**Application** for a

# Section 91 Licence

under the *Threatened Species Conservation Act 1995* to harm or pick a threatened species, population or ecological community* or damage habitat.

| | | |
|---|---|---|
| 1. Applicant's Name ^: *(if additional persons require authorisation by this licence, please attach details of names and addresses)* | Dorothy Malysiak | |
| 2. Australian Business Number (ABN): | OHL Construction Pacific<br>14 146 317 802<br><br>York Civil Pty Ltd<br>65 050 019 960 | |
| 3. Organisation name and position of applicant ^: *(if applicable)* | OHL York Joint Venture<br><br>Environmental and Community Officer | |
| 4. Postal address ^: | PO Box 6275<br>Rouse Hill Town Centre<br>NSW 2155 | Telephone ^:<br>B.H. [redacted]<br>A.H. |
| 5. Location of the action *(including grid reference and local government area and delineated on a map).* | Upgrade of Schofields Road at Schofields between Tallawong Road and Veron Road.<br><br>Refer to Appendix 1 for location map. | |

* A threatened species, population or ecological community means a species, population or ecological community identified in Schedule 1, 1A or Schedule 2 of the *Threatened Species Conservation Act 1995.*

^The personal details of all Section 91 licences will be displayed in the register of Section 91 licences required under Section 104 of the *Threatened Species Conservation Act 1995.* See notes.

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| 6. Full description of the action and its purpose *(e.g. environmental assessment, development, etc.)* | Translocation of Cumberland Plain Land Snail (Meridolum Corneovirens) from the corridor of the Schofields Road Upgrade Project if found during pre-clearing survey and translocated to an area of Cumberland Plain Woodland outside the project corridor as shown in Appendix 2 by a qualified Ecologist. |
| 7. Details of the area to be affected by the action *(in hectares)*. | Approximately 34.83ha of land adjacent to Schofields Road will be cleared to allow for the duplication of Schofields Road between the project extents (as detailed in Section 5 above). |
| 8. Duration and timing of the action *(including staging, if any).* | The proponent and determining authority for the Project is Roads and Maritime Services (RMS). *State Environmental Planning Policy (Infrastructure) 2007* provides that the project may be carried out without the need for development consent. Furthermore, under Clause 18A of the Growth Centres SEPP, development for public utility undertakings (which includes road transport undertakings) can be undertaken without consent on any land to which the policy applies. Development consent from Council is not required for the Project.<br><br>The works are due to commence in August 2014 and are expected to be completed in mid-2016.<br><br>The works will involve the construction of a four-lane divided road with a wide central median allowing for further upgrade to six lanes if required in the future and the extension of Schofields Road from Railway Terrace to Veron Road. |
| 9. Is the action to occur on land declared as critical habitat*? *(tick appropriate box)* | ☐ Yes ☒ No |

* Critical habitat means habitat declared as critical habitat under Part 3 of the *Threatened Species Conservation Act 1995*.

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| 10. Threatened species, populations or ecological communities to be harmed or picked. | Scientific name | Common name *(if known)* | Conservation status *(i.e. critically endangered, endangered or vulnerable)* | Details of no. of individual animals, or proportion and type of plant material *(e.g. fertile branchlets for herbarium specimens or whole plants or plant parts)* |
| | *Meridolum corneovirens* | Cumberland Plain Land Snail | Endangered | To be derermined during relocation |

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| 11. Species impact: *(please tick appropriate box)*<br>a) For action proposed on land declared as critical habtat;<br>or<br>b) For action proposed on land not declared as critical habitat. | an SIS is attached ☐ Yes ☒ No<br><br>Items 12 to 25 have been addressed ☒ Yes ☐ No |

*N.B: Provision of a species impact statement is a statutory requirement of a licence application if the action is proposed on critical habitat.*

| *The provision of information addressing items 12 to 17 is a statutory requirement of a licence application if the action proposed is <u>not</u> on land that is critical habitat. Information addressing any of the questions below must be attached to the application.* | |
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| 12. Describe the type and condition of habitats in and adjacent to the land to be affected by the action. | The subject site traverses a semi-rural environment which supports a rural residential land use. The disturbance of past land uses has resulted in extensive vegetation clearance along much of the subject site; however there are some relatively intact vegetation communities, particularly along the southern side of the existing road. Regrowth vegetation is present across large areas, with the remainder supporting primarily exotic pasture or residential lawns. |
| 13. Provide details of any known records of a threatened species in the same or similar known habitats in the locality *(include reference sources).* | The occurrence of Threatened species, populations and ecological communities was assessed through literature and database review and field surveys for the Schofields Road Upgrade and Extension: Tallawong Road and Veron Road, Review of Environmental Factors Volume 1: main report & Appendices A (RMS, 2012), Volume 2: appendices B to H (RMS, 2012) and Volume 3: appendices I to M (RMS, 2012).<br><br>The vegetation community at the supplement site is the Endangered ecological community Cumberland Plain Woodland.<br><br>Twenty eight threatened flora species have been recorded within a 10km radius of the study area (RMS, 2012). Based on a habitat assessment completed in the REF, fifteen threatened flora species have the potential to occur within the Schofields Road Upgrade footprint. Only the Juniper-leaved Grevillea *(Grevillea juniperina subsp. juniperina)* was recorded during the field survey (RMS, 2012).<br><br>Forty seven threatened faunal species have been recorded within a 10km radius of the study area (RMS, 2012). Twenty eight native fauna species were recorded during the second field survey, including 22 bird species, three reptile species, one frog species, and one invertebrate species (RMS, 2012). The potential habitat for the Cumberland Land Snail is limited to areas of Cumberland Plain Woodland. This remnant vegetation is limited to the corner of Schofields Road and Railway Terrace. No individuals were recorded in this area during the targeted field survey. |
| 14. Provide details of any known or potential habitat for a threatened species on the land to be affected by the action *(include reference sources).* | The remnant Cumberland Plain Woodland within the supplement site provides a habitat for the Cumberland Plain Land Snail. |

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| 15. Provide details of the amount of such habitat to be affected by the action proposed in relation to the known distribution of the species and its habitat in the locality . | Two supplement sites has been located to the north and south, outside of the Schofields Road corridor for the translocation of Cumberland Plain Land Snail.<br><br>No target Cumberland Plain Land Snail searches have been completed in the supplement sites. |
| 16. Provide an assessment of the likely nature and intensity of the effect of the action on the lifecycle and habitat of the species. | The likely effect of the Cumberland Plain Land Snail relocation to other Threatened species in the supplement sites is likely to be of low intensity and temporary. |
| 17. Provide details of possible measures to avoid or ameliorate the effect of the action. | Refer to the attached Translocation Management Strategy for the Cumberland Plain Land Snail *(Meridolum corneovirens)* Stage 2: Schofields Road Upgrade; Tallawong Road to Veron Road prepared by UBM Ecological Consultants Pty Ltd. |

*N.B: The Director-General must determine whether the action proposed is likely to significantly affect threatened species, populations or ecological communities, or their habitats. To enable this assessment the Applicant is required to address items 18 to 24. Any additional information referred to in addressing these items must be attached to the application.*

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| 18. 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 aim of the Cumberland Plain Land Snail relocation is to minimise mortality and injuries to individual Cumberland Plain Land Snails relocated to the supplement sites and thereby to directly support the conservation of the species. |
| 19. 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. | Not applicable. |
| 20. In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:<br><br>(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<br><br>(ii) is likely to | The proposed Cumberland Plain Land Snail relocation will not directly reduce the extent of the supplement ecological community or modify the composition or structure of the supplement ecological community. |

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| substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction. | |
| 21. In relation to the habitat of a threatened species, population or ecological community:<br><br>(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and<br><br>(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<br><br>(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 proposed Cumberland Plain Land Snail relocation will not reduce the extent of the Cumberland Plain Woodland or associated habitat for Threatened species. As such, it will not result in any further fragmentation of the habitat. |
| 22. Whether the action proposed is likely to have an adverse effect | No critical habitat was identified within the relocation site or the locality (within 10km) (Office of Environment and Heritage, 2011). No critical habitat is likely to be directly or indirectly effected as a result of the proposed Cumberland Plain Land Snail relocation. |

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| on critical habitat (either directly or indirectly). | |
| 23. Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan. | A recovery plan for the CPLS has not been prepared; however, it is one of the species considered in the Cumberland Plain Recovery Plan (DECCW 2011). |
| 24. 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 proposed Cumberland Plain Land Snail relocation does not constitute or part of a key threatening process. |

**References**

Department of Environment Climate Change and Water, (2011). *Threatened species information*. Viewed 22/07/2014 <http://www.threatenedspecies.environment.nsw.gov.au/index.aspx>

Office of Environment & Heritage, (2011). *Critical Habitat Register*, viewed 8/02/2013, < http://www.environment.nsw.gov.au/criticalhabitat/CriticalHabitatProtectionByDoctype.htm>

Roads and Maritime Services, (2012). *Schofields Road Upgrade and Extension: Tallawong Road to Veron Road Review of Environmental Factors Volume 1: Main Report and Appendix A, Volume 2: Appendices B to H & Volume 3: Appendices I to M,* Prepared for Roads and Maritime Services by GHD.

## Important information for the applicant

### Processing times and fees

The *Threatened Species Conservation Act 1995* provides that the Director-General must make a decision on the licence application within 120 days where a species impact statement (SIS) has been received. No timeframes have been set for those applications which do not require a SIS. The Director-General will assess your application as soon as possible. You can assist this process by providing clear and concise information in your application.

Applicants may be charged a processing fee. The Director-General is required to advise prospective applicants of the maximum fee payable before the licence application is lodged. Therefore, prospective applicants should contact the Office of Environment and Heritage (OEH) prior to submitting a licence application.

A $30 licence application fee must accompany a licence application.

**Protected fauna and protected native plants***

Licensing provisions for protected fauna and protected native plants are contained within the *National Parks and Wildlife Act 1974.* However, a Section 91 Licence may be extended to include protected fauna and protected native plants when these will be affected by the action.

If you are applying for a licence to cover both threatened and protected species please provide the information requested in Item 10 *as well as* a list of protected species and details of the number of individuals animals or proportion and type of plant material which are likely to be harmed or picked.

**Request for additional information**

The Director-General may, after receiving the application, request additional information necessary for the determination of the licence application.

**Species impact statement**

Where the application is not accompanied by a SIS, the Director-General may decide, following an initial assessment of your application, that the action proposed is likely to have a significant effect on threatened species, populations or ecological communities, or their habitats. In such cases, the *Threatened Species Conservation Act 1995* requires that the applicant submit a SIS. Following initial review of the application, the Director-General will advise the applicant of the need to prepare a SIS.

**Director-General's requirements for a SIS**

Prior to the preparation of a SIS, a request for Director-General's requirements must be forwarded to the relevant OEH Office. The SIS must be prepared in accordance with section 109 and 110 of the TSC Act and must comply with any requirements notified by the Director-General of OEH.

**Disclosure of Personal Information in the Public Register of s91 Licences**

The Public Register provides a list of licence applications and licences granted. A person about whom personal information is contained in a public register may request that the information is removed or not placed on the register as publicly available.

Copies of all applications and licences issued under section 91 and certificates issued under section 95 of the Act are available on the OEH website at
www.environment.nsw.gov.au/threatenedspecies/S91TscaRegisterByDate.htm
or in hardcopy form from The Librarian, OEH, 59 Goulburn St, Sydney.

**Certificates**

* Protected fauna means fauna of a species not named in Schedule 11 of the *National Parks and Wildlife Act 1974.*
Protected native plant means a native plant of a species named in Schedule 13 of the *National Parks and Wildlife Service 1974.*

If the Director-General decides, following an assessment of your application, that the proposed action is not likely to significantly affect threatened species, populations or ecological communities, or their habitats, a Section 91 Licence is not required and the Director-General must, as soon as practicable after making the determination, issue the applicant with a certificate to that effect.

*N.B: An action that is not required to be licensed under the Threatened Species Conservation Act 1995, may require licensing under the National Parks and Wildlife Act 1974, if it is likely to affect protected fauna or protected native plants.*

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I confirm that the information contained in this application is correct. I hereby apply for a licence under the provisions of Section 91 of the *Threatened Species Conservation Act 1995.*

| | |
|---|---|
| Applicant's name *(Please print)* | Dorothy Malysiak |
| Applicant's Position & Organisation *(if relevant)* *(Please print)* | Environmental and Community Officer<br><br>OHL York Joint Venture |
| Applicant's signature |  |
| Date | 22nd July 2014 |

**F**or more information or to lodge this form, contact the nearest branch of OEH's Conservation and Regulation Division:

Metropolitan Branch
P: 02 9995 6802
F: 02 9995 6900
PO Box 668
Parramatta
NSW 2124

North East Branch
P: 02 6640 2500
F: 02 6642 7743
PO Box 498
Grafton
NSW 2460

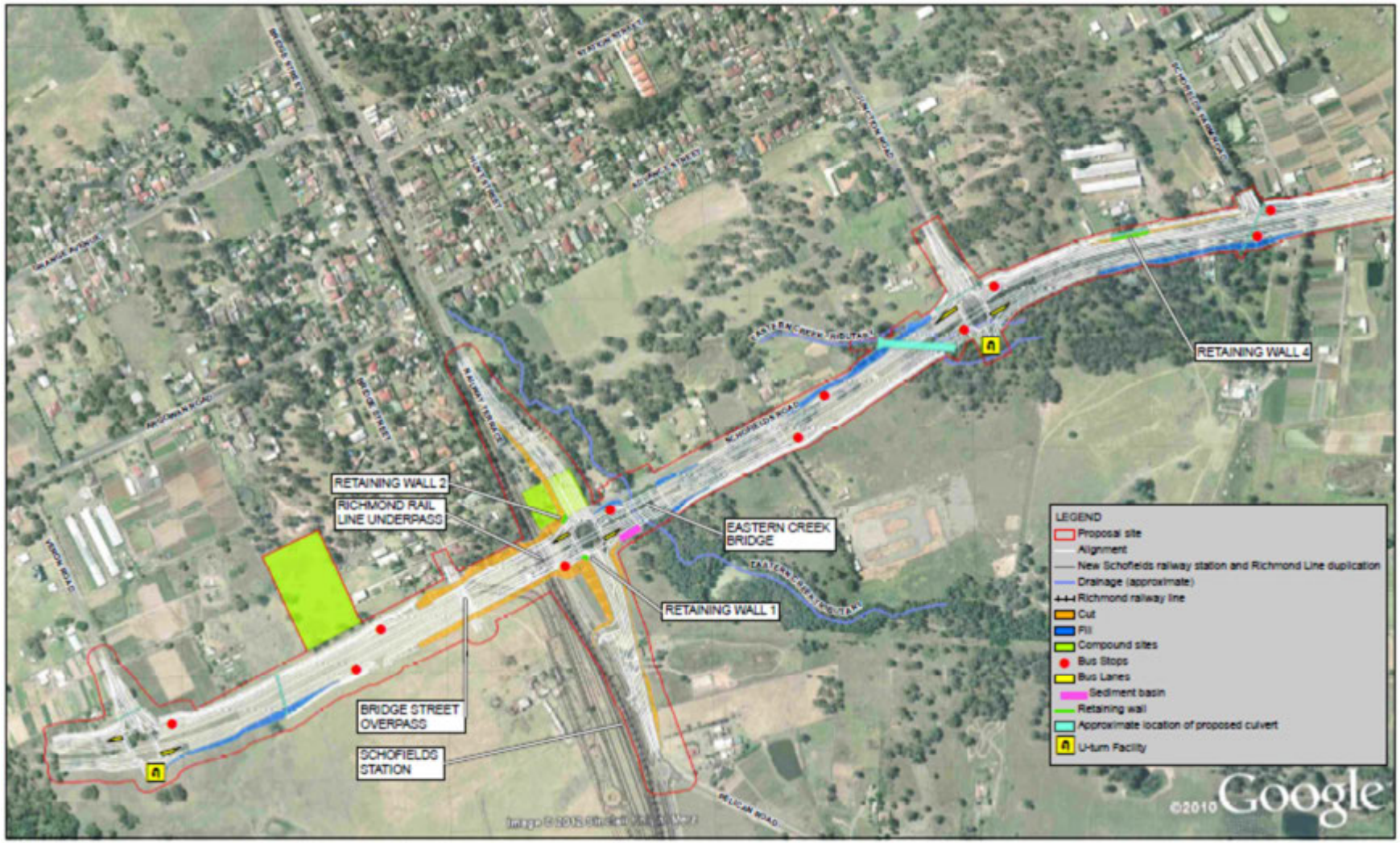
North East Branch
P: 02 4908 6800
F: 02 4908 6810
PO Box 488G,
Newcastle
NSW 2300

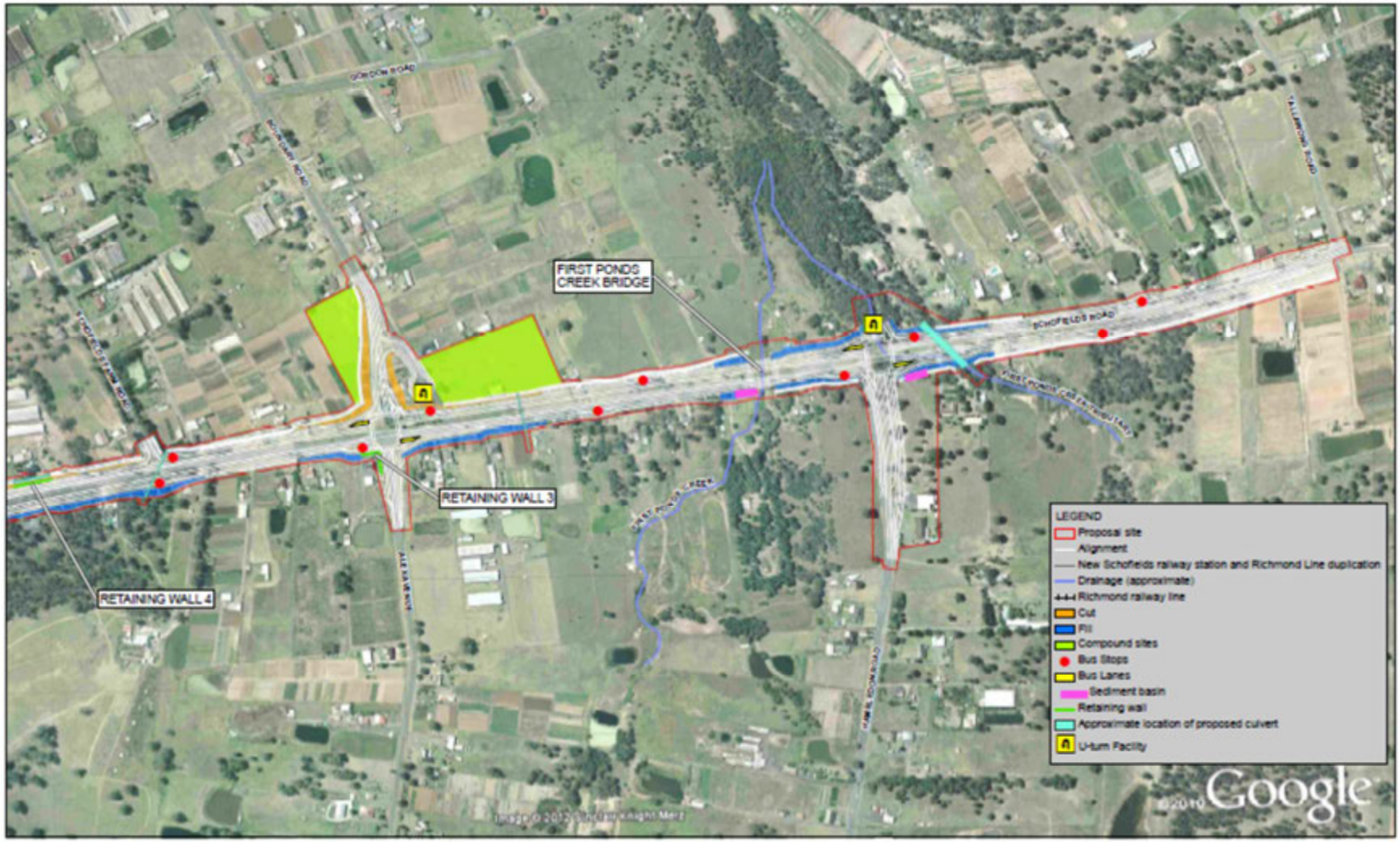
North West Branch
P: 02 6883 5330
F: 02 6884 8675
PO Box 2111
Dubbo
NSW 2830

South Branch
Biodiversity Conservation Section
P: 02 6122 3100
F: 02 6299 3525
PO Box 622 Queanbeyan
NSW 2620

Office of Environment and Heritage (NSW)
PO Box A290, Sydney South NSW 1232
Phone: 131 555 (Environment Line) Fax: 9995 5999
Email: info@environment.nsw.gov.au

**Appendix 1: Location map of the Upgrade of Schofields Road between Tallawong Road and Veron Road.**




FIRST PONDS CREEK BRIDGE
RETAINING WALL 3
RETAINING WALL 4
LEGEND
Proposal site
Alignment
New Schofields railway station and Richmond Line duplication
Drainage (approximate)
Richmond railway line
Cut
Fill
Compound sites
Bus Stops
Bus Lanes
Sediment basin
Retaining wall
Approximate location of proposed culvert
U-turn Facility
Google

# Translocation Management Strategy for the Cumberland Plain Land Snail (*Meridolum corneovirens*)

## Stage 2: Schofields Road Upgrade; Tallawong Road to Vernon Road

***Prepared for***
**OHL –York Australia**

**July 2014**

*Prepared by*
**UBM Ecological Consultants Pty Ltd**

HEAD OFFICE:
'St Clements'
1238 Bells Line of Road,
Kurrajong Heights 2758
Telephone/Fax: (02) 45 677 979
ubm@urbanbushland.com.au
www.urbanbushland.com.au

# Executive Summary

UBM Ecological Consultants Pty Ltd has been commissioned by *OHL-York JV* to prepare a translocation strategy to guide the relocation of the threatened Cumberland Plain Land Snail (*Meridolum corneovierns*) from the Schofields Road corridor into a secure conservation area on nearby land.

Previous studies and ecological investigations (*Appendix G* in RMS 2012) have identified the Schofields Road Corridor as habitat for the Cumberland Plain Land Snail (CPLS), which is listed as an 'Endangered species' under Schedule 1 Part 1 of the *NSW Threatened Species Conservation Act 1995*.

No CPLS were identified during the fauna survey previously conducted by GHD, as part of the *Biodiversity Assessment for Schofields Road Upgrade – Tallowong Road to Veron Road* (August 2012). It is noted that targeted searches by GHD were conducted in winter, when this species in inactive and is known to burrow beneath the soil (Rudman 1999) and hence is more difficult to locate.

The GHD survey was conducted in the stand of remnant Cumberland Shale Plains Woodland on the corner of Schofields Road and Railway Terrace. Other sites within the development footprint and mapped as Cumberland Shale Plain Woodland (considered to be a sub-set of the Critically Endangered Cumberland Plain Woodland), were not targeted in 2012 as the habitat in each area was considered unlikely to support this species. Given that potential habitat for the CPLS was present in the road corridor, an Assessment of Significance (commonly called the Seven-part Test) was carried out under Section 5A of the NSW *Environment Planning & Assessment Act 1979*. This Assessment was conducted on 0.63 ha of suitable habitat to be directly impacted. This Assessment concluded that the impact of the road works would not be significant, and that clearing an area of potential habitat would not put the local population of the threatened CPLS at risk of extinction – should any individuals occur.

More recent field investigations (UBM July 2014) have confirmed the Schofields Road Corridor (and some areas of adjoining woodland) as potential habitat for the CPLS. Further investigations will be conducted in a pre-clearing survey to determine the presence of the CPLS by conducting further targeted searches in the areas where likely habitat occurs i.e. primarily in a patch of remnant CPW on the corner of Railway Terrace and Schofields road.

Accordingly, the Ecological Assessment (*Appendix G* in RMS 2012 *Section 7.1.3*) has recommended that:

- A pre-survey be carried out for the Cumberland Plain Land Snail, with any live individuals found to be relocated to a suitable location based on ecologist recommendations as part of the pre-clearance surveys for fauna and fauna habitat

This Report – the Translocation Management Plan for the Cumberland Plain Land Snail at Schofields Road – has been prepared to guide the translocation of the threatened snail into one or more secure conservation areas, i.e. sites within the same habitat type and as close to the Schofields Road corridor as possible.

# Certification

I, Judith Rawling Managing Director of UBM Ecological Consultants Pty Ltd hereby state that the Translocation Management Strategy for the threatened Cumberland Plain Land Snail (*Meridolum corneovirens*) in the Schofields Road Corridor at Schofields, has been prepared in accordance with the requirements of the project brief provided by OHL-York JV and in accordance with the *Policy for the Translocation of Threatened Fauna in NSW* (NPWS October 2001).

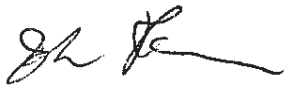
The UBM project team charged with preparing the Translocation Strategy were:

- Judith Rawling (BA,DipEd,DipEnv.Stud.MEnvSt)
- De-Anne Attard (BSc,Hons)
- Heather Clarksen (BLib.Stu, Hons)

# Disclaimer

The preparation of this Report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the Report. All findings, conclusions or recommendations contained within the Report are based only on the aforementioned circumstances.

The Report has been prepared for use by the Client, and no responsibility for its use by other parties is accepted by UBM Ecological Consultants Pty Ltd.



**Judith Rawling** BA,DipEd,DipEnvStud,MEnvStud

Managing Director UBM Ecological Consultants
Member AIB, MESA, MEIANZ, MECA (NSW)

22 July 2014

# TABLE OF CONTENTS

# TABLE OF FIGURES



*Cover images by De-Anne Attard and the Australian Museum.*
*Taken from the DEC threatened species profile.*

# Definitions & Abbreviations Used

**CPLS –** Cumberland Plain Land Snail (*Meridolum corneovirens*) a threatened species listed under Part 1 Schedule 1 of the NSW Threatened Species Conservation Act 1995.

**CPW –** Cumberland Plain Woodland, a 'critically endangered ecological community' listed under the NSW *Threatened Species Conservation Act 1995* and Commonwealth *Environment Protection & Biodiversity Conservation Act 1999*

**CSPW** – Cumberland Shale Plains Woodland, a sub-set of the critically endangered Cumberland Plain Woodland

**DECCW/DECC-** NSW Department of Environment, Climate Change & Water. This Department has recently been abolished as a division of the Government Service, and amalgamated into the Department of Premier & Cabinet).

**DEWHA -** Commonwealth Department of Environment, Water, Heritage & the Arts (now renamed Dept. of Sustainability, Environment Water Population & Communities – 'SEWPAC').

**Development Footprint** – The area outlined in *Figure 1.1* as the total area impacted by the upgrades to the roadway during Stage 2 of the Schofields Road Upgrade between Tallowong Road and Veron Road, Schofields.

**DP&C-** NSW Department of Premier and Cabinet, incorporating the former DECCW

**Direct Impacts** are those that directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat.

**Indirect Impacts** occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas.

**Ecological Community** – described as an assemblage of species occupying a particular area and interacting with one another.

**EEC –** Endangered Ecological Community: a community that is likely to become extinct unless the circumstances and factors threatening its survival cease to operate, and is listed under State and/or Commonwealth threatened species legislation; as listed in Part 3 of Schedule 1 of the *TSC Act.*

**EPBC Act** – Commonwealth *Environment Protection & Biodiversity Conservation Act 1999*

**Habitat** – an area or areas occupied, or periodically or occasionally occupied by a species, population or ecological community, and including any biotic or abiotic components present.

**LGA –** Local Government Area

**Locality** – generally, an area within 1-2 kilometres of the Study Area

**NPWS** – National Parks & Wildlife Unit of 'DPC' (formally 'DECCW')

**Proposal** – to upgrade Schofields Road between Tallawong Road and Vernon Road at Schofields Road, with associated vegetation clearing and earthworks.

**Region** – is an area approximately 10 kilometres in diameter, centred on the Study Area

**SCIVI** – Southeast NSW Native Vegetation Classification and Mapping by former NSW Department of Environment, Climate Change & Water (DECCW)[1].

**SEWPAC** – Commonwealth Department of Sustainability, Environment, Water, Population and Communities (formally 'DEWHA')

**Study Area** – for the purposes of this Report, the section of the Schofields Road Corridor between Tallawong to Vernon Road at Schofield.

**Recipient Site –** the location where the subject species is to be released (also called the 'host environment')

**Recovery Plan** – an approved recovery plan is one approved under Part 4 of the *TSC Act.*

**Threatened Species** – a species of flora or fauna listed under State and/or Commonwealth threatened species legislation.

**TSC Act** – NSW *Threatened Species Conservation Act 1995*

**UBM** – UBM Ecological Consultants Pty Ltd: formerly trading as Urban Bushland Management Consultants ('UBMC')

1 Reference: Tozer, M.G., Turner, K., Simpson, C., Keith, D.A., Beukers, P., MacKenzie, B., Tindall, D. & Pennay, C. (2010). Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands, in *Cunninghamia* 11(3), 2010.

# 1 INTRODUCTION

## 1.1 BACKGROUND INFORMATION

UBM Ecological Consultants Pty Ltd has been commissioned by *OHL-York JV* to prepare a translocation strategy to guide the relocation of the threatened Cumberland Plain Land Snail (*Meridolum corneovierns*) from the Schofields Road Corridor into one or more secure conservation areas on nearby land.

The Schofields Road Corridor occurs within the North West Growth Centre (NWGC). The majority of the land within the NWGC has been biodiversity-certified under the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006.* Non-certified areas are highlighted in *Figure 1.1.* This certification removes the requirement to conduct assessments under the *Threatened Species Conservation Act 1979*. Lands that fall outside this biodiversity-certified area still require an assessment of impact where threatened entities occur.

Previous studies and investigations by GHD for the Roads & Maritime Authority (RMS) (*Appendix G* in RMS 2012) have identified land in the Schofields Road Corridor as potential habitat for the Cumberland Plain Land Snail (CPLS), which is listed as Endangered under Schedule 1 Part 1 of the *NSW Threatened Species Conservation Act 1995*.

The upgrade of Schofields Road will include clearing of 0.63 Ha of potential habitat for the CPLS, mainly located in a stand of remnant Cumberland Shale Plains Woodland on the corner of Schofields Road and Railway Terrace (see *Figure 2.2*). This stand was previously identified as the only area of suitable habitat within the development footprint (GHD for RMS 2012).

There were three (3) areas of Cumberland Shale Plains Woodland assessed during the pre-clearance survey conducted by UBM (July 19, 2014), however the following two (2) areas were excluded from pre-clearance searches as they did not contain suitable habitat for this species;

- Cumberland Plain Shale Woodland and Shale Gravel Transition Forest CEEC (Tozer *et al*. 2010), listed as Endangered under the *EPBC Act* and *TSC Act*, on the south-eastern side of Schofields Road between Hambleton Road and Ridgeline Drive; and
- Cumberland Plain Shale Woodland and Shale Gravel Transition Forest CEEC (Tozer *et al*. 2010), listed as Endangered under the *EPBC Act* and *TSC Act*, opposite Junction road on the eastern side of Schofields road.

Other small areas of Cumberland Shale Plains Woodland (Tozer *et al.* 2010) – this community being a sub-set of the Critically Endangered Cumberland Plain Woodland - have also been considered, however these were considered to be too fragmented, too degraded and/or did not contain enough leaf litter or ground debris for this species to utilise.

No CPLS were identified during the fauna survey, conducted by GHD, as part of the *Biodiversity Assessment for Schofields Road Upgrade – Tallawong Road to Veron Road* (August 2012). Although it is noted that targeted searches were conducted in winter, when this species in inactive and is known to burrow beneath the soil (Rudman 1999) and hence is more difficult to locate. The GHD assessment was conducted in the stand of remnant Cumberland Shale Plains Woodland the corner of Schofields Road and Railway Terrace. Other regions mapped as Cumberland Shale Plains Woodland, and occurring within the development footprint, were not targeted as the habitat in each area was considered unlikely to support this species.

However, given that potential habitat was present, an Assessment of Significance (commonly called the Seven-part Test) was carried out under Section 5A of the NSW *Environment Planning & Assessment Act 1979*. The Assessment was conducted on 0.63 ha of suitable habitat to be impacted within the development footprint. This Assessment concluded that the impacts would not be significant, and that clearing of an area of potential habitat would not put the local population of the threatened CPLS at risk of extinction – should any individuals occur.

More recent field investigations (UBM July 2014) have confirmed the Schofields Road Corridor (and some stands of adjoining woodland) as potential habitat for the CPLS. Further investigations will be undertaken in a pre-clearing survey to determine the presence of the CPLS. Supplementary targeted searches in the areas where likely habitat occurs will be carried out. The most likely habitat for the CPLS is a stand of remnant woodland on the corner of Railway Terrace and Schofields Road.

Accordingly, the Ecological Assessment (*Appendix G* in RMS 2012 *Section 7.1.3*) has recommended that:

- A pre-survey be carried out for the Cumberland Plain Land Snail, with any live individuals found to be relocated to a suitable location based on ecologist recommendations as part of the pre-clearance surveys for fauna and fauna habitat.

Any translocations that occur should be undertaken in accordance with the *Policy for the Translocation of Threatened Fauna in NSW* (NSW NPWS 2001).

Stage 2 of the Schofield Road upgrade includes the area between Tallawong Road and Veron Road: this area will be the focus of the forthcoming searches for the CPLS (see *Figures 1.1* and *1.2*.)

**Figure 1-1: Schofields Road upgrade Location Plan (from RMS 2012)**

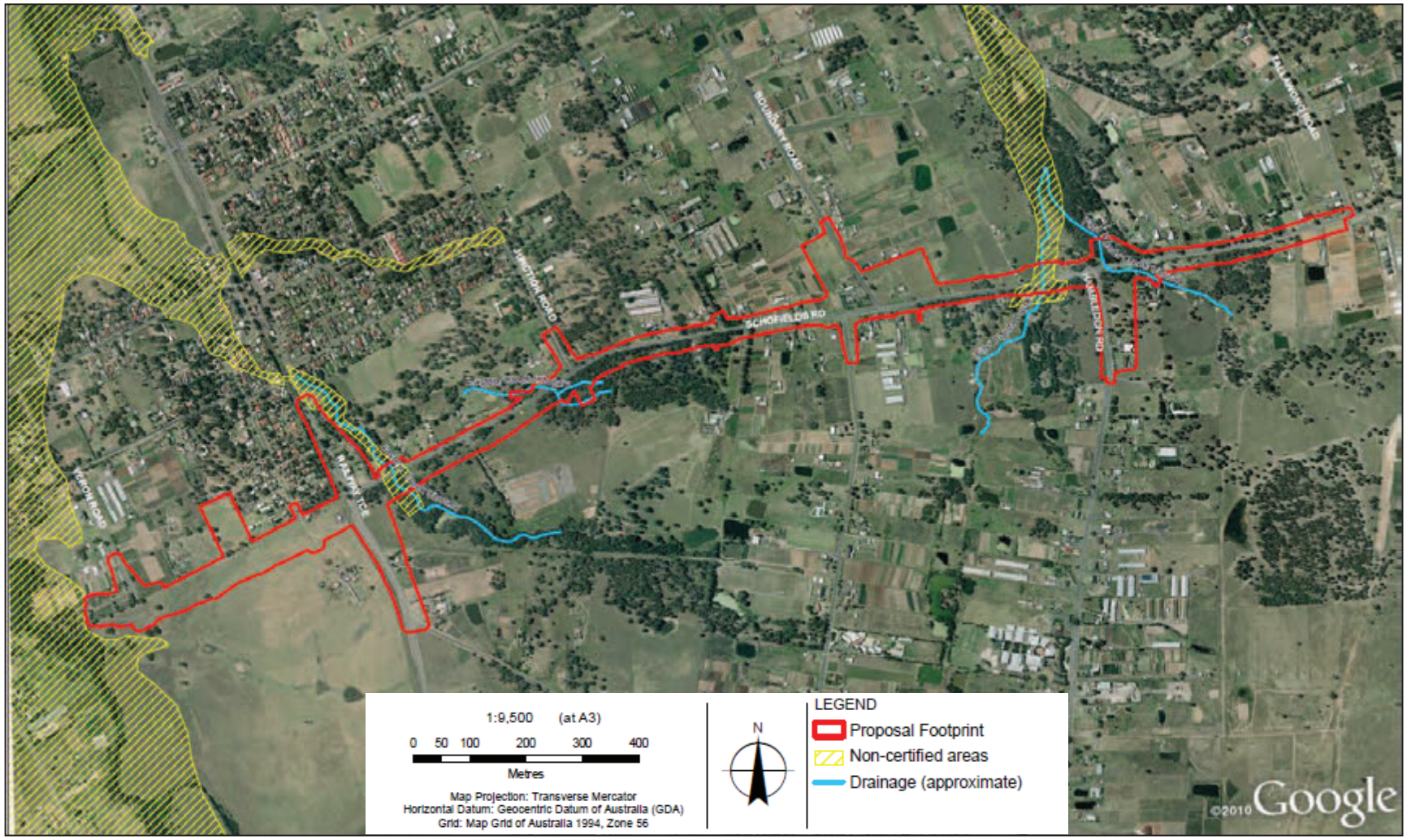
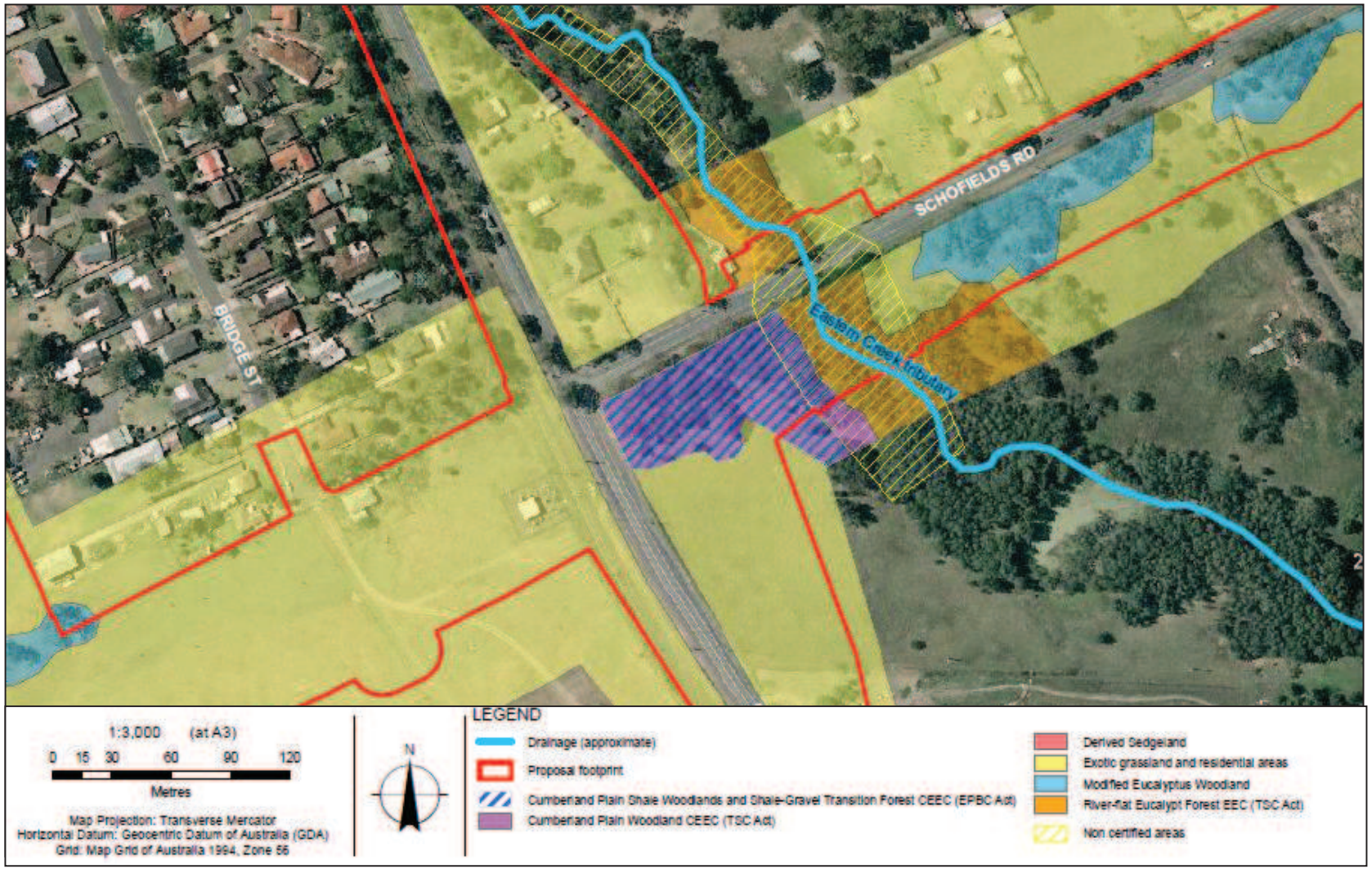


**Figure 1-2 Areas of Cumberland Shale Plains Woodland identified for targeted searches for the CPLS (RMS 2014)**



## 1.2 REPORT PURPOSE

The Translocation Management Strategy has been prepared as a guide to the translocation and re-establishment of the Cumberland Plain Land Snail (*Meridolum corneovirens*) from the Schofields Road Corridor into one or more secure areas of compensatory habitat.

The Translocation Management Strategy provides appropriate strategies and techniques for the translocation of the CPLS, and in doing so it identifies a suitable area of compensatory habitat (also described the 'recipient site). The Plan also determines a suitable maintenance and on-going monitoring program.

## 1.3 SCOPE OF WORKS

The following tasks were undertaken during in the preparation of this Report.

- Review of the adopted *Schofields Road Upgrade, Tallowong road to Veron road: Review of Environmental Factors Main Report & Appendices A to E, Volume 1* (August 2012)
- Identification and inspection of suitable recipient sites (i.e. areas of potential compensatory habitat);
- Review of species information and relevant translocation literature;
- Identification of translocation strategies and mechanisms appropriate for the species; and
- Identification of an appropriate maintenance and monitoring program.

## 1.4 METHODLOGY

The NSW National Parks & Wildlife Division of the former-Department of Conservation & Climate Change DECCW (now Office of Environment & Heritage – OEH) has prepared a generic *Policy for the Translocation of Threatened Fauna in NSW* (NPWS October 2001).

While the Guidelines set out in this Policy have been adhered to in the broad sense, time constraints have made it impossible to carry out many of the pre-translocation investigations. In particular, actions related to detailed biological assessment (e.g. population biology, genetic assessment), and community consultation and the establishment of a long-term monitoring program) has not been possible.

# 2 CUMBERLAND PLAIN LAND SNAIL

## 2.1 SPECIES BIOLOGY

The Cumberland Plain Land Snail (*Meridolum corneovirens*) is a native snail species (*Plate 2.1*). Adult shell diameters are usually 15-30 mm and are a tan to dark brown colour with a green or yellow tinge. They can be confused with the larger common garden snail (*Helix aspersa*) and other *Meridolum* species.

**Plate 2.1: Cumberland Plain Land Snail (left) and shells (right) (from the Australian Museum)**

### 2.1.1 Location in the Schofields Road Corridor

Field studies conducted by GHD in August 2012 identified no live CPLS within the Schofields Road Corridor, specifically within stand of Cumberland Shale Plains Woodland on the corner of Schofields Road and Railway Terrace. As this previous survey had been conducted in winter (when fauna activity is infrequent) it is possible that CPLS individuals were present at that time, however were difficult to fine. Since the time of the survey this intersection has undergone a number of changes and it is unknown whether the CPLS still occurs in this site.

### 2.1.2 Abundance

The abundance of the CPLS is restricted to the availability of suitable habitat. This species primarily inhabits Cumberland Plain Woodland (CPW)[2] (a critically endangered ecological community), Castlereagh Woodlands and on the fringes of River-flat Eucalypt Forest ('RFEF'), especially where it meets Cumberland Plain Woodland. There are records of sightings of the CPLS within a ten (10) kilometres of the Schofields Road Corridor (OEH 2012a). There is no information on current population numbers.

[2] CPW incorporates both Cumberland Shale Plains Woodland and Cumberland Shale Hills Woodland (per Tozer et al.)

### 2.1.3 Habitat Requirements

Cumberland Plain Woodland is grassy, open woodland with occasional dense patches of shrubs. The CPLS lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. They will also shelter under any available debris including rubbish. To escape drought conditions, they are known to dig several centimetres into soil under logs and around the bases of large trees (Clark, 2009).

### 2.1.4 Ecology

There is very little known about the CPLS's biology and life history. They feed exclusively on fungus and are usually active at night. They are hermaphroditic and laying their eggs in moist, dark areas.

### 2.1.5 Distribution

Populations of the CPLS are usually small and isolated, and occur only on the Cumberland Plain west of Sydney. Boundaries extend from Schofields and Windsor (north) to Picton (south) and from Liverpool (east) to the Hawkesbury and Nepean Rivers (west) at the base of the Blue Mountains.

### 2.1.6 Conservation Status

The CPLS is listed as 'Endangered' under Part 1 Schedule 1 of the *NSW TSC Act 1995*; meaning it is likely to become extinct or is in immediate danger of extinction.

### 2.1.7 Threatening Processes and Threat Abatement Plan

Clearing and degradation of Cumberland Plain Woodland remnants threaten the remaining populations. Weed invasion, inappropriate fire regimes and removal of ground cover destroys shelter, breeding habitats and food sources.

A recovery plan for the CPLS has not been prepared; however, it is one of the species considered in the Cumberland Plain Recovery Plan (DECCW 2011).

## 2.2 Impact of the Schofields Road upgrade

Land clearing for the upgrade of Schofields Road will directly impact on the habitat of the CPLS. It is therefore likely to cause extinction of at least part of the population within the development footprint itself, although it would have minimal impact on the local population of the species.

Land within the corridor has been biodiversity-certified under the Growth Centres SEPP, and is therefore approved for development without further assessment.

# 3 MANAGEMENT OPTIONS FOR THE CUMBERLAND PLAIN LAND SNAIL

## 3.1 OFFSETS

Ecological impacts within the North West Growth Centre biodiversity-certified lands would be offset by the mechanisms contained within the Growth Centres Conservation Plan (RMS 2011). The locations of these offset sites and their potential as habitat for the endangered Cumberland Plain Land Snail are not defined.

## 3.2 TRANSLOCATION

Translocation is a term that broadly means the movement of plants or animals (or their reproductive parts) from one site to another (ANPC 2004)

Translocations may be categorised as:

- Introductions –the release of an organism outside its historically known range but within an appropriate habitat and bio-climatic region;
- Re-introductions – the release of an organism into part of its historically known range from which it has become extinct; and
- Supplementation (re-stocking) – the addition of individuals of to an existing population of the same species.

Of the categories of translocation listed above, 'supplementation' will be applied to the relocation of the CPLS individuals within the Schofields Road upgrade corridor.

Translocation methods in common usage and their potential application to the subject population of the CPLS along the Schofields Road Corridor are as follows.

1. Identifying, collecting, and relocating all live CPLS individual within the development footprint; and
2. Transferring accumulated leaf litter (assuming live individuals or eggs are present) to a suitable recipient site nearby. This is a relatively simple process which should also be undertaken prior to clearing or other earthworks commencing.

Translocation (where transplanting individuals, soil or litter to a new site with suitable habitat) is a relatively simple operation, but careful forward planning will be required. This would include the preparation of a species-specific Translocation Management Plan (this Report) and ideally follow-up monitoring and site maintenance. As the donor site is a relatively large area (~0.63 ha) with numerous

'micro-habitats' present, it will be important to undertake targeted searches in all areas of potential habitat in order to gather as many live individuals as possible.

# 4 TRANSLOCATION STRATEGY

## 4.1 MATCHING BIOPHYSICAL CHARACTERS OF DONOR AND RECIPIENT SITES

In choosing host or recipient sites, it is important to examine sites that are either known to support the Subject Species or have similar habitat to the donor site.

Other factors to consider include security of tenure, levels of site protection, habitat size and impacts of existing and future land uses (see *Section 4.3*). Geographical proximity to the donor site should also be considered to maximise the chances of success of the translocation process.

## 4.2 CHARACTERISTICS OF DONOR SITE

The characteristics of the donor site will be determined following the identification of any Cumberland Plain Land Snails during the pre-clearing survey. Characteristics may include (but are not limited to): location, soil landscape, hydrology, vegetation type and presence of exotic flora species.

## 4.3 SELECTION OF RECIPIENT SITES

### 4.3.1 Determining Site Suitability

A number of factors affect the suitability of a recipient site. They include:

**Size and Connectivity**

The recipient or host environment must be to be large enough to support a self-sustaining population of the subject organism to be translocated. If small, the possibility of connecting sites via corridors should also be considered.

**Degree of Disturbance**

Whilst some level of disturbance (e.g. weed invasion, soil erosion) is often unavoidable, it should not exceed a level that places the habitat at risk of being destroyed before successful establishment has occurred.

**Threats**

Threats may also exist that are not currently evident, such as diseases like *Phytophthora* spp which would destroy woody vegetation and significantly alter that habitat. The likelihood of frequent bushfires, herbivory (rabbits, rats. kangaroo/wallabies), or uncontrolled stock grazing in riparian

vegetation should also be considered. The fact that the Subject Site is currently a major construction area also poses major threats to any existing fauna.

**Security of Land Tenure**

The long-term security of the site is essential to ensure the translocated individuals are protected. Consequently, a Memorandum of Understanding between the proponent/developer and any private landowners or government agencies may be necessary.

**Adjacent Land Uses**

Where adjacent land uses are considered to be a threat, (e.g. development which clears or isolates habitat areas), a buffer may need to be left between the conservation site and adjacent land. It is noted that a large part of the land surrounding the Schofields Road Corridor is proposed for development as part of various housing estate developments.

### 4.3.2 Characteristics of Recipient Sites

There are three (3) small tracts of bushland within a one (1) km radius of the donor site at the corner of Schofields Road and Railway Terrace. These sites have been proposed as a suitable translocation site for any CPLS individuals located within the construction area (see *Appendix 2*). This area has been mapped as Cumberland Shale Plains Woodland (*Appendix 2*). No targeted searches have been conducted in the recipient sites (RMS 2012).

The recipient site(s) should ideally be located between 50 and 1000 metres of the donor site. The recipient site(s) is located outside the Schofield Road Corridor and the biodiversity-certified lands. Within the proposed recipient site(s) there is potential for a number of suitable translocations to occur.

**Note**: The maximum recommended distance for a CPLS translocation to occur is 100 metres (pers. comm. S Clark 2013)

It is envisaged that collected leaf litter from the donor site(s) will be scattered in the selected recipient sites along with any live individuals relocated. In the event that no live individuals are collected and relocated, leaf litter from the donor site(s) will be scattered in sites where suitable habitat is deemed to be present.

# 5 TRANSLOCATION PROCESS

## 5.1 COLLECTION AND RELOCATION OF SPECIMENS

### 5.1.1 Targeted Searches and Collection

A targeted search for the threatened CPLS is proposed, to be carried out as part of a pre-clearing survey.

The potential donor site in the mapped CSPW will be thoroughly searched for signs of the CPLS. The potential donor site must be systematically searched from one end to the other in parallel line transects. The bases of all trees are to be observed, and any litter, grass or leaves present searched for signs of the threatened snail.

All logs and fallen timbers will be carefully searched by observation and debris lifted (if possible). All leaf litter and grass is to be manipulated so that a search for the snail underneath can be made. Exposed surface soil should be scraped or dug to check for signs of the snail underneath. Any potential refuge sites (timbers, rubbish and other debris) will also be lifted and searched.

The location of any live CPLS individuals found will be recorded using a GPS MobileMapper, and each donor site similarly recorded. These locations are then to be translocated to a scaled site map for future monitoring purposes.

Prior to licensing approval, an exclusion zone will be marked out around each individual snail identified. Once licensing approval has been received, any live individuals located will be placed into a 20 L bucket with a layer of damp (not wet) leaf litter to cover. The collected individuals may then be relocated to pre-determined recipient site(s).

### 5.1.2 Transfer of Soil and Litter

The leaf litter and a small amount of topsoil will be collected to a depth of 15 cm, and for a distance of at least one (1) metre from sites of likely habitat (e.g. base of trees with fallen timbers and accumulated litter, large grass tussocks). A bobcat could be used to collect soil and litter at the same time (or it can be done by hand). In practice, the two (2) mechanisms are similar in intent and complement one another.

Litter and any toil collected will be translocated along with any live individuals relocated. This will be spread carefully around the base of trees and/or around large grass tussocks.

### 5.1.3 Marking Individual Translocated

If any live individuals are found on site, before being moved they will be tagged in such as way that they can easily be recognized in the later monitoring process. The use of non-toxic enamel-based paint to place a mark or number and/or code on the shell or similar waterproof material is recommended.

## 5.2 Recording Data

It is important to keep accurate records of the procedures followed. Otherwise, important information required during the monitoring stage may be found to be unavailable.

At the very least, data recorded must include the GPS's location of each donor site where live individuals and/or leaf litter are sourced, and a similar record must be kept of properties at each of the recipient sites. Donor and recipient sites are to be located on a scaled site map.

Data recorded during the translocation process will be used in the later monitoring process (see *Section 5.4*) so that it is important to keep accurate records and to write up any finding promptly after field work is completed.

## 5.3 Permits & Licenses

A licence may be required under section 91 of the *Threatened Species Conservation Act 1995* if an action is likely to result in:

- harm to, or picking of, a threatened species, population or ecological community;
- damage to critical habitat; or
- damage to a habitat of a threatened species, population or ecological community.

A licence under Section 91 of the *Threatened Species Conservation Act* is required to translocate individuals of a threatened species.

Obtaining the appropriate licence will be the responsibility of the Environmental Manager/Coordinator OHL-York JV.

The project ecologist will be required to hold a current Scientific License from OEH.

## 5.4 MONITORING AND REPORTING

A measure of 'successful re-establishment' in the field has not been determined, however it is recommended that one measure of success should be the continued presence of the CPLS in those areas where translocations have taken place.

In order to assess this, monitoring over a period of at least 12 months will be required. Visits at intervals of two (2) months in the warmer spring to autumn months are recommended.

The location of any live individuals or shells should be recorded and a short report summarising the monitoring results should be prepared the end of the monitoring period.

Reports are to be forwarded to the RMS.

# 6 CONCLUSIONS AND RECOMMENDATIONS

Previous studies and investigations (RMS 2012) have identified the Schofields Road Corridor as potential habitat for the Cumberland Plain Land Snail, which is listed as an 'Endangered Species' under Schedule 1 Part 1 of the *NSW Threatened Species Conservation Act 1995*.

No CPLS were identified during the fauna survey, conducted by GHD as part of the *Biodiversity Assessment for Schofields Road Upgrade – Tallawong Road to Veron Road* (August 2012). It is noted that targeted searches were conducted in winter, when this species in inactive and is known to burrow beneath the soil (Rudman 1999) and hence is more difficult to locate.

The survey for the CPLS was conducted in the remnant stand of Cumberland Shale Plains Woodland on the corner of Schofields Road and Railway Terrace. Other regions mapped as Cumberland Shale Plains Woodland, and occurring within the development footprint, were not targeted as the habitat in each area was considered unlikely to support this species.

However, given that potential habitat was present, an Assessment of Significance (commonly called the Seven-part Test) was carried out under Section 5A of the NSW *Environment Planning & Assessment Act 1979*. This Assessment was conducted on the 0.63 ha of suitable habitat which would be directly impacted by the road works. This Assessment concluded that the impacts would not be significant, and that clearing of an area of potential habitat would not put the local population of the threatened CPLS at risk of extinction –if such individuals occurred.

More recent field investigations (UBM July 2014) have confirmed the Schofields Road Corridor (and some stands of adjoining woodland) as potential habitat for the CPLS. Further investigations will be conducted in a pre-clearing survey to determine the presence of the CPLS by conducting further targeted searches in the areas where likely habitat occurs, although primarily in the remnant CSPW on the corner of Railway Terrace and Schofields Road.

Accordingly, the Ecological Assessment (*Appendix G* in RMS 2012 *Section 7.1.3*) has recommended that:

- A pre-survey be carried out for the Cumberland Plain Land Snail, with any live individuals found to be relocated to a suitable location based on ecologist recommendations as part of the pre-clearance surveys for fauna and fauna habitat

This Report – the Translocation Management Plan for the Cumberland Plain Land Snail on Schofields Road– has been prepared to guide the translocation of the any threatened snails located within the works site into one or more secure conservation areas, within the same habitat type and as close to Schofield Road as possible.

The translocation of any live CPLS individuals, litter and/or topsoil should follow the procedures outlined in this Report.

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# 8 APPENDICES

## APPENDIX 1: NSW Scientific Committee – Final Determination for the Cumberland Plain Land Snail (Updated 27th February 2011)

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Final Determination to list *Meridolum corneovirens* (Pfeiffer, 1851), a large land snail, as an ENDANGERED SPECIES on Part 1 of Schedule 1 of the Threatened Species Conservation Act.

The Scientific Committee has found that:

1. *Meridolum corneovirens* is a large land snail, found on the Cumberland Plain in remnant pockets of urban bushland, in areas associated with Wianamatta Shale and old Nepean river gravels.

2. *Meridolum corneovirens* occurs in eucalypt woodland under logs and debris and around bases of trees or clumps of grass, burrowing into loose soil.

3. Collections in the Australian and Queensland Museum indicate that the species was formerly common throughout the Cumberland Plain, but recent records indicate that only small remnant disjunct populations remain.

4. Within the present remnant disjunct populations, several morphotypes exist suggesting that there might be considerable genetic differences between extant populations.

5. The habitat of *Meridolum corneovirens* has been drastically reduced with clearing of bush and is subjected to major current development pressures, which further threaten the remaining populations.

6. In view of 3, 4 and 5 above, the Scientific Committee is of the opinion that the numbers of i have been reduced to such a critical level and its habitats have been so drastically reduced that it is in immediate danger of extinction and that M. corneovirens is likely to become extinct in nature in New South Wales unless the circumstances and factors threatening its survival cease to operate.

Associate Professor Paul Adam
Deputy Chairperson
Scientific Committee

Gazetted: 8/8/97

## APPENDIX 2: Proposed translocation sites for the CPLS (prepared for OHL-York JV 2014)