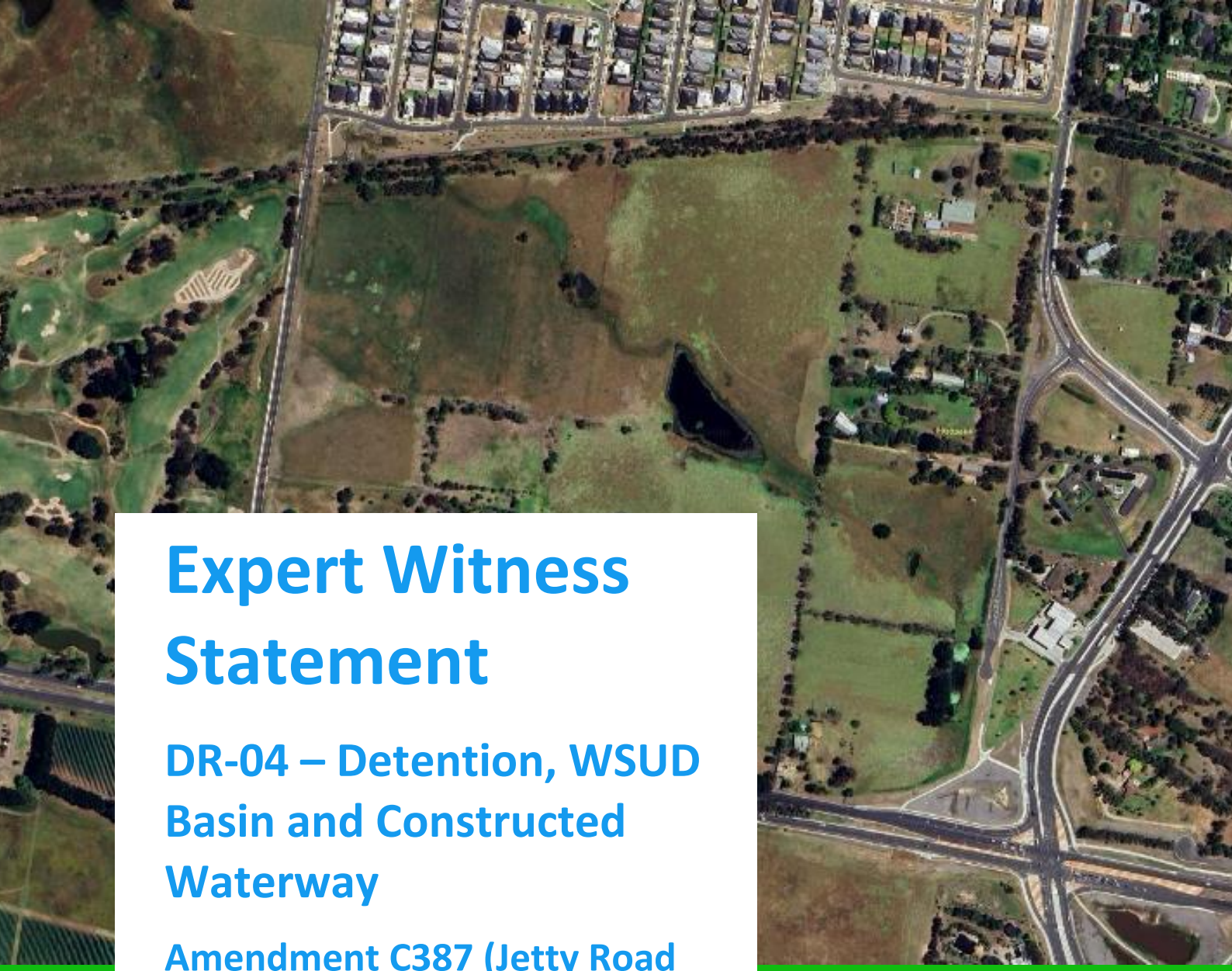

Expert Witness Statement

DR-04 – Detention, WSUD Basin and Constructed Waterway

Amendment C387 (Jetty Road Urban Growth Area Stage 2)

April 2024

Loetis Pty Ltd

Contact Information

Loetis Pty Ltd
ABN 74 665 148 630

Level 2, 51 Little Fyans Street, South Geelong
Level 1, Co.Lab Dispensary Lane, Warrnambool
PO Box 867 Geelong, Vic 3220

Email: info@Loetis.com.au
Web: www.Loetis.com.au

Document Information

Prepared For (Client)	**Various Owners**
Client Property	**1451-1459 Portarlington Rd, Curlewis (Property 27)**
Report Title	**Expert Witness Statement**
Dated	**10 April 2024**
Loetis Reference	**J10151**
Author	**Isaac Clarey**

Contents

1 Introduction / Instructions

1.1.1 I Isaac Clarey have been engaged by various owners (C/- Tract, planning consultants) to provide engineering assessment and expert witness opinion regarding civil engineering matters which pertain to infrastructure costs for item(s) contained within the exhibited Development Contributions Plan for the Planning Scheme Amendment C387.

1.1.2 Amendment C387 seeks to facilitate the planned residential development of land on the western edge of Drysdale-Clifton Springs-Curlewis. The land referred to as the Jetty Road Urban Growth Area (Stage 2) in the Greater Geelong Planning Scheme and follows the recent completion of Stage 1 which delivered 1,700 residential lots.

1.1.3 I have been engaged by the proprietors of 1451-1459 Portarlington Road, Curlewis, nominated as Property 27 within the Development Contribution Plan.

1.1.4 Specifically, the scope of my assessment extends to review of the infrastructure costings for drainage asset DR-04 – Detention, WSUD Basin and Constructed Waterway which is located on Property 16 and 18.

1.1.5 All properties mentioned above are located within the precinct nominated as Charge Area 3 within the Development Contribution Plan (DCP), this precinct contains all properties located south of the Bellarine Rail Trail. These properties (16 to 30) will have apportionment charge contribution to DR-04.

1.1.6 The Amendment and supporting documents were exhibited by City of Greater Geelong in November/December 2023. Exhibited material included supporting documents within the Development Contributions Plan which outlined concept design drawings (SMEC) and costings (Stantec) which calculated total costs for DR-04 as $11,332,650.71 + GST.

1.1.7 Subsequently an update of the estimated costs for DR-04 was provided by to Tract via email on 4 April 2024. This update was intended to supersede previous estimates and included supplementary information to validate earthworks, landscaping and cultural heritage remediation. Based on this, the updated cost for DR-04 is nominated as $15,6221,027.39 + GST.

1.1.8 The engineering assessment for this Expert Witness Report is based on a review and opinion formed with regard to the construction costs associated with infrastructure item DR-04. Specifically, my opinion is formed based on the review of the SMEC concept design plans included as appendices to the Urban Enterprise Development Contributions Plan dated October 2023 (version 1.2 – exhibited by the City of Greater Geelong) and the subsequent updated costings dated 4 April 2024.

1.1.9 An additional drainage infrastructure DCP item within Charge Area 3 has been circulated by Bursill Consulting to Tract via email on 4 April 2024. This has been referenced as DCP Item DR-05 and includes a costing for the section of the open constructed waterway with Property 23. I have considered the appropriateness of the costings of DR-05 and its inclusion in the Development Contribution Plan as a part of this assessment.

1.1.10 Upon formulation of my expert opinion, it was requested that the scope of my assessment was extended to provide an opinion on opportunity to complete an alternate design which seeks to retain topsoil onsite, as much as is deemed practicable.

1.1.11 In the course of preparing the expert evidence:

- I have examined plans and other relevant information (itemised later in this report);
- I have inspected the site and surrounding area; and
- I have formed an opinion of the included data within the cost estimates.

2 Expert Witness Statement

As required, the following statements are provided:

Name: Isaac Frederick Clarey

Position: Director, Senior Civil Engineer
Loetis Pty Ltd

Address: Level 2, 51 Little Fyans Street, South Geelong, Vic 3220

Qualifications: B. Engineering (Civil & Infrastructure), RMIT 2011
B. Business (Management), RMIT 2011

Particular Experience: I have had 15 years of experience working in civil engineering and urban development industry. In that time, I have worked as a civil engineer undertaking design, construction management, project and development management roles.

I am currently a director and senior civil engineer at Loetis, previously I worked at Planit Consulting for over 3 years as the Victoria Operations Manager (Geelong) overseeing a team of 10+ professional staff delivering engineering and land development projects in the Geelong and wider Region. My earlier role included ~10 years' experience as Project Manager, Construction Manager and Designer.

In this time, I gained extensive experience in the detailed civil engineering design, project management and supervision of road, drainage and land development areas.

Areas of Expertise: Engineering advice on infrastructure requirements for the planning, design and delivery on urban development and major infrastructure projects.

Provision of Civil engineering design solutions to urban developments, Local and State Government projects.

Stormwater Investigations, Site Stormwater Management Plans (SSMP) and hydraulic stormwater system design to Authority requirements.

Preparation of development feasibility studies.

Construction contract administration and supervision.

Relationship with various owners:

Loetis have not previously worked with or for the various owners, nor to my knowledge for any of their associated entities.

Mungalla Developments are the proprietors of 1451-1459 Portarlington Road, Curlewis. I have previously worked in association with the Director(s) of Mungalla Developments P/L in their roles for separate business entities within the Geelong civil construction industry. This association was over five (5) years ago and poses no conflict to my independent opinion on this matter.

I have no business relationship with any various owners.

Assistance in Preparing this report:

I have not received assistance in preparing this report, however I have had Leigh Prossor and Thomas Rix from Loetis review the report. They are both Directors and Civil Engineers with extensive experience in land development and infrastructure delivery.

Nevertheless, the views expressed in this statement are my own.

3 Information Used and Relied Upon

3.1.1 I have received/reviewed the following information as part of this assessment.

- Request from client (C/- Tract) for representation at Independent Panel Hearing, incl. Loetis brief for Expert Witness Report and scope of review;
- Previous submissions on behalf of the landowner in relation to Amendment C387 ggee:
  - Submission letter from Tract dated 18 December 2023;
  - Secondary submission letter from Tract dated 6 March 2024.
- Summary of Directions Hearing details via Tract;
- Excerpt of Cultural Heritage Management Plan conditions, provided by City of Greater Geelong via email (C/- Tract) on 13 March 2024;
- Expert Statement Guidelines (Victorian Planning Panel website);
- Exhibited documents relating to Amendment C387:
  - Development Contributions Plan and relevant supporting material contained within, including:
    - DR-04 Concept Design (SMEC)
    - DR-04 Costing (Stantec)
  - Supporting documents to the Amendment including (but not limited to):
    - South of Bellarine Rail Trail Flood Study – Existing Conditions Report (TGM), dated June 2020.
    - Infrastructure Servicing Report – Jetty Rd Urban Growth Area (Stage 2), South of Bellarine Rail Trail (SMEC), dated July 2022.
    - Stormwater Management Strategy – Jetty Road South of Rail Trail (Water Technology), dated September 2023.
- Amended DCP costs for DR-04 circulated by Bursill Consulting, intended to supersede the exhibited costing, supplementary information including:
  - DR-04 Costing spreadsheet;
  - Wetland bulk earthwork volumes;
  - Estimated depth of 'sterile layer';
  - Estimated wetland sieve volume;
  - Costing CHMP 18466 Curlewis sieve compliance by Dugay & Co;
  - Geotechnical investigation by Ground Science Geotechnical.

3.1.2 Additionally, I have referred to and relied on the following standards.

- Infrastructure Design Manual Version 5.4 (IDM) (Adopted by City of Greater Geelong 18 October 2007);
- Infrastructure Design Manual Standard Drawings Version 5.3 (IDM Std Drawings);
- City of Greater Geelong Design Notes.

4 1451-1459 Portarlington Road, Curlewis

4.1.1 1451-1459 Portarlington Road, Curlewis is nominated as Property 27 within the Development Contribution Plan (DCP). It is located in Charge Area 3 within the precinct to the south of the Bellarine Rail Trail. This precinct is bound by Tivoli Drive to the west, Portarlington Road to the south, Jetty Road to the East and the Bellarine Rail Trail on the northern boundary. Charge Area 3 and proximity of drainage DCP items is shown in Figure 1 below.

Figure 1 – Charge Area 3 and proximity of drainage DCP Items (Image extract from DCP)

4.1.2 All properties within Charge Area 3 have apportioned contribution to the drainage asset DR-04 and DR-04-L which is located within the Charge Area. Costs are allocated for construction of the basin and land acquisition.

4.1.3 Stormwater runoff from 1451-1459 Portarlington Road does not wholly pass through DR-04, however it is deemed a contributing catchment and apportioned costs for DR-04 are considered reasonable.

Figure 2 below demonstrates an extract of the proposed Developed Catchments from the Stormwater Strategy (Water Technology, 2023).

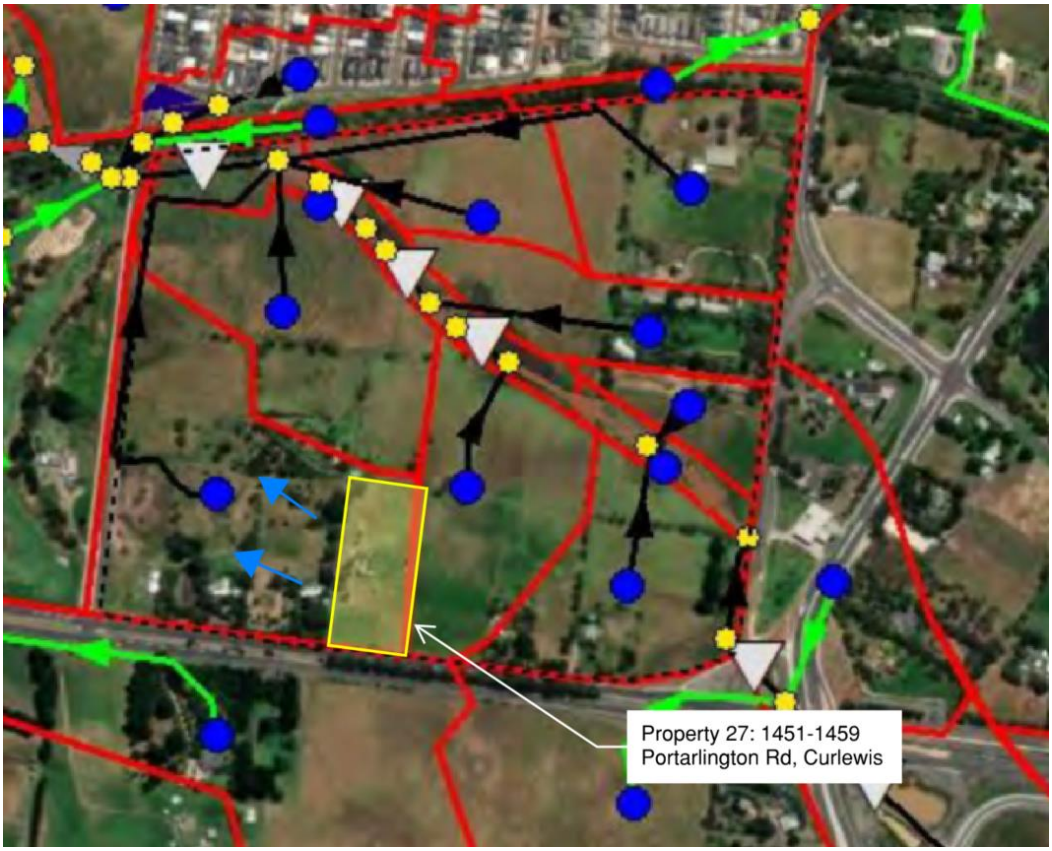

Figure 2 – Location of Site within proposed Developed Catchment Plan (Image extract from Water Technology report, *Jetty Road South of Rail Trail SWMS*)

4.1.4 An additional drainage infrastructure DCP item to be included within Charge Area 3 has been proposed by the proponent. This has been referenced as DCP Item DR-05 and includes a costing for the section of the open constructed waterway with Property 23. No design plans have been prepared or seen for this asset as part of this assessment.

4.1.5 Per the extract above in Figure 2, it is anticipated that the suggested DR-05 would only benefit approximately 15-20% of the catchment in Charge Area 3. As such it is not deemed equitable that the whole of Charge Area 3 should be subject to contribute for construction of DR-05.

4.1.6 Specifically, it is anticipated that no stormwater runoff from Property 27 would be conveyed via proposed DR-05.

5 DR-04 (Detention, WSUD Basin & Constructed Waterway)

5.1.1 This section outlines my independent review of the infrastructure costings for drainage asset DR-04 – Detention, WSUD Basin and Constructed Waterway which is located on Property 16 and 18.

5.1.2 Exhibited material within the Development Contributions Plan initially calculated total costs for DR-04 as $11,332,650.71 + GST.

5.1.3 Subsequently an update of the estimated costs for DR-04 has nominated infrastructure cost for DR-04 as $15,6221,027.39 + GST.

5.1.4 I have reviewed the methodology and quantities included in the updated DR-04 costing. To articulate clarity from this assessment I have presented excerpts from the costing document in below sections,

this is formatted to align with the methodology of the schedule break-down including within the costing.

I have formed a difference of opinion for items which are highlighted as yellow cells. Further commentary is added under each relevant section to discuss further.

5.1.5 It is noted that I have formed some fundamental differences of opinion regarding the itemised methodology and included quantities. Based on my review, it is suggested that the current cost estimates are not accepted without further scrutiny for inclusions/exclusions, as discussed below.

5.1.6 I add a clarification on the use of 'topsoil' terminology in the following discussion. 'Topsoil' is used with a general definition to summarise all soils that occur above a sterile base layer. The sterile base layer is nominated as the presence of stiff clay material and below.

5.1.7 All opinions formed on quantities have been based on third party review of PDF documents. Loetis does not have access to the 'current' design data prepared by others, however re-created some design surfaces to form an opinion on earthworks quantities.

5.2 Preliminaries

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
PRELIMINARIES					
1	Site Establishment	1	Item	$ 50,000.00	$ 50,000.00
2	Provision of temporary fencing	1	Item	$ 20,000.00	$ 20,000.00
3	Provision of Construction Management Plan	1	Item	$ 2,500.00	$ 2,500.00
4	Implementation of the Environmental Management Plan	1	Item	$ 8,000.00	$ 8,000.00
5	Contractor to allocate a water cart to be available onsite at all times during construction works, in accordance with Council requirements.	1	Item	$ 40,000.00	$ 40,000.00
6	Site preparation including disposal of all surface rock, dead trees, timber, fences, wire, rubbish, disposed offsite to a tip to be arranged by the contractor.	1	Item	$ 5,000.00	$ 5,000.00
7	Allowance for Dewatering, treatment and bypass pumping of external catchment during construction (including water treatment prior to discharge)	1	Item	$ 90,000.00	$ 90,000.00

5.2.1 The costs allowed for *Preliminaries* are considered reasonable and consistent with typical rates. There is no reason to suggest further discussion or changes are required for these allowances.

5.3 Earthworks

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
EARTHWORKS					
8	Formation to 98% level 1 compaction inclusive of stripping and stockpiling of topsoil; excavation, placing, watering and compacting approved clay filling in embankment, removal and disposal of all other surplus spoil off site, construction waste and rubbish offsite, all as specified.				
	(i) Strip existing topsoil & stockpile for future use	46800	m3	$ 10.00	$ 468,000.00
	(ii) Estimated Excavation	57300	m3	$ 20.00	$ 1,146,000.00
	(iii) Estimated Fill	3050	m3	$ 15.00	$ 45,750.00
9	PROVISIONAL ITEM Excess Material to be transported off site	54250	m3	$ 30.00	$ 1,627,500.00
	PROVISIONAL ITEM Backfilling of Existing Dam	1300	m3	$ 15.00	$ 19,500.00
10	Topsoiling				
	(i) 200mm depth topsoil beneath EDD (No hydroseeding)	14760	m2	$ 2.50	$ 36,900.00
	(ii) 200mm depth topsoil on permanent batters (above EDD)	30120	m2	$ 2.50	$ 75,300.00
	(iii) Hydromulch all areas above EDD with sterile Ryegrass	30120	m2	$ 1.30	$ 39,156.00
	(iv) Topsoil amelioration with gypsum (5T/ha) - all topsoil	33140	m2	$ 2.50	$ 82,850.00
11	PROVISIONAL ITEM Clay lining				
	(i) Additional 300mm Depth Cut to perform clay lining works	4428	m3	$ 20.00	$ 88,560.00
	(ii) Install and compact 300mm depth clay liner to EDD	4428	m3	$ 20.00	$ 88,560.00
	(iii) Import suitable Clay Liner Material	4428	m3	$ 30.00	$ 132,840.00
	(iv) Dispose of excess unsuitable clay material off-site	4428	m3	$ 30.00	$ 132,840.00

5.3.1 Quantities/rates identified in yellow cells are considered a point of difference in my opinion, I discuss further as follows:

- Item 8 (general) – the scoped wording included in methodology notes for item 8 (general) notes earthworks formation inclusive of 'excavation, placing, watering and compacting approved clay filling' including 'removal and disposal of all other surplus spoil off site'. This terminology indicates rates should be inclusive for disposal offsite. In consideration of this Item 8 (ii) would practically be slightly higher to include disposal offsite. It also leaves disposal rates/quantities in Item 9 to be queried. Currently the combination of Item 8(ii) and Item 9 (disposal) proposed excavation and disposal of material to a total rate of $50 per/ m^3 which is considered excessive.

  The below opinions are formed with independent assessment from the thoughts outlined for this item.

- Item 8(i) – this volume of material is nominated as 20,679.84 m^3 in the amended document provided by Bursill Consulting, *3260E-CL-SK31-Wetland Sieve Volume (660mm Depth to Clay) [A].pdf*
- Item 8(ii) – while the total excavated 'clay' quantity which is nominated is consistent with the provided bulk earthworks drawings, *3260E-CL-SK26-Wetland BEW Volumes_[A].pdf,* Loetis has completed an independent assessment and it is considered that this volume is akin to the total material being excavated from site, including topsoil layer. As such there is double-up with item 8(i). It is suggested that this quantity is revised, anticipated volume ~37,000 m^3.
- Item 9 – Excess material transported offsite. We understand this item summarises 'clay material' disposed offsite. The quantity nominated should be proportional to the revision suggested in Item 8(ii) less fill used onsite (Item 8iii & 9 fill). The rate for disposal offsite is unclear if it also includes excavation. We note that $25 per/$m^3$ (solid) is that rate which has been used in the costing calculations for other DCP items within Amendment C387. It is reasonable to expect consistency for earthworks rates across these costings. My opinion for appropriate earthworks rates is linked to the points summarised for Item 8 (general) above. Clarification on the earthworks methodology and relevant rates used is required.
- Item 10 – the total area of topsoiling included appears to exacerbate topsoiling requirements and suggests a larger area for topsoil than the size of the total drainage reserve. It is expected that these quantities should match landscape calculations further down in the costing at Item 33 & 34, summarising the total area of approximately 32,671m^2.
- Item 11 – same comment applies per Item 9; a more suitable disposal rate would be $25 per/$m^3$. I note however that comments in statement 5.3.2 superseded this.

5.3.2 Further discussion is added to the construction methodology in Item 11 where a 300mm depth clay liner is nominated. A geotechnical report by Ground Science was provided for review with these costings. Section 10 of this report nominates earthworks recommendations for the drainage basin(s) and includes specification for 600mm depth clay liner with potential to be reduced, it also nominates the practicality for use of onsite materials as a clay liner and discusses potential requirements for treatment of in-situ material to be treated to reduce dispersity. The methodology behind Item 11 should be revisited to accord with geotechnical recommendations.

5.3.3 The earthworks portion is silent on allowance of rate for any topsoil required to be disposed from site. This item is explicitly linked to cultural heritage requirements and is discussed in depth below. Upon resolution of a suitable disposal quantity a rate should be included. It is suggested that a suitable

rate in the range of $10/m^3 would be reasonable considering the high utilisation opportunity and local demand for this material if it had to be removed from site.

5.3.4 The costs allowed for *Earthworks* are not considered accurate. In particular, reassessment of quantities is recommended before formalisation of DCP costs for DR-04.

5.4 Access Tracks and Sediment Ponds

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
ACCESS TRACKS AND SEDIMENT PONDS					
12	Sediment Pond Hardstand - 400mm depth compacted rock, D50>50mm	400	m2	$ 90.00	$ 36,000.00
13	Access Track - 200mm thick Class 3 FCR access track with 6% CTCR	470	m2	$ 45.00	$ 21,150.00
14	Dewatering Area - 200mm thick Class 3 FCR	900	m2	$ 25.00	$ 22,500.00
15	Clean (remove & dispose) debris from sediment basins at end of maintenance period	1	Item	$ 20,000.00	$ 20,000.00

5.4.1 The costs allowed for *Access Tracks and Sediment Ponds* are considered reasonable and consistent with typical rates. There is no reason to suggest further discussion or changes are required for these allowances.

5.5 Constructed Waterway

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
CONSTRUCTED WATERWAY					
16	D50 = 300mm Rock Beaching to Base Of Channel - 75 lin.m in Property 16				
	(i) Detailed cut prior to installing beaching	4850	m2	$ 15.00	$ 72,750.00
	(ii) Rock placement base of constructed waterway	7865	m2	$ 25.00	$ 196,625.00
17	Import of Rock material (1m dia fieldstone)	2360	m3	$ 105.00	$ 247,800.00

5.5.1 Quantities/rates identified in yellow cells are considered inaccurate, I discuss further as follows:

- Item 16(i) & 16(ii) – the area/quantity of rock beaching and installation appears exacerbated compared to the concept design drawings. There is no notation on the drawings which pertain requirements to rock beach the construct waterway. Assessment of geotechnical conditions and stormwater velocity would be required to validate this. I note that a constructed rock spillway is proposed between Pond 1 & 2. However, the specification of this rock material is unclear, and it is considered that details per the above schedule would be reasonable. It would be prudent to adjust the quantity schedule accordingly.
- Item 17 – there is nothing within the concept design which pertains to installation of 1m diameter rock fieldstone.

5.5.2 Reassessment of the quantities/costs allowed for *Constructed Waterway* is recommended prior to adoption of DCP costs.

5.6 Drainage Works

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
DRAINAGE WORKS					
18	Excavation and refilling trenches, supply, laying and jointing ordinary backfill.				
	(i) 300 dia Balance Pipes	200	m	$ 160.00	$ 32,000.00
	(ii) 450 dia Balance Pipe and Outlet Pipe	70	m	$ 220.00	$ 15,400.00
	(iii) 525 dia Outlet Pipe	230	m	$ 300.00	$ 69,000.00
	(iv) 750 dia Outlet Pipe	40	m	$ 480.00	$ 19,200.00
	(v) Q100 Pipes between wetland segments (2 x 750 dia RCP's) = 2 x 28m	156	m	$ 480.00	$ 74,880.00
	(vi) Culverts at road crossing (3 x 1200 x 900 RCBC's) = 3 x 36m	165	m	$ 1200.00	$ 198,000.00
19	CCTV of all proposed and existing drainage pipes as instructed by Council	1286	m	$ 18.00	$ 23,148.00
20	Submerged Offtake Pit cast-in-situ including excavation, covers and step irons and disposal of excess material. Refer to MW STD DRG 7251/12/008				
	(i) 600mm x 600mm	14	No.	$ 3,200.00	$ 44,800.00
21	Junction Pits cast-in-situ including excavation, covers and step irons and disposal of excess material. All as specified. Refer to MW STD DRG 7251/08/408				
	(i) 900mm x 900mm (Wetland edge pits)	10	No.	$ 3,600.00	$ 36,000.00
22	Single pipe outlet to Pond 1, 2, 3 - DN1200 pipe with post & rail barrier to be installed around outlet structure	3	No.	$ 7,500.00	$ 22,500.00
23	Supply & install Timber Bollard SD714 (includes 1 removable at each access track)	9	No.	$ 150.00	$ 1,350.00
24	Bypass pipe requested by Council for 20% AEP Diversion for Maintenance				
	(i) Pond 1 bypass - DN900	190	m	$ 400.00	$ 76,000.00
	(ii) Pond 1 bypass - DN1500	140	m	$ 1,000.00	$ 140,000.00
	(iii) Pond 1 bypass - DN900	260	m	$ 400.00	$ 104,000.00
	(iv) Allowance for shut-off gates/ modified pits	3	Item	$ 15,000.00	$ 45,000.00
25	Modifications to existing channel on west side of Tivoli Drive to achieve 300mm freeboard to Golf Course and Rail Trail inclusive of Earthworks and Geofabric (as required)	250	m3	$ 80.00	$ 20,000.00
26	Sediment Pond Drawdown (dewatering) prior to handover for clean out purposes.	1	Item	$ 15,000.00	$ 15,000.00
27	Sediment excavation & removal prior to CoGG handover (based on 5yr sed load calcs)	448	m3	$ 125.00	$ 56,000.00

5.6.1 While there are some minor discrepancies in the lineal quantities for delivery of new pipework, it is considered insignificant to the overall total amount, as such the costs allowed for *Drainage Works* are considered reasonable and consistent with typical rates.

5.7 Landscape Works

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
LANDSCAPE WORKS					
28	**Preliminaries & General Requirements**				
	Site establishment including provisions of access, survey setout, provision of site and office compounds, insurance, OH&S, traffic control, traffic management plan for Council, environmental protection and other works as specified. (3.5% of Project Value)	1	Item	$ -	$ 68,652.83
29	**Groundworks**				
	Earthworks to achieve levels as indicated on landscape plans or as required to complete the works - family nodes, fitness station, seating areas	1	Item	$ 8,000.00	$ 8,000.00
30	**Paving**				
	Geotechnical Certification	1	Item	$ 1,900.00	$ 1,900.00
	2.5m Wide Concrete Shared Paths - Supply & install plain concrete pavement - 774 Lin.m	1935	m2	$ 91.00	$ 176,085.00
	1.5m Wide Concrete Secondary Pedestrian Paths - Supply & install plain concrete pavement - 67 Lin.m	101	m2	$ 91.00	$ 9,145.50
	200mm wide Concrete Edge between waterway planting and grass area	1383	m	$ 110.00	$ 152,130.00
31	**Quarry Work**				
	Supply & install natural boulders (700-1200mm dia.) for seating and stepping stones as specified (provisional sum)	150	Ea.	$ 180.00	$ 27,000.00
32	**Fixtures & Furniture**				
	S1 - Supply & install timber seat with backrest as specified	7	Ea.	$ 2,600.00	$ 18,200.00
	S4 - Supply & install informal log seating as specified	4	Ea.	$ 2,400.00	$ 9,600.00
	Structural Certification, as required	1	Item	$ 3,500.00	$ 3,500.00
	Pedestrian Bridge - Supply and Installation all inclusive	1	Item	$ 350,000.00	$ 350,000.00
33	**Wetland Works (Below Q100)**				
	Weed control to all waterway planting areas	13960	m2	$ 0.50	$ 6,980.00
	Fine Trimming & grading for all waterway planting areas	13960	m2	$ 0.50	$ 6,980.00
	Cultivation 150mm depth to all waterway planting areas	13960	m2	$ 1.20	$ 16,752.00
	Supply & install jute matting to all planting areas	13960	m2	$ 7.00	$ 97,720.00
	Supply & install 200mm imported topsoil to all waterway planting areas	13960	m2	$ 18.00	$ 251,280.00
	Maintenance paths into wetlands - Supply & install plain concrete pavement	402	m2	$ 120.00	$ 48,240.00
34	**Soil & Preparation**				
	Weed control to all grassed areas (above Q100)	18711	m2	$ 0.50	$ 9,355.50
	Fine Trimming & grading for grassed area (above Q100), as specified	18711	m2	$ 0.50	$ 9,355.50
	Cultivation 150mm depth to all grassed areas (above Q100) as specified	18711	m2	$ 1.20	$ 22,453.20
	Supply & install 200mm imported topsoil to all grassed areas (above Q100), as specified	18711	m2	$ 18.00	$ 336,798.00
	Supply & install 75mm depth approved organic mulch to all garden beds (above Q100) as specified	4101	m2	$ 8.00	$ 32,808.00
35	**Trees & Planting**				
	Supply & install trees	288	Ea.	$ 240.00	$ 69,120.00
	Supply & install shrubs & groundcovers to Garden Bed Areas (above Q100) - V93 Hiko cell - 4 plants/m2	16404	Ea.	$ 3.50	$ 57,414.00
	Supply & install plants to Wetland Planting (Below Q100, Ephemeral Planting and Aquatic) - 600cc tube stock	55840	Ea.	$ 5.50	$ 307,120.00
36	**Turf & Grassing**				
	G1 - Supply & install instant turf (100% Kikuyu) in all areas including drying benches	14610	m2	$ 11.00	$ 160,710.00
37	**Establishment (Landscaping)**				
	Establish the landscape to the standards indicated in the specification. This may include, but not limited to, mowing, watering, weed removal and any miscellaneous items required to maintain the landscape	13	Weeks	$ 1,100.00	$ 14,300.00
	Establish the landscape to the standards indicated in the specification for MW Reimbursables items - LB1, LB2, CI, SM, DM planting areas	13	Weeks	$ 1,800.00	$ 4,765.00

5.7.1 I am not suitably qualified to provide expert advice for landscape design and costing. As such my assessment is based on removing scope overlap with the civil construction component.

5.7.2 Quantities/rates identified in yellow cells are queried because they are considered overlapping in scope with civil earthworks construction items, I discuss further as follows:

- Item 32, pedestrian bridge – there is no location nominated on the concept design drawing which nominate a pedestrian bridge. A footpath connection which follows the road link crossing between wetland area 2 & 3 is constructed within the drainage reserve, however would be formed on solid ground as there are substantial box culverts sitting below.
- Item 33 & 34 – associated items with supply of topsoil is considered unnecessary due to substantial quantity available to be sourced in-situ.

5.7.3 It is suggested that the quantities/costs allowed for *Landscape Works* is revised to remove scope overlap with civil construction and earthworks allowances.

5.7.4 I also provide an opinion that it is unclear how a pedestrian bridge is linked to the costing of a drainage asset. They would typically be two separate items.

5.8 Cultural Heritage

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
CULTURAL HERITAGE					
38	CHMP Soil Screening Works (based on SMEC Sketch SK31 - volume of 20,680 m3 & Dugay and Co. Archaeology and Cultural Heritage Managament Cost Estimate - Table 4)	1	Item	$ 3,180,103.20	$ 3,180,103.20

5.8.1 I am not suitably qualified to provide expert advice for cultural heritage matters. It is also noted that my understanding of cultural heritage management conditions for the site is limited to a conditional extract of the Cultural Heritage Management Plan provided via email to Tract on 13 March 2024. As such my assessment and opinion formed is based on the expected earthworks methodology associated with DR-04.

5.8.2 It appears that CHMP soil screening works have been priced by Dugay and Co. based on the disposal of all excavated topsoil for the site. Information was subsequently provided via email by Bursill Consulting on 8 April 2024 which confirms this is the case. The Dugay & Co quote is based on sieving 20,679.84 m^3.

5.8.3 Any costs associated with CHMP soil screening works should be directly linked to the quantity of topsoil which needs to be disposed offsite.

5.8.4 Considering the substantial landscape portion of the drainage reserve and resultant re-spread of 'site won' topsoil it is considered overly conservative to assume that all excavated topsoil needs to be disposed from site. As such, it is suggested that the quantities/costs allowed for *Cultural Heritage* is revised to align with realistic civil construction and earthworks allowance.

5.8.5 We note that an opinion for alternate design options is provided in Section 6 which should be considered to optimise an efficient design with respect to cultural heritage management conditions.

5.9 Subconsultant & Authority Fees

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
39	2-Year Maintenance Period	208	Wk	$ 1,000.00	$ 208,000.00
COUNCIL AND AUTHORITY FEES AND CHARGES					
40	Council Plan Checking and Supervision Fee (3.25%)	3.25%	Item	$ 366,106.87	$ 366,106.87
CONSULTANCY FEES					
41	Project and Program Management	3%	Item	$ 337,944.80	$ 337,944.80
42	Feature Survey	1	Item	$ 5,000.00	$ 5,000.00
43	Geotechnical Testing	1	Item	$ 50,000.00	$ 50,000.00
44	Integrated Stormwater Management Plan including Functional Designs and Reporting	1	Item	$ 120,000.00	$ 120,000.00
45	Title Survey and Plan of Subdivision	1	Item	$ 10,000.00	$ 10,000.00
~~46~~	~~Detailed Civil Design~~	~~1~~	~~Item~~	~~$~~	0
47	Engineering Concept Costs	1	Item	$ 99,997.50	$ 99,997.50
48	Civil Design and Documentation	8%	Item	$ 901,186.14	$ 901,186.14
49	As Constructed Information	1	Item	$ 5,000.00	$ 5,000.00

5.9.1 Calculation totals identified in yellow cells are considered inaccurate, I discuss further as follows:

- Item 39 – weekly quantity calculated as 4 years rather than 2 years.
- Item 40 – Council Plan and Checking fees should be calculated as 3.25% of civil construction fees, not including CHMP soil screening or landscape costs.
- Item 47 – overlap with Item 44. Concept designs are not required if a substantial functional design phase is completed beforehand. This comment would be redacted if Item 47 seeks to cover already accrued costs for conceptual design work.
- Item 48 – Civil design fees when calculated as a percentage should be calculated based on civil construction costs only, not including CHMP soil screening or landscape costs. It is considered that 8% and the resultant civil design fee is excessive in allowance.

5.9.2 It is recommended that the rates allowed for in *Subconsultant and Authority Fees* are revised to suit typical calculation methodology.

5.10 Contingency

ITEM NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
CONTINGENCY					
50	Contingency (20% of Construction Costs)	20%	Item	$ 2,252,965.35	$ 2,252,965.35

5.10.1 Calculation totals identified in the yellow cell is considered inaccurate:

- Item 50 – the contingency is explicitly linked to construction costs, as such should not be calculated in include CHMP soil screening costs.

5.10.2 It is recommended that the rates allowed for in *Contingency Fees* is revised to suit typical calculation methodology. I also consider that a 10% contingency allowance is suitable for a design asset which has been subject to exhaustive conceptual design consideration.

6 Alternate Design Opportunity

6.1.1 Cultural heritage management conditions have a substantial impact on the cost impacts for assessment of DR-04. Timeframes to step through these obligations are an understated additional factor which has substantial impact to delivery opportunities for the asset, including the onerous time

for mechanical sieving in itself. It is anticipated there is substantial developer investment to minimise these obligations.

6.1.2 A default assumption for DR-04 costings has been made which represents absolute worst-case assessment of costs related to CHMP soil screening works. As articulated in above discussion, this is considered overly conservative due to opportunity to re-use topsoil onsite.

6.1.3 It is considered there is opportunity to optimise the reuse of topsoil onsite. 'Optimise' is presented as the opportunity to retain as much material onsite as is practicable.

6.1.4 Design opportunities to 'use' topsoil material onsite are suggested below.

- Increase depth of topsoil, both in drainage asset areas and on adjacent lots;
- Opportunity to align excess topsoil utilisation on adjacent Open Space area (Property 18);
- Integrated assessment of topsoil and cultural heritage obligations/conditions across the relevant area of investigation.

6.1.5 I recommend it would be prudent to prepare a conceptual design strategy which seeks to implement a design to efficiently minimises the obligation for CHMP screening works. It is acknowledged this would be prepared within known constraints, however it is considered there is a substantial opportunity to retain existing topsoil compared to what is currently suggested.

7 Conclusion & Recommendations

7.1.1 Based on my review of all of the relevant documentation, I have presented my expert opinion on the methodology and costs associated with DR-04. This also includes my assessment for the appropriateness of proposed DCP drainage item DR-05.

7.1.2 I have a difference of opinion for a number of items including in the costing presented for DR-04. The quantum of item(s) discussed (in terms of construction value) is of such a substantial value that it is recommended the costings are revised based on agreed methodology and quantity.

7.1.3 Furthermore, it is recommended that alternative design opportunities are investigated to mitigate required CHMP costs. A default assumption for DR-04 costings has been made which represents absolute worst-case assessment of costs related to CHMP soil screening works. This is considered overly conservative due to the opportunity to re-use topsoil onsite.

7.2 Declaration

7.2.1 I have read and agree to be bound by the Expert Witness Code. I have made all the enquiries that I believe are desirable and appropriate and that no matters of significance which I regard as relevant have to my knowledge been withheld from the tribunal.

Isaac Clarey
B.E. (Civil & Infrastructure), B. Bus (Business Mgmt)

Director, Senior Civil Engineer
Loetis Pty Ltd