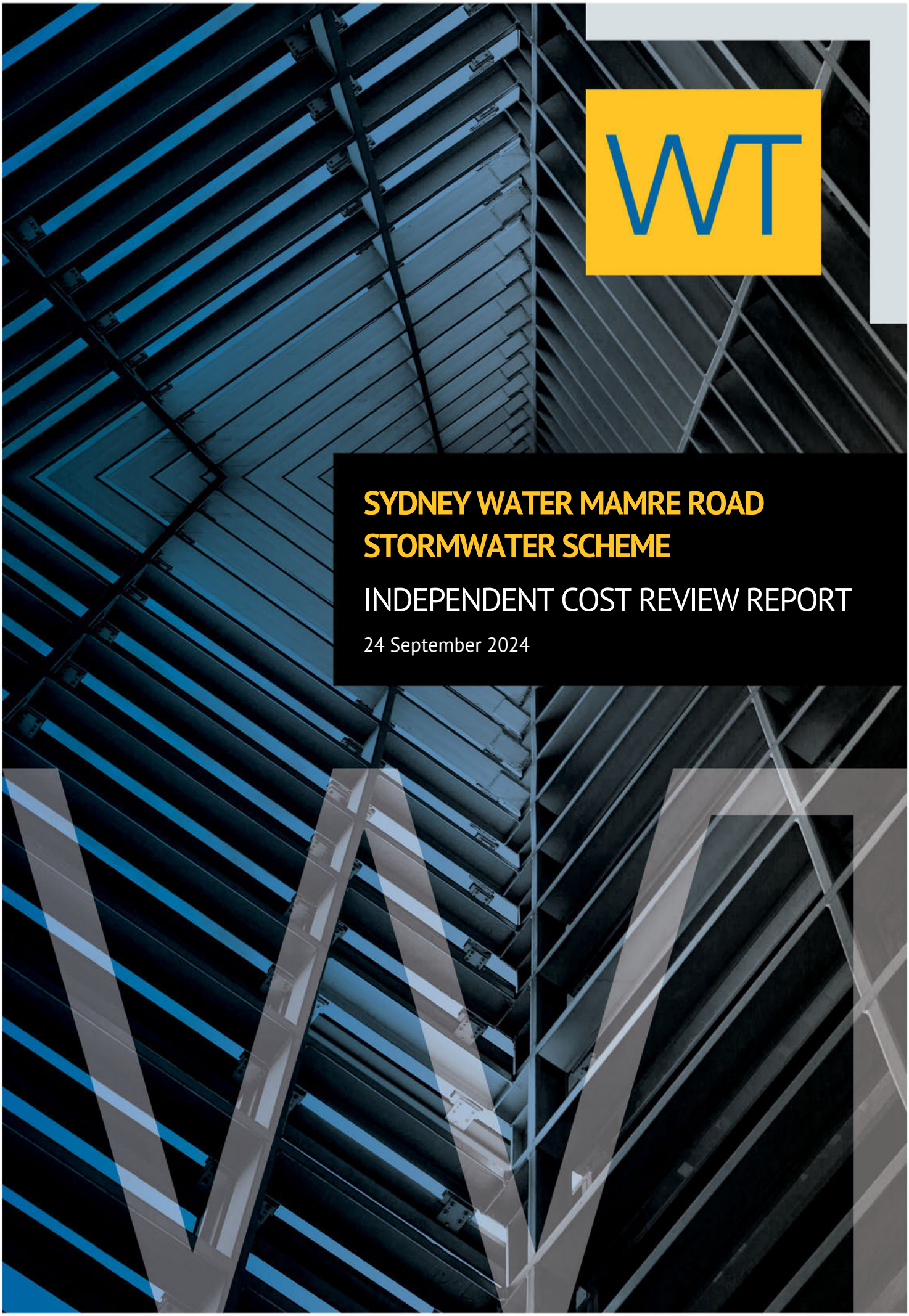

SYDNEY WATER MAMRE ROAD STORMWATER SCHEME

INDEPENDENT COST REVIEW REPORT

24 September 2024

CONTENTS

CONTACT

DETAIL	DESCRIPTION
Name of Company/Trading Name	WTP Australia Pty Ltd
ABN	69 605 212 182
Name of Representative	[redacted]
Position	[redacted]
Head Office Address	L26, 45 Clarence Street, Sydney NSW 2000
Telephone	+61 2 9929 7422
Email	[redacted]

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0	30/08/2024	Draft
1	02/09/2024	Updated Draft
2	03/09/2024	Updated Draft
3	06/09/2024	Updated to include extrapolation of alternative basin design options (section 9)
4	24/09/2024	Updated project names as instructed by IPART

1 DISCLAIMER

This report is prepared by WTP Australia (WT) for the sole and exclusive benefit of the Independent Pricing and Regulatory Tribunal (IPART) for the purpose of assisting the client for the independent cost review for Mamre Road Precinct Stormwater Scheme Plan (MRPSSP).

The report should be read as a whole, and sections should not be read or relied upon out of context. The report includes information provided by the IPART and by certain other parties, unless specifically stated otherwise.

This report contains the expression of the professional opinion of WT, based on information available at the time of preparation. The quality of information, conclusions and estimates contained herein are consistent with the intended level of accuracy as set out in this report, as well as the circumstances and constraints under which this report was prepared.

1.1 ACRONYMS

The following are some of the key acronyms and defined terms referenced within this report.

ACRONYM	DEFINITION
ENM	Excavated Natural Material
GSW	General Solid Waste
HARC	Hydrology and Risk Consulting
IPART	Independent Pricing and Regulatory Tribunal
NSW	New South Wales
MRPSSP	Mamre Road Precinct Stormwater Scheme Plan
MRUS2	Mamre Road Upgrade Stage 2 (Project)
RSW	Restricted Solid Waste
RBCE	Risk-Based Cost Estimate
RCP	Reinforced Concrete Pipe
SLR	Southern Link Road (Project)
SW	Sydney Water Corporation
SWC	Sydney Water Corporation
TfNSW	Transport for New South Wales
TWG	Technical Working Group
VENM	Virgin Excavated Natural Material
WT / WTP	WT Partnership

2 PROJECT INFORMATION

PROJECT NAME	LOCATION
Sydney Water Mamre Road Stormwater Scheme	Mount Vernon, NSW

3 EXECUTIVE SUMMARY

3.1 OVERVIEW

This report provides a review of the capital cost estimates associated with the proposed Stormwater Scheme by Sydney Water as outlined in a report by Bowery Consulting (Bowery) titled **Mamre Road Precinct - Stormwater Collection & Treatment and Recycled Water Distribution - Risk Based Cost Estimate – Summary Report** dated 23 April 2024. The file provided was titled **Appendix E - Cost Plan RW & SW - RBCE - Report.pdf**

The report by Bowery segregated the costs into five main items:

- direct costs
- contractor indirect costs
- contractor margin
- contract contingency (P50),
- and other costs which include land acquisition.

The scope of the review centred on assessing the reasonableness of the cost estimates provided, considering the inherent uncertainties in projects at a similar stage of development, market conditions, and the potential for cost efficiencies.

A review of land acquisition costs was excluded from the assessment.

3.2 KEY FINDINGS

The review focused primarily on the cost report prepared by Bowery and supplied by Sydney Water, with minimal design documentation available for reference.

Overall, the estimated costs presented generally fall within a reasonable range for a project of this nature. Certain elements of the project are estimated higher or lower than expected based on reconciliation against WT's benchmarked costs. WT's review has the following variance from the Bowery estimate:

- WT's direct costs are 2% lower.
- WT's indirect costs are 3% higher.
- WT's contractor margin is 21% higher.
- WT's contract contingency incl margin (P50 - Base) is 21% higher.
- WT's SWC contingency at P50 is 39% higher and at P90 is 12% lower
- WT's Total Project Cost at P50 is 5% higher and at P90 is 1% lower.

The key findings are:

- **Direct Costs:**
  - **Material Disposal Costs** - The disposal of surplus material presents a significant cost at $45.8 million; reviewing disposal rates and volumes could yield substantial savings, particularly by leveraging lower VENM rates or alternative disposal methods.
  - **Stormwater Collection Pipeline** – DN375 - Trenching depths have been standardised to 3 metres, potentially avoiding unnecessary costs associated with deeper excavation.
  - **Traffic management** - Traffic management costs appear excessive; a revised allocation more accurately reflecting the project's needs could reduce costs significantly.
  - **Pump Stations** - Cost savings are possible by optimising access, considering alternative materials for piping, and reviewing the electrical and pump specifications.
  - **Treatment Equipment** - The treatment equipment costs are generally reasonable, though there is potential for value management by reducing the length of the return pipe and optimising the treatment specification based on influent characteristics.
- **Margin** - WT recommends reviewing the application of margin on design costs, which has been applied inconsistently by Bowery.
- **Design Costs** - The design costs applied by Bowery (3% and 10%) are below the benchmark of 6%, warranting a review.
- **Risk and Contingency** - WT recommends revising the probabilistic risk approach to better reflect risk likelihood and range, suggesting adjustments to the P50 and P90 calculations. There is a significant spread between these two values which we believe is over estimated.
- **Escalation** - Escalation calculations were performed using TfNSW formats, with similar outcomes to Bowery, but differences arise in how contingency risk is allocated between scenarios.

3.3 RECOMMENDATIONS

Our review also includes several recommendations to refine cost estimates and address specific elements or risks that may affect the overall financial outcome of the project. In summary, our recommendations are:

- **Gravity Stormwater Main** - Consider redesigning the drainage line route to reduce unnecessary cut and fill operations, potentially leading to more efficient alignment and cost savings.
- **Excavated Material Disposal** - Re-evaluate the disposal costs for VENM materials, considering a lower disposal rate or using the materials as fill for nearby projects, potentially saving at least $45 million.
- **Pump Stations, Treatment Plant, and Pipelines** - Obtain further design details for the Mechanical/Electrical components to validate cost estimates and explore cost-saving opportunities such as prefabricated systems and optimising pipeline lengths.

- **Traffic Management** - Limit traffic management costs by employing a single traffic controller, suitable for the greenfield area, to manage traffic only when trucks enter the roadway.

These recommendations are further detailed in section 7.

3.4 BASINS ALTERNATIVE DESIGN

WT assessed the alternative basin designs by using the original estimate review and extrapolating these costs to account for the alternative basin designs. The two alternative designs focus on reducing basin areas and increasing depth, aiming for more cost-efficient designs and potential land acquisition savings.

Using sketches provided by HARC, WT evaluated the scope and estimated costs for the proposed designs as follows:

- **Technical Working Group Stormwater Consultant (TWG) Stormwater Consultant Alternative Design**
  - Estimated Total Project Cost of $66,928,730
  - 29% lower than SW design
- **Typical Sydney Metropolitan Council Target Design**
  - Estimated Total Project Cost of $20,764,943
  - 78% lower than SW design

See section 9 for details.

4 PROJECT BACKGROUND

In 2022, the Government designated Sydney Water as the trunk drainage authority for managing stormwater in the Western Sydney Aerotropolis, including the MRPSSP. Sydney Water's responsibility includes delivering, managing, and maintaining the regional stormwater network, which supports urban cooling, recreation, and environmental outcomes through blue-green infrastructure.

The MRPSSP has been developed to align with NSW Government planning requirements and ensure compliance with the waterway objectives and stormwater targets outlined in the Mamre Road Precinct Development Control Plan. This plan details the infrastructure needed to implement a regional stormwater harvesting solution that meets the established stormwater targets.

The infrastructure proposed will also contribute to the NSW Government's Western Parkland City Vision, which aims to enhance greening and cooling in the area. Components of the scheme are integral to the blue-green infrastructure framework. Key elements of the MRPSSP include:

- Naturalised trunk drainage channels for stormwater conveyance, offering ecological and social benefits.
- Constructed wetlands, bioretention systems, and storage ponds for stormwater treatment and collection.
- Stormwater harvesting infrastructure, comprising gravity and pressure mains, pumps, a final treatment plant, a reservoir, and a distribution network.

Sydney Water has engaged Bowery Consulting to assist in developing a Risk-Based Cost Estimate (RBCE) for the MRPSSP – Stormwater Collection & Treatment and Recycled Water Transfer & Distribution Project.

The project involves the establishment of precinct-scale trunk stormwater collection and treatment infrastructure, as well as recycled water distribution for new commercial and industrial areas within the Mamre Road Precinct, situated near the new airport in Western Sydney.

The MRPSSP Project encompasses the following infrastructure options:

- Base Case – On-property Rainwater Harvesting
- Option 2 – Precinct Scale Stormwater Harvesting with Potable Top-up
- Option 3 – Precinct Scale Stormwater harvesting with Recycled Water Top-up

IPART has engaged WT Partnership to perform an independent cost review of the Mamre Road Precinct Stormwater Scheme Plan (MRPSSP). This review will include evaluating capital costs, assessing the reasonableness of cost estimates, providing market insights, and extrapolation of costs for alternative design options.

The review focuses specifically on cost estimation advice for Option 3, as instructed by IPART. The cost review also primairly focusses on rates and a full idependent measure and review of quantities has not been undertaken by WT Partnership.

December 2023 – Scheme plan

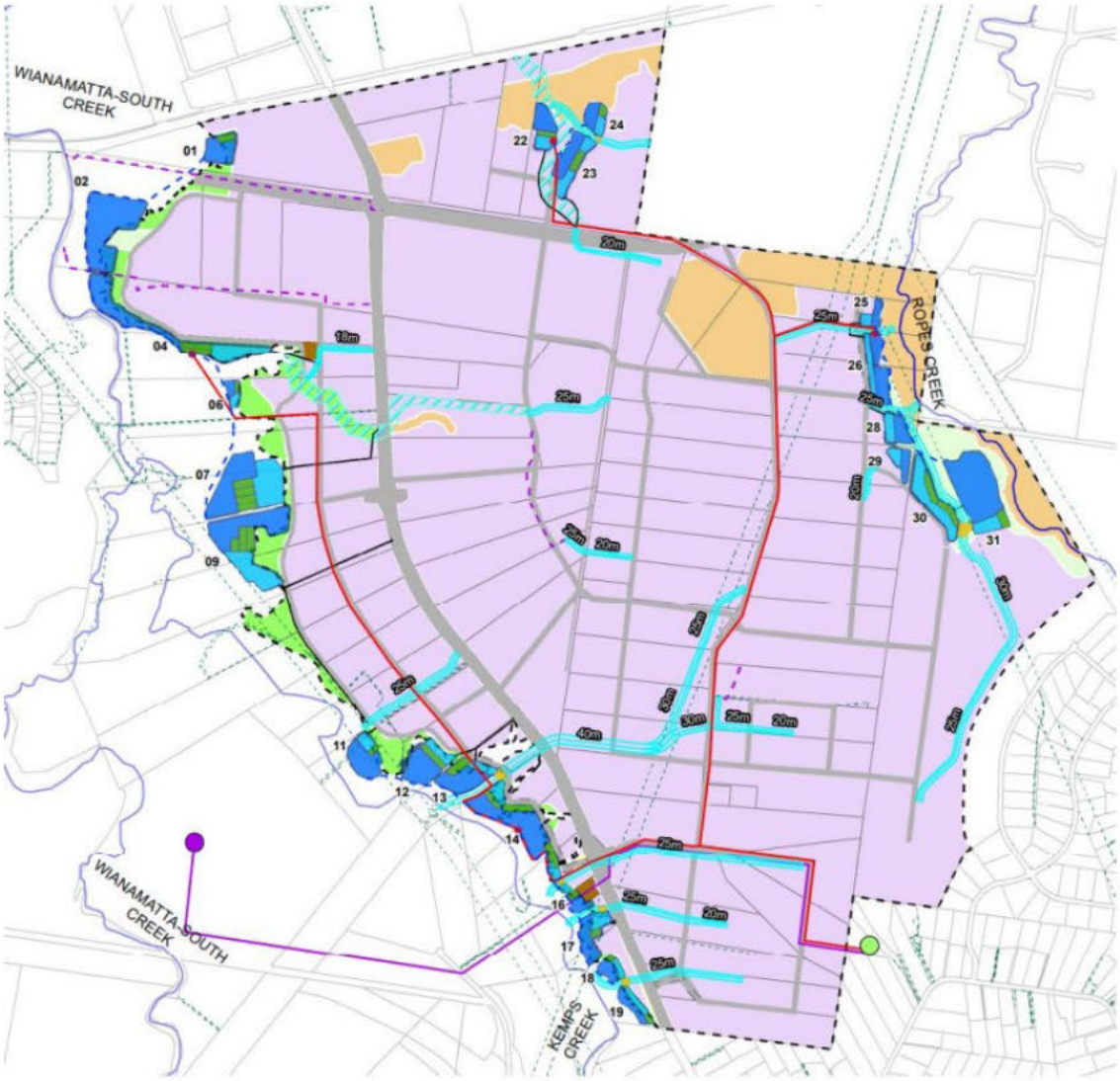

Figure 1 – Key Plan

5 SUMMARY OF COST REVIEW

5.1 TOTAL PROJECT COST P50

DESCRIPTION	SYDNEY WATER $COST	WT REVIEW $COST	VARIANCE $COST	VARIANCE %
Direct Costs	$212,379,237	$207,787,305	($4,591,932)	-2%
Contractors Indirect Costs	$52,713,965	$54,315,446	$1,601,481	3%
Contractors Margin	$31,481,328	$24,726,675	($6,754,653)	-21%
Contract Contingency incl Margin (P50 - Base)	$52,119,331	$63,102,474	$10,983,143	21%
Other Costs	$179,236,115	$180,808,751	$1,572,636	1%
SWC Contingency	$58,560,502	$81,682,082	$23,121,580	39%
Cap Uplift	$9,383,848	$9,798,764	$414,916	4%
Escalation	$140,013,693	$151,836,796	$11,823,103	8%
TOTAL PROJECT COST (P50)	**$735,888,019**	**$774,058,293**	**$38,170,274**	**5%**

5.2 TOTAL PROJECT COST P90

DESCRIPTION	SYDNEY WATER $COST	WT REVIEW $COST	VARIANCE $COST	VARIANCE %
Direct Costs	$212,379,237	$207,787,305	($4,591,932)	-2%
Contractors Indirect Costs	$52,713,965	$54,315,446	$1,601,481	3%
Contractors Margin	$31,481,328	$24,726,675	($6,754,653)	-21%
Contract Contingency incl Margin (P50 - Base)	$52,119,331	$63,102,474	$10,983,143	21%
Other Costs	$179,236,115	$180,808,751	$1,572,636	1%
SWC Contingency	$121,192,219	$107,232,297	($13,959,922)	-12%

Cap Uplift	$10,385,955	$10,207,567	($178,388)	-2%
Escalation	$155,611,748	$158,171,412	$2,559,664	2%
TOTAL PROJECT COST (P90)	**$815,119,898**	**$806,351,927**	**($8,767,971)**	**-1%**

5.3 LEVEL OF PRICING

The estimate considers a single delivery partner engagement model. Any transaction costs and any other commercial impacts of a design and construct or any other delivery model is excluded and consequently, the estimates do not include the cost of financing the project, or any part thereof.

WT have estimated that the project will occur in the next 14 years.

5.3.1 DIRECT COSTS

DESCRIPTION	SYDNEY WATER $COST	WT REVIEW $COST	VARIANCE $COST	VARIANCE %
Stormwater Trunk Drainage	$38,729,910	$33,131,966	($5,597,944)	-14%
Stormwater On Property Works - Base Case	$0	$0	$ 0	0%
Stormwater Collection	$119,553,824	$124,870,608	$5,316,784	4%
Recycled Water Transfer (Option 3 only)	$10,035,401	$9,761,775	($273,626)	-3%
Stormwater Transfer	$16,903,156	$13,566,421	($3,336,735)	-20%
Stormwater Treatment, Disinfection & Recycled Water	$16,235,373	$15,306,023	($929,350)	-6%
Recycled Water Distribution	$10,921,573	$11,150,512	$228,939	2%
Potable Top-up (Option 2 only)	$0	$0	$ 0	0%
TOTAL PROJECT COST	**$212,379,237**	**$207,787,305**	**($5,597,944)**	**-14%**

5.3.2 OFF SITE MATERIAL DISPOSAL

It is observed that $40 million of the total $212 million in direct costs is allocated for off-site material disposal, which represents 19% of the total budget. The current rate for off-site disposal is

$48 per cubic meter, covering 800,000 cubic meters. However, WT note that the actual off-site disposal volume is 976,281 cubic meters, with a rate of $47 per cubic meter, resulting in a total cost of $45.8 million. Based on a quote received for VENM (Virgin Excavated Natural Material) at a rate of $6 per tonne.

Additionally, WT has identified that the surplus material from excavation poses a risk but also presents an opportunity for cost savings. Further details of these potential savings and associated risks is found below in section 7.2.

5.3.3 STORMWATER COLLECTION PIPELINE – DN375

WT has not accounted for the excavation and laying of pipes in trenches deeper than 3 meters. After assessing various scenarios, all 5-meter and 6-meter trenching works have been adjusted and treated as 3-meter works. This decision is based on further investigation, which indicated that the elevation where the stormwater collection pipeline runs is unlikely to exceed 3 meters deep. This assessment was verified using the Google Earth documents provided [redacted] on August 20, 2024, specifically the file: 'Indicative Stormwater Gravity_MainDec2023.shp'.

5.3.4 TRUNK DRAINAGE CORRIDORS

WT has assessed the traffic management provisions for the stormwater trunk drainage works and found them to be excessive. The allowance provided is triple what WT deemed necessary across all five outlet channels. Bowery has allowed for a total of $424k of Traffic Management allowance while WT has only allowed for $117k.

WT agrees with Bowery's quantity allowance for jute mesh, mulch, and planting on batter slopes. However, WT has applied lower rates compared to Bowery's rates.

Overall, WT assess that the total cost for the Trunk Drainage Corridor work is reasonable.

5.3.5 BASINS

WT assess that the total cost for the Basins work to be reasonable.

5.3.6 PUMP STATIONS

The estimates include several pump stations which consist of site access and hardstand, wet wells, pumps, electrical, and instrumentation and control. No design has been provided to inform the estimate review. However, a moderate level of detail is provided in the estimate. In the absence of further information, WT has adopted the quantities listed. It is to be noted that these should be reviewed and confirmed by the reviewing engineer to ensure alignment to the overall scope. WT makes the following observations in relation to the pump stations:

- Access and hardstand have been included at a uniform rate across all pump stations regardless of the size of the station. Given the pump stations will be developed in conjunction with the wider site development works this allowance appears overstated. WT recommends this could be reduced to $175k with 500m2 per pump station compared to Sydney Water at $453k with 1500m2
- All above ground pipework has assumed to be Stainless Steel Pipes, and the cost appears reasonable but based on WT experience, DICL and MSCL pipes are a great alternative to use and are considerably cheaper. Review with the engineer is recommended to ensure the nominal type of pipe is used for the scope.

- The price for miscellaneous fittings for valve supply and installation seems slightly conservative for the scope of works.
- Based on WT experience, the kW rating of the pumps appears slightly conservative for the specified flow and pressure of the pumps
- The pump station appears to have adopted a cast in situ wet well design; similar to a sewerage pumping station. WT notes that more cost-effective packaged stormwater pump stations are available and commonly used across the construction industry. This should be further reviewed as a value management opportunity.
- Noting that no design has been provided, the electrical costs appear significant for a similar stormwater pump station arrangement. WT recommends the electrical costs be further reviewed, with a nominal saving of 25% of electrical costs possible.

5.3.7 TREATMENT EQUIPMENT

The estimates include for water treatment plant including mechanical screens / filters, and chemical / UV dosing systems. No design has been provided to inform the estimate review; however, a moderate level of detail is provided in the estimate. WT notes that this equipment is commonly used in treating recycled water and is commercially available from several vendors. In the absence of further information WT has adopted the quantities and specifications listed in the estimate, however these should be reviewed and confirmed by the reviewing engineer to ensure alignment to the overall scope. WT makes the following observations in relation to the Treatment equipment:

- Based on WT benchmarking, the drum screen allowance would allow for 2-3 units, depending on capacity
- A screenings collection return pipe has been included and allowed at 700m length to the nearest sewerage discharge point. This length appears excessive given the proximity of surrounding development and should be considered for value management. WT further notes that a significant reduction in length could result in the reduction of the overall pipe diameter, resulting in additional cost savings.
- The allowances provided for the treatment equipment appear reasonable for the scope specified.
- The actual treatment equipment specification will be dependent on the influent that the system is treating. This element of the scope carries elevated risk inherent risk compared to the balance of the system.

5.3.8 RESERVOIR SITES

The estimates include several reservoir sites for bulk storage of water. No design has been provided to inform the estimate review; however, a moderate level of detail is provided in the estimate. In the absence of further information WT has adopted the quantities and specifications listed in the estimate, however these should be reviewed and confirmed by the reviewing engineer to ensure alignment to the overall scope. WT makes the following observations in relation to the Treatment equipment:

- The breakdown provided for the reservoir sites aligns with industry norms and the rates generally appear reasonable for the scope listed.

5.4 INDIRECT COSTS

Bowery has provided their indirect cost as a single line-item percentage. WT has developed a breakdown of indirect costs using first principles based on the Reference Design programme which comprises the following items:

5.4.1 PRELIMINARIES AND OVERHEADS

- Site compound
- Construction site access roads including access roads site setup location.
- Management and core staff (allowance has been made for working away from home)
- Supervision
- General plant and equipment
- Other miscellaneous items such as Insurance and fees

The following details the apportionment of the above within the Preliminaries allowance:

INDIRECT COST BREAKDOWN	TOTAL COST $
CONSTRUCTION MANAGEMENT AND SUPERVISION	$18,025,280
SITE ESTABLISHMENT & DEMOBILISATION	$625,304
SITE RUNNING COSTS	$7,162,130
SMALL TOOLS	$546,000
GENERAL PLANT & EQUIPMENT SUPPORT	$3,279,021
SAFETY ALLOWANCES	$423,308
FEES AND LEVIES	$3,022,120
INSURANCES	$3,636,277
PLANS AND MONITORING	$1,010,000
SURVEYS	$1,730,000
MISCELLANEOUS	$20,000
MARGIN – 10%	$24,726,674
TOTAL	**$64,206,114**

5.4.2 MARGIN

Contractor margins are typically calculated as a percentage applied to both direct and indirect costs but excluding design costs. However, we understand that Bowery has included a margin on the design costs. WT's assumption is based on a construction-only contract. It is recommended to clarify the contracting method and review the margin calculation accordingly.

A summary of the margin applied by Bowery is as follows:

- Bowery has broken down the costs into two packages:
  - Stormwater Collection, and
  - Treatment, and Recycled Water Transfer & Distribution.
- Bowery has applied 17.5% of direct costs for the indirect costs, 3% of direct costs for the design costs, and 12.5% of the sum of direct, indirect, and design costs as the margin for the Stormwater Collection package.
- Bowery has applied 25% of direct costs for the indirect costs, 10% of direct costs for the design costs, and 12.5% of the sum of direct, indirect, and design costs as the margin for Treatment, and Recycled Water Transfer & Distribution.

PROJECT	INDIRECTS	DESIGN	MARGIN
BOWERY - Stormwater Collection	17.5%	3%	12.5%
BOWERY – Treatment and Recycled Water Transfer & Distribution	25%	10%	10.25%
WT	19%	6%	10%

5.4.3 DESIGN COSTS

WT has calculated a benchmark based on an aggregate percentage from multiple projects where designers have validated and applied 6% as a minimum percentage. Bowery, however, have applied two different percentages, 3% and 10%.

WT recommends this be reviewed.

5.4.4 CLIENT COSTS

WT has assessed the client cost to be reasonable.

5.4.5 PROPERTY ACQUISITION

WT did not assess property acquisition costs. Instead, WT has applied the land acquisition costs used by Bowery.

5.4.6 RISK & CONTINGENCY

WT has reviewed Bowery/Sydney Water's probabilistic risk assessment, which is based on the current risk register and available information. The assessment indicates a P90 risk level at 36% of the total project cost, with the P50 amount representing 65% of the P90 value.

WT recommends revising the probabilistic risk approach to better account for the likelihood and range of each risk, including minimum, most likely, and maximum amounts. Additionally, an adjustment to the P50 relative to the P90 is advised. Currently, WT has applied 36.42% of the Project Total Cost for the P90 value as Bowery/Sydney Water and 85% of the P90 value for the P50 amount.

It's important to clarify that the Contingency Risk percentage (P90 - 36.42%) is calculated based on the "Total Construction Cost," which includes items A, B, C, and E in the 'WT's Assessment' sheet included in Appendix A.

5.4.7 ESCALATION

WT has used TfNSW formats in generating the escalation amounts for the MRPSSP – Stormwater Collection & Treatment and Recycled Water Transfer & Distribution Project.

Based on the available information, WT has used the midpoint of the construction program to determine escalation amounts for both P50 and P90 scenarios. Escalation calculations have been applied starting from June 2025. The following escalation rates have been used:

Financial Year	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Percentage (Per annum %)	3.60%	3.00%	2.80%	2.50%	2.50%	2.50%	2.50%

When comparing the outturn costs between WT and Bowery/Sydney Water, the escalation factors are similar. The primary difference lies in the allocation of contingency risk, which is applied differently between the P50 and P90 scenarios.

6 ASSUMPTIONS

The assumptions used to prepare the estimate include:

Stormwater Collection Pipeline

- No trenching or pipe works beyond 3m depth
- No excavation for pit beyond 3m depth
- Disposals to be all VENM materials
- Allowed only 1 traffic controller

Trunk Drainage Corridors

- Assume 1 tubestock/m^2.
- Disposals to be all VENM materials
- Allowed only 1 traffic controller
- Assume depth of access track to be 350mm
- Assume width of access track to 4m

- Assume topsoil removal of 150mm instead of 200mm
- Assume topsoil reinstall of 150mm instead of 250mm

Basins

- Disposals to be all VENM materials
- Allowed only 1 traffic controller
- Assume depth of access track to be 350mm
- Assume topsoil removal of 150mm instead of 200mm
- Assume topsoil reinstall of 150mm instead of 250mm

7 RECOMMENDATIONS

7.1 GRAVITY STORMWATER MAIN

An initial assessment of the drainage line route suggests that a more efficient and better alignment could have been designed to accommodate the required work. The current plan includes substantial and potentially unnecessary cut and fill operations to accommodate the pipes.

7.2 EXCAVATED MATERIAL DISPOSAL

Another potential cost-saving opportunity in the project is to revise the allowance for the disposal of VENM materials. Bowery has applied a disposal rate of $20/tonne, while WT has received a quote from Earth Exchange for $6/tonne (tipping only). This presents a viable area where project costs can be significantly reduced. The contact person for Earth Exchange is listed in the disposal rate table below.

[redacted] An additional solution for disposing of the VENM materials could be to use them as fill for these projects. The proximity of MRUS2, SLR, and Elizabeth Drive makes this a feasible option requiring over 450,000m3 of filling material. If this recommendation is implemented, the project could save at least $45 million including indirects, risk contingency, and escalation. [redacted]

7.3 PUMP STATIONS, TREATMENT PLANT AND PIPELINES

Generally, no design has been provided to support the Mechanical / Electrical scope of the works including pump stations and treatment plant. The cost of these items has a high level of variability dependant on specification and capacity, and further design information should be provided to confirm the estimate values.

The design of the pump station appears to follow the typical design of in situ wet wells typically used for sewerage pump stations. WT does not have access to the information that supported this

design decision, however it may be possible to pivot to a more cost effective prefabricated packaged stormwater system. This should be further considered as a value management opportunity.

The lengths of pipeline associated with the system could be optimised further reducing costs. For example, the sewer return line from the treatment plant is 700m in length which appears excessive given the close proximity to surrounding developments.

7.4 TRAFFIC MANAGEMENT

WT has evaluated the need for traffic management for the current scope of works. While traffic management is essential, WT does not believe that excessive costs should be allocated to it. Given that the work is being conducted in a greenfield area, WT considers that a single traffic controller would be sufficient to manage the traffic. The controller's primary responsibility would be to manage traffic only when trucks are joining the roadway.

8 SUPPLY RATES

WT has quantified the necessary materials and disciplines for the proposed project and contacted suppliers and subcontractors to provide the most accurate rates available currently in the market.

Where WT was unable to get supplier and/ or subcontractor rates for the project, we have applied benchmarking rates from past projects with similar scope. Below are supply rates obtained for this project.

All rates obtained in Q4 2024, otherwise escalation has been applied.

8.1 MATERIALS

DESCRIPTION	RATE	SUPPLIER	METHOD
RCP 0375mm Class 4	$102/m	CivilMart	Email
RCP 0525mm Class 4	$173/m	CivilMart	Email
RCP 0900mm Class 4	$520/m	CivilMart	Email
HDPE Liner	$9/m²	Jaybro	Website
Sandstone Log – 500mm x 500mm x 1m	$120/each	Quarry Australia	Website

8.2 DISPOSAL

DESCRIPTION	RATE	SUPPLIER	METHOD
VENM	$ 6 / tonne	Earth Exchange [redacted]	Email

		[redacted]	
VENM	$ 50 / tonne	HiQ	Email
GSW General	$ 230 / tonne	HiQ	Email
ENM	$ 215 / tonne	Cleanaway Kemps Creek	Email
GSW (non-putrescible)	$ 215 / tonne	Cleanaway Kemps Creek	Email
GSW (non-putrescible) Special Waste Asbestos	$ 215 / tonne	Cleanaway Kemps Creek	Email
RSW (non-putrescible)	$ 435 / tonne	Cleanaway Kemps Creek	Email

9 BASINS ALTERNATIVE DESIGN

At the request of IPART, WT has conducted an assessment comparing alternative designs for specific basins across the Northwest and East regions of the project area in an effort to extrapolate the costs from the original review to these alternative design options.

The alternative designs are categorised into two treatment types:

- Technical Working Group Stormwater Consultant Alternative Design
- Typical Sydney Metropolitan Council Target Design

Both treatment types aim to create a more efficient and cost-effective design by reducing basin areas and potentially increasing their depth. This approach could lead to potential savings in land acquisition costs.

The alternative designs focus on modifications to the following basins:

- Northwest side
  - Basin 1
  - Basin 2
  - Basin 4
- East side
  - Basin 25
  - Basin 26
  - Basin 28
  - Basin 29
  - Basin 30
  - Basin 31

HARC provided sketches via Google Earth files that outline the basin updates. WT has evaluated the proposed scope and estimated the costs associated with the new basin designs. The areas assessed are as follows:

9.1 TECHNICAL WORKING GROUP STORMWATER CONSULTANT DESIGN

BASIN NO	BIORETENTION	WETLAND	SEDIMENTATION BASIN	PODS
Basin 1	1,006m2	N/A	400m2	N/A
Basin 2	N/A	N/A	500m2	55,000m2
Basin 4	2,500m2	9,575m2	1,000m2	
Basin 25	1,731m2	5,193m2	N/A	12,216m2
Basin 26			N/A	
Basin 28	822m2	2,466m2	N/A	2,961m2
Basin 29	6,707m2	20,122m2	N/A	35,000m2
Basin 30			N/A	
Basin 31			N/A	

9.2 TYPICAL SYDNEY METROPOLITAN COUNCIL TARGET DESIGN

BASIN NO	BIORETENTION	WETLAND	SEDIMENTATION BASIN	PODS
Basin 1	1,157m2	N/A	400m2	N/A
Basin 2	N/A	N/A	500m2	N/A
Basin 4	2,875m2	9,575m2	1,000m2	N/A
Basin 25	1,731m2	5,193m2	N/A	N/A
Basin 26			N/A	N/A
Basin 28	822m2	2,466m2	N/A	N/A
Basin 29	4,024m2	12,073m2	N/A	N/A
Basin 30			N/A	N/A
Basin 31			N/A	N/A

The tables below provide a summary of the cost comparison for the alternative basin designs.

9.3 TOTAL PROJECT COST COMPARISON

DESCRIPTION	SYDNEY WATER $COST	TWG STORMWATER CONSULTANT $COST	TYPICAL SYDNEY METROPOLITAN COUNCIL $COST
Direct Costs	$58,745,822	$39,741,849	$12,330,089
Contractors Indirect Costs	$12,042,893	$10,388,489	$3,223,076
Contractors Margin	$8,848,589	$4,729,277	$1,467,280
Contract Contingency incl Margin (P50 - Base)	$13,995,278	$12,069,115	$3,744,498
Other Costs	Excluded	Excluded	Excluded
SWC Contingency	Excluded	Excluded	Excluded
Cap Uplift	Excluded	Excluded	Excluded
Escalation	Excluded	Excluded	Excluded
TOTAL PROJECT COST	**$93,632,582**	**$66,928,730**	**$20,764,943**

9.4 BASIN ALTERNATIVE DESIGN COST COMPARISON – TECHNICAL WORKING GROUP STORMWATER CONSULTANT DESIGN

DESCRIPTION	SYDNEY WATER $COST	TWG STORMWATER CONSULTANT $COST	VARIANCE $COST	VARIANCE %
Basin 1	$1,977,329	$631,266	($1,346,063)	-68%
Basin 2	$5,135,170	$4,994,361	($140,809)	-3%
Basin 4	$7,131,980	$3,164,561	($3,967,419)	-56%
Basin 25	$1,081,330	$990,010	($91,320)	-8%
Basin 26	$2,735,018	$2,059,580	($675,438)	-25%
Basin 28	$1,958,683	$1,563,437	($395,246)	-20%
Basin 29	$1,315,461	$1,194,933	($120,528)	-9%

Basin 30	$5,489,279	$3,751,792	($1,737,487)	-32%
Basin 31	$5,408,494	$3,761,319	($1,647,175)	-30%
Northwest Disposal	$19,204,080	$10,520,386	($8,683,694)	-45%
East Disposal	$6,108,998	$5,910,203	($198,795)	-3%
Water Quality	$600,000	$600,000	$ 0	0%
Maintenance	$600,000	$600,000	$ 0	0%
TOTAL DIRECT COST	**$58,745,822**	**$39,741,848**	**($19,003,974)**	**-32%**

9.5 BASIN ALTERNATIVE DESIGN COST COMPARISON – TYPICAL SYDNEY METROPOLITAN COUNCIL TARGET DESIGN

DESCRIPTION	SYDNEY WATER $COST	TYPICAL SYDNEY METROPOLITAN COUNCIL $COST	VARIANCE $COST	VARIANCE %
Basin 1	$1,977,329	$656,852	($1,320,477)	-67%
Basin 2	$5,135,170	$468,280	($4,666,890)	-91%
Basin 4	$7,131,980	$2,009,968	($5,122,012)	-72%
Basin 25	$1,081,330	$636,211	($445,119)	-41%
Basin 26	$2,735,018	$1,272,172	($1,462,846)	-53%
Basin 28	$1,958,683	$927,643	($1,031,040)	-53%
Basin 29	$1,315,461	$621,031	($694,430)	-53%
Basin 30	$5,489,279	$2,588,851	($2,900,428)	-53%
Basin 31	$5,408,494	$848,953	($4,559,541)	-84%
Northwest Disposal	$19,204,080	$546,469	($18,657,611)	-97%
East Disposal	$6,108,998	$553,660	($5,555,338)	-91%
Water Quality	$600,000	$600,000	$ 0	0%

Maintenance	$600,000	$600,000	$ 0	0%
TOTAL DIRECT COST	**$58,745,822**	**$12,330,090**	**($46,415,732)**	**-79%**

10 ALLOWANCES AND CONSIDERATIONS

The allowances and considerations used to prepare the basin alternative design are as follows:

BIORETENTION BASINS

- Extended detention depth – 300mm
- Filter material depth – 300mm

WETLAND

- Northwest
  - Filter material depth – 300mm
- East
  - Filter material depth – 330mm

SEDIMENTATION BASIN

- Proposed depth – 1.50m

POND

- Northwest
  - Proposed depth – 3m
  - Included 30% extra over for benching
- East
  - Proposed depth – 2m
  - Included 20% extra over for benching

OVERALL

- Allowed only 1 traffic controller
- Disposals to be all VENM materials
- Assume depth of access track to be 350mm
- Assume width of access track to 4m
- Assume topsoil removal of 150mm instead of 200mm
- Assume topsoil reinstall of 150mm instead of 250mm

WT has identified that Sydney Water has included allowances for reticulation and discharge pump (submersible in diversion chamber including pipework) including power for pump, SCADA control of pumps and cabling. Based on [redacted] HARC advice, the allowance may potentially not be required given the scope is based on a gravity system rather than a rising system. Each basin has included an amount of $277,500 potentially resulting in savings.

For comparison purposes, WT has prorated the costs for off-site disposal volumes, water quality monitoring, 24-month maintenance, indirect costs, margin, and contract contingency.

11 LIMITATIONS

The conclusions presented herein are based on the limited information made available to us and may be subject to change should the information upon which they are based be determined to be false, inaccurate, or incomplete.

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12 EXCLUSIONS

- Excavation in rock
- WT assessment of Land acquisitions
- Property adjustments
- OPEX
- GST

13 DOCUMENTS LIST

- Mamre Scheme Plan Dec 2023 Basin Strings
- Mamre Scheme Plan Dec 2023 Basin tins
- MSP_BASIN TINS_MODELS
- MSP_COMBINED BASIN STRINGS_MODELS
- MSP_COMBINED BASIN TINS_MODELS
- MSP_COMBINED TRUNK DRAINAGE CHANNEL STRINGS_MODELS
- MSP_COMBINED TRUNK DRAINAGE TINS_MODELS
- Mamre_Stormwater_Scheme_GIS_DEC_2023
- Appendix E - Cost Plan RW & SW - RBCE - Report
- MRP_Regional_stormwater_scheme_optimisation_summary
- MRP_Stormwater_Scheme_Plan_December_2023
- Scope of works - Mamre Rd - Cost estimation
- Model Treatments Comparison – multiple versions
- Technical Working Group Stormwater Consultant Treatments shape files for various clusters
- Typical Sydney Metropolitan Council Targets Treatments shape files for various clusters
- Emails

14 ESTIMATING TEAM

WT has put together a team of professionals who have extensive relevant experience in cost management of significant infrastructure projects:

ROLE	RESOURCE
[redacted]	[redacted]
[redacted]	[redacted]

[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Refer to excel file for estimates breakdown.