
**Revised botanical resources survey of the site proposed for
the Huon Integrated Timber Processing Yard, Glen Huon,
southern Tasmania.**

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SUMMARY

A site, approximately 65 hectares in size, to the west south-west of Glen Huon in southern Tasmania has been proposed by Forestry Tasmania to be the site for the construction of the Huon Integrated Processing Yard. The site is located to the north of the confluence of the Huon and Arve Rivers on Weld Road. The centre of the site is a flat plateau surrounded by gentle slope to steep slopes that lead down to the Huon River to the south and east, and Kings Creek to the west.

The plateau, which constitutes the majority of the site, is dominated by *Leptospermum glaucescens* - *Hibbertia procumbens* heathland growing on sand or muck peats that overlay a Permian quartzite bedrock (siliceous). The margin of the heathland and slopes just off the top of the plateau are dominated by a heathy *Eucalyptus amygdalina* woodland and forest growing on a quartzite bedrock (siliceous), the forest component being comparable to the Regional Forest Agreement community of *E. amygdalina* forest on sandstone (see also *Forest Botany Manual - Nature Conservation Region 10B* (Duncan and Johnson 1995)). The forest, woodland and heathland on the site are traversed by numerous roads (in various conditions of repair), tracks and cut lines. There are several disused quarries across the plateau, with most of these regenerating back to heathland with small intermittent copses of stunted *E. amygdalina*. Shrubby wet to dry forest dominated by *Eucalyptus obliqua* occurs in the drainage lines and steeper slopes on the boundary of the proposed development.

Leptospermum glaucescens - *Hibbertia procumbens* heathland is adequately reserved within the Tasmanian Reserve System (Kirkpatrick and Harris 1999; S. Harris pers. comm.). *Eucalyptus amygdalina* forest on sandstone is a high priority for conservation under the Regional Forest Agreement Private Land Reserve Program, but is not a priority for conservation on public land (e.g. State Forest). Wet and dry *Eucalyptus obliqua* forest is well reserved in Tasmania. There is no requirement for the forest or non-forest communities located within the boundary of the proposed development site to be reserved on public land.

No plant species of local, statewide or national conservation significance were located on the site during the survey. A record of the orchid species *Caladenia alata*, which is listed in the Tasmanian *Threatened Species Protection Act 1995* (rare; Schedule 5), indicates a population

of this species occurs to west of the proposed development site. No plants of this species were located within the boundary of the proposed development.



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1. Introduction

The site proposed for the construction of the Huon Integrated Timber Processing Yard is located on Weld Road, approximately 12 kms west south-west of Glen Huon in southern Tasmania (Figure 1). The site overlooks the Huon River to the south and east, the Weld Plains to the west and the Arve Plains to the south-west on the southern side of the Huon River.

Forestry Tasmania has proposed that the site be developed to incorporate a log segregation yard, sawmilling/timber recovery operation, rotary peeled veneer mill, woodchip mill, wood-fired power station, wood waste composting operation and a site-wide communal waste water reuse operation. At present the site is covered by relatively intact native vegetation which would be predominantly cleared to accommodate the above infrastructure. The conservation status of this native vegetation, at both the individual species and entire plant communities level, was the focus of this study.

The aims of this survey and report were to:

- (i) identify and record the native and introduced plant species present on the site;
- (ii) define the distribution of plant communities;
- (iii) locate any species of conservation significance on the site and comment on their distribution and status; and
- (iv) to comment and provide recommendations on plant species and communities of conservation significance, if present.

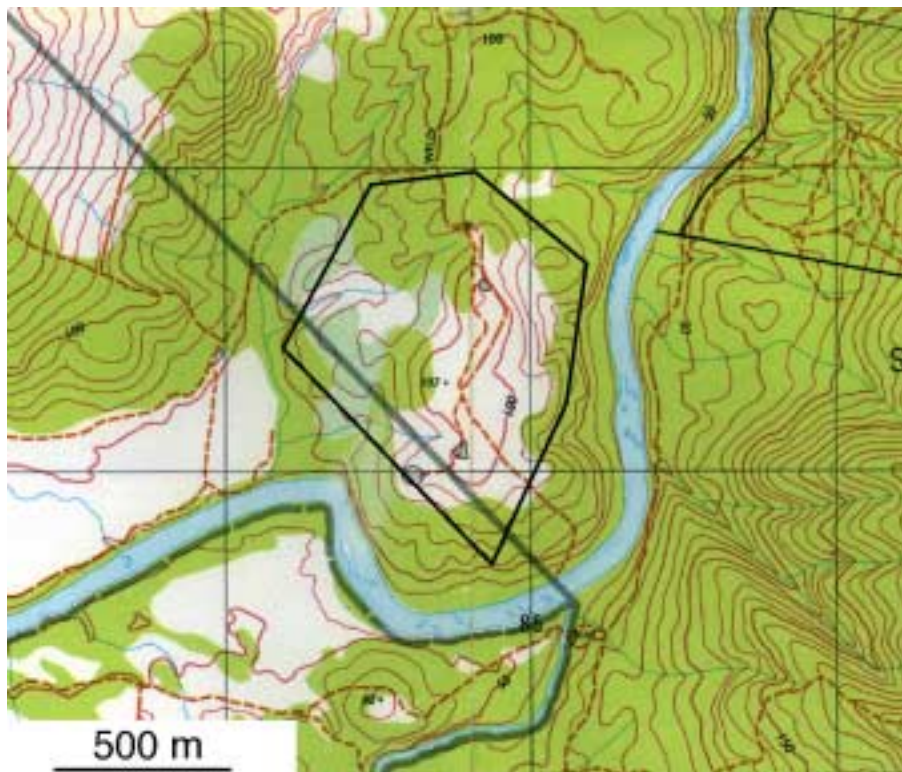


2. Methodology

2.1 Study area and survey techniques

The proposed development site is located west south-west of Glen Huon in southern Tasmania, on the northern side of the Huon River (Figure 1). The site is approximately 65 hectares in size and is bisected by Weld Road (centroid AMG coordinates 484800E 5233300N; Glen Huon 1:25 000 Tasmap sheet). The altitude of the site varies between 60 and 105 m above sea level, with the centre of the site being a flat plateau surrounded by gentle slopes to the west, south and east that become steeper towards the Huon River.

Figure 1. Section of the Glen Huon topographic mapsheet showing the location of the proposed development site (solid black line) for the Huon Integrated Timber Processing Yard in southern Tasmania



The bedrock geology is mainly Permian metamorphosed sandstones (quartz) that have eroded to produce friable sandy soils occasionally with a deep (>1 m) overlying organic muck peat. Soils derived from Jurassic Dolerite occur around the edge of the proposed development site, particularly along the eastern and southern boundaries. The site has been heavily disturbed in some areas through quarrying activities, and more recently during the construction of access roads and tracks.

The proposed development site and surrounding area was surveyed on three separate occasions. The first was conducted on the 26th of August 2000 to record the plant species and communities present within a 40 hectare site that was the original extent of the development (see Barnes 2000). Sampling was conducted using quadrats of approximately 10 by 10 metres in size arbitrarily located in representative sections of each plant community. Species within each quadrat were recorded as present or specimens were collected for *ex situ* identification. Data was collected on a TASFORHAB style datasheet using standard Braun-Blanquet categories for species dominance. A second survey was conducted on the 2nd of December 2000 to specifically survey for the rare orchid species *Caladenia alata* which has been recorded previously to the west of the proposed development site. The third survey was conducted on the 13th of January 2001 to survey the plant species and communities on an additional area (approx. 25 hectares) that was added to the extent of the proposed development. This report is based on the data collected from all three surveys.

Plant communities were described in accordance with those listed in the *Forest Botany Manual - Nature Conservation Region 10B* (Duncan and Johnson 1995) or by Kirkpatrick *et al.* (1995), with other relevant codes/categories listed beneath each community type (e.g. Regional Forest Agreement (1997) forest classification). Plant species identification follows The Students Flora of Tasmania (Curtis 1963, 1967; Curtis and Morris 1975, 1994) and nomenclature follows Buchanan (1999). Fern taxonomy, distribution and common names follow Garrett (1996). It must be noted that some plants (e.g. some species within Orchidaceae and Asteraceae) would not have been present in an identifiable life cycle stage during the site survey so the species list presented in this report must be considered a minimum for the site.



The distribution of each plant community within, and on the margin of, the proposed development site is shown in Figure 2.

2.2 Previous studies and observations

A botanical survey with quadrat samples has been made within the proposed development site by Ms Karen Zeigler (Forestry Tasmania) as part of an environmental assessment for the construction of the access road into the area. The data from this previous survey were available for this study (accessed through Forestry Tasmania).

A search of the GTSPOT database (conducted by Forestry Tasmania) indicated that there have been no previous records of rare and/or threatened plant species made from within the boundary of the proposed development site. A record of the rare orchid species *Caladenia alata* (winged caladenia; Orchidaceae) was made by Mr David Zeigler in 1996 to the south-west of the site, on the margin of the Huon River (Figure 2). The species is listed as rare in the Tasmanian *Threatened Species Protection Act 1995* and is a priority 1 forest species in the *Forest Botany Manual - Nature Conservation Region 10B* (Duncan and Johnson 1995).

2.3 Conservation status of plant species and communities

Plants species considered to be rare and threatened are those listed in the Tasmanian *Threatened Species Protection Act 1995* and/or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Rare and/or poorly reserved forest communities are those listed in the Regional Forest Agreement (1997) as needing further reservation or protection on public and/or private freehold land. The conservation status of plant communities according to Kirkpatrick *et al.* (1995), the *Forest Botany Manual - Nature Conservation Region 10B* (Duncan and Johnson 1995) and the *Vegetation Management Strategy for Tasmania* (2000) are also detailed where relevant.

3. Plant communities



The distribution of the three plant communities present on the proposed development site is detailed in Figure 2. Plant species located in the development site are listed in Appendix 1 and the data sheets for the quadrat samples are in Appendix 2.

3.2 *Leptospermum glaucescens* - *Hibbertia procumbens* heathland

Regional Forest Agreement Community Code: Not applicable (non-forest community).

Vegetation Management Strategy (2000) Code: Lowland and intermediate heath (Hh).

The flat plateau that constitutes the majority of the proposed development site is dominated by a heathland mosaic that would be best described as a facies of *Leptospermum glaucescens* - *Hibbertia procumbens* heath (see Kirkpatrick *et al.* 1995). The dominant species include *Leptospermum glaucescens* and *L. scoparium* to 2.5 m tall with a diverse array of heaths and ground covers including *Epacris lanuginosa*, *E. impressa*, *Selaginella uliginosa*, *Hibbertia procumbens*, *Pteridium esculentum*, *Leucopogon ericoides*, *Amperea xiphoclada*, *Sprengelia incarnata*, *Restio hookeri*, *Bauera rubioides* and *Patersonia fragilis*. Small copses of stunted *Eucalyptus amygdalina* trees (<10 cm dbh) to 3 (-5) m tall dot the heathland in the better drained areas and along the disused tracks. Small narrow bands of this community type occur down the western slopes off the top of the plateau and are mainly associated with drainage lines.

The heathland is traversed by numerous roads and tracks in various conditions. There are also several disused quarry sites located in the heathland, with at least two of these regenerating back to heathland dominated by *Bauera rubioides*, *Hibbertia procumbens*, *Leptospermum glaucescens* and *Lepidosperma filiforme*. No woody or herbaceous weeds were located anywhere in the heathland during the survey.

No rare and threatened plant species were located in the heathland at the time that the survey was conducted (see **4.1 Significant botanical areas** for more details). This plant community is considered to be adequately reserved in the Tasmanian Reserve System by Kirkpatrick and Harris (1999), with it occurring within at least the South Bruny Island and Tasman National Parks and the Southport Lagoon Conservation Area.



3.2 Heathy *Eucalyptus amygdalina* open forest and woodland on sandstone

Regional Forest Agreement Community Code: *Eucalyptus amygdalina* forest on sandstone (forest component) and non-forest (woodland component).

Vegetation Management Strategy (2000) Code: *Eucalyptus amygdalina* forest on sandstone and *E. amygdalina* woodland.

The slopes leading down to the Huon River from the plateau are dominated by heathy *Eucalyptus amygdalina* open forest and woodland on a quartzite substrate (siliceous). The forest component of this community is comparable to the *E. amygdalina* forest on sandstone community described in the *Forest Botany Manual - Nature Conservation Region 10B* (Duncan and Johnson 1995) and the Regional Forest Agreement (1997). The forest component generally occurs as a transitional community between the heathland/*E. amygdalina* woodland and the *E. obliqua* forest that occurs on perimeter of the proposed development site. The proportion of forest to woodland is low, with the forest component mainly restricted to the southern and north-eastern areas of the site. At the southern end of the site, the forest mainly occurs between the new road and a second track that was cut from this road to the south-eastern corner of the site. In the north-eastern corner this forest type occurs just off the top of the plateau and extends down the slope onto the flats that lead down to the Huon River.

For both the woodland and forest the canopy trees are commonly between 3 and 12 (-15) m tall with some of the larger trees possessing prominent fire scars at the base of the trunk and numerous dead branches in the upper crown. Seedlings and saplings of *E. amygdalina* are occasional across the site and often form small, dense stands in areas of high disturbance regimes (i.e. besides tracks and in the disused quarries). The canopy coverage within the forest is variable and ranges between 40 and 70%, while for the woodland it can be as low as 5%. In some areas there is a component of *E. obliqua* in the forest but this species rarely attains more than 35% dominance.

The understorey for both the woodland and forest is a mosaic of heaths, tea-trees and small shrubs in the better drained areas while *Gymnoschoenus sphaerocephalus*, *Melaleuca*



squarrosa and *M. squamea* dominate on the deeper, poorly drained peats. Common understorey species include *Epacris impressa*, *E. lanuginosa*, *Leptospermum scoparium*, *L. glaucescens*, *Aotus ericoides*, *Patersonia fragilis*, *Hibbertia procumbens*, *Empodisma minus*, *Sprengelia incarnata*, *Bauera rubioides*, *Lepyrodia tasmanica*, *Gonocarpus tetragynus*, *Leucopogon ericoides*, *Restio hookeri*, *Schoenus lepidosperma*, *Selaginella uliginosa* and *Pteridium esculentum*. Small trees of *Banksia marginata*, *Allocasuarina zephyrea*, *Acacia terminalis* and *A. mucronata* var. *mucronata* to 2 m tall occur throughout the understorey.

As with the heathland, this forest/woodland community is dissected by several roads, tracks and cut lines, and has been disturbed quite extensively in some areas by sand and gravel extraction activities. No woody or herbaceous weeds were located anywhere in the heathland during the survey.

No rare and threatened plant species were located in the heathland at the time that the survey was conducted. Refer to **4.1 Significant botanical areas** for details on the conservation status of this plant community.

3.3 *Eucalyptus obliqua*-*Melaleuca squarrosa*-*Monotoca glauca* forest (OB0111)

Regional Forest Agreement Community Code: *Eucalyptus obliqua* dry forest/*E. obliqua* wet forest.

Vegetation Management Strategy (2000) Code: *Eucalyptus obliqua* dry forest/*E. obliqua* wet forest.

The lower slopes of the plateau are dominated by *Eucalyptus obliqua* forest with a midstorey of both wet and dry tree and shrub species. This forest type generally marks the transition to deeper and more moist soils and includes the areas at the west, south and north of the proposed development site. Midstorey shrubs are occasional throughout the forest and are more abundant in the drainage lines which have presumably been less frequently burnt than the drier ridgelines and upper slopes. Common species in the drainage lines include *Acacia terminalis*, *A. dealbata*, *A. melanoxylon*, *Melaleuca squarrosa*, *Monotoca glauca*, *Bauera rubioides*, *Hibbertia empetrifolia* and *Gleichenia dicarpa*. The drier ridgelines and north to



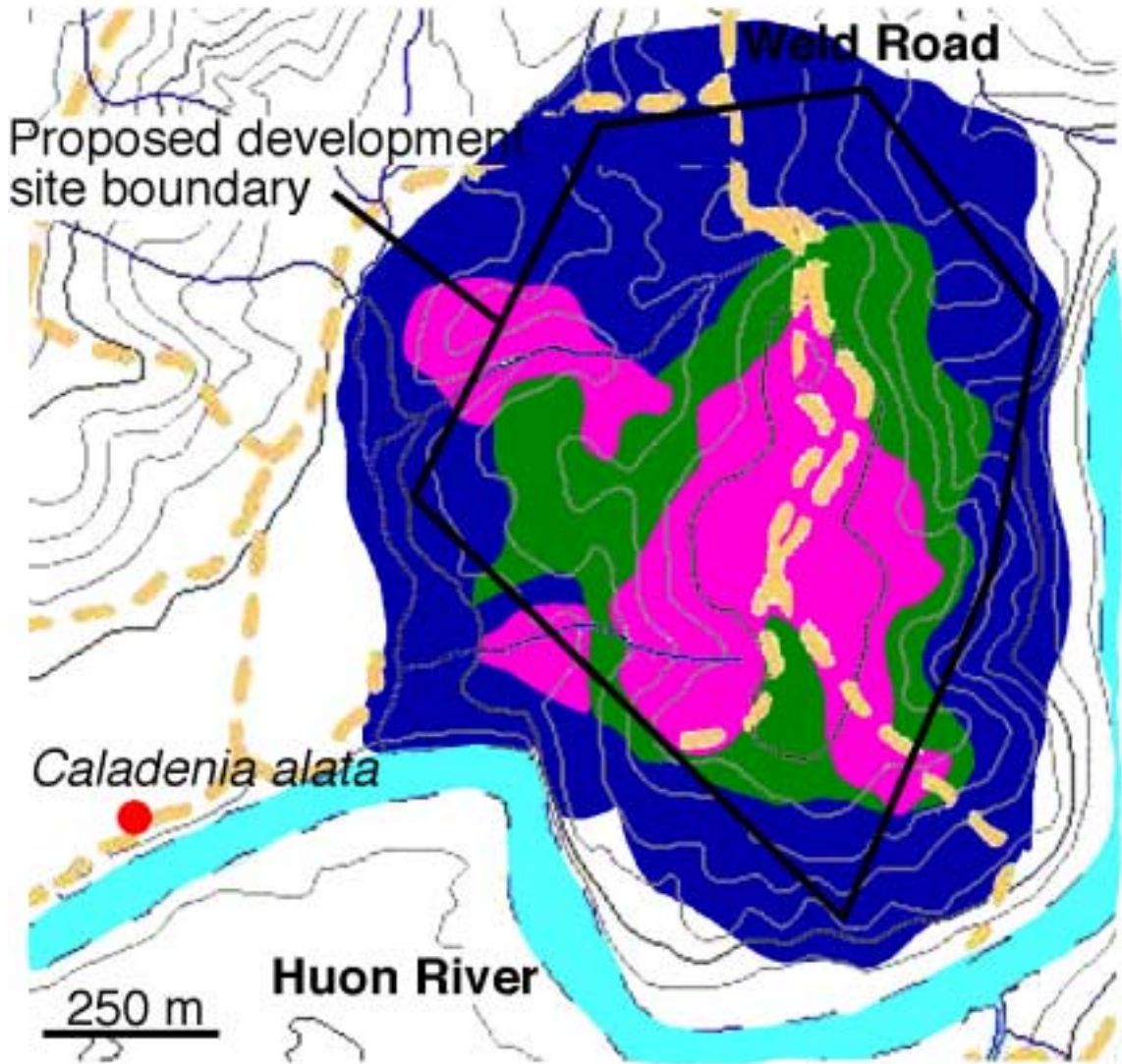
north-east facing slopes are dominated by *Pteridium esculentum*, *Epacris impressa*, *Leucopogon ericoides*, *Daviesia ulicifolia*, *Lomatia tinctoria*, *Dianella tasmanica* and *Banksia marginata*. This forest type grades into a wetter, more shrub dominated community along the riparian zone of the Huon River to the south and east with *E. obliqua* as the canopy dominant. Towards the riparian zone of the Huon River wet forest species such as *Nematolepis squamea*, *Gaultheria hispida*, *Cenarrhenes nitida*, *Anopterus glandulosus* and *Pittosporum bicolor* become more common.

With the exception of a few roads and cut lines, this forest has not been impacted upon by the quarrying activities further upslope and it appears to be free of any woody or herbaceous weeds. No rare and threatened plant species were located in this forest at the time that the survey was conducted. Dry to wet *Eucalyptus obliqua* forest is well reserved within the Tasmanian Reserve System and does not require additional reservation on public or private land under the Regional Forest Agreement (1997).



Figure 2. Map showing the distribution of plant communities within and around the proposed development site.

The location of a known *Caladenia alata* (winged caladenia) population is shown.



Key to plant communities

- Pink: 3.1 *Leptospermum glaucescens* - *Hibbertia procumbens* heathland
- Green: 3.2 *Eucalyptus amygdalina* forest and woodland on sandstone
- Dark Blue: 3.3 *Eucalyptus obliqua*-*Melaleuca squarrosa*-*Monotoca glauca* forest (OB0111)





4. Potential Impact of Development

4.1 Significant Plant Communities

The construction of the timber processing yard will have a large impact on the native vegetation in the proposed development site as most of it will have to be cleared for the construction of infrastructure. A single plant community of some conservation value was recorded within the boundary of the site.

Eucalyptus amygdalina forest on sandstone has been identified as a high conservation priority in a number of different sources (see Table 1). As this forest generally occurs in the central region of the proposed development site the majority of it would presumably be cleared for site construction. Any forest that may remain after the development of the site may be impacted upon by the activities of the yard through erosion run-off and the introduction of soil-borne pathogens (e.g. *Phytophthora cinnamomi*). With the change in boundary from the original report by Barnes (2000) it is very unlikely that any areas of this plant community within the boundary of the development site will remain in an undisturbed condition once the site has been fully developed.

Table 1. Conservation status of *Eucalyptus amygdalina* forest on sandstone

| Source | Status and notes |
|--|--------------------------------------|
| <i>Forest Botany Manual - Nature Conservation Region 10B</i> (Duncan and Johnson 1995) | Priority B* community. |
| RFA Private Land Reserve Program | Very high priority for conservation. |
| Vegetation Management Strategy for Tasmania (2000) | Very high priority for conservation. |



* indicates that the plant community is un-reserved or poorly reserved on a regional basis, but is reserved elsewhere in Tasmania. A Forest Practices Unit botanist should be contacted when a priority B community has been identified in a Timber Harvesting Plan.

Under the Regional Forest Agreement (1997), *E. amygdalina* forest on sandstone does not require further reservation on public land. However, the RFA Private Land Reserve Program has subsequently identified this forest type as having high conservation priority on private freehold land and the Forest Practices *Forest Botany Manual - Nature Conservation Region 10B* (Duncan and Johnson 1995) identifies the forest community as having regional conservation significance. Therefore, based on this it is recommended that:

¥ any development (including vegetation clearance and the construction of infrastructure) that takes place on the site should preferably be concentrated away from this forest type. However, this may not be practical given the distribution of the community within the site.

4.2 Significant Plant Species

No rare and threatened plant species were located within, or near, the boundary of the proposed development site during the survey.

No plants of the rare orchid species *Caladenia alata* that have previously been recorded to the south-west of the site (Figure 2) were located within the boundary of the site during any of the three surveys. The species is considered to be rare and of conservation significance (see Table 2). Mr David Ziegeler recorded this species in 1996 on the margin of the Huon River (Figure 2) in a similar habitat to that which occurs within some areas of the development site. A survey in December of the site did not yield any populations of the species within the development site and therefore no recommendations are made for this species.

Table 2. Conservation status of *Caladenia alata* (winged caladenia)

| Source | Status and notes |
|--------|------------------|
|--------|------------------|



| | |
|---|-------------------------------------|
| Tasmanian <i>Threatened Species Protection Act 1995</i> | rare |
| <i>Forest Botany Manual - Nature Conservation Region 10B</i> (Duncan and Johnson 1995) | Priority 1* species |
| Regional Forest Agreement (1997) | Not listed as a priority species |

* indicates that the species is un-reserved or poorly reserved on a statewide basis, and/or has a very high regional conservation significance. A Forest Practices Unit botanist must be contacted when a priority 1 species has been identified in a Timber Harvesting Plan.

5. Discussion and Conclusions

No plant species of local, statewide or national conservation significance were located on the site during any of the three vegetation surveys. One plant community of some conservation value was located within the boundary of the proposed development site: *Eucalyptus amygdalina* forest on sandstone. Although this plant community is now considered to be poorly reserved there is no legal requirement for it to be further reserved on public land. Therefore, based on the general findings of the botanical surveys and literature search undertaken for this report there appears to be no botanical issues that would prevent the construction of the processing yard at the proposed site on Weld Road.



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Appendix 1: Higher plant species recorded at the proposed Huon Integrated Timber Processing Yard development site, Glen Huon, southern Tasmania.

+ denotes the species was present in that community type (numbers refer to the above text).

| | | Community number | 3.1 | 3.2 | 3.3 |
|-----------------------------|-------------------------------|------------------|-----|-----|-----|
| <u>Angiospermae</u> | | | | | |
| <u>Dicotyledonae</u> | | | | | |
| Apiaceae | <i>Hydrocotyle hirta</i> | | | | + |
| Asteraceae | <i>Cassinia aculeata</i> | | | | + |
| | <i>Gnaphalium</i> sp. | | + | + | |
| | <i>Lagenifera stipitata</i> | | + | + | |
| | <i>Senecio linearifolius</i> | | | | + |
| Casuarinaceae | <i>Allocasuarina zephyrea</i> | | + | + | |
| Cunoniaceae | <i>Bauera rubioides</i> | | + | + | + |
| | <i>Eucryphia lucida</i> | | | | + |
| Dilleniaceae | <i>Hibbertia empetrifolia</i> | | | | + |
| | <i>Hibbertia procumbens</i> | | + | + | + |
| Droseraceae | <i>Drosera pygmaea</i> | | + | + | + |
| | <i>Drosera peltata</i> | | | | + |
| Epacridaceae | <i>Epacris impressa</i> | | + | + | + |
| | <i>Epacria lanuginosa</i> | | + | + | |
| | <i>Epacris tasmanica</i> | | + | + | |
| | <i>Leucopogon ericoides</i> | | + | + | + |
| | <i>Lissanthe strigosa</i> | | | | + |
| | <i>Monotoca glauca</i> | | | + | + |
| | <i>Sprengelia incarnata</i> | | + | + | |
| Ericaceae | <i>Gaultheria hispida</i> | | | | + |
| Escalloniaceae | <i>Anopterus glandulosus</i> | | | | + |
| Euphorbiaceae | <i>Amperea xiphoclada</i> | | + | + | + |
| Fabaceae | <i>Aotus ericoides</i> | | + | + | + |
| | <i>Daviesia ulicifolia</i> | | | | + |
| | <i>Bossiaea cinerea</i> | | | + | |
| | <i>Bossiaea prostrata</i> | | | | + |
| | <i>Oxylobium ellipticum</i> | | | + | + |
| | <i>Pultenaea juniperina</i> | | | | + |
| Haloragaceae | <i>Gonocarpus micranthus</i> | | + | | |
| | <i>Gonocarpus tetragynus</i> | | + | + | + |
| | <i>Gonocarpus teuroides</i> | | | | + |
| Lauraceae | <i>Cassytha glabella</i> | | + | | |
| | <i>Cassytha pubescens</i> | | + | + | + |
| Mimosaceae | <i>Acacia dealbata</i> | | | | + |
| | <i>Acacia melanoxylon</i> | | | | + |



| | | | | |
|----------------|---|---|---|---|
| | <i>Acacia mucronata</i> var. <i>mucronata</i> | + | + | + |
| | <i>Acacia riceana</i> | | | + |
| | <i>Acacia terminalis</i> | | | + |
| Myrtaceae | <i>Eucalyptus amygdalina</i> | + | + | + |
| | <i>Eucalyptus obliqua</i> | | + | + |
| | <i>Leptospermum glaucescens</i> | + | + | + |
| | <i>Leptospermum lanigerum</i> | | + | + |
| | <i>Leptospermum scoparium</i> | + | + | + |
| | <i>Melaleuca squamea</i> | + | + | |
| | <i>Melaleuca squarrosa</i> | + | + | + |
| Pittosporaceae | <i>Pittosporum bicolor</i> | | | + |
| Proteaceae | <i>Banksia marginata</i> | + | + | + |
| | <i>Lomatia tinctoria</i> | | + | + |
| | <i>Persoonia juniperina</i> | + | + | + |
| Rosaceae | <i>Acaena novae-zelandiae</i> | | + | + |
| Rubiaceae | <i>Coprosma hirtella</i> | | | + |
| | <i>Coprosma quadrifida</i> | | | + |
| Rutaceae | <i>Nematolepis squamea</i> | | | + |
| Santalaceae | <i>Exocarpos cupressiformis</i> | | | + |
| | <i>Leptomeria drupacea</i> | | + | + |
| Stylidiaceae | <i>Stylidium graminifolium</i> | + | + | + |
| Thymeleaceae | <i>Pimelea humilis</i> | | | + |
| | <i>Pimelea linifolia</i> | | + | + |
| Tremandraceae | <i>Tetratheca labillardieri</i> | | | + |
| Violaceae | <i>Viola hederacea</i> | + | + | + |

Monocotyledonae

| | | | | |
|--------------|--|---|---|---|
| Cyperaceae | <i>Baumea juncea</i> | + | | |
| | <i>Gahnia grandis</i> | + | + | + |
| | <i>Gahnia radula</i> | + | + | |
| | <i>Gymnoschoenus sphaerocephalus</i> | + | + | |
| | <i>Isolepis fluitans</i> | + | | |
| | <i>Lepidopserma concavum</i> | + | + | |
| | <i>Lepidosperma filiforme</i> | + | + | |
| | <i>Lepidosperma laterale</i> | | | + |
| | <i>Schoenus lepidosperma</i> | + | + | |
| Iridaceae | <i>Diplarrena moraea</i> | | + | + |
| | <i>Patersonia fragilis</i> | + | + | |
| Juncaceae | <i>Luzula densiflora</i> | | | + |
| Liliaceae | <i>Dianella revoluta</i> | | | + |
| | <i>Dianella tasmanica</i> | | | + |
| | <i>Drymophila cyanocarpa</i> | | | + |
| Orchidaceae | <i>Glossodia major</i> | + | + | |
| Poaceae | <i>Danthonia</i> sp. | | | + |
| | <i>Poa labillardierei</i> var. <i>labillardierei</i> | | | + |
| Restionaceae | <i>Empodisma minus</i> | + | + | + |
| | <i>Hypoleana fastigiata</i> | + | | |



| | | | |
|----------------------------|---|---|---|
| <i>Leptocarpus tenax</i> | + | + | + |
| <i>Lepyrodia tasmanica</i> | + | + | + |
| <i>Restio complanatus</i> | + | | |
| <i>Restio hookeri</i> | + | + | |

Pteridophyta

| | | | | |
|------------------|---------------------------------|---|---|---|
| Blechnaceae | <i>Blechnum nudum</i> | | | + |
| | <i>Blechnum watsii</i> | | | + |
| Dennstaedtiaceae | <i>Pteridium esculentum</i> | + | + | + |
| Dicksoniaceae | <i>Dicksonia antarctica</i> | | | + |
| Dryopteridaceae | <i>Polystichum proliferum</i> | | | + |
| Gleicheniaceae | <i>Gleichenia dicarpa</i> | + | + | + |
| | <i>Gleichenia microphylla</i> | | | + |
| Lycopodiaceae | <i>Lycopodium deuterodensum</i> | | | + |
| Schizaeaceae | <i>Schizaea fistulosa</i> | + | + | |
| Selaginellaceae | <i>Selaginella uliginosa</i> | + | + | + |



Appendix 2. Species data sheets for quadrats sampled at the proposed development site

Braun-blanquet coverage scores used in data sheets

| | |
|---|----------------|
| + | trace coverage |
| 1 | <1% cover |
| 2 | 1-5% cover |
| 3 | 6-25% cover |
| 4 | 26-50% cover |
| 5 | 51-75% cover |
| 6 | 76-100% cover |

