Nomination to change the conservation class of a species under the Queensland *Nature Conservation Act 1992*

Complete this form to nominate a species for assessment of its conservation class under the *Nature Conservation Act 1992* (NC Act). Any subspecies, variety, race, hybrid, mutation or geographically separate population (hereafter 'species') can be nominated. The appropriate conservation class will be selected during an expert assessment process and, following approval processes, reflected in the next suitable update of the NC Act.

A species may be nominated to an appropriate conservation class from any other conservation class. The nomination assessment process may result in a species being recommended to the conservation class as nominated, or to a class better supported by scientific data and expert opinion. Assessments and nominations will be shared with the Commonwealth and other Australian jurisdictions within the species' distribution.

All plant and vertebrate species native to Queensland are protected under the NC Act and classified as Least Concern unless found eligible for a different conservation class. Invertebrate species are only protected under the NC Act if specifically named under a conservation class. A species can be nominated for listing or reassignment from any conservation class to:

A national threat category:

- Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (E) or Vulnerable (V) if it meets at least one of the International Union for Conservation of Nature (IUCN) criteria for species at risk of extinction

A state threat class:

- Near Threatened (NT) if the species meets at least one of the criteria for species at risk of becoming threatened in the future based on concerns relating to population dynamics or threats
- Least Concern (LC) if evidence is provided that no criteria for a higher class have been met, and the species won't become eligible for a higher class in the foreseeable future should conservation actions cease due to reclassification.

The assessment of species against the national threat categories reflected in this form complies with the Memorandum of Understanding for the Common Assessment Method (CAM) between the Commonwealth and Australian states and territories. The objective of the CAM is for partner jurisdictions to adopt each other's national assessments as appropriate. Information about the CAM can be found at https://www.qld.gov.au/environment/plants-animals/wildlife-permits/common-assessment.

To nominate a species with an Australian distribution that is not restricted to Queensland, use the nomination form and guidelines at http://www.environment.gov.au/biodiversity/threatened/nominations/forms-and-guidelines and email the completed form to the Australian Government at EPBC.nominations@environment.gov.au.

Queensland
Government

Important notes for completing this form

- **To enable a species eligibility for listing to be assessed against the criteria, please complete the form as comprehensively as possible by providing a response in each box with an orange border.**
- Completing a nomination is a demanding task. Nominators are encouraged to seek advice from experts where appropriate to assist in completing the nomination form.
- The opinion of scientific experts may be cited as <u>personal communication</u> with their approval. Please provide the experts names, qualifications and contact details (including employment in a government agency if relevant) in the reference list at the end of the form.
- Include any available information and analysis or state when the required information is not available.
- Figures, tables and maps can be included at the end of the form or provided as separate electronic files or hardcopy documents (referenced as appendices or attachments in your nomination).
- Cross-reference relevant areas of the nomination form where needed.
- **Reference all information sources**, both in the text and in a reference list at the end of the form.
- Identify confidential material and the reason it is sensitive. With the exception of information you have identified as confidential, nominations under the CAM process may be made available by a state, territory or the Commonwealth Government to experts or the public for comment.
- If the species is listed nationally, the Australian Government will publish nomination information on its website. Your details as nominator will not be released and will be treated as confidential information.
- Guidance on interpreting this nomination form can be found in the "*Guidelines for Assessing the Conservation Status of Native Species*" developed by the Australian Government under the EPBC Act here http://www.environment.gov.au/biodiversity/threatened/nominations/forms-and-guidelines. Although not fully relevant under the NC Act, the guidelines provide assistance on several aspects of this form. Please email SpeciesTechnical.Committee@des.qld.gov for further advice on completing the nomination.

Further information on selected questions

INTRODUCTION

Species native to Queensland may be nominated to any conservation class under the NC Act, including to transfer between classes. If the taxon at risk is a population or hybrid, or if you wish to know if it has been unsuccessfully nominated under the NC Act in the past, please contact the Queensland Department of Environment and Science for advice at SpeciesTechnical.Committee@des.qld.gov.au.

To search for a species' conservation class under the NC Act please refer to the *Nature Conservation (Wildlife) Regulation 2006*: https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2006-0206.

You can also search the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) list of threatened species in the Species Profile and Threats Database (SPRAT) at www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

The full lists of threatened fauna and flora under the EPBC Act are available here:
www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna
www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=flora.

You can find a list of nominated species that did not meet the assessment criteria for listing under the EPBC Act at www.environment.gov.au/biodiversity/threatened/unsuccessful-species.html.

A nomination to transfer a species from a threatened conservation class to Least Concern or Near Threatened under the NC Act need not address sections marked with an asterisk (*).

SCIENTIFIC AND COMMON NAMES OF NOMINATED SPECIES

- Provide the currently accepted scientific and common name(s) for the species (including Indigenous names, where known). Note any other scientific names that have been used recently such as superseded names.

TAXONOMY

- Record the species' authority and the taxonomic group to which it belongs (Family name is sufficient for plants; both Order and Family name are required for fauna).
- Is the species known to hybridise with other species? Describe any cross-breeding with other species in the wild, indicating where and how frequently this occurs.

DISTRIBUTION

- In accordance with the CAM, the Commonwealth is the default assessment 'lead' for species occurring across multiple Australian jurisdictions, and the nomination will be subject to the prioritisation and assessment process under the EPBC Act. Download the nomination form here http://www.environment.gov.au/system/files/pages/d72dfd1a-f0d8-4699-8d43-5d95bbb02428/files/nomination-form-species.pdf, and email it to epbc.nominations@environment.gov.au. Further information on the EPBC Act nomination, prioritisation and assessment process is available at http://www.environment.gov.au/biodiversity/threatened/nominations.
  Note: where the relevant jurisdictions agree, a State or Territory (rather than the Commonwealth) may take the lead on assessing a cross-jurisdictional species, in consultation with the Commonwealth and other jurisdictions.
- A nomination for a species endemic to Queensland or with its only Australian distribution in Queensland, for example a species only occurring in Queensland and Papua New Guinea, can be assessed under the NC Act. Please submit your completed nomination form to SpeciesTechnical.Committee@des.qld.gov.au.
- Describe the species' current geographic distribution within Queensland, and where applicable, outside Australia.
- Provide a map, if available, indicating latitude, longitude, map datum and location names
  - Indicate the percentage of the global population that occurs in Queensland, and what is its significance?
  - Is the Queensland population distinct, geographically isolated, or does part or all of the population migrate into/out of the Queensland jurisdiction?
  - Explain the relationship between the Queensland population and the global population.
  - Do global threats affect the Queensland population?
- Give locations of other existing or proposed populations such as populations that are captive, propagated, naturalised outside their range, recently re-introduced to the wild, and planned to be re-introduced. Note if these sites have been identified in recovery plans. Provide latitude, longitude, map datum and location name, where available, in an attached table.
- Give details of fauna species' home ranges/territories including any relevant daily and seasonal or irregular movement patterns, such as arrival/departure dates if migratory.
- Does the species occur within an EPBC Act listed ecological community? You will find a list of EPBC Act listed ecological communities here: www.environment.gov.au/cgi-bin/sprat/public/publiclookupcommunities.pl.

BIOLOGY/ECOLOGY

- **Life cycle**: Provide detail on the age at sexual maturity, average life expectancy, natural mortality rates, and generation length
  - "*Generation length*" is defined as the average age of parents of the current cohort (i.e. newborn individuals in the population), and reflects the turnover rate of breeding individuals in a population. Generation length is greater than the age at first breeding and less than the age of the oldest breeding individual, except in species that breed only once. Where generation length varies under threat, use the more natural pre-disturbance generation length. It is often calculated as = (longevity + age at maturity)/2. Provide details of the method(s) used to calculate the generation length.
- **Reproduction**: Provide detail on the reproductive requirements of this species.
  - **Flora**: When does the species flower and set fruit? What conditions are needed for this? What are the pollinating and seed dispersal mechanisms? If the species reproduces vegetatively, describe when, how and what conditions are needed. Does the species require a disturbance regime (e.g. fire, cleared ground) to reproduce?
  - **Fauna**: provide an overview of the species' breeding system and breeding success, including: when it breeds; what conditions are needed for breeding; whether there are any breeding behaviours that may make it vulnerable to a threatening process.
- **Habitat**
  - Provide information on aspect, topography, substrate, climate, forest type, associated species, sympatric species and anything else that is relevant to the species' habitat.
  - Explain how habitats are used (e.g. breeding, feeding, roosting, dispersing, basking, etc.).
  - Does the species use refuge habitat (e.g. in times of fire, drought or flood)? Describe this habitat.
- **Feeding (fauna):**

– Summarise the feeding behaviours, diet, and the timing/seasonality associated with these. Include any behaviour that may make the species vulnerable to a threatening process.
- **Movement (fauna)**: provide information on daily and seasonal movement patterns.

IDENTIFICATION OF KNOWN THREATS AND IMPACTS OF THE THREATS
- For each threat, describe:
  a. whether it is actual or potential
  b. how and where it impacts on this species
  c. what its effect has been so far (is the threat known or suspected?, does it only affect certain populations?) Present supporting information/research).
  d. its expected effect in the future (is the threat known or suspected?, does it only affect certain populations?, is there supporting research/information?) Present supporting information/research).
  e. its relative importance or the magnitude of the impact on the species.

- Identify and explain any additional biological characteristics particular to the species that are threatening to its survival (e.g. low genetic diversity).
- If subject to natural catastrophic events, i.e. events with a low predictability that are likely to severely affect the species, identify the type of event, its likely impact, and its likelihood of occurrence (e.g. a drought/cyclone in the area every 100 years). If **climate change** is an important threat to the species, provide referenced information on how climate change might significantly increase the species' vulnerability to extinction. Please refer to the *Guidelines for Assessing the Conservation Status of Native Species*: http://www.environment.gov.au/system/files/pages/d72dfd1a-f0d8-4699-8d43-5d95bbb02428/files/tssc-guidelines-assessing-species-2018.pdf.

*CONSERVATION ADVICE: THREAT ABATEMENT AND RECOVERY ACTIONS
- Describe how threats are or could be abated and/or species recovered.
- Identify who is undertaking these activities and how successful the activities have been to date.
- Describe any mitigation measures or approaches that have been developed specifically for the species at identified locations. Identify who is undertaking these activities and how successful the activities have been to date.
- For species nominated as Extinct in the Wild, provide location details for any naturalised or captive populations and the level of human intervention required to sustain the species.

IMPACT OF TRANSFERRING A THREATENED SPECIES TO NEAR THREATENED OR LEAST CONCERN
- Only complete this section if you are nominating a species for transfer to Near Threatened or Least Concern from a class of nationally threatened wildlife (Extinct, Extinct in the Wild, Critically Endangered, Endangered or Vulnerable).
- Provide details of the expected impact on the species if conservation actions ceased following its transfer out of a threatened wildlife class.

CURRENT LISTING CLASS AND CATEGORY
- Note: The term 'class' under the NC Act is equivalent to the term 'category' under the EPBC Act.
- Select the species' current class under the NC Act where applicable. Search the species' NC Act class here: https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2006-0206.
- Select the species' current category under the EPBC Act where applicable. Search the Australian Government SPRAT Database here: www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

NOMINATED LISTING CLASS

- **After completing the section 'Eligibility against the criteria'** sufficient evidence should be available to determine your response to this section. Please select the NC Act class to which the species is being nominated.

REASONS FOR A NOMINATION TO TRANSFER TO ANOTHER CLASS
Please describe why the species is being nominated to transfer to another conservation class in Queensland:
- *Genuine.* The change in class is the result of a genuine status change that has taken place since the previous assessment. For example, the change is due to an increase in the rate of decline, a decrease in population or range size or habitat, or declines in these for the first time (owing to increasing/new threats).
- *Knowledge.* The change in class is the result of new knowledge, e.g. owing to new or newly synthesised information about the status of the taxon (e.g. better estimates for population size, range size or rate of decline).
- *Taxonomy.* The change in class is due to a taxonomic change adopted during the period since the previous assessment. Such changes include:

- *newly split* (the taxon is newly elevated to species level)
- *newly described* (the taxon is newly described as a species)
- *newly lumped* (the taxon is recognised following lumping of two previously recognised taxa)
- *no longer valid/recognised* (either the taxon is no longer valid, e.g. because it is now considered to be a hybrid, variant form or subspecies of another species, or the previously recognised taxon differs from a currently recognised one as a result of a split or lump).

- *Mistake*. The previous class was applied in error.
- *Other.* The change in class is the result of other reasons not easily covered by the above, and/or requires further explanation. Examples include change in assessor's attitude to risk and uncertainty.

INITIAL LISTING

- The reasons for the initial NC Act listing may be available in the original nomination for the species. This can be obtained by emailing the Department of Environment and Science's Species Technical Committee at SpeciesTechnical.Committee@des.qld.gov.au.
- The reasons for EPBC Act listing may also be available. Search for the species' EPBC Act listing and conservation advice for threatened species in the SPRAT Database www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.
- If there is insufficient information to provide details of the reasons for the original listing, please state this.

CHANGES IN SITUATION LEADING TO THE NOMINATION TO TRANSFER TO ANOTHER CLASS

- Describe the changes that have occurred or are likely to occur to the species' population, range or habitat that influence the nomination to change the species' conservation class.

ELIGIBILITY AGAINST CRITERIA

- For a species to be eligible as Near Threatened or a class of threatened wildlife, it must be assessed as meeting **at least one** of the five 'criteria' on this nomination form. For example, for a species listed as Vulnerable to be transferred to the Endangered class, it must meet the threshold/s for at least one of the five criteria for Endangered.
- A species does not have to be found eligible for the same class under all criteria; however, all questions must be answered. If information is not available for a particular criterion, a statement to this effect is required.
- If you hold unpublished data that support assessment of a criterion, you must provide them with the nomination.
- Standards for assessing a species' conservation status in Australia align with the IUCN Red List Criteria and Categories. Please refer to the IUCN guidelines for explanations of how to address the criteria http://s3.amazonaws.com/iucnredlist-newcms/staging/public/attachments/3151/redlistguidelines.pdf.

DECLARATION

In signing this nomination form, you agree to grant the Queensland Government (as represented by the Department of Environment and Science) a perpetual, non-exclusive, worldwide, royalty-free licence to use, reproduce, publish, communicate and distribute information that you have provided in the nomination form that is not referenced to other sources with the exception of information specifically identified by you as confidential, in websites and publications and to promote those websites and publications in any medium.

As nominator, your details are automatically subject to the provisions of the *Privacy Act 1988* and will not be divulged to third parties. The Commonwealth, State and Territory governments have agreed to collaborate on national threatened species assessments using the CAM. As part of this collaboration, your nomination, including your details as nominator, may be provided to other government jurisdictions, who will also observe these privacy and confidentiality arrangements.

If you subsequently agree to be cited as the author of specific, cited information, you will be acknowledged in all publications and websites in which that information appears, in a manner consistent with the *Style Manual for Authors, Editors and Printers* (latest edition).

Nomination form to change the conservation class of a species in Queensland

Details of the nominated species

SCIENTIFIC NAME OF SPECIES (SUBSPECIES, VARIETY, ETC. TO BE SPECIFIED WHERE RELEVANT)

Grevillea hodgei Olde & Marriot

COMMON NAME(S)

Coochin Hills Grevillea

TAXONOMY

Provide any relevant detail on the species' taxonomy (e.g. authors of taxon or naming authority, year and reference; synonyms; Family and Order).

Olde&Marriot

Olde, P.M. & Marriott, N.R. (1994), New names and combinations in Grevillea (Proteaceae: Grevilleoideae). *The Grevillea Book* 1: 185

Proteales: Proteacaeae

*CONVENTIONAL ACCEPTANCE OF TAXONOMY

Is the species' taxonomy conventionally accepted?

☒Yes
☐No

If the species is not conventionally accepted, please provide the following information:
- a taxonomic description of the species in a form suitable for publication in conventional scientific literature

OR
- evidence that a scientific institution has a specimen of the species, and a written statement signed by a person who is a taxonomist and has relevant expertise (has worked with, or is a published author on, the group of species nominated) that the species is considered to be a new species.

Click or tap here to enter text.

*DESCRIPTION

Provide a description of the species. Include where relevant its distinguishing features, size and social structure.
How distinct is this species in its appearance from other species? How likely is it to be misidentified?

Short description
Erect shrub 1-4 m tall with leaves 6-19 cm long that are deeply divided into 6-14 parallel, linear lobes that are hairy underneath. The confloresence is simple, erect and cylindrical with creamy-yellow flowers that have dense brown hairs. *Grevillea hodgei* is closely related to *G. whiteana* but is generally distinguished by its shorter conflorescences, shorter pistil and having more extensive rusty-brown hairs, which are more persistent on the outer surface of the perianth.

Full description as in Makinson (2000):
"Erect shrub 1–4 m high. Leaves 6–19 cm long, pinnatisect with 6–14 ascending parallel linear lobes; lobes 5–12 cm long, 1.5–2.8 mm wide, acute, not pungent; margins revolute, enclosing most or all of the sericeous lower surface on either side of midvein. Conflorescence simple, erect, cylindrical, subsynchronous or opening irregularly; floral rachis 20–80 mm long. Flower colour: perianth cream with a ±dense indumentum of persistent brown hairs especially on limb and at base; style rich cream to pale yellow. Perianth tomentose to villous outside. Pistil 26–35 mm long; style glabrous, with a slight dorsal hump immediately below style-end. Follicle 13–14 mm long, tomentose" (in Makinson 2000).

DISTRIBUTION

Provide a succinct overview of the species' known or estimated current and past distribution, including international/national distribution. Provide a map if available.

Is the species' habitat protected within the reserve system (e.g. national parks, Indigenous Protected Areas, or other conservation estates, private land covenants, etc.)? If so, which populations? Which reserves are actively managed for this species? To your knowledge, which reserves are being actively managed in way that provides incidental benefits for this species? Give details.

Grevillea hodgei is known from a very narrow range in the Beerwah area in the South Eastern Queensland bioregion. The estimated extent of occurrence (EOO) and area of occupancy (AOO) are calculated as 8.0 km^2 using an automated 2 km grid cell and verified herbarium specimens (IUCN 2019). The EOO and AOO are reduced to 4.0 km^2 when the grid cell position is optimised. This estimate is considered to have high certainty as targeted surveys have been undertaken on surrounding mountain peaks and unrecorded populations are unlikely (G. Leiper, pers. comm. 2019).

Grevillea hodgei is naturally restricted to two peaks in the Glasshouse Mountains; Rupari Hill and Mt Coochin. These mountaintop subpopulations are separated by intensively urbanised areas and timber plantations (Figure 2). The species is therefore considered severely fragmented as genetic exchange between these subpopulations is likely to be limited (IUCN 2019).

One subpopulation of *Grevillea hodgei* is protected within the Glasshouse Mountains National Park at Mt Coochin (Figure 3). The second subpopulation, which occurs at Rupari Hill, is on freehold tenure that is not managed for conservation (Figure 4). For the purposes of this assessment, *G. hodgei* can be considered to occur at two separate locations, as the threats differ at each subpopulation.
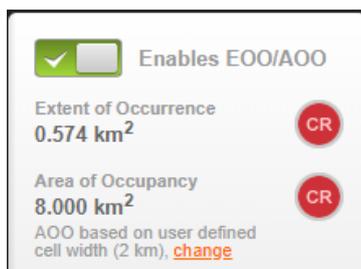
BIOLOGY/ECOLOGY

Provide a summary of biological and ecological information.

Include information on:
- life cycle including age at sexual maturity, life expectancy and natural mortality rates
- specific biological characteristics
- the species' habitat requirements
- for fauna: feeding behaviour and food preference and daily/seasonal movement patterns
- for flora: pollination and seed dispersal patterns

Grevillea hodgei occurs on well-drained, skeletal, sandy loam soils amongst exposed trachyte rock outcrops. The species can also occur at lower elevations in deeper soils amongst shrubland and open woodland. The species occurs amongst vegetation mapped as Regional Ecosystems 12.8.20 and 12.8.19 (Queensland Government 2019).

Grevillea hodgei grows in both full-sun and part-shade (G. Leiper, pers. comm. 2019). Flowering occurs all year but peaks in March and October. The flowers provide an abundance source of nectar for nectar-feeding birds and arboreal mammals that pollinate the species. *Grevillea hodgei* is killed by fire and regenerates from seed after this disturbance. The generation length of the species is not known, however when compared to documented longevity of *Grevillea* spp. in the Sydney region (Benson and McDougall 2000), it is reasonable to assume it ranges from 10 to 20 years.

Threats

IDENTIFICATION OF KNOWN THREATS AND IMPACT OF THE THREATS

Identify any known threats to the species in the table below. Describe **past, current or future** threats, whether the threats are **actual or potential**, and the **type and level of impact** you believe each threat is having on the species.

Past threats	Impact of threat
Land clearing (current post VMA) High	The installation of water and microwave towers removed a portion of habitat from the Rupari Hill crest. A sizeable population of both mature and juvenile individuals was removed near the summit for underground services (G. Leiper, pers. comm. 2019). Further clearing for easements and access tracks has occurred at this population.
Current threats	**Impact of threat**
Land clearing (current post VMA) High	Ongoing maintenance of the facilities at Rupari Hill has resulted in damage to at least two of the few remaining mature *G. hodgei* and poisoning of several seedlings.
Current land management practises (e.g. increasing urbanisation) Moderate	The population on Rupari Hill occurs on freehold tenure and populations have been lost for infrastructure development. Activities associated with increased urbanisation in the area include firewood collection, tree ringbarking and tree poisoning.
Inappropriate disturbance regimes High	*Grevillea hodgei* is vulnerable to inappropriate fire regimes. As the species is killed by fire, the interval before the next fire must be long enough for the new generation to reach reproductive maturity and produce seed. If fire intervals are too short, the population will continue to decline. Similarly, if the species requires fire to germinate, lack of fire may also contribute to population declines. The species occurs at the top of two peaks and given that fire travels rapidly uphill, the populations are particularly susceptible to burning when fires occur in the area. The remote location and low risk to human life means that mitigating such fires would be a low priority.
Future threats – actual	**Impact of threat**
Land clearing (current post VMA) High	The population at Rupari Hill occurs on freehold tenure (Figure 4) and further development has been proposed in the past. Future development continues to be a threat to this population.
Climate change High	Climate change projections for South East Queensland include a decline in rainfall, increase in temperatures and more extreme storms (Dowdy et al. 2015). Like other mountaintop species in Queensland (Costion et al. 2015), *G. hodgei* is already severely restricted and therefore unable to move in response to this habitat change.
Future threats – potential	**Impact of threat**
Small populations (demographic, genetic effects) High	Given the small population size and restricted distribution, this species is highly vulnerable to stochastic events including too-frequent fire and prolonged drought. Given the small population size, this species may have low genetic diversity with long-term implications for the viability of the species. The species may hybridise with garden plants of nearby housing developments and contribute to genetic contamination of the Rupari Hill population (G. Leiper, pers. comm. 2019), although this remains unsubstantiated (P. Forster, pers. comm. 2019).
Current land management practices (urbanisation)	With the increasing urbanisation occurring around Coochin Hills there is a possible future threat of hybridisation with cultivated *Grevillea* spp. (D. Hockings to

Unknown	G. Leiper, pers. comm. 2019). Although, there is no evidence that currently suggests this is a threat to the population (P. Forster, pers. comm. 2019).
	There are extensive agricultural plantations (e.g. pineapple) in the region and herbicide drift may impact the populations.

*CONSERVATION ADVICE: THREAT ABATEMENT AND RECOVERY ACTIONS

Give an overview of recovery and threat abatement/mitigation actions that are underway, have been formally proposed or that you would like to recommend. Address all threats listed or state threats that lack conservation advice.

Past threats	Abatement or recovery action underway
Land clearing (current post VMA)	One population of the species is protected within the Glasshouse Mountains National Park.
Past threats	**Abatement or recovery action proposed**
Land clearing (current post VMA)	Acquire land at Rupari Hill and protect under appropriate conservation agreements. The remnant vegetation at Rupari Hill would protect several other threatened species including *Leucopogon recurvisepalus* and *Eucalyptus curtisii,* making it an extremely important conservation reserve.
Current threats	**Abatement or recovery action underway**
Land clearing (current post VMA)	One population of the species is protected within the Glasshouse Mountains National Park.
	A campaign to raise awareness of the ecological values of Rupari Hill and protect the site from further development has been underway for a number of years (G. Leiper, pers. comm. 2019).
Current land management practises (e.g. increasing urbanisation)	A campaign to raise awareness of the ecological values of Rupari Hill and protect the site from further development has been underway for a number of years (G. Leiper, pers. comm. 2019).
Inappropriate disturbance regimes	There is a management plan for the Glasshouse Mountains National Park that includes implemented appropriate fire regimes, although the considerations for *Grevillea hodgei* are not specified (Department of National Parks, Recreation, Sport and Racing 2013).
	Abatement or recovery action proposed
Land clearing (current post VMA)	Acquire land at Rupari Hill and protect under appropriate conservation agreements. The remnant vegetation at Rupari Hill would protect several other threatened species including *Leucopogon recurvisepalus* and *Eucalyptus curtisii,* making it an extremely important conservation reserve.
Current land management practises (e.g. increasing urbanisation; habitat degradation)	Acquire land at Rupari Hill and protect under appropriate conservation agreements.
	Manage land at Rupari Hill for conservation including management of invasive weeds and reducing illegal timber collection via extension/awareness.
	Regularly monitor both populations to gain a better understanding of potential/suspected threats.
Inappropriate disturbance regimes	Undertake research into the fire ecology of *Grevillea hodgei* and implement and appropriate fire regime to increase the number of mature individuals in the long-term.
Future threats – actual	**Abatement or recovery action underway**
Land clearing (current post VMA)	Some surveys are undertaken intermittently by the Glasshouse Mountains Advancement Network Inc. to monitor the population trends and threats.
Climate change	There are no specific recovery actions that currently address this threat.
	Abatement or recovery action proposed
Land clearing (current post VMA)	Acquire land at Rupari Hill and protect under appropriate conservation agreements.
	Continue to raise awareness of the species with relevant stakeholders and engage in recovery actions.
Climate change	Ongoing monitoring of known populations to understand responses to threats and management actions.

	Undertake research to better understand the life history and ecology of the species including conservation genetics, pollination, seed production and viability, germination requirements and habitat suitability for translocations.
	Establish *ex situ* population of the species representing maximum range of genetic diversity and augment wild populations to increase the number of individuals.
	Undertake translocation to other suitable habitat to increase the number of populations in the wild.
Future threats – potential	**Abatement or recovery action underway**
Small populations (demographic, genetic effects)	Surveys are undertaken intermittently by the Glasshouse Mountains Advancement Network Inc. to monitor the population trends and threats.
	Limited attempts have been made to cultivate the species and there is an individual grown at the Mt Coot-Tha Botanic Gardens in Brisbane.
Current land management practices (urbanisation)	Surveys are undertaken intermittently by the Glasshouse Mountains Advancement Network Inc. to monitor the population trends and threats.
	Abatement or recovery action proposed
Small populations (demographic, genetic effects)	Ongoing monitoring of known populations to understand responses to threats and management actions.
	Undertake research to better understand the life history and ecology of the species including conservation genetics, pollination, seed production and viability, germination requirements and habitat suitability for translocations.
	Establish *ex situ* population of the species representing maximum range of genetic diversity and augment wild populations to increase the number of individuals.
	Undertake translocation to other suitable habitat to increase the number of populations in the wild.
Current land management practices (urbanisation)	Regularly monitor populations to better understand whether hybridisation and herbicide drift are threats.

Listing class/category

CURRENT LISTING CLASS/CATEGORY

[Please mark the boxes that apply by double clicking them with your mouse.]

In what class is the species currently listed under the **NC Act**?

☐Extinct	☐Extinct in the Wild	☐Critically Endangered	☐Endangered
☒Vulnerable	☐Near Threatened	☐Least Concern	☐Not listed

In what category is the species currently listed under the **EPBC Act**?

☐Extinct	☐Extinct in the Wild	☐Critically Endangered	☐Endangered
☐Vulnerable	☐Conservation Dependent		☒Not listed

NOMINATED LISTING CLASS

To what class under the **NC Act** is the species being nominated?

☐Extinct	☐Extinct in the Wild	☒Critically Endangered	☐Endangered
☐Vulnerable	☐Near Threatened	☐Least Concern	☐Not listed

Nominating a species to transfer to another class

REASON FOR A NOMINATION TO TRANSFER TO ANOTHER CLASS

What is the reason for the nomination?

☒Genuine change of status	☐New knowledge	☐Mistake	☐Other
Taxonomic change - ☐'split'	☐newly described	☐'lumped'	☐no longer valid

INITIAL LISTING

Describe the reasons for the species' initial listing under the NC Act and/or the EPBC Act and, if available, the criteria under which it was formerly considered eligible.

Previous listing advice is not available.

CHANGES IN SITUATION LEADING TO THE NOMINATION TO TRANSFER TO ANOTHER CLASS

Please complete (a), (b) OR (c) as appropriate to the nomination.

(a) Critically Endangered, Endangered, Vulnerable or Near Threatened

Describe the change in circumstances that make the species eligible for listing in a class other than Extinct and Extinct in the Wild.

The species has been well-surveyed and is known from <50 mature individuals (G. Leiper, pers. comm. 2019). Ongoing population declines are projected given that the Rupari Hill subpopulation occurs on freehold tenure with ongoing threats.

Eligibility against the criteria

Standard of scientific evidence and adequacy of survey

For this assessment is it considered that the survey of the species has been adequate and there is sufficient scientific evidence to support the listing outcome.

CRITERION A

Population size reduction (reduction in total numbers) measured over the longer of 10 years or 3 generations based on any of A1 to A4				
	Critically Endangered (CR)	**Endangered (EN)**	**Vulnerable (VU)**	**Near Threatened (NT)**
A1	**≥ 90%**	**≥ 70%**	**≥ 50%**	**≥ 20%**
A2, A3, A4	**≥ 80%**	**≥ 50%**	**≥ 30%**	**≥ 20%**

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(*a) cannot be used for A3*]

A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.

based on any of (a) to (e)

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites

Please identify whether the species meets A1, A2, A3 or A4. Include an explanation, supported by data and information, on how the species meets the criterion (A1 – A4). If available include information on:
- whether the population trend is increasing, decreasing or static
- estimated generation length and method used to estimate the generation length

You must provide a response. If there is no evidence to demonstrate a population size reduction, this must be stated.

Grevillea hodgei **is assessed as Data Deficient under Criteria A.**

The generation length of the species is estimated at 10-20 years (see Habitats and Ecology). Therefore decline should be assessed over the length of 45 years (3 generations). However, the precise number of mature individuals lost to development and the timing of these losses is unknown.

CRITERION B:

Geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy				
	Critically Endangered (CR)	**Endangered (EN)**	**Vulnerable (VU)**	**Near Threatened (NT)**
B1. Extent of occurrence (EOO)	**< 100 km²**	**< 5,000 km²**	**< 20,000 km²**	**< 40,000 km²**
B2. Area of occupancy (AOO)	**< 10 km²**	**< 500 km²**	**< 2,000 km²**	**< 4,000 km²**
AND at least 2 of the following 3 conditions for CR, EN or VU:				AND (b) for NT
(a) Severely fragmented OR Number of locations	**= 1**	**≤ 5**	**≤ 10**	**Not applicable**
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals				**≥ 10% within the longer of 10 years or 3 generations**
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals				**Not applicable**

Please refer to the 'Guidelines for Using the IUCN Red List Categories and Criteria' for assistance with interpreting the criterion particularly in relation to calculating 'extent of occurrence', 'area of occupancy' and understanding of the definition and use of 'severely fragmented', 'locations', 'continuing decline' and 'extreme fluctuations'.

Please identify whether the species meets B1 or B2. Except for Near Threatened species, include an explanation, supported by data and information, on how the species meets at least 2 of (a), (b) or (c). For Near Threatened species, include an explanation, supported by data and information, on how the species meets (b).

Please note that locations must be defined by a threat. A location is a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the species present.

If available, include information on:
- Whether there are smaller populations of the species within the total population and, if so, the degree of geographic separation between the smaller populations within the total population
- Any biological, geographic, human induced or other barriers enforcing separation

You must provide a response. If there is no evidence to demonstrate that the geographic distribution is precarious for either extent of occurrence AND/OR area of occupancy, this must be stated.

Grevillea hodgei **meets the thresholds for the Critically Endangered category under criteria B1+2ab(i-v).**

Grevillea hodgei has an EOO and AOO of 4 km². This estimate has been calculated based on expert verified herbarium specimens and the 2 km grid cell method (IUCN 2019). These parameters are considered to have a high certainty due to targeted surveys in the surrounding area (G. Leiper, pers. comm. 2019).

The distribution of *G. hodgei* is considered to be severely fragmented as the two known subpopulations occur on isolated mountain peaks surrounded by intensive development and therefore with minimal opportunity for genetic exchange.

Past population decline has been observed at both subpopulations due to the impacts of development, including bushwalking tracks and infrastructure construction (see Threats). Decline in EOO, AOO, area/extent of habitat, number of locations/subpopulations and number of mature individuals is projected given the subpopulation at Rupari Hill is not protected in conservation estate and is threatened by ongoing development activities (see Threats). The habitat quality at the Rupari Hill subpopulation is projected to decline given fragmentation, clearing and associated edge effects due to infrastructure development in the area (see Threats). Furthermore, the area, extent and quality of habitat could be projected to decline in the future due to climate change impacts on mountain top species (see Threats).

CRITERION C

Small population size and decline				
	Critically Endangered (CR)	**Endangered (EN)**	**Vulnerable (VU)**	**Near Threatened (NT)**
Estimated number of mature individuals	**< 250**	**< 2,500**	**< 10,000**	**< 20,000**
AND either (C1) or (C2) is true				AND (C1) is true
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in the future	**25% in 3 years or 1 generation (whichever is longer)**	**20% in 5 years or 2 generations (whichever is longer)**	**10% in 10 years or 3 generations (whichever is longer)**	**10% in 10 years or 3 generations (whichever is longer)**
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of (a) or (b):				
(a) (i) Number of mature individuals in each subpopulation	**≤ 50**	**≤ 250**	**≤ 1,000**	**Not applicable**
OR				
(ii) % of mature individuals in one subpopulation =	**90 – 100%**	**95 – 100%**	**100%**	**Not applicable**
(b) Extreme fluctuations in the number of mature individuals	**Applicable**	**Applicable**	**Applicable**	**Not applicable**

Please identify the estimated total number of mature individuals and either an answer to C1 or C2. Include an explanation, supported by data and information, on how the species meets the criteria. Note: If the estimated total number of mature individuals is unknown but presumed to be likely to be >10 000, you are not required to provide evidence in support of C1 or C2, just state that the number is likely to be >10 000.

You must provide a response. If there is no evidence to demonstrate small population size and decline this must be stated.

Grevillea hodgei **meets the thresholds for the Critically Endangered category under criteria C2a(i).**

A precise count of *Grevillea hodgei* individuals is not available, but the population is estimated at <50 mature individuals based on expert knowledge (G. Leiper, pers. comm. 2019). Therefore, the largest subpopulation can be inferred as <50 mature individuals.

Past population decline has been observed at both subpopulations due to the impacts of development, including bushwalking tracks and infrastructure construction (see Threats). Decline in EOO, AOO, area/extent of habitat, number of locations/subpopulations and number of mature individuals is projected given the subpopulation at Rupari Hill is not protected in conservation estate and is threatened by ongoing development activities (see Threats). The habitat quality at the Rupari Hill subpopulation is projected to decline given fragmentation, clearing and associated edge effects due to infrastructure development in the area (see Threats). Furthermore, the area, extent and quality of habitat could be projected to decline in the future due to climate change impacts on mountain top species (see Threats).

CRITERION D:

Very small population				
	Critically Endangered (CR)	**Endangered (EN)**	**Vulnerable (VU)**	**Near Threatened (NT)**
D1. Number of mature individuals	**< 50**	**< 250**	**D1. < 1,000**	**D1. < 3,000**
OR				
D2. [Only applies to the VU and NT categories] Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	**Not applicable**	**Not applicable**	**D2. Typically: AOO < 20 km^2 or number of locations ≤ 5**	**D2. Typically: AOO < 40 km^2 or number of locations ≤ 10**

Please identify the estimated total number of mature individuals and evidence of how the figure was derived.

For Criterion D2, please provide information on the species' area of occupancy, number of locations and plausible threats.

You must provide a response. If there is no evidence to demonstrate eligibility, this must be stated.

> *Grevillea hodgei* **meets the Critically Endangered category under criteria D.**
>
> A precise count of *Grevillea hodgei* individuals is not available, but the population is estimated at <50 mature individuals based on expert knowledge (G. Leiper, pers. comm. 2019).
>
> *Grevillea hodgei* has an AOO of 4.0 km^2 and is known from two locations (see Distribution).
>
> There are a range of threats that could plausibly drive *G. hodgei* to EX in a very short time (see Threats).

CRITERION E:

Quantitative Analysis				
	Critically Endangered (CR)	**Endangered (EN)**	**Vulnerable (VU)**	**Near Threatened (NT)**
Indicating the probability of extinction in the wild to be:	**≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)**	**≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)**	**≥ 10% within 100 years**	**≥ 5% within 100 years**

Please identify the probability of extinction and evidence of how the analysis was undertaken.
You must provide a response. If there has been no quantitative analysis undertaken this must be stated.

> *Grevillea hodgei* **is assessed as Data Deficient under this criteria.**
>
> Quantitative analysis was not undertaken.

SUMMARY OF CRITERIA UNDER WHICH THE SPECIES IS ELIGIBLE FOR LISTING AS: CR, EN, V, NT, EW or EX

Please mark the criteria and sub-criteria that apply.

☐Criterion A Data Deficient	☐A1 (specify at least one of the following) ☐a) ☐b) ☐c) ☐ d) ☐e); **AND/OR** ☐A2 (specify at least one of the following) ☐a) ☐b) ☐c) ☐d) ☐e); **AND/OR** ☐A3 (specify at least one of the following) ☐a) ☐b) ☐c) ☐d) ☐e); **AND/OR** ☐A4 (specify at least one of the following) ☐a) ☐b) ☐c) ☐d) ☐e)
☒Criterion B Critically Endangered	☒B1 (specify at least two of the following) ☒a) ☒b) ☐c); **AND/OR** ☒B2 (specify at least two of the following, other than NT) ☒a) ☒b) ☐c)
☒Criterion C	☐estimated number of mature individuals **AND**

Critically Endangered	☐C1 **OR** ☒C2 ☒a (i) **OR** ☐a (ii) **OR** ☐C2 ☐b)
☒Criterion D Critically Endangered	☒D1 **OR** ☐ D2
☐Criterion E	
☐EX	
☐EW	
☐LC	Species nominated to change from a higher conservation class to Least Concern. No above boxes apply.

Other Considerations

*INDIGENOUS CULTURAL SIGNIFICANCE

Is the species known to have cultural significance for Indigenous groups within Australia? If so, to which groups? Provide information on the nature of this significance if publicly available.

The Glasshouse Mountains are culturally significant to the Gubbi Gubbi and Jinibara People whom maintain strong links with the area in which this species occurs.

FURTHER STUDIES

Identify relevant studies or management documentation that might relate to the species (e.g. research projects, national park management plans, recovery plans, conservation plans, threat abatement plans, etc.).

Click or tap here to enter text.

ADDITIONAL COMMENTS/INFORMATION

Please include any additional comments or information on the species such as survey or monitoring information, and maps that would assist with the consideration of the nomination.

Click or tap here to enter text.

IMAGES OF THE SPECIES

Please include or attach images of the species if available, and indicate if you are in a position to authorise their use.

Images courtesy of Glenn Leiper. Their use in this listing has been authorised by G. Leiper.

Reviewers and references

REVIEWER(S)

Has this nomination been peer-reviewed? Have relevant experts been consulted on this nomination? If so, please include their names, current professional positions and contact details.

The nomination was reviewed by Glenn Leiper.

Experts consulted:
Glenn Leiper (Independent expert)
Paul Forster (Principal Botanist), The Queensland Herbarium

REFERENCE LIST

Please list key references/documentation you have referred to in your nomination.

Benson, D & McDougall, L 2000, 'Ecology of Sydney plant species: part 7b Dicotyledon families Proteaceae to Rubiaceae', *Cunninghamia,* vol. 6, no. 4, pp. 1016-1202.

Costion, C. M., Simpson, L., Pert, P. L., Carlsen, M. M., Kress, W. J., and Crayn, D. (2015). Will tropical mountaintop plant species survive climate change? Identifying key knowledge gaps using species distribution modelling in Australia. *Biological Conservation* **191**, 322-330.

Department of the Environment (2012). *Interim biogeographic regionalisation for Australia (regions – states and territories) v. 7 (IBRA).* Commonwealth of Australia. Canberra. Available at https://www.environment.gov.au/land/nrs/science/ibra#ibra.

Department of National Parks, Recreation, Sport and Racing (2013). *Glasshouse Mountains National Park Management Statement 2013.* Queensland Government.

IUCN Standards and Petitions Committee (2019). Guidelines for Using the IUCN Red List Categories and Criteria. Version 14. Prepared by the Standards and Petitions Committee. http://www.iucnredlist.org/documents/RedListGuidelines.pdf.

Queensland Herbarium (2020) Herbarium records for *Grevillea hodgei*, Department of Environment and Science, Queensland, viewed 24 March 2020.

Queensland Government (2019). *Regional ecosystem descriptions,* The State of Queensland, viewed 31 January 2020, https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions.

Queensland Government (2020). *Queensland Globe.* The State of Queensland, viewed 14 February 2020, https://qldglobe.information.qld.gov.au/

R.O.Makinson, Grevillea, Flora of Australia, 17A: 1–460 (2000).

Westaway, T. (2014). Glasshouse Mountains Advancement Network Inc. Newsletter. Winter 2014, Glasshouse Mountains, Qld. Available at https://fylebase.fylesoft.com.au/uploads/64/docs/24_Winter%202014.pdf.

Nominator's Details

Note: Your details are subject to the provisions of the *Privacy Act 1988* and will not be divulged to third parties, except for state and territory governments and scientific committees that have agreed to collaborate on national threatened species assessments using a CAM. If there are multiple nominators please include details below for all nominators.

TITLE (e.g. Mr/Mrs/Dr/Professor/etc.)

Ms

FULL NAME

Teghan Collingwood

ORGANISATION OR COMPANY NAME (IF APPLICABLE)

Queensland Department of Environment and Science, Brisbane.

CONTACT DETAILS

DECLARATION

I declare that, to the best of my knowledge, the information in this nomination and its attachments is true and correct.

Signed: Click here to enter text.	Date: 19/09/2019
* *If submitting by email, please attach an electronic signature*	

Lodging your nomination

Completed nominations may be lodged either:
1. by email in Microsoft Word format to: SpeciesTechnical.Committee@des.qld.gov.au
2. by mail to: The Chair
        Species Technical Committee
        Queensland Herbarium
        Mount Coot-tha Rd
        Toowong QLD 4066

* **If submitting by mail, you must include an electronic copy on a memory stick.**

Suggested Citation: Collingwood, T.D. (2019) Nomination to change the conservation class of *Grevillea hodgei.* Queensland Department of Environment and Science, Brisbane.