Appendix B Great Eastern Highway Bypass Interchanges Project: Targeted Carter's Freshwater Mussel Survey

Great Eastern Highway Bypass Interchanges Project:

Targeted Carter's Freshwater Mussel Survey

Biologic Environmental Survey

Report to Main Roads Western Australia

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3				

EXECUTIVE SUMMARY

Biologic Environmental Survey (Biologic) was commissioned by Main Roads Western Australia (Main Roads) to undertake a targeted survey of the conservation significant Carter's freshwater mussel, *Westralunio carteri* for the Great Eastern Highway Bypass (GEHB) Interchanges Project. The survey was required to inform the Native Vegetation Clearing Permit (NVCP) application for the Project (CPS 9448/1). Carter's freshwater mussel is currently listed as Vulnerable on State (WA *Biodiversity Conservation Act 2016*), Federal (*EPBC Act 1999*), and international conservation lists (IUCN Red List of Threatened Fauna).

The Survey Area comprised an approximate 500 m length of the Helena River, including upstream and downstream of Roe Highway, as well as two adjacent wetlands (Wetland West, located west of Roe Highway, and Wetland East, located east of Roe Highway and where Carter's freshwater mussel have been recorded previously). The Survey Area was searched extensively following best practice methods to increase the likelihood of recording individuals, if present. Methods included mussel rakes, hand searches, and quantitative sampling within quadrats in order to calculate population density. Substrate assessment and water quality measurements were also undertaken to assess habitat suitability.

Carter's freshwater mussels were not detected in the Helena River, despite extensive survey effort. Two live Carter's freshwater mussels were recorded from Wetland West and 46 individuals were recorded at Wetland East. There are several components of habitat which make a particular location suitable for Carter's freshwater mussel, including water quality (within tolerable limits), substrate composition (sufficiently soft to allow burrowing, but not too soft or too compact), and the presence of permanent water. Although the Helena River did record appropriate water quality at the time of the targeted survey, as well as suitable substrate across parts of the Survey Area reach, the lack of permanent water means that Carter's freshwater mussel cannot occur there, and therefore, overall, the habitat is not suitable. Evidence for the fact that the reach is not permanent include the growth of terrestrial grasses throughout the creek bed, as well as the lack of sedges (such as *Machaerina articulata*) which indicate permanent water. Carter's freshwater mussel are known to require permanent surface water to persist. The Helena River is an ephemeral system, but it does support permanent pools upstream and downstream of the Survey Area. Within the section of river adjacent to the NVCP area, however, the lack of permanent water means that their likelihood of occurrence is Unlikely. At Wetland West and Wetland East, occurrence is Confirmed for Carter's freshwater mussels.

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1. INTRODUCTION

1.1 Background and objectives

The Roe Highway and Great Eastern Highway Bypass (GEHB) are strategic road corridors in Perth's north-east (Figure 1.1). These highways and their intersections experience high congestion, leading to the Federal and State Governments allocating funding for the planning, development, and construction of a new grade-separate interchange on the GEHB. As part of the GEHB Interchanges Project (hereafter referred to as the Project), Main Roads Western Australia (Main Roads) submitted a Native Vegetation Clearing Permit (NVCP) application for GEHB (CPS 9448/1) in October 2021. The application was informed by a biological assessment that included a survey for the conservation significant Carter's freshwater mussel, *Westralunio carteri* (Biota, 2021). This species is currently listed as Vulnerable under State (WA *Biodiversity Conservation Act 2016*), Federal (*Environment Protection and Biodiversity Conservation Act 1999*), and international conservation lists (IUCN Red List of Threatened Species).

While a previous biological survey did not find any evidence of Carter's freshwater mussel, a wetland adjacent to the northern portion of the clearing application area had not been included in that survey at the time. During assessment of the NVCP application, the Department of Water and Environmental Regulation (DWER) requested a further survey for Carter's freshwater mussel which aligned with the recommended methodology for monitoring freshwater mussels and included this additional wetland. As DWER were aware of records of Carter's freshwater mussel from this location, the wetland required targeted survey.

Main Roads commissioned Biologic Environmental Survey (Biologic) to conduct the additional survey work requested by DWER. This involved a targeted survey for Carter's freshwater mussel across aquatic habitats adjacent to the NVCP application area, which was undertaken in August 2022. The Survey Area comprised an approximate 500 m stretch of the Helena River, a wetland located east of Roe Highway where previous records of Carter's freshwater mussel exist (Wetland East), and a wetland located west of Roe Highway and Military Road (Wetland West; Figure 1.2). The main objective was to assess and delineate the extent of suitable habitat for the species, identify the presence of Carter's freshwater mussel within the Survey Area, and assess the extent of populations, if present.

404000
406000
408000
410000
6470000
6468000

James St
East St
Great Eastern Hwy
Hazelmere
Great Eastern Hwy
Greenmount
Great Eastern Hwy Bypa
Roe Hwy
Helena River

Legend

- NVCP Area
- Development Envelope
- State Road

Surface Hydrology

- Minor
- Major

N

biologic Environmental Survey

Scale: 1:22,000

0 0.5 1 Km

Coordinate System: GDA2020 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA2020 Created 23/11/2022

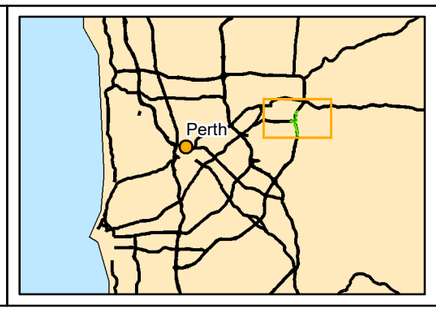

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Figure 1.1: NVCP application area