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**VERIFICATION SURVEY
REPORT ON GNETUM
LUOFUENSE**

FOR

**PORT SHELTER PHASE 3, PO
TOI O SEWERAGE
TREATMENT PLANT EM&A**

Prepared by
Allied Environmental Consultants Limited
In Association with
China Hong Kong Ecology Consultants Ltd.

COMMERCIAL-IN-CONFIDENCE

Document Verification



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6	15/04/2021	6th Submission	Mark Shea	Timmy Wong	Grace Kwok



Our Ref: PL-202104041

Drainage Services Department
Special Duty Division
42/F, Revenue Tower, 5 Gloucester Road,
Wan Chai, Hong Kong.

Attention: Ms. Wing W.Y. Law

20 April 2021

Dear Wing,

Sewerage Works at Po Toi O
Verification Survey Report on Gnetum Luofuense

I refer to the email from the ET concerning the captioned. I have no further comment on the Verification Survey Report on *Gnetum Luofuense* (Issue 6). In accordance with Condition 2.12 of the Environmental Permit with permit No EP-516/2016, I hereby verify that this document has conformed to the information and recommendations contained in the EIA Report (Register No. AEIAR-206/2017)

Yours faithfully,

F.C. Tsang
Independent Environmental Checker

cc. ETL – Timmy WONG

Agreement No. CE41/2013 (EP)
Port Shelter Sewerage, Stage 3 – Sewerage Works at Po Toi O
Environmental Team Services (2020-2022)

VERIFICATION SURVEY REPORT
ON *Gnetum luofuense*

Prepared by:
China Hong Kong Ecology Consultants Ltd.
Issue Date: March 2021



Prepared by: _____
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1 INTRODUCTION

1.1 China Hong Kong Ecology Consultants Ltd. has been commissioned to undertake a verification survey on *Gnetum luofuense* for the Project “Port Shelter Sewerage, Stage 3 – Sewerage Works at Po Toi O” to verify the location and condition of the climber *Gnetum luofuense* that may be affected by the sewage treatment plant construction in accordance with Condition 2.12 of the EP.

2 SCOPE OF WORKS

2.1 The following Scope describes the works that will be completed by China Hong Kong Ecology Consultants Ltd.

- Conduct Verification Survey of the location and condition of the climber *Gnetum luofuense* that may be affected by sewage treatment plant construction; and
- Recommend measures to minimize or avoid impact to the climber species based on the finalized layout of the sewage treatment plant.

3 METHODOLOGY

3.1 Verification Survey was conducted to record the climber *Gnetum luofuense* within the proposed sewerage works boundary, shown in **Figure 1**, with particular focus on vegetated area and the location where the climber has been recorded in the EIA study. The condition and location of the climber *Gnetum luofuense* were recorded. Photographic record of each individual or colonies of the climber *Gnetum luofuense* was provided. The nomenclature and conservation status of the species was follow Agriculture, Fisheries and Conservation Department (2020). The verification survey for *Gnetum luofuense* was conducted in October 2020.

4 RESULTS

4.1 The Survey Area was located within the Po Toi O Chuen and along Po Toi O Chuen Road. The habitats within the Study Area were mostly developed area and fringe of woodland.

4.2 In total, eight clumps of *Gnetum luofuense* were recorded during the survey. Most of *Gnetum luofuense* were recorded adjacent to the project boundary. The location of *Gnetum luofuense* was marked on topographical plan (**Figure 1**). The representative photo records of the recorded *Gnetum luofuense* are shown in **Appendix 1**. The conditions of the recorded *Gnetum luofuense* were shown in **Table 1**. All of them were

recorded in fair conditions.

Table 1. Conditions of the Recorded *Gnetum luofuense*

	Health Condition	Location
<i>Gnetum luofuense</i> (G1)	Fair	Man-made slope within the Proposed Sewage Treatment Plant
<i>Gnetum luofuense</i> (G2)	Fair	Roadside near the Proposed Sewage Treatment Plant
<i>Gnetum luofuense</i> (G3)	Fair	Roadside near the Proposed Sewage Treatment Plant
<i>Gnetum luofuense</i> (G4)	Fair	Roadside near the Proposed Sewage Treatment Plant
<i>Gnetum luofuense</i> (G5)	Fair	Fringe of woodland near the Proposed Submarine Outfall
<i>Gnetum luofuense</i> (G6)	Fair	Roadside near the Fairway Vista
<i>Gnetum luofuense</i> (G7)	Fair	Roadside near the Fairway Vista
<i>Gnetum luofuense</i> (G8)	Fair	Fringe of woodland outside the project boundary

5 CONCLUSION AND MITIGATION MEASURES

5.1 Eight clumps of *Gnetum luofuense* were recorded during the survey. Most of *Gnetum luofuense* were recorded adjacent to the project boundary. Based on the survey result, all the recorded clumps of *Gnetum luofuense* were found relatively close to the proposed project boundary/survey area except G8. Mitigation measures including avoidance and minimisation to the species were summarised in **Section 5.2**.

5.2 Based on the survey record, the layout of the sewage treatment plant has been finalised by engineer design team (**Figure 1 and 2**) with consideration of avoiding and minimising the impact to the species. Among the recorded clumps, G5, to G8 have avoided being impacted by the proposed project. Having reviewed by the design team, the affected G1 was located close to the proposed sewage treatment plant and G2 to G4 located were within the project boundary, direct impact on them were considered to be inevitable. The *Gnetum luofuense* (G1) was inside the cut slope area, translocation of the species is considered to be not feasible due to its growth form. The design of the proposed STP has minimised the building footprint and site area as far as permissible to reduce the impact on sensitive landscape resources and landscape character areas. However, due to the

limited site area for the proposed STP, cut slope in the vicinity of G1 is necessary. Due to the abovementioned constraint, it is therefore concluded and that *Gnetum luofuense* (G1) was unavoidable to directly lost. Thus, G1 was proposed to be removed.

5.3 G2 to G4 were recorded on the proposed sewage treatment plant and rising main, where direct loss of part of these clumps may be anticipated. The construction area and contractor's temporary works areas are reduced as far as permissible to avoid the direct impact of G2 to G4 as far as permissible. However, due to the limited site area available for the construction of rising main and sewers and proposed STP, direct impact of G2 to G4 are unavoidable. Upon review of the proposed layout of the proposed STP and rising main, it is concluded that direct loss of G2 to G4 have been avoided as far as permissible, but direct impact of G2 to G4 is not possible to be avoided. With consideration of the abovementioned constraint, to minimise the direct impact of G2 to G4, small scale pruning of affected area of the clumps G2 to G4 (indicated in **Photos 13 to 16** and **Figure 2**) is to be completed to avoid the direct loss of G2-G4, if necessary. Such small scale pruning will not significantly affect the survival of the species. The pruning should be conducted under inspection by a qualified local ecologist / botanist with at least 10 years relevant experience to be certified by the Environmental Team and verified by the Independent Environmental Checker to minimize the impact to the species. Impact and recommended measures on the recorded *Gnetum luofuense* were summarised in **Table 2**.

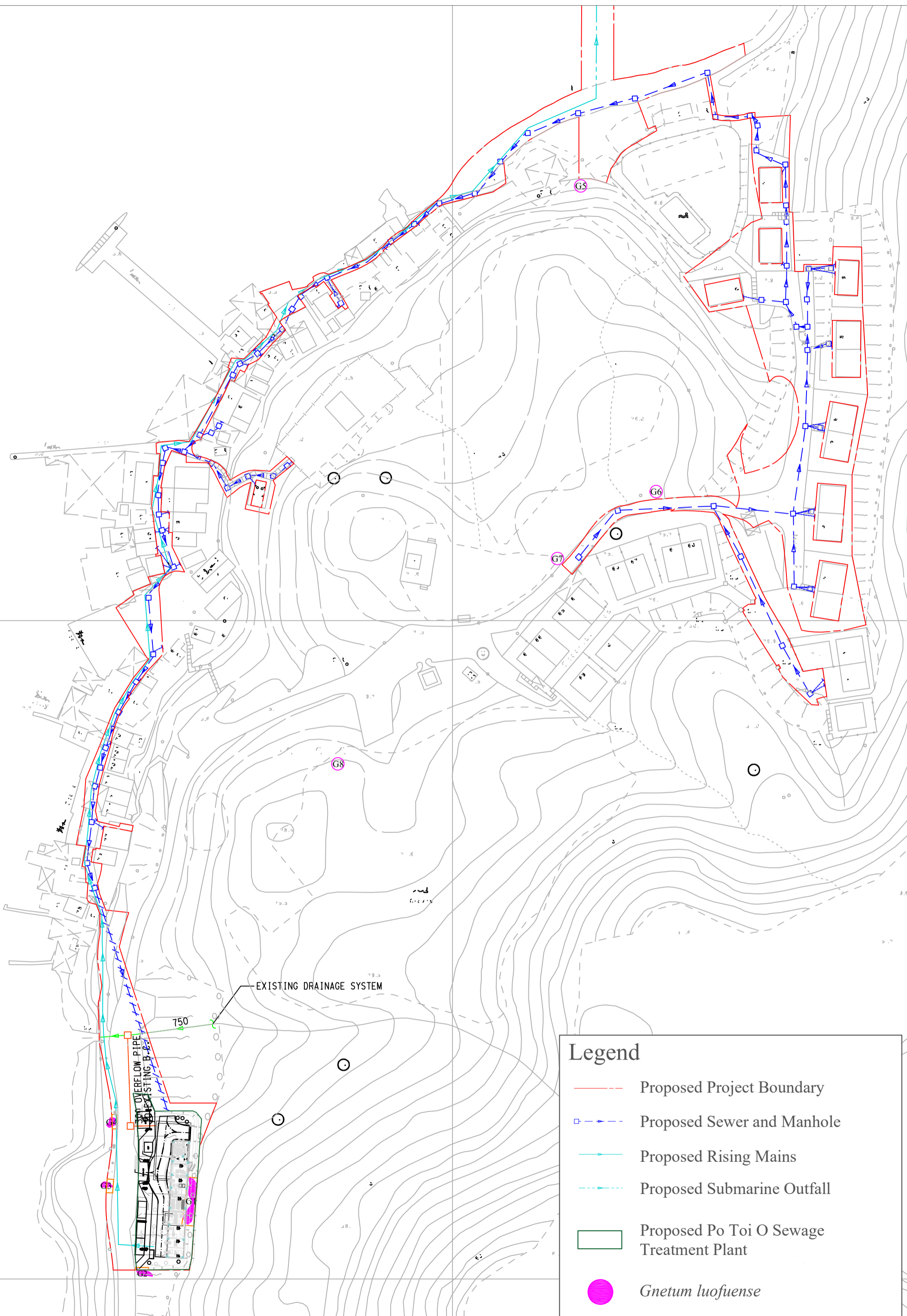
Table 2. Recommended Measures to the Recorded *Gnetum luofuense*

	Impact and mitigation measures	Recommended Measures
<i>Gnetum luofuense</i> (G1)	Direct loss of whole clumps may be anticipated.	Proposed to remove the whole individual as indicated in Photo 13 .
<i>Gnetum luofuense</i> (G2)	Direct loss of part of these clumps may be anticipated.	Proposed to prune the affected area as indicated in Photo 14 .
<i>Gnetum luofuense</i> (G3)	Direct loss of part of these clumps may be anticipated.	Proposed to prune the affected area as indicated in Photo 15 .
<i>Gnetum luofuense</i> (G4)	Direct loss of part of these clumps may be anticipated.	Proposed to prune the affected area as indicated in Photo 16 .
<i>Gnetum luofuense</i> (G5)	Impact avoided	No measure is proposed.
<i>Gnetum luofuense</i> (G6)	Impact avoided	No measure is proposed.
<i>Gnetum luofuense</i> (G7)	Impact avoided	No measure is proposed.
<i>Gnetum luofuense</i> (G8)	Impact avoided	No measure is proposed.

6 REFERENCES

Agriculture, Fisheries and Conservation Department (2020) Hong Kong Herbarium. Agriculture, Fisheries and Conservation Department. HKSAR. Retrieved from <http://herbarium.gov.hk/SearchResult.aspx> [29th August 2020]

Figure



Legend

- - - Proposed Project Boundary
- - - Proposed Sewer and Manhole
- Proposed Rising Mains
- - - Proposed Submarine Outfall
- Proposed Po Toi O Sewage Treatment Plant
- *Gnetum luofuense*

Figure 1. Survey Area and Location of *Gnetum luofuense*

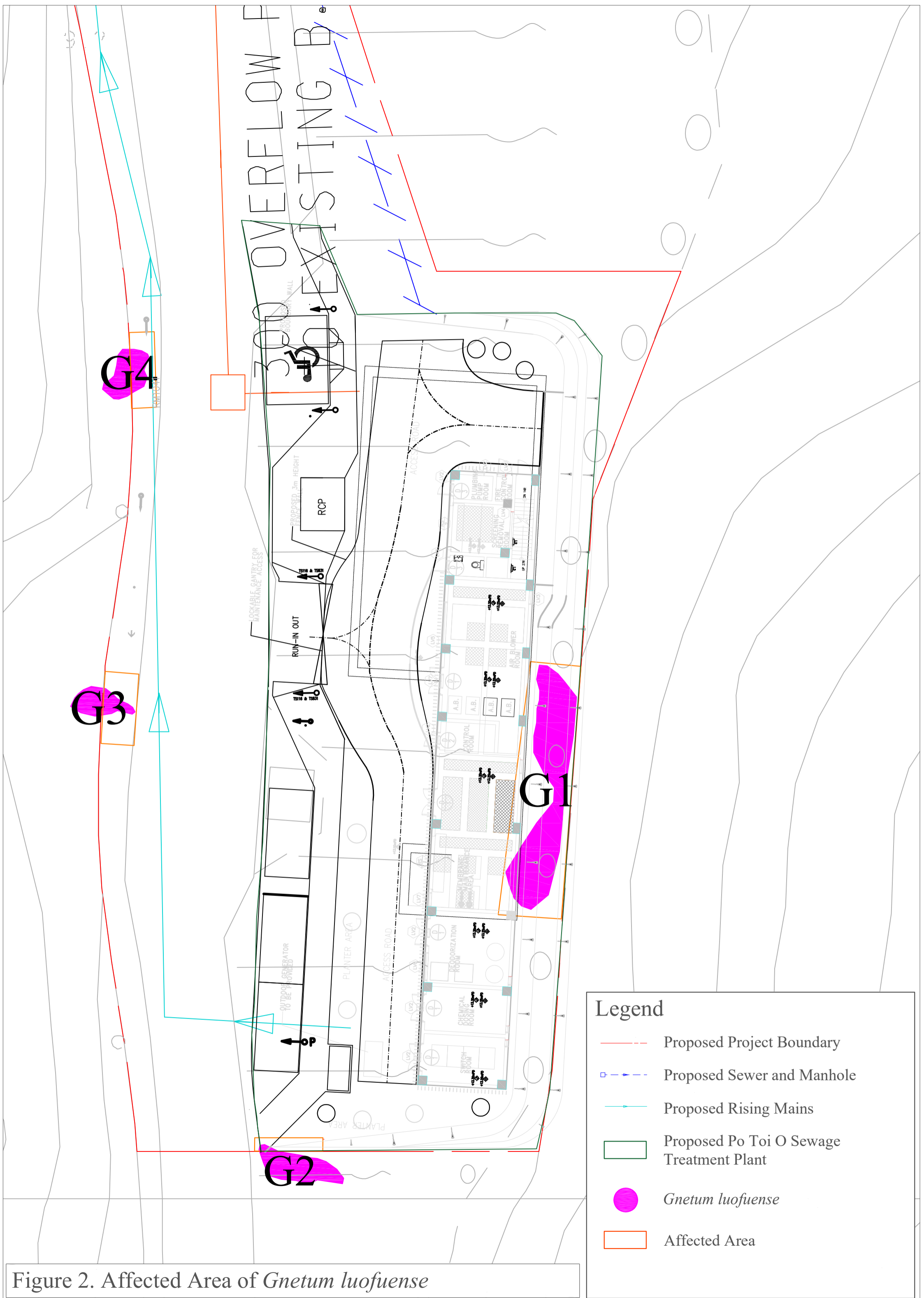


Figure 2. Affected Area of *Gnetum luofuense*

Appendix

Appendix 1. Photo records of the onsite environment and the recorded *Gnetum luofuense*

	
<p>Photo 1. Survey Area</p>	<p>Photo 2. Survey Area</p>
	
<p>Photo 3. Survey Area</p>	<p>Photo 4. Survey Area</p>
	
<p>Photo 5. <i>Gnetum luofuense</i> (G1) / Man-made slope within the Proposed Sewage Treatment Plant</p>	<p>Photo 6. <i>Gnetum luofuense</i> (G2) / Roadside near the Proposed Sewage Treatment Plant</p>



Photo 7. *Gnetum luofuense* (G3) / Roadside near the Proposed Sewage Treatment Plant



Photo 8. *Gnetum luofuense* (G4) / Roadside near the Proposed Sewage Treatment Plant



Photo 9. *Gnetum luofuense* (G5) / Fringe of woodland near the Proposed Submarine Outfall



Photo 10. *Gnetum luofuense* (G6) / Roadside near the Fairway Vista



Photo 11. *Gnetum luofuense* (G7) / Roadside near the Fairway Vista



Photo 12. *Gnetum luofuense* (G8) / Fringe of woodland outside the project boundary



Photo 13. Affected area of *Gnetum luofuense* (G1)



Photo 14. Affected area of *Gnetum luofuense* (G2)



Photo 15. Affected area of *Gnetum luofuense* (G3)



Photo 16. Affected area of *Gnetum luofuense* (G4)