



18 April 2008

Mr Frank Krstic
Senior Council
Sydney Gas Operations Pty Ltd
Level 11, 1 O'Connell Street
Sydney NSW 2000

Our ref: 21/16559/140282
Your ref:

Dear Mr Krstic

Hunter Corehole Drilling Program Assessments of Significance

I refer to the Department of Primary Industries (Mineral Resources)'s recent request for further information to be provided in the form of Assessments of Significance pursuant to both the NSW *Environment Planning and Assessment Act 1979 (EP&A Act)* and the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*.

The following further information is therefore provided for the Department's consideration. It should be noted that the following information should be considered in conjunction with other documentation prepared by GHD and previously submitted to the Department by Sydney Gas Operations, in support of your current project application to conduct corehole drilling activities at various sites in the Hunter Valley. In particular, the following information should be considered to be a formal Addendum to the previously submitted Ecological Assessment report (GHD, March 2008).

1 Assessment under Section 5A of the NSW EP&A Act

Pursuant to the NSW *Environment Planning and Assessment Act 1979 (EP&A Act)*, an assessment of the impacts of the proposed works on land that is critical habitat or is likely to affect threatened species, populations, or ecological communities, or their habitats listed under the *TSC Act*, must be undertaken in the form of an Assessment of Significance. This involves assessing the potential impacts of the proposal based on seven criteria. These criteria aid in assessing if the proposal is likely to have a significant impact on threatened species or their habitat or endangered ecological communities which occur at the site or have the potential to occur. If the Assessment of Significance concludes that a significant impact is likely then a Species Impact Statement (SIS) must be prepared.

An assessment of significance has been carried out for flora and fauna species recorded as occurring in the locality of each site.

1.1 Rothanal 01 (RN01)

No threatened species were recorded during the recent assessment of the Rothanal 01 site, although threatened species previously recorded within close proximity to the site include the following:

- » *Miniopterus schreibersii oceanensis* (Eastern Bent-wing Bat);
- » *Eucalyptus glaucina* (Slaty Red Gum);
- » *Pomatostomus temporalis subsp. temporalis* (Grey-crowned Babbler);



- » *Dasyurus maculatus* (Spotted-tail Quoll); and
- » *Myotis adversus* (Large-footed Myotis).

None of these species are likely to be impacted as a result of this proposal.

Vegetation occurring immediately adjacent to the proposed corehole site may constitute Hunter Lowland Red Gum Forest, listed as Endangered Ecological Community (EEC) under the *Threatened Species Conservation Act 1995* (TSC Act). Various grasses and regrowth Forest Red Gum occurs within the vicinity of the proposed corehole site, however no significant vegetation constituting this EEC would be cleared as a result of this proposal.

An Assessment of Significance has been carried out for Hunter Lowland Red Gum Forest, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report.

However, as the proposal site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act, the proposal is considered not to represent any significant impacts on any specific threatened species of either flora or fauna.

Notwithstanding the above, a formal Assessment of Significance under Section 5A(2) of the *Environmental Planning and Assessment Act 1979* (EP& Act) is provided below for any threatened flora or fauna species with the potential of being impacted as a result of this proposal:

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

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered that threatened species that may occur in the area would be unlikely to be impacted to a degree that placed the species at further risk of extinction as a result of this proposal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered unlikely that the proposal would have an adverse effect on the life cycle of a species that constitutes an endangered population, such that a viable local population of the species is likely to be placed at further risk of extinction.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**



- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

Not applicable to threatened flora or fauna species, or critical habitat. An Assessment of Significance has been carried out for the EEC known as Hunter Lowland Red Gum Forest, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report.

(d) in relation to the habitat of a threatened species, population or ecological community:

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,**

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the removal or clearing of any significant vegetation it is considered unlikely that any direct or indirect impacts of the proposal would modify, fragment or isolate any habitat of threatened species potentially occurring in the study area in a way that it is likely to have a negative impact on the ability for the species or population to survive in the long term within the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered unlikely that the proposal will have an adverse effect on critical habitat either directly or indirectly.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation or removal of critical habitat it is considered that no recovery or threat abatement plan is relevant to the proposal.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The introduction of *Phytophthora cinnamomi* fungus has the potential to occur along the access track due to the movement of vehicles along the access track through this vegetation community. The implementation of mitigation measures including vehicle wash downs off site have been included within GHD's Ecological Assessment report.



It is considered that if appropriate mitigation measures are followed, it is unlikely this key threatening process would result in a significant impact on any threatened flora species occurring on this site as a result of this proposal.

1.1.1 Conclusion

The proposed Rothanal 01 site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act. The proposal is therefore considered not to represent any significant impacts on any specific threatened species of either flora or fauna, or any critical habitat.

1.2 Roughit 01 (RI01)

No threatened species were recorded during the recent assessment of the Roughit 01 site, although threatened species previously recorded within close proximity to the site include the following:

- » *Phascogale tapoatafa* (Brush-tailed Phascogale);
- » Grey-crowned Babbler;
- » *Ephippiorhynchus asiaticus* (Black-necked Stork);
- » *Pyrrololaemus sagittatus* (Speckled Warbler); and
- » *Scoteanax rueppellii* (Greater Broad-nosed Bat).

None of these species are likely to be impacted as a result of this proposal.

Nearby scattered trees would provide potential habitat components (e.g. refuge, foraging and breeding opportunities), however these nearby trees would not be impacted as part of this proposal. However, as the proposal site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act, the proposal is considered not to represent any significant impacts on any specific threatened species of either flora or fauna.

A small stand of Swamp Oak Floodplain Forest occurs to the northwest of the site. This community is listed as an EEC under the TSC Act. An Assessment of Significance has been carried out for of Swamp Oak Floodplain Forest, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report. As no vegetation is to be cleared to accommodate the proposed corehole site or its access track then this EEC is unlikely to be significantly impacted as a result of this proposal.

Notwithstanding the above, a formal Assessment of Significance under Section 5A(2) of the *Environmental Planning and Assessment Act 1979* (EP& Act) is provided below for any threatened flora or fauna species with the potential of being impacted as a result of this proposal:

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

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal would not require clearing of any significant vegetation it is considered that threatened species that may occur in the area would be unlikely to be significantly impacted as a result of this proposal.



(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal would not require clearing of any significant vegetation it is considered unlikely that the proposal would have an adverse effect on the life cycle of a species that constitutes an endangered population, such that a viable local population of the species is likely to be placed at risk of extinction.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

Not applicable to threatened flora or fauna species, or critical habitat. An Assessment of Significance has been carried out for the EEC known as Swamp Oak Floodplain Forest, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report.

(d) in relation to the habitat of a threatened species, population or ecological community:

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,**

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the removal or clearing of any significant vegetation it is considered unlikely that any direct or indirect impacts of the proposal would modify, fragment or isolate any habitat of threatened species potentially occurring in the study area in a way that it is likely to have a negative impact on the ability for the species or population to survive in the long term within the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat occurring near or on this site. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal would not require clearing of any significant vegetation it is considered unlikely that the proposal would have an adverse effect on critical habitat either directly or indirectly.



(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation or removal of critical habitat it is considered that no recovery or threat abatement plan is relevant to the proposal.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The introduction of *Phytophthora cinnamomi* fungus has the potential to occur along the access track due to the movement of vehicles along the access track through this vegetation community. The implementation of mitigation measures including vehicle wash downs off site have been included within GHD's Ecological Assessment report.

It is considered that if appropriate mitigation measures are followed, it is unlikely this key threatening process would result in a significant impact on any threatened flora species occurring on this site as a result of this proposal.

1.2.1 Conclusion

The proposed Roughit 01 site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act. The proposal is therefore considered not to represent any significant impacts on any specific threatened species of either flora or fauna, or any critical habitat.

1.3 Wollombi 01 (WB01)

No threatened species were recorded during the recent assessment of the Wollombi 01 site, although threatened species previously recorded within close proximity to the site include the following:

- » *Xanthomyza phrygia* (Regent Honeyeater);
- » *Mixophyes iterates* (Giant Barred Frog);
- » Greater Broad-nosed Bat; and
- » *Phascolarctos cinereus* (Koala).

None of these species are likely to be impacted as a result of this proposal.

Vegetation occurring along the creekline to the northwest of the site constitutes River-Flat Eucalypt Forest on Coastal Floodplains, listed as EEC under the TSC Act. This community is listed as an EEC under the TSC Act. An Assessment of Significance has been carried out for River-Flat Eucalypt Forest on Coastal Floodplains, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report. As no significant native vegetation clearance is required to accommodate the proposed corehole site or its access track then this EEC is unlikely to be significantly impacted as a result of this proposal.

The limited site area required for the proposed drilling site is unlikely to offer any significant habitat for threatened fauna given its small size and absence of canopy species. The proposal would not require



clearing of any significant vegetation including any canopy or shrub species. It is therefore considered that any threatened species of flora or fauna that occur in the area are unlikely to be significantly impacted as a result of this proposal.

Notwithstanding the above, a formal Assessment of Significance under Section 5A(2) of the *Environmental Planning and Assessment Act 1979* (EP& Act) is provided below for any threatened flora or fauna species with the potential of being impacted as a result of this proposal:

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

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal would not require clearing of any significant vegetation it is considered that threatened species that may occur in the area would be unlikely to be significantly impacted as a result of this proposal, and therefore is unlikely to have an adverse affect on the species or population such that it would place it at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal would not require clearing of any significant vegetation it is considered unlikely that the proposal would have an adverse effect on the life cycle of a species that constitutes an endangered population, such that a viable local population of the species is likely to be placed at risk of extinction.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable to threatened flora or fauna species, or critical habitat. An Assessment of Significance has been carried out for the EEC River-Flat Eucalypt Forest, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

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



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

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the removal or clearing of any significant vegetation it is considered unlikely that any direct or indirect impacts of the proposal would modify, fragment or isolate any habitat of threatened species potentially occurring in the study area in a way that it is likely to have a negative impact on the ability for the species or population to survive in the long term within the locality.

(e) *whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),*

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require clearing of any significant vegetation it is considered unlikely that the proposal will have an adverse effect on any critical habitat either directly or indirectly.

(f) *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,*

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation or removal of critical habitat it is considered that no recovery or threat abatement plan is relevant to the proposal.

(g) *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

The introduction of *Phytophthora cinnamomi* fungus has the potential to occur along the access track due to the movement of vehicles along the access track through this vegetation community. The implementation of mitigation measures including vehicle wash downs off site have been included within GHD's Ecological Assessment report.

It is considered that if appropriate mitigation measures are followed, it is unlikely this key threatening process would result in a significant impact on any threatened flora or fauna species occurring on this site as a result of this proposal.

1.3.1 Conclusion

The proposed Wollombi 01 site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act. The proposal is therefore considered not to represent any significant impacts on any specific threatened species of either flora or fauna, or any critical habitat.



1.4 Paynes Crossing 01 (PC01)

No threatened species were recorded during the recent assessment of the Paynes Crossing 01 site, although threatened species previously recorded within close proximity to the site include the following:

- » Speckled Warbler;
- » Koala; and
- » *Calyptorhynchus lathami* (Glossy Black Cockatoo).

Other species previously recorded nearby include the following:

- » *Petaurus australis* (Yellow-bellied Glider);
- » *Tyto novaehollandiae* (Masked Owl);
- » Grey-crowned Babbler; and
- » *Callocephalon fimbriatum* (Gang-gang Cockatoo).

None of these species are likely to be impacted as a result of this proposal.

The limited site area required for the proposed drilling site is unlikely to offer any significant habitat for threatened fauna given its small size and absence of canopy species. Remnant woodland occurs along the route of the access track and within the adjacent forest areas that would offer potential habitat for a number of threatened fauna species, however only the vegetation within the 30 x 60 metre corehole drilling area and along the access track would be directly impacted as a result of the proposal. Minimal lopping of low-lying tree limbs to accommodate the movement of vehicles along the access track (only if required) may have localised impacts on the surrounding vegetation, however it is unlikely that these impacts would represent any significant impacts on any threatened species that may utilise this area.

Vegetation occurring along the existing access track and creekline constitute River-Flat Eucalypt Forest on Coastal Floodplains, listed as EEC under the TSC Act. Adjacent areas of swampland may also constitute Freshwater Wetlands on Coastal Floodplains, also listed as an EEC under the TSC Act. Therefore the location originally proposed for the corehole site has been re-located by approximately 10 to 15 metres to the southwest from its previously proposed location in order to avoid impacts on this wetland area. Assessments of Significance have been carried out for River-Flat Eucalypt Forest on Coastal Floodplains and Freshwater Wetlands on Coastal Floodplains, with respect to the potential impacts associated with this proposal. The results of these Assessments are presented in **Appendix G** of GHD's Ecological Assessment report. As no significant native vegetation clearance is required to accommodate the proposed corehole site or its access track then this EEC is unlikely to be significantly impacted as a result of this proposal.

As the proposal site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act, the proposal is considered not to represent any significant impacts on any specific threatened species of either flora or fauna.

Notwithstanding the above, a formal Assessment of Significance under Section 5A(2) of the *Environmental Planning and Assessment Act 1979* (EP& Act) is provided below for any threatened flora or fauna species with the potential of being impacted as a result of this proposal:



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

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered that threatened species that may occur in the area would be unlikely to be significantly impacted or placed at a further increase of extinction as a result of this proposal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered unlikely that the proposal will have an adverse effect on the life cycle of a species that constitutes an endangered population, such that a viable local population of the species is likely to be placed at further risk of extinction.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***

Not applicable to threatened flora or fauna species, or critical habitat. An Assessment of Significance has been carried out for the EEC's River-Flat Eucalypt Forest on Coastal Floodplains and Freshwater Wetlands on Coastal Floodplains, with respect to the potential impacts associated with this proposal. The results of these Assessments are presented in **Appendix G** of GHD's Ecological Assessment report.

(d) in relation to the habitat of a threatened species, population or ecological community:

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and***
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,***

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the removal or clearing of any significant vegetation it is considered unlikely that any direct or indirect impacts of the proposal would modify, fragment or isolate any habitat of threatened species potentially



occurring in the study area in a way that it is likely to have a negative impact on the ability for the species or population to survive in the long term within the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require clearing of any significant vegetation it is considered unlikely that the proposal will have an adverse effect on any critical habitat either directly or indirectly.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation or removal of critical habitat it is considered that no recovery or threat abatement plan is relevant to the proposal.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The introduction of *Phytophthora cinnamomi* fungus has the potential to occur along the access track due to the movement of vehicles along the access track through this vegetation community. The implementation of mitigation measures including vehicle wash downs off site have been included within GHD's Ecological Assessment report.

It is considered that if appropriate mitigation measures are followed then this key threatening process is unlikely to result in a significant impact on any threatened flora or fauna species as a result of this proposal.

1.4.1 Conclusion

The proposed Paynes Crossing 01 site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act. The proposal is therefore considered not to represent any significant impacts on any specific threatened species of either flora or fauna, or any critical habitat.

1.5 Maison Dieu 01 (MD01)

No threatened species were recorded during the recent assessment of the Maison Dieu 01 site, although threatened species previously recorded within any proximity to the site include the following:

- » Grey-crowned Babbler; and
- » *Pteropus poliocephalus* (Grey-headed Flying-fox).

It should be noted that the nearest previously recorded threatened species to this site is about two (2) kilometres away. The proposal site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act. The limited site area required for the proposed drilling site is



unlikely to offer any significant habitat for threatened fauna given its small size and absence of canopy species. adjacent scattered hollow-bearing trees, vegetation communities and waterways would not be directly impacted as a result of this proposal. The proposal is therefore considered not to represent any significant impacts on any specific threatened species of either flora or fauna.

Swamp Oak Floodplain Forest is listed as an EEC and is present along the Hunter River, 140 metres to the west of the proposed corehole site. An Assessment of Significance has been carried out for Swamp Oak Floodplain Forest, with respect to the potential impacts associated with this proposal, however this EEC would not be directly impacted as a result of this proposal. The results of these Assessments are presented in **Appendix G** of GHD's Ecological Assessment report. This EEC is unlikely to be significantly impacted as a result of this proposal.

As the proposal site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act, the proposal is considered not to represent any significant impacts on any specific threatened species of either flora or fauna.

Notwithstanding the above, a formal Assessment of Significance under Section 5A(2) of the *Environmental Planning and Assessment Act 1979* (EP& Act) is provided below for any threatened flora or fauna species with the potential of being impacted as a result of this proposal:

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

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered that any threatened species that may occur in the area is unlikely to be significantly impacted that would have an adverse affect on the species in a way that would place the species or population at further risk of extinction as a result of this proposal.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal would not require clearing of any significant vegetation it is considered unlikely that the proposal would have an adverse effect on the life cycle of a species that constitutes an endangered population, such that a viable local population of the species is likely to be placed at further risk of extinction.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
- (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,***



Not applicable to threatened flora or fauna species, or critical habitat. An Assessment of Significance has been carried out for the EEC known as Swamp Oak Floodplain Forest, with respect to the potential impacts associated with this proposal. The results of this Assessment are presented in **Appendix G** of GHD's Ecological Assessment report.

(d) in relation to the habitat of a threatened species, population or ecological community:

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and**
- (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and**
- (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,**

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the removal or clearing of any significant vegetation it is considered unlikely that any direct or indirect impacts of the proposal would modify, fragment or isolate any habitat of threatened species potentially occurring in the study area in a way that it is likely to have a negative impact on the ability for the species or population to survive in the long term within the locality.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation it is considered unlikely that the proposal will have an adverse effect on critical habitat either directly or indirectly.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

The field survey found no evidence of the presence of any threatened species of either flora or fauna or any critical habitat. The proposed corehole site is considered to offer limited habitat for threatened fauna as it is of such small size and is currently cleared of canopy species. As the proposal does not require the clearing of any significant vegetation or habitat values of threatened species potentially occurring in the locality, it is considered that no recovery or threat abatement plan is relevant to the proposal.

(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The introduction of *Phytophthora cinnamomi* fungus has the potential to occur along the access track due to the movement of vehicles along the access track through this vegetation community. The implementation of mitigation measures including vehicle wash downs off site have been included within GHD's Ecological Assessment report.

It is considered that if appropriate mitigation measures are followed, this key threatening process is unlikely to result in an increase of impact on any threatened flora or fauna species as a result of this proposal.



1.5.1 Conclusion

The proposed Maison Dieu 01 site does not contain any threatened species, their populations or any critical habitat listed under the TSC Act. The proposal is therefore considered unlikely to represent any significant impacts on any specific threatened species of either flora or fauna, or any critical habitat.

2 Assessment under the Commonwealth EPBC Act

Pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, an assessment of the impacts of the proposed works on land that is critical habitat or is likely to affect threatened species, populations, or ecological communities, or their habitats listed under the *EPBC Act* ("Matters of National Environmental Significance"), must be undertaken. This involves assessing the potential impacts of the proposal based on several criteria. These criteria aid in assessing if the proposal is likely to have a significant impact on threatened species or their habitat or endangered ecological communities which occur at the site or have the potential to occur. If the assessment concludes that a significant impact is likely then a referral to the Minister of the Department of Environment and Heritage must be made.

No Endangered Ecological Communities or populations listed under the EPBC Act were recorded on or in the immediate vicinity of the five proposed corehole sites. Four species listed as Endangered and three listed as Vulnerable under the EPBC Act have been recorded as occurring within the locality (i.e. within 5 km) of the sites (DECC 2008). These include the Endangered Giant Barred Frog, Glossy-Black Cockatoo, Regent Honey-eater, and Spotted-Tailed Quoll, and the Vulnerable *Eucalyptus glaucina*, Grey-Headed Flying-Fox, and Yellow-Bellied Glider. None of these species were recorded at the five proposed corehole sites and no habitat critical for their conservation in the locality or region will be removed or disturbed as a result of the proposed works. Consequently, no significant impacts on threatened species, populations or ecological communities listed under the EPBC Act are anticipated. Although the proposal is highly unlikely to have any significant impacts on the threatened species recorded in the locality or their habitats, an assessment under the Act has been made for completeness.

2.1 a) Critically endangered and endangered species

Giant Barred Frog, Glossy-Black Cockatoo, Regent Honeyeater, and Spotted-Tailed Quoll have been previously recorded in the locality of the proposed corehole sites (DECC 2008). The following criteria have been considered with respect to determining the likelihood of the proposed works at the five corehole sites imposing a significant impact on these species:

Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population;
- reduce the area of occupancy of the species;
- fragment an existing population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of a population;



- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat;
- introduce disease that may cause the species to decline; or
- interfere with the recovery of the species.

The field survey found no evidence of the presence of any threatened species or any habitat critical to their local or regional conservation on any of the five corehole sites. The proposed corehole sites offer limited habitat for threatened fauna as all sites are of a very small size (60 m x 30 m) and are all currently cleared of canopy species or other significant vegetation. Each site lacked the presence of habitat features that would allow threatened fauna species to persist on the sites in a manner other than transitory. Impacts will be temporary and minimal in nature, with each site occupied for a period of no longer than 65 days, and all proposed drilling operations carried out during daylight hours. If mitigation measures recommended in GHD's Ecological Assessment report are adhered to, and as the proposal does not require the clearing of any significant vegetation or habitat values relevant to these species, it is considered that the proposed activity is unlikely to result in the further fragmentation, reduction or adverse affect on any critical habitat of these species, further fragment local populations, lead to the decrease in population sizes, disrupt breeding cycles, result in increased weed invasion, introduce disease, further modify or destroy habitat leading to species decline, or interfere with the recovery of any of the species assessed as a result of this proposal.

2.2 b) Vulnerable species

Eucalyptus glaucina, Grey-Headed Flying-Fox, and Yellow-Bellied Glider have been previously recorded within the locality of the proposed corehole sites.

The following criteria have been considered with respect to determining the likelihood of the proposed works at the five corehole sites imposing a significant impact on these species:

Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;
- introduce disease that may cause the species to decline; or



- interfere substantially with the recovery of the species.

As stated previously, the field survey found no evidence of the presence of any threatened species or any habitat critical to their local or regional conservation on any of the five corehole sites. The proposed corehole sites offer limited habitat for threatened fauna as all sites are of a very small size (60 m x 30 m) and are all currently cleared of canopy species or other significant vegetation. Each site lacked the presence of habitat features that would allow threatened fauna species to persist on the sites in a manner other than transitory. Each drilling site will be occupied for a period of no longer than 65 days, with all proposed drilling operations to be carried out during daylight hours. If mitigation measures recommended in GHD's Ecological Assessment report are adhered to, and as the proposal does not require the clearing of any significant vegetation or habitat values relevant to these species, it is considered that the proposed activity is unlikely to result in the further fragmentation, reduction or adverse affect on any critical habitat of these species, further fragment local populations, lead to the decrease in population sizes, disrupt breeding cycles, result in increased weed invasion, introduce disease, further modify or destroy habitat leading to species decline, or interfere with the recovery of any of the species assessed as a result of this proposal.

As no threatened species, populations or ecological communities listed under the Act are likely to be impacted as a result of the proposal at any of the five proposed corehole sites, it is unnecessary to make a referral to the Environment Minister and therefore no further assessment under the EPBC Act is required.

Yours faithfully
GHD Pty Ltd

A handwritten signature in black ink that reads 'S Rivett'. The signature is written in a cursive, flowing style.

Skye Rivett
Ecologist
02 9239 7407