowland subtropical rainforest and wet sclerophyll forest restricted to the Brunswick and Tweed River catchments of the north coast of NSW ((DCCEEW, 2015)). This species is small (less than 1m), outside its known range and is unlikely to represent an expansion of its range because no other specimens were found in the Study Area. It is likely that this species was planted in Springbrook National Park. This species is not considered to be MNES and has not been assessed further in the EAR.

Database searches revealed the historic occurrence of 12 conservation-significant fauna species in the locality (**Attachment 3**). The PMST also highlighted the potential for many more MNES to occur within or near the site. Of note, the fauna species listed in **Table 4.4** have been recorded within a 5 km radius of the Proposed Development.

Table 4.4: Recorded conservation significant fauna species (Wildlife Online Extract 5km)

Scientific Name	Common Name	EPBC Act Status	NC Act Status
Adelotus brevis	Tusked frog	N/A	Vulnerable
Assa darlingtoni	Pouched frog	Vulnerable	Vulnerable
Atrichornis rufescens	Rufous scrub-bird	Endangered	Vulnerable
Calyptorhynchus lathami	Glossy black-cockatoo	N/A	Vulnerable
Calyptorhynchus lathami lathami	Glossy black-cockatoo (eastern)	Vulnerable	Vulnerable

Scientific Name	Common Name	EPBC Act Status	NC Act Status
Hirundapus caudacutus	White-throated needletail	Vulnerable	Vulnerable
Litoria pearsoniana	Cascade treefrog	N/A	Vulnerable
Menura alberti	Albert's lyrebird	N/A	Near Threatened
Mixophyes fleayi	Fleay's barred frog	Endangered	Endangered
Mixophyes iteratus	Giant barred frog	Vulnerable	Vulnerable
Ninox strenua	Powerful owl	N/A	Vulnerable
Podargus ocellatus plumiferus	Plumed frogmouth	N/A	Vulnerable

5. Survey Method

Baseline ecological assessment was undertaken over the site by two qualified ecologists, Justin Armstrong and Callum McKercher, from 28 South on 23 April 2025.

The aim of the survey was to assess the presence and potential impact of the proposed disturbance footprint to threatened flora and fauna, and their habitats. The baseline botanical surveys involved: a complete traverse of the Study Area to review the Study Area's various ecological values including native trees, native habitat trees and any other species of conservation significance. Where required, the tree survey data provided by Arbor Australis was utilised to guide the ecological survey (**Attachment 6**). This was scope of the fieldwork was achieved by:

1. Validating State Regional Ecosystem and Regulated Vegetation Management Mapping
2. Facilitating targeted surveys for threatened flora and fauna, including their habitats listed under the EPBC Act (TECs) and the NC Act, and
3. Compiling a species list of observed EPBC Act listed flora and fauna, including weed and pest species.

Surveys also involved an assessment to determine whether the Study Area:

1. Supports vegetation analogous with TEC identified as MNES under the EPBC Act
2. Supports any plant species identified as MNES under the EPBC Act
3. Is appropriately omitted or included on the Regulated Vegetation Management Mapping
4. Is appropriately omitted or included on the Koala Habitat Area mapping
5. Supports EVNT plant species, and
6. Supports plant species or communities which were otherwise of conservation interest.

6. Vegetation and Flora Assessment

6.1 Vegetation Communities

The site supports 4 vegetation communities that have been described below:

- Vegetation Community 1 (Open field with fringing invasive and native vegetation)
- Vegetation Community 2 (Historically cleared area with significant regrowth)
- Vegetation Community 3 (Vegetation consistent with RE 12.8.1)
- Vegetation Community 4 (Carpark vegetation with formalised gardens)

The vegetation communities mapping is in **Figure 3** with further discussion on communities provided below.

6.1.1 Vegetation Community 1

Vegetation Community 1 is described as an open field dominated with lawn grasses and bordered by invasive species in the low canopy to shrub layer (0 - 5 m) where previous disturbance has occurred. Invasive species include but are not limited to Easter cassia (*Senna pendula*) and wild tobacco bush (*Solanum mauritianum*).

Native canopy is present in the form of a variety of Acacia species *(Acacia maidenii*) (to 12 m), planted natives such as weeping bottlebrush (*Melaleuca viminalis*) (to 4 m), mat rush (*Lomandra sp*) and blue gum (*Eucalyptus saligna*) (to 26 m) on the boundary of the field. A picnic shelter, benches, an existing car park and toilet infrastructure are adjacent to the field.

The distribution of this vegetation community is in **Figure 3**.

6.1.2 Vegetation Community 2

Vegetation Community 2 has been previously cleared, replanted with non-endemic species and does not correspond with RE 12.8.8, shown on the State mapping. These species include large canopy species such as swamp mahogany (*Eucalyptus robusta*), manna gum (*Eucalyptus viminalis*), lemon-scented gum (*Corymbia citriodora*), plunkett mallee (*Eucalyptus curtisii*) (to 4 m) and cadagi (*Corymbia torelliana*). Most of these species are of a significant height, up to 30 m. Other canopy species that occur within this area, which are likely to occur naturally in the local environment, include scattered blue gums (*Eucalyptus saligna*), New England blackbutt (*Eucalyptus andrewsii subsp. campanulata*), flooded gums (*Eucalyptus grandis*), hoop pine (*Araucaria cunninghamii*) and Illawarra flame trees (*Brachychiton acerifolius*). These species are likely encroaching from the remnant vegetation adjacent to the planting or were included within the planting.

The shrub layer contains invasive species and juvenile examples of the canopy species. The invasive species include easter cassia (*Senna pendula*), lantana (*Lantana camara*) and wild tobacco bush (*Solanum mauritianum*). Native shrubs include white bollygum (*Neolitsea dealbata*), geebungs (*Persoonia media*), maiden's blush (*Sloanea australis*), Bangalow palm (*Archontophoenix cunninghamii*), a variety of wattles (*Acacia sp*.) and sandpaper figs (*Ficus coronata*).

The ground layer consisted of thickets of rose-leaf bramble (*Rubus rosifolius*), water vines (*Cissus sp*.) and rainbow fern (*Calochlaena dubia*).

The distribution of this vegetation community is in **Figure 3**.

6.1.3 Vegetation Community 3

This vegetation community was consistent with vegetation outlined in the description for RE 12.8.1, exhibiting a canopy dominated by New England peppermint (*Eucalyptus andrewsii subsp. campanulata*) with occasional examples of blue gums (*Eucalyptus saligna*) in the canopy. Other canopy species recorded during an initial walkthrough in this area included tallowwood (*Eucalyptus microcorys*) and broad-leaved mahogany (*Eucalyptus carnea*) which also appears in the RE description. These trees reached heights of around 35 m.

The lower strata included a variety of rainforest species including Maiden's wattle (*Acacia maidenii*), geebungs (*Persoonia media*), maiden's blush (*Sloanea australis*), blue lilly pilly *(Syzygium oleosum*) and silver-leaved butterwood (*Callicoma serratifolia*).

The ground stratum contained a variety of native species including Lepidosperma species (*Lepidosperma sp.*), matrush species (*Lomandra sp.*) and rainbow fern (*Calochlaena dubia*).

The distribution of this vegetation community is in **Figure 3**.

6.1.4 Vegetation community 4

This area contained a mixture of species that have been planted in formalised garden beds and large, remnant individuals that border the carpark or have been incorporated into the carpark area. These individuals include New England peppermint (*Eucalyptus andrewsii subsp. campanulata*), silver-leaved butterwood (*Callicoma serratifolia*), maiden's blush (*Sloanea australis*), broad-leaved mahogany (*Eucalyptus carnea*) and a variety of large rainforest species.

The lower shrub stratum contains several species including cordyline species (*Cordyline sp.*), celerywood (*Polyscias elegans*) and tea tree species (*Lepotspermum sp.*). The ground stratum hosts a variety of species that includes matrushes (*Lomandra sp.*) and aneilema (*Aneilema acuminatum*).

Parts of this vegetation conform to RE 12.8.1.

The distribution of this vegetation community is in **Figure 3**.

6.2 Threatened Flora and Ecological Community Searches

The survey did not identify any TECs within the Study Area. Two threatened species were identified (**Table 6.1**), none of which are located within the disturbance footprint of the Project:

Table 6.1: Threatened flora identified during the survey

Species	Common Name	Category (EPBC ACT)	Category (NC Act)
Rhodamnia maideniana	Smooth Scrub Turpentine	Critically Endangered	Critically Endangered
Westringia rupicola	-	Vulnerable	Vulnerable

Details of surveyed native and exotic trees across the site is shown in **Attachment 5** and **Attachment 6.**

7. Fauna Habitat Assessment

7.1 Landscape Connectivity

The relative importance of this site to fauna species within the broader landscape varies significantly depending on the group of fauna. While there are barriers to the movement of fauna species (Springbrook Road and Carricks Road), connectivity from this site is good for avian, flying mammal, terrestrial and small non-flying and gliding arboreal species. This can be attributed to the size of and connectivity provided by Springbrook National Park across McPherson Range.

7.2 Fauna habitat

The Project is situated in a forested section of Springbrook National Park, which exhibits cleared areas associated with the Settlement Day Use Area. The vegetation communities described in **Section 6.1**, contain defined canopies, shrub and groundcover layers and offer a variety of habitat features for local fauna. Habitat assessments were undertaken for the threatened mammals (terrestrial and arboreal), birds, amphibians, reptiles, crustaceans and insects shown in **Table 7.1.**

Table 7.1: Threatened species habitat assessment (EPBC Act)

Scientific name	Common name	Category (EPBC Act)	Category (NC Act)
Mammals			
Phascolarctos cinereus	Koala	Endangered	Endangered
Petauroides volans	Greater glider	Endangered	Endangered
Petaurus australis australis	Yellow-bellied glider	Vulnerable	Vulnerable
Potorous tridactylus tridactylus	Long-nosed potoroo (northern)	Vulnerable	Vulnerable
Pseudomys novaehollandiae	New Holland mouse	Vulnerable	Vulnerable
Birds			
Calyptorhynchus lathami lathami	South-eastern glossy black-cockatoo	Vulnerable	Vulnerable
Turnix melogonaster	Black-breasted button quail	Vulnerable	Vulnerable
Atrichornis rufescens	Rufous scrub bird	Endangered	Vulnerable
Amphibians			
Assa darlingtoni	Pouched frog	Vulnerable	Vulnerable
Mixophyes fleayi	Fleay's barred frog	Endangered	Endangered
Litoria pearsoniana	Cascade treefrog	-	Vulnerable
Reptiles			
Coeranoscincus reticulatus	Three-toed snake-tooth skink	Vulnerable	Least concern
Harrisoniascincus zia	Rain forest cool-skink	Vulnerable	Vulnerable
Crustaceans			

Scientific name	Common name	Category (EPBC Act)	Category (NC Act)
Euastacus maidae	Hinterland spiny crayfish	Critically Endangered	Critically Endangered
Insects			
Phyllodes imperialis smithersi	Pink underwing moth	Endangered	Endangered

7.2.1 Arboreal mammals

Koala are found in a range of forest and woodland habitat dominated by Eucalyptus species and defined by other factors such as soil fertility and habitat quality(DCCEEW, 2022). During the survey, moderate to high quality koala habitat was identified, and was attributed to the abundance of non-juvenile koala habitat trees (NJKHT) that are significant foraging resources and feed trees. *Eucalyptius carnea* (Broad-leaved White Mahogany) and *Eucalyptus adrewsii subsp campanulata* (New England Blackbutt) were identified within the disturbance footprint and broader area. *Eucalyptus microcorys (Tallowwood)* was not identified in the disturbance footprint but was identified in the broader area.

Trees forming the canopy were found to have a diameter at breast height (DBH) of between 470 – 890 mm, with some as large as 890mm. Within the sub-canopy individuals were found to have a DBH less than 200mm. A shrub layer with an appropriate density for the movement of Koala was found within the disturbance footprint, especially near the proposed bridge. However, it must be noted that near the day use area, the shrub layer was found to be dense in patches and may inhibit the easy access and movement of koala through the habitat.

Moderate to high quality greater glider and yellow-bellied glider habitat was identified throughout the disturbance footprint. For the most part, significant glider foraging habitat weas identified, but few hollow-bearing trees were identified. However, a large hollow bearing *Eucalyptus campanulata* (New England Blackbutt) was identified near the proposed bridge.

Given that most trees in the broader area are moderate to high quality habitat for koala and gliders, the removal of 180 LIKT and AHT within the disturbance footprint should not constitute a significant reduction in habitat within the context of Springbrook National Park. The assessment of potential impacts and mitigation measures is in **Section 8**.

7.2.2 Terrestrial mammals

Low to moderate quality habitat was identified across the disturbance footprint for the long-nosed potoroo and New Holland mouse. The understorey was not sufficiently dense to provide nesting material and protection from predators for the potoroo, but potential foraging habitat was identified in Vegetation Community 2 with the presence of *Rubus probus* (native raspberry). The bridge site contained moderate quality habitat for the potoroo given proximity to the creek and medium density understorey.

Habitat for the New Holland mouse is typically characterised by open heathlands, woodlands with a heath understorey, and vegetated sand dunes. No heathland or grassy understorey was identified during the survey and the habitat quality for this species is therefore considered to be low.

The vegetation evident in the survey area is low to moderate quality for the potoroo and low-quality habitat for the New Holland mouse. The removal of vegetation within the disturbance footprint should therefore not constitute a significant reduction in habitat for threatened terrestrial mammals. The detailed assessment of potential impacts and mitigation measures is in **Section 8**.

7.2.3 Birds

Low quality habitat for the south-eastern glossy black-cockatoo, black-breasted button quail and rufous scrub bird was identified in the survey area. Sporadic and small examples of Allocasuarina and Casuarina species were identified within the survey area, but there were no signs of these species being used as food trees by cockatoos. Additionally, the approved conservation advice definition for cockatoo habitat was not met given the lack of suitable hollows (refer to **Section 7.2.1**).

Both the black-breasted button quail and rufous scrub bird are terrestrial species that require dense understoreys. The vegetation types do not conform to those outlined in the conservation advice for the button quail but there is sufficient litter material, required by thew scrub bird for foraging in Vegetation Community 3.

The vegetation is marginal habitat for these threatened bird species and removal of vegetation within the disturbance footprint should therefore not constitute a significant reduction in habitat. The detailed assessment of potential impacts and mitigation measures is presented in **Section 8**.

7.2.4 Amphibians and reptiles

As part of the survey, a habitat assessment was undertaken for threatened amphibians (the pouched frog and Fleay's barred frog) and reptiles (three-toed snake-tooth skink and rain forest cool-skink). Both frog species require specific habitat types for breeding or specific life cycle stages. The pouched frog requires an established layer of damp leaf litter, which is critical to the survival of the species (reproduction). The Fleay's barred frog is a stream breeding species that relies on permanent and semi-permanent freshwater streams for breeding and vegetated areas with significant leaf litter adjacent to the watercourse for shelter. Moderate to high quality breeding and shelter habitat was identified across the survey for these frog species, which was attributed to the presence of vegetated creeks and deep leaf litter.

Low to moderate quality habitat was identified for the reptile species assessed as part of the survey. While there is significant leaf litter available to these reptiles throughout the survey area for shelter and breeding, there were no flat rocks, and a low abundance of logs required for basking activities.

Good quality habitat for the amphibian and reptile species could be affected by the construction of the footings of the bridge spanning Purling Brook Creek. The residual impact of this activity is not considered to be significant given that there is remaining suitable habitat for these species along Purling Brook Creek. The detailed assessment of potential impacts and mitigation measures is in **Section 8**.

7.2.5 Crustaceans

The hinterland spiny crayfish is found exclusively in the Gold Coast Hinterland, inhabiting upstream ephemeral waterways while avoiding open fast flowing sections of creeks and rivers. This species burrows amongst rocks and gravel, often in areas with minimal surface water. High quality shelter and foraging habitat for the crayfish was identified in the non-perennial tributary of Purling Brook Creek which was described as a high-altitude rainforest stream characterised by low turbidity and rocky habitat.

High quality habitat for the crayfish could be affected by the construction of the footings of the bridge spanning Purling Brook Creek. The detailed assessment of potential impacts and mitigation measures is in **Section 8**.

7.2.6 Insects

The pink underwing moth is found in subtropical rainforest below 600 m in elevation, with an expected distribution of this species ranging from Nambour in South-east Queensland to Bellingen in northern New South Wales. Potential breeding habitat is limited to areas where the caterpillars food plant, a native rainforest vine (*Carronia multisepalea*), occurs in the rainforest. During the survey, the Carronia vine was not identified in the Study Area, confirming that the species may be transient passing through the area, but habitat quality is poor.

Given that the Corronia Vine is not present in the Study Area, removal of vegetation within the disturbance footprint should not constitute a significant reduction in habitat. The assessment of potential impacts and mitigation measures is in **Section 8**.

8. Potential Impacts and Mitigation Measures

8.1 Iterative Design Process

An iterative design process has underpinned the development of construction of the bridge, upgrade of the Settlement Picnic Area and Purling Brook causeway, look-outs and walking track (**Section 2.1**). The design process has undergone a collaborative evolution informed by on-going accumulation of desktop and site based data/results coupled with multidisciplinary advice on design requirements. Focus has been placed on balancing infrastructure requirements and environmental values. This iterative process of informing design has occurred through:

1. Desktop assessments
2. Site based surveys
3. Review and workshop of site based survey results
4. Review and testing of various designs and cost benefit analysis
5. Review of design options with the ultimate client, and
6. Refinement of design options.

8.2 World Heritage Properties Natural Heritage Values

Springbrook National Park was listed as part of the World Heritage-listed Gondwana Rainforests of Australia in 1994, recognised for representing a major stage in the Earth's evolutionary history, showcasing outstanding ongoing ecological and biological processes, and containing important natural habitats for conserving biological diversity. The assessment of the proposed action against the world heritage property criteria is in **Table 8.1** (DOE, 2013).

Table 8.1 Assessment against the world heritage property criteria

Values	Criteria	Justification
Values associated with geology or landscape	Damage, modify, alter or obscure important geological formations in a World Heritage property.	The sensitive nature and design of this proposed action, specifically accommodating most of the Project within or adjacent to previously disturbed areas will ensure that no important geological formations will be damaged, modified, altered or obscured. No significant impact.
	Damage, modify, alter or obscure landforms or landscape features, for example, by excavation or infilling of the land surface in a World Heritage property.	The areas that will require excavation or infilling, for the most part, have previously been developed on or altered in some way. As the works will not seek to significantly expand upon the footprint of this disturbance it is unlikely that any landforms will be altered. The installation of the proposed new bridge structure over Purling Brook Creek will not constitute a significant impact upon any landforms or landscape features. The clearing footprint for the new bridge should be minimal and as long as the bridge does not encroach upon the rocky stream in a new location and alter the hydrology and flow of the creek and waterfall no significant impact will occur. No significant impact.
	Modify, alter or inhibit landscape processes, for example, by accelerating or increasing susceptibility to erosion, or stabilising mobile landforms, such as sand dunes, in a World Heritage property.	The works have the potential to increase erosion and sedimentation within the Purling Brook Creek. This erosion and sedimentation could occur during the construction phase due to disturbed surfaces being exposed to erosional processes (rainfall etc.). Appropriate erosion and sedimentation control measures should be outlined and a management plan developed by a Certified Professional in Erosion and Sediment Control. Additionally, replacement of vegetation or other measure to reduce the overland flow of water should be sufficient to mitigate the potential for any increase in erosion and sedimentation as a result of the bridge installation. No significant impact.

Values	Criteria	Justification
	Divert, impound or channelise a river, wetland or other water body in a World Heritage property.	The proposed bridge will not encroach upon the Purling Brook Creek channel. The installation of a single span bridge should be sufficient to prevent this. No significant impact.
	Substantially increase concentrations of suspended sediment, nutrients, heavy metals, hydrocarbons, or other pollutants or substances in a river, wetland or water body in a World Heritage property.	The works have the potential to increase erosion and sedimentation within the Purling Brook Creek. This erosion and sedimentation could occur during the construction phase due to disturbed surfaces being exposed to erosional processes (rainfall etc.). Appropriate erosion and sedimentation control measures should be outlined in a management plan developed by a Certified Professional in Erosion and Sediment Control. Additionally, replacement of vegetation or other measure to reduce the overland flow of water should be sufficient to mitigate the potential for any increase in erosion and sedimentation as a result of the bridge installation. Additionally, spill kits and robust spill containment protocol should be outlined during the construction phase within the Construction Environmental Management Plan (CEMP) to ensure sediment, nutrients, heavy metals, hydrocarbons or other pollutants are released into Purling Brook Creek. Once construction is completed significant discharge of the above into the environment should be minimal to non-existent. No significant impact.
Biological and ecological values	Reduce the diversity or modify the composition of plant and animal species in all or part of a World Heritage property.	The proposed action is not expected to reduce species diversity or alter species composition within the WHA. Habitat values in the project area have been modified by existing infrastructure and significant impacts to species such as the pouched frog (*Assa darlingtonii*), Fleay's barred frog (*Mixophyes fleayii*), the glossy black cockatoo (*Calyptorhynchus lathami lathami*), the greater glider (*Petauroides volans*) and the koala (*Phascolarctos cinereus*) is not anticipated given that the remaining Springbrook National Park landholdings (6,558ha) provides extensive habitat for species that may be present in the area. Potential indirect impacts, particularly during construction, include edge effects, noise, and dust, and will be managed through standard environmental controls (erosion and sediment measures, dust suppression, noise mitigation). It is recommended, to minimise any potential impacts, that all hollow bearing trees with significant hollows are retained within the works area and any leaf litter and rotting logs

Values	Criteria	Justification
		that require removal are redistributed adjacent to the site to preserve habitat within the immediate area. No significant impact.
	Fragment, isolate or substantially damage habitat important for the conservation of biological diversity in a World Heritage property.	The proposed works will not fragment isolate or substantially damage habitat important for the conservation of biological diversity. With most of the works restricted to previously disturbed areas no further fragmentation or damage to habitat will occur. Where new clearing is required habitat features including hollow bearing trees and leaf litter should be retained or redistributed throughout the site to ensure no net loss of habitat. No significant impact.
	Cause a long-term reduction in rare, endemic or unique plant or animal populations or species in a World Heritage property.	Several rare and threatened species (*Rhodamnia maideniana* and *Westringia rupicola*) are known to occur within or adjacent to the works area. Where observed, these species' locations were recorded to ensure they will not be impacted by the works. Habitat assessments were performed for rare and threatened fauna species, and it was found that habitat for several rare and threatened fauna species did occur within the works area. This habitat will be retained where possible to ensure that these species can persist within the area. Additionally, with significant amounts of suitable habitat outside of the works footprint any impacts to habitat would not be considered significant for most species. The notable exception to this is the hinterland spiny crayfish (*Euastacus maidae*). This species is largely confined to the stream and its banks, making migration to new habitat difficult. This species occurs in the creeks and streams within the park. Alteration to the creek in a way that would reduce available habitat and could potentially have significant impacts up on this species. However, the design of the infrastructure as well as the implementation of appropriate erosion and sedimentation control measures will ensure this species habitat will not be significantly impacted. No significant impact.
	Fragment, isolate or substantially damage habitat for rare, endemic or unique animal populations or species in a World Heritage property.	Habitat assessments were performed for rare and threatened fauna species, and it was found that habitat for several rare and threatened fauna species did occur within the works area. This habitat will be retained where possible to ensure that these species can persist within the area. Additionally, with significant amounts of suitable

Values	Criteria	Justification
		habitat outside of the works footprint any impacts to habitat would not be considered significant for most species. The notable exception to this is the hinterland spiny crayfish (*Euastacus maidae*). This species is largely confined to the stream and its banks, making migration to new habitat difficult. This species occurs in the creeks and streams within the park. Alteration to the creek in a way that would reduce available habitat and could have significant impacts up on this species. The design of the infrastructure as well as the implementation of appropriate erosion and sedimentation control measures will ensure this species habitat will not be significantly impacted. No significant impact.
Wilderness, natural beauty or rare or unique environmental values	Involve construction of buildings, roads, or other structures, vegetation clearance, or other actions with substantial, long-term or permanent impacts on relevant values.	The proposed infrastructure including car parks, refurbished sealed hiking trails and pedestrian bridges will not have any long-term impacts on relevant environmental values. Most of this infrastructure will be installed in areas where previous clearing and disturbance has occurred, reducing the need to clearing of new areas. Additionally, those areas that will require clearing will not significantly reduce habitat for threatened species or significantly reduce the rare or unique beauty of the site. No significant impact.
	Introduce noise, odours, pollutants or other intrusive elements with substantial, long-term or permanent impacts on relevant values.	The proposed works will not introduce noise, odours, pollutants or other intrusive elements with substantial, long term or permanent impacts up on the park. The installation of the carp park infrastructure is in an area already used as a car park so no further impacts upon the park will occur. The proposed bridge infrastructure will not encroach into the bank of Purling Brook Creek and therefore will not significantly impact upon any natural values.

8.3 World Heritage and National Heritage List

Springbrook National Park, as part of the Gondwana Rainforests of Australia, was inscribed in the World heritage list in 1986 (extended in 1994) and included in the National Heritage List on 21 May 2007. The Gondwana Rainforests of Australia, spanning southeast Queensland and northeast New South Wales, preserve key rainforest remnants that showcase Earth's evolutionary history, ongoing ecological processes, and exceptional biodiversity. They support ancient plant and animal lineages, many endemic to the region, and provide critical habitat for numerous threatened species.

The Gondwana Rainforests is listed for three of the ten World Heritage criterion. An assessment of the proposed action against these criteria is in **Table 8.2**.

Table 8.2. Assessment against the National heritage list criteria

Criteria	Description	Justification
VIII	Outstanding examples of stages of earth's history	The Gondwana Rainforests protect some of the world's oldest plants and animals, including ancient ferns, conifers, marsupials, and unique birds and insects. They encompass subtropical, temperate, and dry rainforest habitats and illustrate the evolution of cold- and dry-adapted plants, serving as a living record of life from Gondwana. The proposed Project has been carefully designed, largely within or adjacent to previously disturbed areas, to avoid impacts on these ecosystems. This approach ensures the rainforest's World Heritage values are preserved while still allowing community access to them. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
IX	Outstanding examples of on-going evolution	The Gondwana Rainforests showcase ongoing geological processes and biological evolution. Key values include the well-preserved Tweed Volcano caldera, centres of endemism, and species with limited dispersal found in multiple rainforest pockets. Many plants and animals show evidence of recent evolution, including unique Southern Hemisphere plant genera, monotypic endemic plant families, frogs, reptiles, and invertebrates. The area demonstrates high biodiversity and evolutionary processes in both flora and fauna. The proposed Project has been carefully designed, largely within or adjacent to previously disturbed areas, to avoid impacts on these values. This approach ensures the rainforest's World Heritage values are preserved while still allowing community access to them. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
X	Important habitats for conservation of biological diversity	The Gondwana Rainforests contain highly significant habitats and species of conservation value, representing remnants of rainforest once widespread in Australia. Key values include subtropical rainforest, wet sclerophyll forest, montane heathlands, rocky outcrops, and transitional ecotones. They support over 200 important plant species (notably in Proteaceae, Myrtaceae, and Euphorbiaceae)

		and at least 80 vertebrate species of conservation concern, including rare birds, frogs, and mammals. The proposed Project has been carefully designed, largely within or adjacent to previously disturbed areas, to avoid impacts on these ecosystems. This approach ensures the rainforest's World Heritage values are preserved while still allowing community access to them. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.

Under the EPBC Act, the Minister for the Environment, Heritage and the Arts oversees the National Heritage List. An assessment of the proposed action against these criteria is in **Table 8.3**.

Table 8.3. Assessment against the National heritage list criteria

Criteria	Description	Justification
a	the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history	Springbrook National Park showcases significant stages in Australia's natural history, including the breakup of Gondwana and the persistence of ancient ecosystems. The park's geological features, such as remnants of ancient rainforests and landforms demonstrate these significant stages. The sensitive nature and design of this proposed action, specifically accommodating most of the Project within or adjacent to previously disturbed areas, will ensure that the Gondwana Rainforest heritage values are preserved. In doing so, the Project avoids impacts to the rainforest's role in demonstrating the course of Australia's natural history, including its ancient ecosystems, biodiversity, and evolutionary processes, and ensures the potential for on opportunities for future research into these values is low. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
b	the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history	Springbrook National Park provides habitat for rare, threatened, and endemic flora and fauna species. Several rare and threatened plant species (*Rhodamnia maideniana* and *Westringia rupicola*) occur within or near the works area, and their locations have been recorded to avoid impacts. Habitat for several rare and threatened fauna species also occurs within the area and will be retained where possible. Most species are unlikely to be significantly affected due to abundant habitat outside the works footprint. The exception is the hinterland spiny crayfish (*Euastacus maidae*), which is restricted to streams and is sensitive to habitat alteration. However, infrastructure design and erosion/sediment controls will prevent significant impacts. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**.

		No significant impact.
c	the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history	Flora and fauna diversity, combined with well-preserved geological formations, provides ongoing opportunities for scientific research into evolutionary, ecological, and geomorphic processes. The park's ecosystems offer valuable insights into natural history, including the survival of ancient lineages and the evolution of species. The sensitive nature and design of this proposed action, specifically accommodating most of the Project within or adjacent to previously disturbed areas will ensure that these heritage values are preserved and there is no impact to future research of Australia's natural history. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
d	the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of: *i. a class of Australia's natural or cultural places; or* *ii. a class of Australia's natural or cultural environments;*	This criteria applies to the Gondwana Rainforests of Australia, as it demonstrates the principal characteristics of a class of Australia's natural environments. The rainforests are outstanding examples of subtropical and temperate rainforest ecosystems, exhibiting their typical structure, composition, and ecological processes. The preservation of these forests allows for the representation and study of biodiversity patterns, forest dynamics, and associated geological features, making them nationally significant as a representative example of this class of natural environments. The sensitive nature and design of this proposed action, specifically accommodating most of the Project within or adjacent to previously disturbed areas, will ensure that the Gondwana Rainforests continue to demonstrate the principal characteristics of Australia's subtropical and temperate rainforest environments. By protecting the ecological structure, species composition, and natural processes of these ecosystems, the Project preserves their heritage value as representative examples of this class of natural environment and safeguards opportunities for ongoing scientific research into Australia's natural history. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
e	the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group	Springbrook National Park's landscape (escarpments, rain forest) is widely recognised for outstanding natural beauty. These features are highly valued by the Australian community and contribute to the park's aesthetic significance. The sensitive nature and design of this proposed action, specifically accommodating most of the Project within or adjacent to previously disturbed areas will ensure that QPWS&P continue to manage and conserve this protected area while providing facilities for the public to enjoy the natural heritage and aesthetic value of the region. No significant impact.

f	the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.	This criterion recognises places with outstanding heritage value due to a high degree of creative or technical achievement, does not generally apply to the Gondwana Rainforests of Australia National Heritage listing. This is typically relevant to built or engineered sites, such as historic buildings, bridges, or industrial works that demonstrate exceptional technical or artistic skill. The Gondwana Rainforests and Springbrook national park are listed for their natural heritage values, including ancient ecosystems, biodiversity, geological features, ongoing evolutionary processes, aesthetic qualities, and Indigenous cultural significance, rather than for human creative or technical achievement. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
g	the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	The land holds continuing significance for the Traditional owners, with cultural values and history tied into how the land was used, stories, and connection to country. This enduring cultural and spiritual connection underscores Springbrook National Park's cultural significance. The sensitive nature and design of this proposed action, specifically accommodating most of the Project within or adjacent to previously disturbed areas, ensures that the Project will not impact the cultural heritage significance of the park. This approach balances public use of the national park while also preserving the Traditional owners values and connections to it. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
h	the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history.	There is no nationally recognised association with a particular person or group of people that underpins this national heritage listing. The primary significance of Springbrook National Park and the Gondwana Rainforests of Australia relates to its ecological, geological, aesthetic, and cultural significance. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.
i	the place has outstanding heritage value to the nation because of the place's importance as part of Indigenous tradition.	Springbrook National Park holds ongoing cultural and spiritual significance for the Traditional Owners, reflecting their connection to the land, its history, and stories. The Project has been carefully designed to occur mostly within previously disturbed areas, ensuring that these cultural values are preserved while allowing for responsible public use of the park. Refer to **Sections 8.4 - 8.7** for the assessment of vegetation, fauna, biosecurity and construction-related

		impacts. The overarching mitigation measures are in **Section 8.8**. No significant impact.

8.4 Vegetation Impacts

8.4.1 TEC Impacts

The survey did not identify any TECs within the Study Area. No further consideration of potential impacts to TEC is required.

8.4.2 Impacts to EPBC Act Threatened Flora

Rhodamnia maideniana (smooth scrub turpentine) and *Westringia rupicola* were identified during the survey but are not located within the development footprint (**Figure 3**). The Project will not have any impacts on EPBC Act threatened flora.

No further consideration of potential impacts to threatened flora is required.

8.4.3 State Protected Vegetation Impacts

Rhodamnia maideniana (smooth scrub turpentine) and *Westringia rupicola* were identified during the survey but are not located within the development footprint. As such, a contemporary protected plant survey, in accordance with DETSI's Flora Survey Guidelines – Protected Plants, is recommended during the pre-construction phase to establish the presence of protected plant species and determine whether a clearing permit or exemption notification is required.

8.4.4 Rehabilitation

Site rehabilitation will be planned to replace vegetation that is cleared to accommodate the movement of plant and machinery during construction. Rehabilitation will seek to enhance the existing vegetation community which may have been impacted, through the planting of species which are consistent with the previous RE and best represent the previous habitat. Refer to the planting palette in the Landscaping Plan (**Attachment 7**).

8.5 Fauna and Fauna Habitat

8.5.1 Vegetation clearing

Direct and indirect impacts to native trees within the impact area are anticipated (**Attachment 6**), including the proposed removal of 149 trees and impacts (lopping, trimming) to 49 trees that are to be retained. Five Locally Important Koala Trees (LIKT) and four Ancillary Habitat Trees (AHT) species were identified to be removed or retained (with impacts) (Youngentob K.N et al., 2021).Refer to **Attachment 6** and **Table 8.4 for a** summary of impacts to LIKT and AHT.

Table 8.4. Direct and indirect impacts to trees

Aspect	Total	Total (LIKT)		Total (AHT)	
Trees to be removed	*149*	▪ *Eucalyptus campanulata* (x20) ▪ *Eucalyptus exserta* (x1)	31	▪ *Allocasuarina torulosa* (x1) ▪ *Corymbia intermedia* (x3)	▪ *13*

		▪ *Eucalyptus microcorys* (x4) ▪ *Eucalyptus saligna* (x5) ▪ *Eucalyptus tereticornis* (x1)		▪ *Lophostemon confertus* (x3) ▪ *Syncarpia glomulifera* (x6)	
Trees to be retained (with impacts)	*90*	▪ *Eucalyptus campanulata* (x28) ▪ *Eucalyptus microcorys* (x2) ▪ *Eucalyptus saligna* (x1) ▪ *Eucalyptus tereticornis* (x7)	38	▪ *Allocasuarina torulosa* (x3) ▪ *Corymbia intermedia* (x6) ▪ *Syncarpia glomulifera* (x1)	▪ *10*

To mitigate disturbance to, or the loss of terrestrial fauna habitat, course woody debris (logs with a diameter 10 cm or greater) generated with the removal or trimming of native trees, will be retained and placed by the contractor and QPWS&P within the adjacent sections of the National Park.

Potential habitat for threatened reptiles primarily occurs within the areas of remnant vegetation and placing cleared vegetation adjacent to the impact area will provide additional habitat for these species. Additionally, hollow limbs of trimmed trees will be retained and attached to remaining trees to provide habitat for arboreal mammals, birds, reptiles and amphibians.

Additionally, a tree management plan (**Attachment 6**) and landscape package (**Attachment 7**) have been developed to promote the preservation and enhancement of the aesthetic and ecological value of the site, while also ensuring the health and safety of trees and vegetation.

The proposed design option will not significantly impact fauna or fauna habitat within the area. This is because the Project components have been maintained within historically disturbed areas and minor expansion into vegetated areas has been carefully planned to ensure that minimal habitat loss will result from construction and operational activities.

8.5.2 Water quality

Removing two existing causeway crossings and constructing of a new suspension bridge has the potential to impact habitat associated with the creeks, if mitigation measures are not implemented and adhered to. This is because these systems may be utilised by amphibian, reptile, and crustacean species that have potential to occur in the area (**Section 7.2**). Spiny crayfish are particularly sensitive to changes in aquatic conditions, with increased sedimentation known to adversely affect their health and habitat (Coughran J & Furse J, 2010). Reptile and amphibian species rely on the creek for foraging and breeding, and extensive vegetation loss may disrupt key life cycle processes.

Water quality monitoring should be commissioned during the pre-construction phase to establish baseline water quality within Purling Brook Creek and its tributary. By understanding existing water quality characteristics of the creeks, the effectiveness of the ESCP can be tracked, identifying potential problems early, allowing for corrective actions to be taken. With specific reference to the spiny crayfish, water quality parameters should include, but not limited to, temperature, pH, water hardness and dissolved oxygen.

8.5.3 Fauna management within the impact area

In addition to habitat loss, construction activities can displace, injure, or kill fauna. While the impact area is small (2.16 ha) and associated with recreational uses within Springbrook National Park, it is recommended that temporary fauna exclusion fencing be installed around construction areas to prevent ground-dwelling fauna from entering and being exposed to the risk of injury or mortality.

Additionally, a species management plan (SMP) will be developed to outline how activities that may impact native animal breeding places and their habitats will be managed. The SMP will also be used to guide the suitably qualified Fauna Spotter Catcher, engaged to undertake a pre-clearing survey and supervise clearing required for the Project. Where possible, large hollow-bearing trees and other habitat features that are found to be occupied or in use (e.g.

avian nests) should be cleared last at the end of the workday. This allows any potentially injured or orphaned fauna (such as nestlings) to be promptly transported to a veterinarian or wildlife carer.

Where possible, trees should be felled into open or already cleared areas, in a manner that minimises impact to habitat features (such as hollows or nests), or as directed by the Fauna Spotter Catcher. Clearing should be progressed towards the edges of the impact area to allow fauna to disperse safely away from construction into the national park.

Where required, any native fauna located within areas scheduled for clearing must be relocated to secure areas of similar habitat by the Fauna Spotter Catcher before vegetation removal commences.

The summary of foraging / breeding and dispersal habitat expected to be lost because of the Project is in **Table 8.5**.

Table 8.5: Foraging / breeding and dispersal habitat loss

Scientific Name	Common Name	Foraging/Breeding Habitat	Lost Foraging / Breeding Habitat Area (ha)	Dispersal Habitat	Lost Dispersal Habitat Area (ha)
Mammals					
Phascolarctos cinereus	Koala	All areas within the Core Koala Habitat area, including REs 12.8.1, 12.8.19, 12.8.5 and vegetated non-remnant areas	2.16	N/A	-
Petauroides volans	Greater glider	REs 12.8.1, 12.8.19, 12.8.5 and vegetated non-remnant areas	2.16	N/A	-
Petaurus australis australis	Yellow-bellied glider	REs 12.8.1, 12.8.19 and 12.8.5	2.16	N/A	-
Potorous tridactylus tridactylus	Long-nosed potoroo (northern)	REs 12.8.1, 12.8.19 and 12.8.5, especially near Purling Brook Creek and its tributary.	0.27	Non-remnant areas	1.88
Pseudomys novaehollandiae	New Holland mouse	N/A – no heathland or grassy understorey	0	N/A no heathland or grassy understorey	0
Birds					
Calyptorhynchus lathami lathami	South-eastern glossy black-cockatoo	REs 12.8.1, 12.8.19 and 12.8.5	0.27	Non-remnant areas	1.88
Turnix melogonaster	Black-breasted button quail	REs 12.8.1, 12.8.19 and 12.8.5	0.27	Non-remnant areas	1.88
Atrichornis rufescens	Rufous scrub bird	REs 12.8.1, 12.8.19 and 12.8.5	0.27	Non-remnant areas	1.88
Amphibians					
Assa darlingtoni	Pouched frog	Purling Brook Creek, its tributary and associated vegetation	0.12	N/A	-
Mixophyes fleayi	Fleay's barred frog	Purling Brook Creek, its tributary and associated vegetation	0.12	N/A	-

Scientific Name	Common Name	Foraging/Breeding Habitat	Lost Foraging / Breeding Habitat Area (ha)	Dispersal Habitat	Lost Dispersal Habitat Area (ha)
Litoria pearsoniana	Cascade treefrog	Purling Brook Creek, its tributary and associated vegetation	0.12	N/A	-
Reptiles					
Coeranoscincus reticulatus	Three-toed snake-tooth skink	REs 12.8.1, 12.8.19 and 12.8.5	0.12	N/A	-
Harrisoniascincus zia	Rain forest cool-skink	REs 12.8.1, 12.8.19 and 12.8.5	0.12	N/A	-
Crustaceans					
Euastacus maidae	Hinterland spiny crayfish	Confined to Purling Brook Creek and its tributary	0.05	N/A	-
Insects					
Phyllodes imperialis smithersi	Pink underwing moth	N/A as no evidence of the *Carronia multisepelea* vine was identified within the impact area	-	REs 12.8.1, 12.8.19 and 12.8.5	1.88

To mitigate these impacts, vegetation clearing has been minimised wherever practicable, to preserve critical habitat, reduce the risk of erosion and sedimentation within the creek system and retain the aesthetic value of the WHA. In conjunction with structured vegetation removal, a comprehensive ESCP will be developed in the pre-construction phase. This plan will guide the interventions needed to minimize impacts of erosion and sediment runoff on the creek system and water quality. Water quality monitoring **(Section 8.5.2**) should also be implemented pre-construction (to establish a baseline) and during construction to track water quality parameters and assess the effectiveness of the ESCP.

All areas of vegetation disturbed during construction will be reinstated in accordance with the methodology outlined in the Tree Management Plan (**Attachment 6**) and Landscaping Plan (**Attachment 7**).

8.6 Biosecurity Impacts

Invasive plants pose significant threats to Queensland's natural environment, native wildlife, agriculture, cultural heritage, and community wellbeing (DPI, 2024). The Project has the potential to create favourable conditions for the establishment or spread of invasive plant species in areas immediately adjacent to the development footprint.

The Project CEMP should include a Biosecurity Subplan detailing mitigation measures to prevent the introduction and spread of invasive plants during construction. A key component will be reducing the potential spread of pathogens such as *Phytophthora*, myrtle rust, amphibian chytrid fungus, and fire ants. The Settlement Day Use Area is located outside, but adjacent to fire ant Biosecurity Zone 2 and specific precautions should be taken to prevent the spread of this invasive species.

Mitigation measures include, but is not limited to:

- Developing management protocols for sourcing flora species (landscaping and revegetation), soil and organic matter that do not pose a risk of introducing fungal spores and other pathogens harmful to forest ecosystems and amphibians
- Incorporating fire ant-safe practices into the CEMP for sourcing soil, mulch, quarry products, turf and potted plants from Biosecurity Zone 1 and Biosecurity Zone 2
- Incorporating wheel wash procedures to clean / disinfect the wheels and undercarriage of vehicles, plant and machinery entering and being used within the National Park.

8.7 Construction Environmental Management Plan

During detailed design, and prior to commencement of the construction phase, the contractor will prepare a CEMP to outline project-specific actions to avoid, manage, and mitigate environmental impacts. This document will be prepared in accordance with DETSI's *Preparing Environmental Management Plans for Queensland Parks and Wildlife Service and Partnerships authorities Guideline* (DES, 2023a) and provided to QWS&P for acceptance prior to the commencement of construction.

Flora and fauna mitigation and management measures include, but are not limited to:

- Conducting pre-clearing surveys
- Developing vegetation clearing protocols. This will be achieved through measures that include, but are not limited to, applying for permits (where required), implementing pre-clearing surveys to locate fauna and flora, clearing in a staged, systematic way with qualified personnel, and managing the site for erosion and sediment control
- Developing relocation strategies for tree hollows, large debris, and other habitat features (**Section 8.4.2**)
- Providing a suitably qualified Fauna Spotter Catcher during vegetation and groundcover clearing activities (**Section 8.5.3**)
- Identifying and marking no-go areas and tree protection zones

- Implementing pest animal and weed control measures (**Section 8.6**)
- Managing stockpiles to prevent habitat degradation and weed spread. This will be achieved through measures that include, but is not limited to, minimising size of and time stockpiles are maintained on site, locating stockpiles away from sensitive areas, incorporating stockpile management into erosion and sediment control measures and monitoring stockpiles for weed growth
- Directionally felling trees into cleared areas and, wherever practicable, away from retained vegetation and habitat; and
- Setting clear objectives and actions to minimise human disturbance to flora and fauna and reduce impacts to threatened fauna habitat.

The CEMP should also address measures that may affect flora and fauna habitat, such as:

- Installing temporary screening or fauna exclusion fencing between construction works and open habitats
- Adopting noise reduction measures on plant and equipment
- Limiting artificial lighting to the site camp area on the cricket oval, ensuring lights are suitably cowled, directed downwards, and oriented away from retained vegetation
- Locating fuelling points for diesel plant on flat, hard-standing areas (such as the cricket oval) at least 20 m from retained vegetation and watercourses, and
- Bunding refuelling areas and providing appropriate spill kits.

8.8 Overarching mitigation measures

Recommended mitigation measures to minimise the impacts of the Project on identified environmental values include, but are not limited to:

- Minimising the construction footprint required to the minimum practical width to retain mature trees and other vegetation where possible
- Utilising arborist (minimum Australian Qualification Framework Level 5) advice and supervision during works to ensure that trees identified for retention adjacent to works are suitably protected from damage
- Clearing of animal breeding places, including hollows and nests, should be avoided as far as practical
- Development of an SMP for the Project
- Any potential animal breeding places shall be checked by a Fauna Spotter Catcher prior to clearing to assess animal breeding. Should evidence of animal breeding be identified either:
    - No clearing shall be undertaken of the animal breeding place until the breeding has ceased, and the animal (and offspring) vacate the breeding place, or
    - Activities are undertaken in accordance with an approved Species Management Program for tampering with an animal breeding place should development include clearing of animal breeding place
- Minimising ground disturbance and implementing the ESCP
- To reduce potential impacts to the spiny crayfish, robust erosion and sediment control measures should be developed for bridge construction activities near Purling Brook Creek. Focus should be placed on reducing impacts to this habitat by minimizing vegetation removal near the stream banks and implementing the ESCP to maintain high water quality
- Water quality monitoring should be undertaken before and during construction to assist with the management of potential impacts to spiny crayfish. Understanding the baseline / existing water quality characteristics of the creek will help track the effectiveness of the ESCP, identify potential problems early on, and allow for corrective actions to be taken

- Developing a Biosecurity Subplan as part of the CEMP to manage the potential introduction and spread of weeds, pathogens and fire ants during construction
- A protected plants survey should be commissioned in accordance with DETSI's Flora Survey Guidelines – Protected Plants, to locate and assess the presence of protected plant species, regulated under the NC Act (DETSI, 2025a). Survey results should be reported to DETSI and may be required to support clearing permit applications
- Utilise fauna friendly lighting and in-ground path markers to minimise light spill and disturbance for adjacent fauna habitats
- Promoting habitat connectivity for fauna through sensitive design measures such as the raised boardwalks proposed as part of the Project and incorporating fauna sensitive fencing, where applicable

9. Statutory Compliance

9.1 Matters of National Environmental Significance

The Proposed Action is unlikely to result in a Significant Residual Impact on MNES (refer to **Section 8**). Although the site is located within Springbrook National Park, much of the area near the Settlement Day Use Area is non-remnant vegetation, consistent with historical plantings associated with the management of the protected area. While some site values suggest potential habitat for MNES-listed fauna, the Project design demonstrates a considered approach that balances the need to upgrade existing QPWS&P facilities with the objective of minimising disturbance to environmental values. No TECs are present on site; however, minor impacts to remnant vegetation (RE 12.8.1 and RE 12.8.19) and high value regrowth vegetation areas are anticipated.

Consequently, the impacts of the Proposed Development are considered unlikely to constitute a *Significant Impact* on MNES. Most of the Project footprint is confined to areas that are already disturbed. Where expansion into remnant vegetation is required to accommodate Project components and construction activities, these have been carefully planned to minimise environmental impacts as far as possible. While referral to DCCEEW is merited, the proposed action should not be considered a controlled action.

9.2 Matters of State Environmental Significance

As discussed in **Section 3.2.3**, because QPWS&P is a State / public sector entity, clearing of native vegetation and koala habitat as part of the Project is exempted development under the Planning Reg. However, with the application of the management and mitigation measures, significant residual impacts are not expected to occur to MSES.

9.3 Matters of Local Environmental Significance

QPWS&P is a public sector entity, and as per Schedule 6, Section 8 of the Planning Reg, assessment of the Project against CoGC City Plan is not required (**Section 3.3**).

10. Summary and Conclusion

This Report was produced to provide an assessment of the Project regarding design and relevant statutory instruments. To produce this document a field survey was completed in addition to desktop surveys to outline the environmental values within the site that have the potential to trigger any environmental legislative approvals in at a Commonwealth, State and local level. In addition to field survey an iterative design optioneering process has been undertaken since 2020, to refine the design of Project infrastructure to ensure that as many MNES and MSES were avoided and where impacts to these matters of environmental significance could not be avoided impacts were minimised and/or mitigated.

No Endangered TECs were recorded during the survey, however minor impacts are anticipated to remnant and non-remnant vegetation, which forms habitat for the species outlined in **Section 7.2**. The iterative environmentally sensitive design process will ensure environmental impacts are limited as far as possible. Vegetation cleared to accommodate access and operations associated with the construction of the suspension bridge, revitalisation of the look-outs and upgraded walking tracks will be reinstated as part of the landscaping plan. Additionally, no threatened species under the EPBC Act are likely to be significantly impacted by the Project.

Based on the findings of the assessment, the proposed action is not expected to have a significant impact on MNES as defined under the EPBC Act. The Project footprint (2.16 ha) has been designed to avoid areas of high environmental value, with potential impacts further minimised through the implementation of comprehensive mitigation and management measures consistent with relevant guidelines. It is also in QWS&P's interest to limit the extent of disturbance, as the site's existing natural character is a key attraction for visitors. The Project will therefore be designed to blend into the surrounding landscape to ensure that these natural values are maintained and.

Any residual impacts are expected to be minor, localised, and temporary, with no measurable effect on the ecological character, population viability, or long-term conservation status of protected species, ecological communities, or World and National Heritage values. Accordingly, whilst referral to DCCEEW is merited, the proposed action should not be considered a controlled action.

11. References

CoGC. (2016). *City Plan* . https://www.goldcoast.qld.gov.au/Planning-building/Planning-our-city

Coughran J, & Furse J. (2010). *Euastacus maidae. The IUCN Red List of threatened species 2010.*

DCCEEW. (2015). *Davidsonia jerseyana (Davidson's plum) conservation advice*.

DCCEEW. (2022). *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory*.

DCCEEW. (2025, April 28). *Protected Matters Search Tool*. https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool

DES. (2023a). *Guideline: Infrastructure and Equipment - Preparing Environmental Management Plans for Queensland Parks and Wildlife Service and Partnerships authorities*.

DES. (2023b). *State Government Supported Infrastructure Koala Conservation Policy 2023*.

DESI. (2024). *Queensland Environmental Offsets Policy*.

DETSI. (2025a). *Flora Survey Guidelines-Protected Plants*.

DETSI. (2025b, April 28). *WildNet Species LIst* .

DNRMMRRD. (2025). *Vegetation Management Report* .

DOE. (2013). *Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*.

DPI. (2024). *Queensland Invasive Plants and Animals Strategy 2025-2030*.

Youngentob K.N, Marsh K.F, & Skewes J.A. (2021). *A review of koala habitat assessment criteria and methods*. Report prepared for the Department of Agriculture, Water and the Environment. www.anu.edu.au

Figures

Figure 1: Site Location

Figure 2: Site Development Plan

Figure 3: Survey Results and Threatened Flora Species Locations

28ºS ENVIRONMENTAL

Attachment 1 – Purling Brook Falls Suspension Bridge Project (2024-7290)

Document One

28ºS ENVIRONMENTAL

Attachment 2 – PMST Search Tool Results

Document Name

28ºS ENVIRONMENTAL

Attachment 3 – MSES Report and WildNet Species

28ºS ENVIRONMENTAL

Attachment 4 – Vegetation Management Property Report

28ºS ENVIRONMENTAL

Attachment 5 – Site Survey Results

28ºS ENVIRONMENTAL

Attachment 6 – Tree Survey Plan

Attachment 7 – Landscape Package