Upper South Creek

Advanced Water Recycling Centre and Pipelines PART B

CoA E92 Construction Water Reuse Strategy

Document No: USCP-JHG-PLN-ENV-0001 Revision No: A

Construction Water Reuse Strategy



 likelihood of generating uncontrolled sediment laden water and this waters potential to discharge to locally waterways (South Creek). This poses an unacceptable environmental impact to the surrounding environment that the Project must prohibit and as such the end use of testing water for irrigation purposes has been concluded unviable. Compaction & Dust Suppression (Under assessment) – The Project is currently assessing the logistical limitations of relaining and reusing portions of the testing water within temporary detention basins that have no designed stomwater catchinent for use in compaction and dust suppression activities. Noting the quantities for testing are greater than 80ML in total for the plant excluding pipelines, of which Project available space will be restricted to storing significantly tess water at any one time. Reuse of testing water in additional tests (<u>Under assessment</u>) – The Project will be assessing the possibility of seeking a deviation from the Sydney Water Civil specification and associated guidelines to permit relainment and possible reuse of testing water. Limitations yat to be resolved: Water exposed to concrete and concrete-lined structures is subject to increasing pH as a result of the akali minerals in cennent. Water with a high pH (above the neutral pH of 7) can result in risks of corrosion, scaling neicplation issues, disinfection challenges due to reduced effectiveness in chlorine-based disinfection and magnesitum earbontabe build up reducing water flow), chemical precipitation issues, disinfection challenges due to reduced affectiveness in chlorine-based disinfection and magnesitum earbontabe build up reducing water tweater must periodesace. This enables of personnel and inability to safely discharge due to the potential reuse opportunity. The staging of water relating structures and asset testing, aimed at facilitating efficient water use age and movement, is restricted by the ucucomes of prior tests and the readiness of design	Non-potable Water Source	Potential End Use	Evaluation of reuse option	Assessment timeframe/ implementation	Assessment Outcome	
 Irrigation, compaction, and dust suppression (Unviable)- The staging of pipeline construction works inhibits the use of hydrostatic testing water for the purpose of compaction and dust suppression at pipeline sites. Trenching and compaction works required for pipeline installation must be completed prior to the commencement of hydrostatic testing. As a result, there is limited to no opportunity to 					 waterways (South Creek). This poses an unacceptable environmental impact to the surrounding environment that the Project must prohibit and as such the end use of testing water for irrigation purposes has been concluded unviable. Compaction & Dust Suppression (Under assessment) – The Project is currently assessing the logistical limitations of retaining and reusing portions of the testing water within temporary detention basins that have no designed stormwater catchment for use in compaction and dust suppression activities. Noting the quantities for testing are greater than 80ML in total for the plant excluding pipelines, of which Project available space will be restricted to storing significantly less water at any one time. Reuse of testing water in additional tests (Under assessment) - The Project will be assessing the possibility of seeking a deviation from the Sydney Water Civil specification and associated guidelines to permit retainment and possible reuse of testing water. Limitations yet to be resolved: Water exposed to concrete and concrete-lined structures is subject to increasing pH as a result of the alkali minerals in cement. Water with a high pH (above the neutral pH of 7) can result in risks of corrosion, scaling (due to calcium and magnesium carbonate build up reducing water flow), chemical precipitation issues, disinfection challenges due to reduced effectiveness in chlorine-based disinfection agents, skin irritation to Project is investigating if in-situ monitoring and treatment can be undertaken using pH correction chemicals to de-risk the potential reuse opportunity. The staging of water retaining structures and asset testing, essential inspection to identify failure points, and access to assets for post-testing dry commissioning. For reference, John Holland's preliminary approach to water retention and reuse through staging can be found in Appendix D. 	
pipeline sites. Trenching and compaction works required for pipeline installation must be completed prior to the commencement of hydrostatic testing. As a result, there is limited to no opportunity to						
utilise testing water for such end uses at the completion of testing. The opportunity to retain and reuse will furthermore be prohibited by the spatially constrained compounds of the pipeline sites and					pipeline sites. Trenching and compaction works required for pipeline installation must be completed prior to the commencement of hydrostatic testing. As a result, there is limited to no opportunity to utilise testing water for such end uses at the completion of testing. The opportunity to retain and	

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Non-potable Water Source	Potential End Use	Evaluation of reuse option	Assessment timeframe/ implementation	Assessment Outcome	
Drilling Fluid used in pipe jacking, horizonal directional drilling and under bores	Drilling fluid circulation	Viable	<i>Implementation:</i> During construction period.	 the cost prohibitive nature of onboarding detention tanks with the capacity of holding water in quanitties in excess of 1 ML. Irrigation has the identical limitations of the AWRC site mentioned above, prohibiting the discharge to land for such a purpose. Reuse of testing water in additional tests (Under assessment) – The Project will be assessing the viability of seeking deviation from the Sydney Water Civil specification that specifies the requirement to test and discharge water used in pipeline pressure testing in 1km sections. If a deviation to the specification is received the Project will assess if pipeline installation and testing staging aligns to allow water to be transferred between testing sections through pipeline air valves to limit the need for purging and refilling additional potable water per section. Pipelines Sites: Reuse and recycling of drilling fluid in drill rig operations: The satellite sites used to stage and house the required drilling rigs for the treated and brine pipelines have been assessed meeting the spatial constraints to establish the necessary mixing and recycling unit to limit disposal and maximise reuse of drilling fluid in construction. 	
(Consideration Ref: 7.1.11)	Distillation of drilling fluid	Unviable	<i>Implementation:</i> Not feasible for Project implementation	Pipelines Sites: Transport, detention, and treatment of drilling fluid post drilling: The logistical and technical requirements of transporting drilling fluid from drill sites to the main AWRC compound to a treatment plant capable of separating the two mixtures don't pose an acceptable cost, time or environmental risk the Project is willing to accept. The cost to onboard personnel with the expertise to manage a treatment plant capable of treating the waste, the space required to house the plant and the time to transport the material to the plant past licenced treatment facilities in the area present a negative whole-of-life cost and the water extracted for reuse and bentonite for application to land wouldn't be significant quantities to make the process viable.	•

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Non-potable Water Source	Potential End Use	Evaluation of reuse option	Assessment timeframe/ implementation	Assessment Outcome	
Capture of water from construction activities (Concrete activities, non- destructive digging, surface washing, grit blasting, washing vehicles) (<i>Consideration</i> <i>Ref: 7.1.2</i>)	Concrete activities, ERSED establishment and maintenance (spray grass, soil binder etc.) non- destructive digging, surface/cleaning washing, grit blasting, washing vehicles and plant.	Unviable	Implementation: Not feasible for Project implementation	 AWRC & Pipelines sites: Concrete activities, non-destructive digging, surface/cleaning washing, grit blasting, washing vehicles and plant wastewater. Utilising the above identified wastewater (detailed in section 7.1.2) as a potential non-potable water source for re-use has been assessed by the Project and concluded as non-viable for both AWRC and pipelines for the following reasons: Not a significant end use during the construction phase (<5%). Immaterial and inconsistent quantities based on the concrete design and construction staging make capture, storage, and treatment unviable for financial payback consistent with the construction period and if treated wouldn't provide a positive reduction in order of magnitude for the work delivered. Logistically, establishment of a water treatment system/plant won't be possible due to spatial and staging constraints within areas of digging, washing, blasting, drilling, concrete pours and subsequent curing activities. Pumping of the remaining water to a treatment plant outside the work zone would be limited and inconsistent in the result as the majority of wastewater used will be absorbed and/or evaporate making capture and pumping prohibitive. The small quantity of wastewater captured through washout processes in site designated washout areas in accordance with environmental management practices has been assessed as technically unviable for on-site treatment due to the inconsistent mixture and quality of the water. As such this will be removed to a licensed wastewater treatment facility with processes and systems in place to treat such water in accordance with relevant regional wastewater legislation. Technically, the inconsistent quality of wastewater and requirement for high quality water for concrete curing as per batcher specifications, Project civil specifications and the Australian Standard and Project restrict the use to clean water. Wastewater or recycled water that was treated to anything short of th	

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Table 7-5 Water reuse assessment site compound specific (Ancillary site indicative compound layouts provided in Appendix C)

Ancillary facility / site	Area (m²)	Roof Space (m2)	Roof Capture Viable	Water sources	Estimated volumes of rooftop capture	Proposed reuse		Considerations/ constraints	Duration / timeframes
AWRC	3900	1750	Yes, ROI threshold achieved.	Rainwater capture through roof canopy and sediment basins. Captured runoff from road	Monthly =108.79 kL Total = 3263.75 kL	Amenities/ Offices – Office & worker ablution urinal and toilet reuse. Construction activities - dust suppression, compaction, machinery/plant wash down or cleaning and erosion control watering (spray grass etc).	•	Project personnel health risks associated with reusing water captured from the rooftop and stored in tanks. Space constraints prevent water detention tank installation. Financial payback greater than 30 months. – Achieved Logistically and technically not possible to capture rooftop water due to the configuration of the Project offices, lunchrooms, and ablution blocks. Limited access for water trucks for dust suppression and compaction purposes.	30 months
Pipelines - C5	3600	180	No, ROI threshold not met. No, ROI threshold not met.	Potable Mains	Monthly =11.14 kL Total = 133.68 kL	Amenities/ Offices – Office & worker ablution urinal and toilet reuse. Construction activities - dust suppression, compaction, machinery/plant wash down or cleaning and erosion control watering (spray grass etc).	•	Project personnel health for water captured from the rooftop and stored in tanks. Space constraints and Project amenities need limit the amount of available roof space and the adequate space for a water detention tank installation. Financial payback greater than 30 months. Logistically and technically not possible to capture rooftop water due to the configuration of the Project offices, lunchrooms, and ablution blocks. Space constraints prevent sediment basin establishment. Legislative licencing and approval requirements from the EPA or DPE prevent capture and reuse. Limited access for water carts to reuse water within sediment basin.	12 months

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Pipelines - C6	27000	990	No, ROI threshold not met.	Potable Mains	Monthly =61.55 kL Total = 615.45 kL	Amenities/ Offices – Office & worker ablution urinal and toilet reuse. Construction activities - dust suppression, compaction, machinery/plant wash down or cleaning and erosion control watering (spray grass etc).	 Project personnel health for water captured from the rooftop and stored in tanks. Space constraints and Project amenities need limit the amount of available roof space and the adequate space for a water detention tank installation. Financial payback greater than 30 months. Logistically and technically not possible to capture rooftop water due to the configuration of the Project offices, lunchrooms, and ablution blocks. Space constraints prevent sediment basin establishment. Legislative licencing and approval requirements from the EPA or DPE prevent capture and reuse. Limited access for water carts to reuse water within sediment basin. Sub-contractor and supplier capability to supply recycled water or capture and reuse water during construction activities. Health risks associated with reusing construction water or groundwater. Sub-contractors and supplier capability to supply recycled water or capture and reuse water during construction activities. Sub-contractor and supplier capability to supply recycled water or capture and reuse water during construction activities. Sub-contractor and supplier capability to supply recycled water or capture and reuse water during construction activities. Sub-contractor and supplier capability to supply recycled water or capture and reuse water during construction activities. Sub-contractor and supplier capability to supply recycled water or capture and reuse water during construction activities. Sub-contractors and suppliers will alter throughout the construction period providing intermittent sources and no steady supply based on changing scope of works as the Project progresses 	months
Pipelines - C7	12640	250	No, ROI threshold not met.	Recirculating water from construction activities	Monthly =15.56 kL Total = 171.12 kL	Amenities/ Offices – Office & worker ablution urinal and toilet reuse. Construction activities - dust suppression, compaction, machinery/plant wash down or cleaning and erosion control watering (spray grass etc).	• As above. 11 n	months

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Pipelines - C11	4540	350	No, ROI threshold not met.	Potable Mains	Monthly = 21.88 kL Total = 262.59 kL	Amenities/ Offices – Office & worker ablution urinal and toilet reuse. Construction activities - dust suppression, compaction, machinery/plant wash down or cleaning and erosion control watering (spray grass etc).	• As above	12 months
Pipelines - C21	5600	520	No, ROI threshold not met.	Potable Mains	Monthly =32.33 kL Total = 96.98 kL	Amenities/ Offices – Office & worker ablution urinal and toilet reuse. Construction activities - dust suppression, compaction, machinery/plant wash down or cleaning and erosion control watering (spray grass etc).	As above	3 months

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8 Total Water Consumption

The initial water balance assessment for the project has been finalised, detailing the main water usage categories (refer to Appendix A for the comprehensive assessment). The analysis reveals that the primary consumption of water during the construction phase is associated with hydrostatic testing, site acceptance testing, and dust suppression.

Moving forward, the project will continue to evaluate the feasibility of various potential opportunities for water reuse, those which are currently under investigation. Those opportunities deemed feasible and viable, as indicated in Table 7-4, will be integrated. The project is committed to enhancing water reuse and minimising consumption by concentrating on the initiatives outlined in section 6, that address the three main water usage categories highlighted earlier.

After the completion of the feasibility assessment outlined in section 7.2 and the subsequent modelling of proposed water consumption, a refined version of this strategy will be presented to the Planning Secretary. This updated strategy will encompass the project's final stance on the potential for water reuse, derived from the culmination of these analyses.

Water Source	End-use	Volume (ML)		
Mains Water (Potable)	Dust Suppression	73.69		
Mains Water (Potable)	Hydrostatic Testing	89.42		
Mains Water (Potable)	Wet Commissioning	23.88		
Mains Water (Potable)	Non-destructive Digging	4.00		
Mains Water (Potable)	Horizontal Directional Drilling (HDD)	5.27		
Mains Water (Potable) Concrete		1.83		
Aains Water (Potable) Street Sweeping		0.34		
Mains Water (Potable)	Site Compounds - AWRC	5.85		
Mains Water (Potable)	Site Compounds - Pipelines	0.41		
Totals				
Base case water consum	otion	207.94 ML		
Proposed water consump	tion	TBC – Pending final water reuse investigations		
Base case water consum	otion from potable sources	207.94 ML		
Potable water replacemer	nt from alternate sources	TBC – Pending final water reuse investigations		
% Reduction in water con	sumption	TBC – Pending final water reuse investigations		
% Alternate water source	replacement	TBC – Pending final water reuse investigations		

Table 8-1 Summary of water consumption

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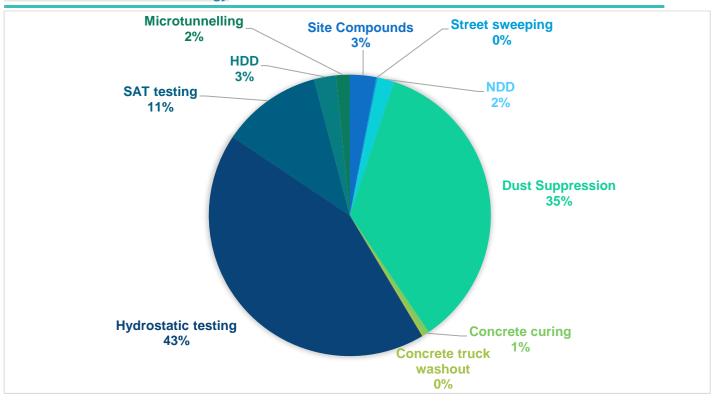


Figure 8-1 Percentage breakdown of water consumption per end use

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9 Monitoring and management

The project's consumption of water summarised within Section 8 of this report will be regularly monitored and reported by John Holland through the establishment and implementation of a monitoring program managed by the project Sustainability Team and implemented by on-site construction personnel and sub-contractors.

The project Sustainability team will review all water use to ensure health and safety of project personnel and to monitor effectiveness of water avoidance and reuse strategies.

The project will monitor all water consumption sources (Table 9-1) throughout the construction phase to evaluate project performance towards ISC requirements and targets defined in Section 3.5.

Audits, inspections, and reviews of project performance, including water reuse, will be undertaken throughout project delivery and at the discretion of the Project Sustainability Manager as required.

Measurement and tracking will be through following measures:

- A permit system for reuse of any rainwater captured on site will be implemented in accordance with procedures set out in the Surface Water & Groundwater CEMP Sub-plan (USCP-JHG-MPL-ENV-0001).
- Water meters and sub-meters at key water use points.
- Water cart load tracking and reuse estimates.
- Smart metering at key locations to allow site water consumption to be monitored and recorded; and
- Project collation and evaluation of data through data collection portals (sub-contractors), Sustainability data registers and dashboards.

Table 9-1 Water data capture sources to be monitored during the Project.

R	esource Type	Source/s	Responsible Party	Frequency
Water	Potable water	Project invoices Subcontractor monthly reports	Sub-contractor, JH Commercial Team	Monthly
		Water meter reads and smart meter dashboard.	Site personnel & Environment & Sustainability team	Monthly
	Non-potable water	Water meter reads	Site personnel & Environment & Sustainability team	Monthly
		Modelled consumption estimates (where water meter reads are unavailable)	Sub-contractor, commercial Environment Team	Monthly
		Subcontractor monthly reports Water Discharge & Reuse Permits		Monthly
	Water discharge	Water meter reads	Site personnel & Environment & Sustainability team	Monthly
		Modelled estimates (where water meter reads are unavailable)		
		Water Discharge & Reuse Permits		

Sustainability performance will be reported as per the requirements of the Sydney Water Engineering and Construction Contract, the EIS and ISC v2.1 credit requirements. The sustainability reports will include details on objectives, targets, indicators, etc. and identify areas for improvement.

Reporting will be conducted as per the Upper South Creek Project reporting requirements (Table 9-2), reporting will be consolidated and reviewed by the Sustainability team and provided to the project client representative monthly though summary dashboards and the public annually by means of the project annual Sustainability Report. The ISC targets set by the project and detailed in Section 3.5 will be reported and project achievement towards documented within the Annual Sustainability Report and ISC rating submissions.

Table 9-2 Project's sustainability reporting requirements

Reporting Requirement	Description	Frequency
Client		
Monthly Sustainability Progress Reporting	A monthly summary of key deliverables, risks, innovations/opportunities and performance summary in meeting sustainability requirements and targets will be provided to Sydney Water, as well as data on carbon emissions, waste disposal, concrete, and steel quantities in the form of dashboards extracted from the Project Sustainability Assurance Platform/tool.	Monthly
Presentation to Project Leadership Team	During design and construction, a quarterly summary of performance against the sustainability objectives and targets stated in section 3.3.1 Project wide targets.	Quarterly
Public Reporting	·	
Annual Sustainability Report	An annual sustainability report will be prepared for John Holland and include a performance update of sustainability requirements, implementation of strategies, targets and initiatives, climate change risks assessments, greenhouse gas reduction initiatives, life cycle assessments, sustainability in procurement and corrective actions taken where non- conformances are identified.	Annual (within 6 months following 21 April each year)
	6 months of the end of the reporting period the 21 st of April each year.	
Legislation		
NGERS Reporting	The Project is required to report sustainability data to John Holland Group to fulfil legislative reporting requirements under the National Greenhouse and Energy Reporting Act 2007 (NGER Act).	Annual (Financial Year)
Infrastructure Sustainabi	lity Council	
ISC rating submissions	John Holland is required to obtain a Gold ISC rating for the Project for the Design and As-Built phases.	End of Design and Construction phases
	Sustainability data captured by John Holland will be used to support the preparation and evidence towards the Project ISC rating submissions.	





10 Conclusion

John Holland is committed to using non-potable water sources and reusing water wherever possible and when feasible. As detailed within this Construction Water Reuse Strategy, currently the project is committed to delivering and further assessing viable water reuse opportunities identified in Table 7-4. The following key limitations require further consideration and assessment prior to the project committing to the delivery of further stormwater harvesting and reuse opportunities:

- Logistical limitations of retaining and reusing portions of the testing water within temporary detention basins that have no design stormwater catchment for use in compaction and dust suppression activities.
- Finalisation and acquisition of the necessary approvals to extract and use surface water during construction from a local waterway or neighbouring property.
- Resolution of limitation in reference to coordinated staging, deviation from specification and quality restrictions, devising a monitoring and treatment regime to enable the reuse of hydrostatic testing and site acceptance testing water.
- Site-specific soil testing is yet to be undertaken to confirm the appropriate settlement rate for the Project HES basin
 and further inform the basins final sizing is yest to be undertaken. Once testing is complete the Project will be able to
 confirm the capacity and ability of the basin to provide a surface and stormwater runoff source of non-potable water
 for reuse on-site.

As the project design and construction progress, John Holland will continue to work collaboratively to find a successful outcome with Sydney Water and our construction partners to make all possible endeavours with project suppliers and sub-contractors through the procurement process, construction planning and onboarding and site establishment processes, to implement the options identified as under review within Table 7-4.

The project will continue to investigate any further identified water reuse options and will seek advice on those options from relevant stakeholders and agencies as needed.

A finalised version of this strategy will be presented to the Planning Secretary upon completion in alignment with the timeline of assessment in Table 7-4. This updated strategy will encompass the project's final stance on the potential for water reuse.

Appendix A: Water Balance Study

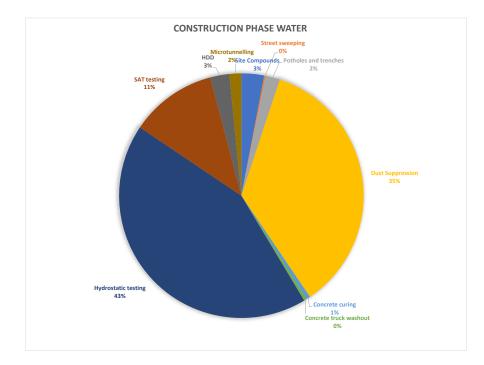
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WAT-1 RESULTS SUMMARY

	Base Case	% Total Contribution	Proposed Case	% Total Contribution	% reduction
CONSTRUCTION PHASE WATER USE					
	Total (ML)	(%)	Total (ML)	(%)	(%)
Site Compounds	6.26	3%			
Street sweeping	0.34	0%			
Potholes and trenches	4.00	2%			
Dust Suppression	73.69	35%			
Concrete curing	1.10	1%			
Concrete truck washout	0.73	0%			
Hydrostatic testing	89.42	43%			
SAT testing	23.88	11%			
HDD	5.27	3%			
Microtunnelling	3.25	2%			
TOTAL Construction	207.94	100%	0	0%	0%
OPERATIONAL PHASE WATER USE					
	Total (ML/lifespan)	(%)	Total (ML/lifespan)	(%)	(%)
TBC					
TOTAL Operation	0	0%	0	0%	0%
TOTAL LIFECYCLE WATER USE	207.94				
LEVEL					



Upper South Creek

 SITE COMPOUNDS

 Results Summary

 Wat: 3
 Base Case (ML)
 Proposed Case (ML)
 N Reduction

 Site Company
 6.55
 4.32
 315

Inputs and Assumptions

Mascot Site Office	Input	Unit		Source
Occupancy (hours)		40 hr/wee		JHSW
Occupancy (days)		5 full day	s/week	JHŚW
	Whole construction P	eriod, however, designer	rs finish in early so	
Duration of use	capacity halves			JHSW
Number of staff				
Female staff on site at one time (average):		30		
Male staff on site at one time (average):		270		Staffing (JHSW)
Total staff on site at one time (average):		300		T
				•

		Base Case				Proposed Case - TBC			
	Star Rating	Water Consumption	Unit	Source	Star Rating	Water Consumption	Unit	Source	
Taps	WELS - 4 stars	7.5	L/min	Responsible Construction	RCLG - push button taps with aera	3.5	L/min		
Toilets	WELS - 3 stars	4	L/flush	Leadership Guidelines (RCLG) and/or	RCLG - 3 stars	4	L/flush	Sustainability Specification, Base Case	
Urinals	WELS - 3 Stars	2	L/flush	Green Star Potable Water Guide	RCLG - 3 stars	2	L/flush	and RCLG min. requirements	
Showers	WELS	7.5	L/min	(2019) & Upper South Creek Base	RCLG	7.5	L/min	and RCCG min. requirements	
Dishwashers	3.5 Stars	1.35	L/place setting	Case Proposal	4 Stars	1.35	L/place setting		

General			Base Case	Proposed Case	- TBC			
	No. uses	Unit	Time per use	Unit		Base Case Daily Consumption Unit	Proposed Case Daily Consumption	Unit
Wash Basin	3.3	per person per day	0.5	m per use	Responsible Construction	12.375 L per person per day	5.775	L per person per day
Toilets	1.3	per person per day	N/A	N/A	Leadership Guidelines (RCLG)	5.2 L per person per day	5.2	L per person per day
1					and/or Green Star Potable Water			
					Guide (2019) & Upper South			
Urinals	2	per person per day	N/A	N/A	Creek Base Case Proposal	4 L per person per day	4	L per person per day
					Responsible Construction			
					Leadership Guidelines (RCLG), &			
					Upper South Creek Base Case			
					Proposal and Green Star			
1 1					Industrial Potable Water			
Showers	0.05	uses per person	5	m per use	Calculator Guide (2010) - Table 1	1.875 L per person per day	1.875	L per person per day
Dishwashers	0.05	per person per day	N/A	N/A	filled with 20 plates before wash	0.0675 L per person per day	0.0675	L per person per day
Kitchen Sink	1	per person per day	0.5	m per use	v1 Potable Water Calculator	3.75 L per person per day	1.75	L per person per day
Water Consumed	1	L per person per day	N/A	N/A	Assumption	1 L per person per day		L per person per day
Water contained	1	c per person per day	ili a	iya	Assumption	1 c per person per ouy		e per person per day

Site data	AWRC Main Compound	C	C6	C7	C11	C21	
Installation Date:		Sep-23	Jan-24	Sep-23	Sep-23	Aug-23	Oct-23
End date:		Dec-25	Apr-24	Jul-24	Aug-24	Aug-24	Jan-24
Duration (months):		27.98	2.99	9.93	11.28	12.03	3.02
Duration (days):		851	91	302	343	366	92
Duration (weeks):		122	13	43	49	52	13
Duration (years):		2.33	0.25	0.83	0.94	1.00	0.25
Working days (6 days a week-2 weekshut down):	695	9.452055	75	248	282	301	76
Female staff on site at one time (average):		30	0	1	1	1	1
Male staff on site at one time (average):		270	0	10	10	30	5
Total staff on site at one time (average):		300	0	11	11	31	6

Calculations

Fittine use

		Base Case					
	AWRC Main Compound	CS	C6	C7	C11	C21	*No confirmed site compound at C5
Wash Basin (L/day)	3712.5	0	136.125	136.125	383.625	74.25	
Toilets female (L/day)	156	0	5	5	5	5	
Toilets male (L/day)	1404	0	52	52	156	26	
Urinals male (L/day)	1080	0	40	40	120	20	
Showers (L/day)	563	0					*No showers in satellite compounds
Dishwashers (L/day)	20	0	1	1	2	0	
Kitchen Sink (L/day)	1125	0	41	41	116	23	
Water Consumed (L/day)	300	0	11	11	31	6	
Total daily consumption (L/day)	8,360		286	286	814	154	
Total monthly consumption (L)	254,291		8,709	8,709	24,764	4,695	
Total construction phase consumption (ML)	5.85		0.07	0.08	0.24	0.01	

	Proposed Case - TBC						
		CS	C6		C11		*No confirmed site compound at C5
Wash Basin (L/day)	1732.5	0	63.525	63.525	179.025	34.65	
Toilets female (L/day)	156	0	5.2	5.2	5.2	5.2	
Toilets male (L/day)	1404	0	52	52	156	26	
Urinals male (L/day)	1080	0	40	40	120	20	
Showers (L/day)	562.5		0	0	0	0	*No showers in satellite compounds
Dishwashers (L/day)	20.25	0	0.7425	0.7425	2.0925	0.405	
Kitchen Sink (L/day)	525	0	19.25	19.25	54.25	10.5	
Water Consumed (L/day)	300	0	11	11	31	6	
Total daily consumption (L/day)	5,780		192	192	548	103	
Total construction phase consumption (ML)	4.04		0.05	0.05	0.16	0.01	

On site Rainwater Tank at AWRC Compound							
	Unit	Value	Source/ Assumptions				
Tank connected to	No.	Toilets	Male toilet, femail toilets and urinals AWR				
Number of tanks	No.	1	AWRC Site compound plan				
Capacity total	L	15000	AWRC Site compound plan				
Roof area available for water collection	m	1750	AWRC Site compound plan				
Mean yearly Average Rainfall	mm	727.5	Bureau of Meteorolog				
Construction Period	months	30	Refer to Appendix				
Maximum potential rain capture per month	kL	108.7	Refer to Appendix				
Total rainfall captured over project	ML	3.261	Construction phase from Sep 23 t December 2				
Total water required	ML	6.26					
Total water replaced	ML	2.64	AWRC site toile				
Total water replaced	%	42%	Formul				

Upper South Creek CONSTRUCTION WATER Results Summary

Results Summury				
Wat-1	Base Case (ML)	Proposed Case (ML) - TBC	% reduction	Comments
Street sweeping - AWRC	0.15			
Street sweeping - Pipelines	0.19			
Potholes and trenches	4.00			
Dust Suppression	73.69			
Concrete curing	1.10			
Concrete truck washout	0.73			
TOTAL	79.86			

Inputs and Calculations

Street sweeping - AWRC						
	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Source	Туре	Potable Water				
Area to be swept	m2	10,000.00				Area provided by Construction team
	m2/day	1,666.67				
Total sweepers	No.	1.00				Water use per Sweeper
Duration	months	27.00				
buuton	days	618.75				Assuming 5.5 working days a week and 50 weeks in a year (2 week shutdown)
Operation hours per day	hrs	8.00				Assume running from 8am to 4pm
Total street sweeper hours	hrs	4,950.00				
Spray per hour	L/hr	30.77				One street sweeper tank consumes approximately 200L of water across 6.5 hours
Total water consumption	L	152,307.69				
Total water consumption	ML	0.15				
Street sweeping - Pipelines				•		ш
Street sweeping - Pipelines	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Street sweeping - Pipelines Source	Unit Type	Potable Water	Proposed Case	Reduction %	Replacement %	
Source	Type m2	Potable Water 80,000.00	Proposed Case	Reduction %	Replacement %	Notes Area provided by Construction team
Source Area to be swept	Туре	Potable Water 80,000.00 13,333.33	Proposed Case	Reduction %	Replacement %	Area provided by Construction team
Source	Type m2	Potable Water 80,000.00	Proposed Case	Reduction %	Replacement %	
Source Area to be swept Total sweepers	Type m2 m2/day	Potable Water 80,000.00 13,333.33 1.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team
Source Area to be swept	Type m2 m2/day No.	Potable Water 80,000.00 13,333.33 1.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team
Source Area to be swept Total sweepers	Type m2 m2/day No. Date	Potable Water 80,000.00 13,333.33 1.00 27.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Water use per Sweeper Assuming 5.5 working days a week and 50
Source Area to be swept Total swepers Duration	Type m2 2. No. Date Days	Potable Water 80,000.00 13,333.33 1.00 27.00 618.75	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Water use per Sweeper Assuming 5.5 working days a week and 50 weeks in a year (2 week shutdown)
Source Area to be swept Total sweepers Duration Operation hours per day	Type n2 m2/day No. Date Days hrs	Potable Water 80,000.00 11,333.33 1.00 27.00 618.75 10.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Water use per Sweeper Assuming 5.5 working days a week and 50 weeks in a year (2 week shutdown)
Source Area to be swept Total sweepers Duration Operation hours per day Total street sweeper hours	Type n2 m2/day No. Date Days hrs. hrs.	Potable War5 80,000.01 13,133.33 1.00 27.00 618.75 1.00 6,187.50	Proposed Cave	Reduction %	Replacement %	Area provided by Construction team Water use per Sweeper Assuming 55 working days a week and 50 weeks in a year (2 week shutdown) Assume running from Zant 65 pm One street sweeper tank consumpes

Dust Suppression DEMOLITION - AWRC						
DEMOLITION * AWAC	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Total Exposed Area to be dust suppressed	m2	15,000.00				Area provided by Construction Team
Demolition program	Weeks	3.00				Demolition Program
	Days	16.50				Assume 5.5 working days a week
Hours per day	Hrs/day	10.00				
	days/annual	68.90				Source: BOM Mean number of days of
Average days rainfall	days/week	1.33				rain >=1mm at Badgerys Creek
Days requiring dust suppression	days/week days	1.33 12.53				
Water Cart used	ouys	15,000.00				Assume 15,000L Water cart
Daily Water use rate	L/day	45,000.00				Assumption - 3 fills of water cart per day
Water Consumption rate per day	L/m2	3.00				
Total Consumption (L)	L	563,625.00				
Total water consumption	ML	0.56				
Dust Suppression SITE STRIPPING (TOPSOIL) - AWRC						
Site Sharring (Tor Sole) - Anne	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Site area cleared	m2	168,500.00				Source: Plant Programme - Inlet, Permanent
Site area cleared	m2	168,500.00				OSD Basin, ACM, Bench.
						Period of exposure prior to install of
						hardstand and application of spray seal and internal roads
Time Site Clearing Phase	months	3.00				incental robots
						Souce: Plant Programme - August 2023 to
						November 2023. No 2 week shutdown.
	weeks	13.00				
Average days rainfall	days/annual	68.90				Source: BOM Mean number of days of rain >=1mm at Badgerys Creek
Average days raintail	days/month	5.74				rain >=1mm at Badgerys Creek
	uays/month	5.74		1	1	
Days requiring dust suppression	days	54.28				Assuming 5.5 working days a week - 700-1700 Monday to Friday and 800 - 1300 Saturday
						Monday to Friday and 800 - 1500 Saturday
Water Cart used	L/load	15,000.00				
Average Number of Refills per day Daily Water use	No.	5.00 75,000.00				Assume 5 refills of water cart per day
Water Consumption rate per day	L L/m2	0.45				
Total Consumption (L)	içinz	4,070,625.00				
Total Consumption (ML)	ML	4,070,023.00				
					1	1
Dust Suppression						
STOCKPILES - AWRC						
	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Stockpiled material requiring dust suppression	Unit m2	Base Case 50,000.00	Proposed Case	Reduction %	Replacement %	Notes Area provided by Construction team
Stockpiled material requiring dust suppression Water use rate for dust suppression (day)		Base Case 50,000.00	Proposed Case	Reduction %	Replacement %	
	m2	50,000.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for
	m2	50,000.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demolition dust supression. Based on
	m2 L/m2	50,000.00 3.00 2.00 100.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demolition dust supression. Based on 15,000L water carts and 3 refills per day Assume 2 week shutdown per year
Water use rate for dust suppression (day)	m2 L/m2 years	50,000.00 3.00 2.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demotilion dust supersion. Based on 15,000L water carts and 3 refills per day Assume 2.5 working days a week
Water use rate for dust suppression (day)	m2 L/m2 years weeks days	50,000.00 3.00 2.00 100.00 550.00	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demolinion dus tupersion. Based on 15,000L water carts and 3 refilis per day Assume 2 week shutdown per year Assume 5.5 working days a week Source: BOM Mean number of days of.
Water use rate for dust suppression (day) Period of Exposure	m2 L/m2 years weeks days days/annual	50,000.00 3.00 2.00 100.00 550.00 68.90	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demotilion dust supersion. Based on 15,000L water carts and 3 refills per day Assume 2.5 working days a week
Water use rate for dust suppression (day)	m2 L/m2 vears weeks days days/ancut day/ancut	50,000.00 3.00 2.00 100.00 550.00 68.90 5.74	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demolinion dus tupersion. Based on 15,000L water carts and 3 refilis per day Assume 2 week shutdown per year Assume 5.5 working days a week Source: BOM Mean number of days of.
Water use rate for dust suppression (day) Period of Exposure Average days rainfall	2m CmU Scavy veess days days days/moth days/weet	50,000.00 3.00 2.00 550.00 68.90 5.74 0.02 68.90 3.74 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.0	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWEC demoliton dast supersion. Based on 15,000 water casts and 3 refils per day Assume 2 week shutdown per year Assume 2 so vonting days a week Source. BOM Mean number of days of rain >= Imm at Badgerys Creek.
Water use rate for dust suppression (day) Period of Exposure	m2 L/m2 vears weeks days days/ancut day/ancut	50,000.00 3.00 2.00 100.00 550.00 68.90 5.74	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWRC demolinion dust supersion. Based on 15,000L water carts and 3 refilis per day Assume 2 week shutdown per year Assume 5.5 working days a week Source: BOM Mean number of days of.
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U)	m2 بر ایس پرمی طوبی طوبی مرابع طوبی(weak طوبی طوبی طوبی طوبی طوبی طوبی طوبی طوبی	50,000.00 3.00 1000.00 550.00 6.8.30 5.74 0.82 0.9.81 14,875,954.39	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based of water communition in the of day for AWDC clemotition dast supersion. Based on 15,000, water carts and 3 refils per day Assume 2 week rutudown per year Assume 5.5 sorting days a week Source: BOM Mean number of days of pain = sinm at Badgers; Creek
Water use rate for dust suppression (day) Period of Exposure Average days rainfalt Days requiring dust suppression	2m CmU Scavy veess days days days/moth days/weet	50,000.00 3.00 2.00 550.00 68.90 3.74 4.0.22 9.9.18	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based of water communition in the of day for AWDC clemotition dast supersion. Based on 15,000, water carts and 3 refils per day Assume 2 week rutudown per year Assume 5.5 sorting days a week Source: BOM Mean number of days of pain = sinm at Badgers; Creek
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (1) Total Consumption (ML)	m2 بر ایس پرمی طوب طوب مرابع طوب رابی طوب رابی طوب رابی طوب رابی طوب رابی مراب مراب مراب مراب مراب مراب مراب مراب	50,000.00 3.00 1000.00 550.00 6.8.30 5.74 0.82 0.9.81 14,875,954.39	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based of water communition in the of day for AWDC clemotition dast supersion. Based on 15,000, water carts and 3 refils per day Assume 2 week rutudown per year Assume 5.5 sorting days a week Source: BOM Mean number of days of pain = sinm at Badgers; Creek
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U) Total Consumption (M) Dost Suppression	m2 بر ایس پرمی طوب طوب مرابع طوب رابی طوب رابی طوب رابی طوب رابی طوب رابی مراب مراب مراب مراب مراب مراب مراب مراب	50,000.00 3.00 1000.00 550.00 6.8.30 5.74 0.82 0.9.81 14,875,954.39	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption rate per day for AWEC demoliton dast supersion. Based on 15,000 water casts and 3 refils per day Assume 2 week shutdown per year Assume 2 so vonting days a week Source. BOM Mean number of days of rain >= Imm at Badgerys Creek.
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (1) Total Consumption (ML)	m2 J/m2 years dwets day/meth day/meth day/weth day/weth day. dys M	50,000.00 3.00 100,00 556,00 5,54 0,42 9,913 14,875,542.39 14,88				Area provided by Construction team Bared on water consumption rate per day for AWBC demolition dast supression. Based on 15,000L water carts and 3 refilis per day Assume 5.5 working daya aver Assume 5.5 working daya aver Source. BOH Mean number of days of path >= 1mm at Badgerss Creek. Assume 1 wet down of stockpiles per week
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U) Total Consumption (ML) Oust Suppression STOCKPILES - Pipelines	m2 بر ایس پرمی طوبی طوبی مرابع طوبی(weak طوبی طوبی طوبی طوبی طوبی طوبی طوبی طوبی	50,000.00 3.00 1000.00 550.00 6.8.30 5.74 0.82 0.9.81 14,875,954.39	Proposed Case Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water consumption ratio per day for AWRC demolition dast supression. Based on 15,000, water carts and 3 refills per day Assume 2 week shutdown per year Assume 5.5 working days a week Source: BOM Mean number of days of rain >=1mm at Badgerys Creek Assume 1 x wet down of stockpiles per week
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (L) Total Consumption (ML) Dust Suppression STOCKPLES - Pipelines Exposed area to be dust suppressed	m2 Jm2 yeasy weeky days/annaat days/meat days/ days days days Mt Mt Unit m2 m2 Mt Unit	50,000,00 3,00 100,000 550,00 5,524 0,921 0,9,13 14,27,564.29 14,27,57,57,57,57,57,57,57,57,57,57,57,57,57				Area provided by Construction team Bared on water consumption rate per day for AWBC demolition dast supression. Based on 15,000L water carts and 3 refilis per day Assume 5.5 working daya aver Assume 5.5 working daya aver Source. BOH Mean number of days of path >= 1mm at Badgerss Creek. Assume 1 wet down of stockpiles per week
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U) Total Consumption (ML) Oust Suppression STOCKPILES - Pipelines	2m سرل رسی veas day day day day,vaet day,vaet day,vaet day day day day day day day day day day	50,000.00 3.00 2.00 555.00 68.30 3.57 4.87 9.913 14,876,964.23 14.876,964.23 14.876,964.23 14.875,964.23 15.000,964.2315.0000,965.2515.0000,965.2515.0000,965.2515.000				Area provided by Construction team Based on water consumption rate per day for AVBCC demoliton dast superssion. Based on 15,000L water carts and 3 refils per day Assume 2 week shutdown per year Assume 3 so working daya a week Source. BOM Mean number. of days. of an as-simm at Badgerys Creek Assume 1 x wet down of stockpiles per week Source. G5 site layout, stockpile area Reference. Dust Meangement Plan, Meriton Site, URS, 009
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consumption (M) Dott Suppression STOCKPILES - Pipelines Exposed area to be dust suppressed Water use rate for dust suppression (day)	۳ 2 (س) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳3) (۲73) (773) (77	50,000.00 3,00 2,000 5550.00 5,574 0,823 99,13 14,076,964.29 34,00 34,00 5,574 0,22 99,13 14,076,964.29 31,00 0,055 10,00 0,055 10,00				Area provided by Construction team Saed on welco consumption ratio per day for AWRC demolition dast supression. Based on 15,000, used carts and 3 relfis per day Assume 2 week shutdown per year Assume 5.5 working daya a week Source: BOM Mean number of days of rain >=1mm at Badgerys Creek Assume 1 x wet down of stockpiles per week Assume 1 x wet down of stockpiles per week Notes Notes Beference: Edste layout, stockpile area Beference: Edste Davagement Plan, Merton
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (L) Total Consumption (ML) Dust Suppression STOCKPLES - Pipelines Exposed area to be dust suppressed	2m cm,U cm,U veas days days/meth days/week days/week days/week days/week days/week days/week days/week days/week days/days/days/days/days/days/days/days/	50,000.00 3,00 2,00 5550.00 5,574 0,82 0,931 14,876,9429 14,876,9429 3551.00 0,05 10,00 4,333				Area provided by Construction team Based on water communition in the or day for AWDC demolition dast supersion. Based on 15,000. water carts and 3 refils: per day Assume 5.5 andring days a week Assume 5.5 andring days a week Source: CB So Andrig days a week International Source: CB Sou
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consumption (M) Dott Suppression STOCKPILES - Pipelines Exposed area to be dust suppressed Water use rate for dust suppression (day)	۳ 2 (س) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳۵) (۲۳3) (۲73) (773) (77	50,000.00 3,00 2,000 1000.00 550,00 552,00 5,524 9,93 14,876,964,29 8886 8886 8886 8886 8886 8886 8886 88				Area provided by Construction team Date of water communition in the ever day for AVMC demolition dast supersion. Based on 15,000, water carts and 3 refiles per day assume 2 week shutdown per veet Assume 5 working days a week Sources: DMA Makes number of days of rain s=1mm at Badgerys Creek Assume 1 a wet down of stockpites per week Nation Nation Nation Source: GS Bit layoud, stockpite area Source: GS Bit layoud, stockpite Source: GS Bit layoud, s
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (NL) Dout Suppression STOCKPLLS - Peelnet Exposed area to be dust suppression (day) Period of exposure	2m cm,U cm,U veas days days/meth days/week days/week days/week days/week days/week days/week days/week days/week days/days/days/days/days/days/days/days/	50,000.00 3,00 2,00 5550.00 5,574 0,82 0,931 14,876,9429 14,876,9429 3551.00 0,05 10,00 4,333				Area provided by Construction team Assume 1 approximate processing the period of the p
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consumption (M) Dott Suppression STOCKPILES - Pipelines Exposed area to be dust suppressed Water use rate for dust suppression (day)	2m (m) (m2) (m2) (m3) (m3) (m3) (m3) (m3) (m3) (m3) (m3	50,000.00 3,00 1000.00 550.00 557.47 0,022 99.18 14,075,964.29 14,075,964.29 14,007 14				Area provided by Construction team Based on weter consumption rate per day for AWBC demolition dust supression. Based on 15,000L water carst and 3 refills per day Assume 2 seek shutdown per year Assume 5 Sworking days a week Source: BON Mean number of days of rain >=1 mm at Badgerys Creek Assume 1 x wet down of stockpiles per week Assume 1 x wet down of stockpiles per week Source: CSI the topod, stockpile streas Source of operation for C6
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (NL) Dout Suppression STOCKPLLS - Ppelines Exposed area to be dust suppression (day) Water use rate for dust suppression (day) Period of exposure Average days rainfall	۲m (m) (m) (m) (m) (m) (m) (m) (m) (m) (m	50,000.00 3,00 2,00 5550.00 5,570 0,68,590 0,82 0,931 14,876,9429 14,876,9429 14,876,9429 14,876,9429 14,876,9429 14,883 14,876,9429 14,883 14,876,9429 14,883 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,45 10,00 0,55 0,00 0,57 0,00 0,57 0,00 0,57 0,00 0,57 0,00 0,00				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 5.5 andring days a week Assume 5.5 andring days a week assume 1.5 andring days a week assume 1.5 andring days a week base of the supersite of th
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consumption (M4) Dist Suppression Exposed area to be dust suppression Exposed area to be dust suppression Period of exposure Average days rainfall Days requiring dust suppression	2m (m) (m2) (m2) (m3) (m3) (m3) (m3) (m3) (m3) (m3) (m3	50,000.00 3,00 1000.00 550.00 557.47 0,022 99.18 14,075,964.29 14,075,964.29 14,007 14				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 5.5 andring days a week Assume 5.5 andring days a week assume 1.5 andring days a week assume 1.5 andring days a week base of the supersite of th
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (NL) Dout Suppression STOCKPLLS - Ppelines Exposed area to be dust suppression (day) Water use rate for dust suppression (day) Period of exposure Average days rainfall	۲m (m) (m) (m) (m) (m) (m) (m) (m) (m) (m	50,000.00 3,00 1000.00 550.00 550.00 5,574 0,022 99.13 14,075,964.29 14,007 88s6 Case 351.00 0,055 1000 0,453 1000 0,453 1000 0,453 1000 0,453 1000 0,453 1000 1000 1000 1000 1000 1000 1000 10				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 1.1 wet down of stockplies per week Assume 1.1 wet down of stockplies per week Assume 5.5 andring days, todcyples area Reference: Dust Management Plan, Mertion Step, UK, 2009 Period of operation for C6 Source: DOM Mean number of days of
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption () Dust Suppression STOCKPLLS - Ppelnes Exposed area to be dust suppression (day) Water use rate for dust suppression (day) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption () Total Consumption () Total Consumption ()	2m (m,) (m,) (m,) (m,) (m,) (m,) (m,) (m,	50,000.00 3,00 1000.00 550.00 550.00 5,574 0,022 99.13 14,075,964.29 14,007 88s6 Case 351.00 0,055 1000 0,453 1000 0,453 1000 0,453 1000 0,453 1000 0,453 1000 1000 1000 1000 1000 1000 1000 10				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 1.1 wet down of stockplies per week Assume 1.1 wet down of stockplies per week Assume 5.5 andring days, todcyples area Reference: Dust Management Plan, Mertion Step, UK, 2009 Period of operation for C6 Source: DOM Mean number of days of
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U) Total Consumption (M) Exposed area to be dust suppression Exposed area to be dust suppression Exposed area to be dust suppression Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consum	2m (m,) (m,) (m,) (m,) (m,) (m,) (m,) (m,	50,000.00 3,00 1000.00 550.00 550.00 5,574 0,022 99.13 14,075,964.29 14,007 88s6 Case 351.00 0,055 1000 0,453 1000 0,453 1000 0,453 1000 0,453 1000 0,453 1000 1000 1000 1000 1000 1000 1000 10				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 1.1 wet down of stockplies per week Assume 1.1 wet down of stockplies per week Assume 5.5 andring days, todcyples area Reference: Dust Management Plan, Mertion Step, UK, 2009 Period of operation for C6 Source: DOM Mean number of days of
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption () Dust Suppression STOCKPLLS - Ppelnes Exposed area to be dust suppression (day) Water use rate for dust suppression (day) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption () Total Consumption () Total Consumption ()	2m (m,) (m,) (m,) (m,) (m,) (m,) (m,) (m,	50,000.00 3,00 1000.00 550.00 550.00 5,574 0,022 99.13 14,075,964.29 14,000 14,000 0,055 10,000 0,055 10,000 0,053 10,000 0,053 10,000 0,000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 1.1 wet down of stockplies per week Assume 1.1 wet down of stockplies per week Assume 5.5 andring days, todcyples area Reference: Dust Management Plan, Mertion Step, UK, 2009 Period of operation for C6 Source: DOM Mean number of days of
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U) Total Consumption (M) Exposed area to be dust suppression Exposed area to be dust suppression Exposed area to be dust suppression Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consum	2m (m,) (m,) (m,) (m,) (m,) (m,) (m,) (m,	50,000.00 3,00 1000.00 550.00 550.00 5,574 0,022 99.13 14,075,964.29 14,000 14,000 0,055 10,000 0,055 10,000 0,053 10,000 0,053 10,000 0,000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000 10,0000				Area provided by Construction team Based on water communition in the or day for AWDC clemolition dast supersion. Based on 15,000. water carts and 3 refils per day Assume 5.5 andring days a week Assume 1.1 wet down of stockplies per week Assume 1.1 wet down of stockplies per week Assume 5.5 andring days, todcyples area Reference: Dust Management Plan, Mertion Step, UK, 2009 Period of operation for C6 Source: DOM Mean number of days of
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (L) STOCKPLLS - Pigelinet Exposed area to be dust suppression STOCKPLLS - Pigelinet Record area to be dust suppression (day) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (Ms) Days requiring dust suppression Total Consumption (Ms) Days requiring dust suppression Total Consumption (Ms) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (Ms) Dats Suppression Fill/OPEN TENCH - AWRC	m2 J/m2 Venti dary/anab dary/month dary/month dary/month dary/month dary/month dary/month L Mu Unit dary dary dary L L dary dary dary Mu Mu dary Mu Mu dary Mu dary Mu Mu dary Mu Mu dary Mu Mu Mu Mu Mu Mu Mu Mu Mu Mu Mu Mu Mu	50,000.00 3,00 2,000 5550.00 5,574 0,823 3,14,076,964.29 3,14,076,964.29 3,14,076,964.29 3,14,076,964.29 3,14,00 0,45 3,1000000000000000000000000000000000000	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Based on water communition on the end sky for AVMC demolition dust supersion. Based on 15,000, water cuts and 3 refiles per day Assume 2 week shutdrown per year Assume 2 week shutdrown per year Assume 5 working days a week Source: 00M Nean number of days of rain >>1 wet down of stockpiles per week Assume 1 s wet down of stockpiles per week Source: 05 Stockpiles the stock of the stock of the stock of Source: 05 Min Management Plan, Mertion Ste, UK, 2009 Period of operation for C6 Source: 05 Min Mean number of days of parts Source: 05 Min Mean number of days of parts Source: 05 Min Mean number of days of parts Source: 05 Min Mean number of days of parts Source: 05 Min Mean number of days of parts Source: 05 Min Mean number of days of parts Notes Notes
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (U) Total Consumption (M) Exposed area to be dust suppression Exposed area to be dust suppression Exposed area to be dust suppression Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (J) Total Consum	2m (m) (m) (m) (m) (m) (m) (m) (m) (m) (m	50,000.00 3,00 1000.00 550.00 550.00 5,574 0,92 0,93 14,878 5,574 0,92 0,93 14,878,584.29 14,878 14,9788 14,9788 14,9788 14,9788 14,9788 14,9788 14,9788 14,	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Bared on water consumption rate per day for AWBC demolition dast supersion. Based on 15,000L water carts and 3 refils per day for Assume 2 week shutdown per year Assume 2 so working days a week Source. BOM Mean number of days of an a-a imm at Badgenys Creek Notes Source: C6 Stle layout, stockpile area Reference: Dust Management Plan, Meriton Ste, UKS, 2009 Period of operation for C6 Source: BOM Mean number of days of rain >= imm at Badgenys Creek
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (L) Total Consumption (ML) Dust Suppression STOCKPLLS - Pigelines Exposed area to be dust suppression (day) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (ML) Total Consumption (ML) Days requiring dust suppression Total Consumption (ML) Total Consumption (ML) Total Suppression Total Consumption (ML) Total Suppression	m2 J/m2 Venti dary/anab dary/month dary/month dary/month dary/month dary/month dary/month L Mu Unit dary dary dary L L dary dary dary Mu Mu dary dary dary Mu dary d	50,000.00 3,00 2,000 5550.00 5,574 0,823 3,14,076,964.29 3,14,076,964.29 3,14,076,964.29 3,14,076,964.29 3,14,00 0,45 3,1000000000000000000000000000000000000	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Bard on water consumption rate per day for AWBC demolition dast supersion. Based on 15,000L water carts and 3 refils per day Assume 5.5 working daya avek Source. BOH Ardan number of days of annovember of the superside team of team
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (L) STOCKPLLS - Pigelinet Exposed area to be dust suppression STOCKPLLS - Pigelinet Record area to be dust suppression (day) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (Ms) Days requiring dust suppression Total Consumption (Ms) Days requiring dust suppression Total Consumption (Ms) Period of exposure Average days rainfall Days requiring dust suppression Total Consumption (Ms) Dats Suppression Fill/OPEN TENCH - AWRC	یب ایسار ای ای ای ا ای ای ای ای ای ای ای ای ای ای ای ای ای ای ای ای ای ای ا	50,000.00 3,00 2,000 100,000 5550,00 5,574 0,232 9,313 14,876,544.29 3,448 4,448 4,448 4,448 4,448 4,448 4,448 4,448 4,448 4,448 4,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,4484,448 4,448 4,4484,448 4,4484,448 4,448 4,4484,448 4,4484,448 4,448 4,4484,448 4,4484,448 4,4484,448 4,4484,448 4,4484,448 4,4	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Bard on weter consumption rate per day for AWRC demolition dust supression. Based on 15,000. Weter carts and 3 refilts per day Assume 25 working days a week Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Notes Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Source: Rain Programme Source: Plant
Water use rate for dust suppression (day) Period of Exposure Average days rainfall Days requiring dust suppression Total Consumption (I) Total Consumption (I) Total Consumption (I) Period of exposure Average days rainfall Days requiring dust suppression (day) Period of exposure Average days rainfall Days requiring dust suppression (day) Resource Average days rainfall Days requiring dust suppression (day) Resource Average days rainfall Days requiring dust suppression (day) Resource Average days rainfall Days requiring dust suppression (day) Resource Average days rainfall Days requiring dust suppression (day) Resource Total Consumption (ML) Total Consumption (ML) Total Consumption (ML) Total Consumption (ML) Resource Constraints C		50,000,00 3,00 2,00 556,00 556,00 556,00 5,54 10,075,564,29 14,876,564,29 14,876,564,29 14,876,564,29 14,876,564,29 14,876,564,29 14,876 14,876 14,876 14,876 10,00 0,455 10,00 0,455 10,00 0,455 10,00 0,455 10,000 10,000 10	Proposed Case	Reduction %	Replacement %	Area provided by Construction team Bard on weter consumption rate per day for AWRC demolition dust supression. Based on 15,000. Weter carts and 3 refilts per day Assume 25 working days a week Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Notes Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Source: Bond Mean number of days of rain >=1 m at Badgerys Creek Notes Source: Rain Programme Source: Plant

Period of exposure						12 months of work, assumption from "Copy o
Tendo of exposure	days	250.00				Water Reuse_MT [*] , assume 5 working days a
						week and 2 weeks shutdown
Days requiring dust suppression	days	181.10				Total days in a year minus annaul rainfall days
Equipment capacity	L	30.000.00				Based off 3 water carts (10,000L each)
						Assume 2 fill of water cart for 3 water carts
Daily usage	L/day	60,000.00				per day
Water use rate for dust suppression (day)	L/m2	1.41				[1: 0]
Total Consumpction (L)	cy m2	10,866,000.00				
Total water consumption	ML	10,880,000.00				
Total water consumption	ML	10.87				
Dust Suppression						
FILL/OPEN TRENCH - PIPELINES						
	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Total Exposed Area to be dust suppressed	m2	120,000.00				Provided by Construction Manager and Team
	days/annual	68.90				Source: BOM Mean number of days of
Average days rainfall	uays/annuar					rain >=1mm at Badgerys Creek
	days/month	5.74				
	months	12.00				Construction Programme
	montais	12.00			-	12 months of work from construction
Period of exposure	days	275.00				programme, assume 5.5 working days a week
	uays	273.00				and 2 weeks shutdown
					-	
Days requiring dust suppression	days	206.10				Total days in a year minus annaul rainfall days
Equipment capacity		30,000.00				Based off 3 water carts (10,000L each)
Equipment capacity	L	30,000.00				
Daily usage	L/day	60,000.00				Assume 2 fill of water cart for 3 water carts
						per day
Water use rate for dust suppression (day)	L/m2	0.50				
Water use rate for dust suppression (day) Total Consumpttion (L)	L	0.50 12,366,000.00				
	L/m2 L ML					
Total Consumption (L)	L	12,366,000.00				
Total Consumption (L) Total water consumption	L	12,366,000.00				
Total Consumpotion (L) Total water consumption Dust Suppression	L	12,366,000.00				
Total Consumption (L) Total water consumption	L ML	12,366,000.00 12.37	Descend Core	Raduction V	Backsonnest V	Nata
Total Consumpotion (L) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC	L ML Unit	12,366,000.00 12.37 Base Case	Proposed Case	Reduction %	Replacement %	Notes
Total Consumpotion (L) Total water consumption Dust Suppression	L ML	12,366,000.00 12.37	Proposed Case	Reduction %	Replacement %	Source: Plant Programme
Total Consumpotion (L) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area	L ML Unit m2	12,366,000.00 12.37 Base Case 61,400.00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of
Total Consumpotion (L) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC	L ML Unit m2 days/annual	12,366,000.00 12.37 Base Case 61,400.00 68.90	Proposed Case	Reduction %	Replacement %	Source: Plant Programme
Total Consumpotion (L) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area	L ML Unit m2	12,366,000.00 12.37 Base Case 61,400.00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of rain >=1mm at Badgerys Creek
Total Consumpotion (L) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area	L ML Unit m2 days/annual	12,366,000.00 12.37 Base Case 61,400.00 68.90	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of
Total Consumption (U) Total Water consumption Dust Suppression BULK CARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall	L ML Unit m2 days/annual	12,366,000.00 12.37 Base Case 61,400.00 68.90	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of rain >=1nm at Badgerys Creek Period of exposure assumption from "Copy of
Total Consumpotion (L) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area	L Mt Unit m2 day(annal day/month	12,366,000.00 32.37 Base Case 61,400.00 68.90 5.74	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of rain >=1mm at Badgerys Creek, Period of exposure assumption from "Copy of Water Reuse_MT] from Engineers and Site
Total Consumption (U) Total Water consumption Dust Suppression BULK CARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall	L ML Unit n2 days/month days/month months	12,86,000.00 12,37 8550 Case 61,400,00 6,574 5,74 24,00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of rain >=1nm at Badgerys Creek Period of exposure assumption from "Copy of
Total Consumption [1] Total water consumption Divert Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure	L ML Unit m2 days/monut days/monut months days/months days/days	12,86,000.00 12.37 Base Case 61,400.00 6.8.50 5.76 2.4.00 5.50.00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of rain >=1mm at Badgerys Creek, Period of exposure assumption from "Copy of Water Reuse_MT] from Engineers and Site
Total Consumption [1] Total water consumption But KEARTHWORKS CUT TO FILL - AWRC BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression	L ML Unit n2 days/month days/month months	12,86,000.00 12,32 68,000 61,400.00 68,39 5,74 24,00 5,52 24,00 550,00 412,20	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of caln -s stimn at Badgerys Creek. Period of exposure assumption from "copy of Water Reuse_MT) from Engineers and Site Supervisor
Total Consumption [1] Total water consumption Divert Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity	L Mt Unit ayşı/annus dəşr,/annus months dəşş dəşş dəşş dəşş	12,86,000.00 12.37 Base Case 61,400.00 6.830 5.74 2.400 5.500 4.12.20 15,000.00	Proposed Case	Reduction X	Replacement X	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Duly usage	L ML Unit m2 days/monut days/monut months days/months days/days	12,86,000.00 12,32 8550 Case 61,400,00 6,30 5,74 24,00 550,00 412,20 15,000,00 75,000,00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: BOM Mean number of days of caln -s stimn at Badgerys Creek. Period of exposure assumption from "copy of Water Reuse_MT) from Engineers and Site Supervisor
Total Consumption (1) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total Consumption (1)	L Mt Mt Unit m2 days/annual days/montal days/montal days days days L L/day L L/day L L/day	12,86,000.00 12.33 Base Case 61,400.00 6.8 30 5.74 2.4.00 5.50 4.402 5.500 4.12.20 1.5,000.00 7.5,000.00 30,915,500.00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Duly usage	L Mt Unit ayşı/annus dəşr/annus months dəşş dəşş dəşş	12,86,000.00 12,32 8550 Case 61,400,00 6,30 5,74 24,00 550,00 412,20 15,000,00 75,000,00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption (1) Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total Consumption (1)	L Mt Mt Unit m2 days/annust days/mouth months days days days L L/day L L/day L L/day	12,86,000.00 12.33 Base Case 61,400.00 6.8 30 5.74 2.4.00 5.50 4.402 5.500 4.12.20 1.5,000.00 7.5,000.00 30,915,500.00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Disst Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Daily suppression Equipment capacity Total water consumption [1] Total water consumption	L Mt Mt Unit m2 days/annust days/mouth months days days days L L/day L L/day L L/day	12,86,000.00 12.33 Base Case 61,400.00 6.8 30 5.74 2.4.00 5.50 4.402 5.500 4.12.20 1.5,000.00 7.5,000.00 30,915,500.00	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Feridad consumption [1] Total days usage Total consumption Total avater consumption	L ML Unit day/month day/month months day day day day day day day day day day	12,86,000.00 1233 88xe Case 61,400.00 68.59 5.54 24.00 550.00 412.29 15,000.00 75,000.00 39,915,000.00 88.82	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total Total water consumption	L L ML Unit m2 days/mouth days/mouth days/mouth days/ days/ days/ L L/day L L/day L L/day L ML	12,86,000.00 12.33 Base Case 61,400.00 68.90 5.74 24.00 550.00 412.20 15,000.00 75,500.00 30,915,500	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Feridad consumption [1] Total days usage Total consumption Total avater consumption	L ML Unit day/month day/month months day day day day day day day day day day	12,86,000.00 1233 88xe Case 61,400.00 68.59 5.54 24.00 550.00 412.29 15,000.00 75,000.00 39,915,000.00 88.82	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total Total water consumption	L L ML Unit m2 days/mouth days/mouth days/mouth days/ days/ days/ L L/day L L/day L L/day L ML	12,86,000.00 12.33 Base Case 61,400.00 68.90 5.74 24.00 550.00 412.20 15,000.00 75,500.00 30,915,500	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Days requiring dust suppression Total water consumption Total water consumption Total water consumption	L L ML Unit m2 days/mouth days/mouth days/mouth days/ days/ days/ L L/day L L/day L L/day L ML	12,86,000.00 12.33 Base Case 61,400.00 68.90 5.74 24.00 550.00 412.20 15,000.00 75,500.00 30,915,500	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total Total water consumption	L L ML Unit m2 days/mouth days/mouth days/mouth days/ days/ days/ L L/day L L/day L L/day L ML	12,86,000.00 12.33 Base Case 61,400.00 68.90 5.74 24.00 550.00 412.20 15,000.00 75,500.00 30,915,500	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Days requiring dust suppression Total water consumption Total water consumption Total water consumption	L L ML Unit m2 days/mouth days/mouth days/mouth days/ days/ days/ L L/day L L/day L L/day L ML	12,86,000.00 12.33 Base Case 61,400.00 68.90 5.74 24.00 550.00 412.20 15,000.00 75,500.00 30,915,500	Proposed Case	Reduction %	Replacement %	Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT from Engineers and Site Supervisor Assume water cart size of 15,000.
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Total water consumption Total water consumption Total water consumption Total water consumption Total water consumption	L L ML	12,86,000.00 1233 8352 Case 6,1,400.00 6,80.00 5,74 24.00 5,74 24.00 147,20 15,000.00 30,915,000.00 30,915,000.00 30,935,000.00 30,905,000,00 30,905,000,00 30,905,000,00 30,905,000,00 30,905,000,00 30,905,000,00 30,905,000,00 30,905,000,000,000,000,000,000,000,000,00				Source: Plan Programme Source: Rol Mean number of days of, rain x=1mm at Badgerog Creak Period of reposure assumption from "Copy of Water Reuse, N1 from Engineers and Site Sopervisor Assume water cart size of 15,000. Assume 5 refits of water cart per day Notes Notes
Total Consumption 1 Total water consumption BULK CARTINYORKS CUT TO FILL - AWRC BULK CARTINYORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total water consumption Total water consumption POTHOLES & TRENCHES No. of NDD trucks per day	L J J J H K H K K K K K K K K K K K K K K	12,86,000 00 1233 88se Case 61,400.00 68.39 5.74 64.00 64.00 64.20 5.500 412.20 15,500.00 38,915,5000 00 38,915,5000 00 38,915,5000 00 38,915,5000 00 73,486,479 16 73,486,479 16 73,687,479 16 74,697,479 16 74,679,479 16740 10				Source: Plant Programme Source: Rol M Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, MT) from Engineers and Site Supervisor Assume water cart size of 15,000k Assume 5 reflis of water cart per day
Total Consumption [1] Total water consumption Dust Suppression BULK EARTHWORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Total water consumption Total water consumption Total water consumption Total water consumption Total water consumption	Linit Unit m2 day(nonth day(nonth day) day day day day day day day day day day	12,86,000 00 1233 88se Case 61,400 00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 68.00 69.00 73.60 73.60,479.16 73.69 73.69 73.69 2.00				Source: Plan Programme Source: Rol Mean number of days of, rain x=1mm at Badgerog Creak Period of reposure assumption from "Copy of Water Reuse, N1 from Engineers and Site Sopervisor Assume water cart size of 15,000. Assume 5 refits of water cart per day Notes Notes
Total Consumption Total Consumption Dust Suppression BULK FARTHWORKS CUT TO FILL - AWRC UT To FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total water consumption POTHOLES & TRENCHES No. bads per day No. bads per day No. bads per day	L L MEL LUNIT LUNI	12,86,000 00 1233 88se Case 61,400.00 68.90 5.74 74.00 412.20 15,500.00 38,915,5000 00 38,915,5000 00 39,915,5000 00 39,915,5000 00 39,915,5000 00 39,915,5000 00 30,915,5000 00 30,915,5000000000000000000000000000000000				Source: Plant Programme Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, NT) from Engineers and Site Supervisor Assume water cart size of 15,000L Assume S reflis of water cart per day Notes Construction Schedule Notes
Total Consumption 1 Total water consumption BULK CARTINYORKS CUT TO FILL - AWRC BULK CARTINYORKS CUT TO FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total water consumption Total water consumption POTHOLES & TRENCHES No. of NDD trucks per day	Linit Unit m2 day/anath day/anath day/moth day day day day day day day day day day	12,86,000.00 1233 Base Case 61,400.00 63.00 648.00 648.00 648.00 649.00				Source: Plan Programme Source: Rol Mean number of days of, rain as Imm at Badgerog Creak, Period of exposure assumption from "Copy of Water Reuse, N1 from Engineers and Site Sopervisor Assume strefts of water cart per day Assume strefts of water cart per day Notes Construction Schedule Assuming 2 week shutdown
Total Consumption Diversion Dust Suppression BULK FARTHWORKS CUT TO FILL - AWRC UT Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total stoter consumption Total stoter consumption Total stoter consumption POTHOLES & TRENCHES No. Calls per day No. Loads per day Duration of Use Duration of Use Duration of Use Duration of Use	L L MEL LUNIT LUNI	12,86,000.00 1233 88se Case 61,400.00 68.90 5.74 24.00 412.20 15,500.00 38,915,000.00 39,915,000.00 30,915,000,000,000,000,000,000,000,000,000				Source: Plant Programme Source: Plant Programme Source: Plant Mean number of days of, rain x=1mm at Badgerys Creek Period of exposure assumption from "Copy of Water Reuse, NT) from Engineers and Site Supervisor Assume water cart size of 15,000L Assume S reflis of water cart per day Notes Construction Schedule Notes
Total Consumption Total Consumption Dust Suppression BULK FARTHWORKS CUT TO FILL - AWRC UT To FILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total water consumption Total water consumption Total water consumption POTHOLES & TRENCHES No. bads per day No. bads per day No. bads per day	Linit Unit m2 day/anath day/anath day/moth day day day day day day day day day day	12,86,000.00 1233 Base Case 6,1,400.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 12,00 13,000.00 80.00 73,666,479.16 73,669 2000 200				Source: Plan Programme Source: Rol Mean number of days of, rain as Imm at Badgerog Creak, Period of exposure assumption from "Copy of Water Reuse, N1 from Engineers and Site Sopervisor Assume strefts of water cart per day Assume strefts of water cart per day Notes Construction Schedule Assuming 2 week shutdown
Total Consumption Diversion Dust Suppression BULK FARTHWORKS CUT TO FILL - AWRC UT Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Equipment capacity Days requiring dust suppression Equipment capacity Total stoter consumption Total stoter consumption Total stoter consumption POTHOLES & TRENCHES No. Calls per day No. Loads per day Duration of Use	Linit Unit m2 day/anath day/anath day/moth day day day day day day day day day day	12,86,000.00 1233 88se Case 61,400.00 68.90 5.74 24.00 412.20 15,500.00 38,915,000.00 39,915,000.00 30,915,000,000,000,000,000,000,000,000,000				Source: Plan Programme Source: Rol Mean number of days of, rain as Imm at Badgerog Creak, Period of exposure assumption from "Copy of Water Reuse, N1 from Engineers and Site Sopervisor Assume strefts of water cart per day Assume strefts of water cart per day Notes Construction Schedule Assuming 2 week shutdown
Total consumption [U] Total water consumption Dust Suppression BULK EARTHWORKS CUTT OF ILL - AWRC Total stockpile surface area Average days rainfall Period of exposure Days requiring dust suppression Copyrequiring dust suppression Copyrequiring dust suppression Copyrequiring dust suppression Total consumption Total water consumption Total invater consumption Total invater consumption No. loads per day No. loads per day Duration of Uae Equipment size	Linit Unit m2 day/anath day/anath day/anath day/anath day day day day day day day day day day	12,86,000.00 1233 Base Case 6,1,400.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 6,80.00 12,00 13,000.00 80.00 73,666,479.16 73,669 2000 200				Source: Plan Programme Source: Rol Mean number of days of, rain as Imm at Badgerog Creak, Period of exposure assumption from "Copy of Water Reuse, N1 from Engineers and Site Sopervisor Assume strefts of water cart per day Assume strefts of water cart per day Notes Construction Schedule Assuming 2 week shutdown

Plant Equipment/ Construction Water Use						
	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Water Source	Source	Potable	Floposed Case	Reduction %	Replacement 26	Notes
water source	source	Potable				
Plant Equipment/ Construction Water Use						
CONCRETE CURING						
	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Water Source	Source	Potable				
Volume of concrete	m3	22,000.00				Based on Project desi
Total no. of pours	no.	220.00				Based on constructability program
Water requirement per pour		5,000.00				Based on information provided by engineer
						in "Copy of Water Reuse_M
Total water consumption (L)	L	1,100,000.00				
Total water consumption (ML)	ML	1.10				
Plant Equipment/ Construction Water Use						
Concrete Truck Washout						
	Unit	Base Case	Proposed Case	Reduction %	Replacement %	Notes
Water Source	Source	Potable				
Volume of Concrete	m3	22,000.00			Base	e Case - Tender BOQ, Proposed Case - FDD BC
Total no. of trucks	no.	3,667.00				Confirmed JHS
Water volume per truck	L	200.00				
Total water consumption	L	733,400.00		1.00	1.00	
Total water consumption (ML)	ML	0.73				
TOTAL						
TOTAL Total water consumption (L)	L	1,833,400.00				

Upper South Creek Hydrostatic testing values

Results Summary	Results Summary						
Wat-1	Base Case (ML)	Proposed Case (ML) - TBC	% reduction				
AWRC	89.41						
AWRC - SAT	23.88						
Pipelines	0.01						
TOTAL	113.30	-					

Wat-1	Base Case (ML)	Proposed Case (ML) - TBC	% reduction	Comments
AWRC	89.41			
AWRC - SAT	23.88			
Pipelines	0.01			
TOTAL	113.30	-		
Inputs and Calculations				

AWRC Hydrotesting BASE CASE

Inlet Works	Program Start	24/05/2024		Program Finish	12/06/2024	1							
Inlet Works Test 1									Internal				
								Internal Wall	Wall	Internal Wall		Total	
Receival Chamber	Top of Base 48.41	Top of Water for Test	300mm for stab	Effective Water Depth	Length 11.0	Width 8.00	Area 88.00	Length	Width 0.00	Area	Total Area 88.00	Volume 473.62	kL Required
Primary Screens	40.4			4.68			496.80	99.20	0.00	39.68	457.12	2,140.24	2,140.24
TOTAL kL Required	2,613.8	kL											
Inlet Works Test 2	Height First Lift	Dia	Volume	Height second lift	Dia	Volume	Total	Total kL					
Grit Collector Below Sus Floor	2.5	1.50	8.84	0.90		77.42	684.02	684.02					
	Top of Base	Top of Water for Test	300mm for stab	Effective Water Depth	dia	Total circular	Length	Width	Volume	Total Volume	Total kL		
Grit Collector Above Sus Floor	49.4				7.4		10.40	2.50		256.18	256.18		
								Internal Wall	Internal Wall	Internal Wall			
	Top of Base	Top of Water for Test	300mm for stab	Effective Water Depth	Length	Width	Area	Length	Width	Area	Total Area	Total Vol	Total kL
Fine Screens and Outlet	49.4	51.69	0.30	2.59	18.20		231.88	36.00	1.00	36.00	195.88	506.74	506.74
Grit Collector Inlet Channel	Height 1.3	Length 7.00	Width 6.07	Volume 55.24	Total kL 55.24								
			0.0	33.24	33.2								
TOTAL kL Required	1,502.10	8 kL											
Bioreactor	Program Start	45,414.00		Program Finish	45,450.00)							
				Program Test 1 Finish	45,435.00)							
								Internal Wall	Internal Wall	Internal Wall		Total	
	Top of Base	Top of Water for Test	300mm for stab	Effective Water Depth	Length	Width	Area	Length	Width	Area	Total Area	Volume	kL Required
Per Ox ditch (For planning purpose)	39.02	46.45	0.30	7.77	85.6	3 24.29	2,079.95	239.56	0.40	95.82	1 084 43	15,416.68	
Per Ox ditch (For planning purpose) Entire Tank (3 chambers)			0.30	7.77	85.6	24.29	2,079.95	239.56	U.40	95.82	1,984.13	15,416.68	15,416.68
Total Volume	46,250.04	\$ kL											
Membrane Tank	Program Start	See below		Program Finish	See below	-							
									Internal				
1	Top of Base	Top of Water for Test	300mm for stab	Effective Water Depth	Length	Width	Area	Internal Wall Length	Wall Width	Internal Wall Area	Total Area	Total Volume	kL Required
Inlet Chamber	10p of Base 41.0			Effective water Depth 4.59		3.08	Area 102.41	Length	width	Area	10tal Area 102.41	470.06	470.06
Membrane Train (5 of 10 for one test)	43.8	3 47.86	0.30	4.33	17.40	15.00	261.00				261.00	1,130.39	1,130.39
Membrane Train Sump Allowance Outlet Chamber	43.5	47.86	0.30	0.90			27.00				27.00	24.30	24.30
	43.3	Program St	0.30	Program Finish	37.0.	5 2.00	73.30				73.30	344.93	344.3
TEST Inlet	470.0	5 28/07/2023		13/08/2023									
TEST Main Tank TEST Even Trains (separating walls)	2,285.0	4/04/2024 18/04/2024		17/04/2024 29/04/2024									
TEST OUTLET	344.9	17/05/2024		1/06/2024									
TOTAL Volume	4,242.6	kL.											
Dissector Texts	Des anno Chart	45,386.00		Program Finish	45,418.00		1	oth tanks over	ta an ta a ta at			1	
Digester Tank	Program Start	45,386.00		Program Finish	45,418.0	, 	Volume	oth tanks over	lapping but	150 days noat	in program - p	ian for 1 att	er the other
	Wall Height	Freeboard	300mm for stab	Effective Depth	Dia	Area	(m^3)	kL					
Conical Bottom (1 Tank) Tank Volume (1 Tank)	2.5	0.00	0.30	2.80		0 490.87	458.15 6,037.75	458.15 6,037.75					
Total 1 Tank	12.5	0.30	0.30	12.30	23.0	450.67	6,495.90	6,495.90					
Total 2 Tanks							12.991.79	12,991.79	Total for 2	tanks			
F			P										
Brine Tank	Program Start	45,476.00		Program Finish	45,520.00		(program is b Volume	oth tanks over	lapping but	50 days float ii	n program - pl	an for 1 afte	r the other)
	Wall Height	Freeboard	300mm for stab	Effective Depth	Dia	Area	(m^3)	kL					
Tank Volume (1 Tank)	12.70	0.30	0.30	12.70	32.0	804.25	10,213.95	10,213.95					
Total 2 Tanks Water Vol								20 427 00	T-4-1 6 2	anke			
							20,427.89	20,427.89	Total for 2	Lating			
First Flush Tank							20,427.89	20,427.89	Total for 2				
First Flush Tank	Top of Base	Top of Water for Test	300mm for stab	Effective Water Depth	Length	Width	Area	Volume	Total kL	unit.			
	Top of Base 35.50	Top of Water for Test	300mm for stab 0.30	Effective Water Depth 4.50	Length 12.0	Width 0 7.00	Area 84.00		Total kL				
First Flush Tank Disinfection Chamber	Top of Base 35.50 Top of Base	Top of Water for Test 39.70 Top of Water for Test	300mm for stab 0.30 300mm for stab	Effective Water Depth 4.50 Effective Water Depth	Length 12.0	7.00	Area	Volume	Total kL				
Disinfection Chamber	35.5	39.70 Top of Water for Test	0.30 300mm for stab	4.50 Effective Water Depth	Length	Width	Area 84.00 8.00	Volume 378.00	Total kL 378.00 Total kL				
	35.50 Top of Base	39.70 Top of Water for Test	0.30 300mm for stab	4.50 Effective Water Depth	Length	Width	Area 84.00 8.00 Area	Volume 378.00 Volume	Total kL 378.00 Total kL				
Disinfection Chamber	35.54 Top of Base 38.60 Wall Height	Top of Water for Test 41.40 Freeboard	0.30 300mm for stab 0.30 300mm for stab	4.50 Effective Water Depth 3.10 Effective Depth	Length 5.60	0 7.00 Width 0 2.00 Area	Area 84.00 8.00 Area 11.20 Volume (m^3)	Volume 378.00 Volume 34.72 kL	Total kL 378.00 Total kL 34.72				
Disinfection Chamber Drainage Pumpstations x 3	35.50 Top of Base 38.60	Top of Water for Test 41.40 Freeboard	0.30 300mm for stab 0.30 300mm for stab	4.50 Effective Water Depth 3.10	Length 5.60	0 7.00 Width 0 2.00 Area	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40	Volume 378.00 Volume 34.72 kL 75.40	Total kL 378.00 Total kL 34.72				
Disinfection Chamber	35.54 Top of Base 38.60 Wall Height	Top of Water for Test 41.40 Freeboard	0.30 300mm for stab 0.30 300mm for stab	4.50 Effective Water Depth 3.10 Effective Depth	Length 5.60	0 7.00 Width 0 2.00 Area	Area 84.00 8.00 Area 11.20 Volume (m^3)	Volume 378.00 Volume 34.72 kL	Total kL 378.00 Total kL 34.72				
Disinfection Chamber Drainage Pumpstations x 3	35.54 Top of Base 38.60 Wall Height	Top of Water for Test 41.40 Freeboard	0.30 300mm for stab 0.30 300mm for stab	4.50 Effective Water Depth 3.10 Effective Depth	Length 5.60	0 7.00 Width 0 2.00 Area	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40	Volume 378.00 Volume 34.72 kL 75.40	Total kL 378.00 Total kL 34.72				
Disinfection Chamber Drainage Pumpstations x 3 Total for 3 tanks	35.54 Top of Base 38.60 Wall Height	Top of Water for Test 41.40 Freeboard	0.30 300mm for stab 0.30 300mm for stab	4.50 Effective Water Depth 3.10 Effective Depth	Length 5.60	0 7.00 Width 0 2.00 Area	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40	Volume 378.00 Volume 34.72 kL 75.40	Total kL 378.00 Total kL 34.72	Internal Wall		Total	
Disinfection Chamber Drainage Pumptations x 3 Total for 3 tanks Flow Splitter	Top of Base Top of Base Top of Base	Top of Water for Test	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19 Area	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall Length	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall Area	Total Area	Volume	kL Required
Disinfection Chamber Drainage Pumpstations x 3 Total for 3 tanks	Top of Base 38.61 Wall Height 6.01	Top of Water for Test	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall	Total Area 86.45	Volume	
Disinfection Chamber Drainage Pumptations x 3 Total for 3 tanks Flow Splitter Inlet Chamber	35.50 Top of Base 38.60 Wall Height 6.00 Top of Base 38.80	Top of Water for Test	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19 Area	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall Length	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall Area		Volume	
Disinfection Chamber Drainage Pumptations x 3 Total for 3 tanks Flow Splitter Indet Chamber AWRC Site Acceptance Testing (SAT) - Wet of	33.54 Top of Base Wall Height 6.00 Top of Base 38.86 Top of Base 38.86	Top of Water for Test	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19 Area	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall Length	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall Area		Volume	
Disinfection Chamber Drainage Pumpstations x 3 Total for 3 tanks Flow Splitter Indet Chamber AWRC Site Acceptance Testing [SAT) - Wet c Component	33.52 Top of Base 38.60 Wall Height 6.00 Top of Base 38.88 San Missioning Total Water Use (ki)	39.72 Top of Water for Test 6 7reeboard 0.33 7op of Water for Test 0 41.40 7op of Water for Test 0 41.40	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19 Area	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall Length	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall Area		Volume	
Disinfection Chamber Drainage Pumpstations x 3 Total for 3 tanks Flow Splitter Intel Chamber AWRC Site Acceptance Testing (SAT) - Wet of Component MBR Trains Digestor	35.51 Top of Base 38.6 Wall Height Cop Top of Base Top of Base Top of Base Total Water Use (M) 1969 707 1969 707 6495.8973	Top of Water for Test	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19 Area	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall Length	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall Area		Volume	
Disinfection Chamber Drainage Pumpstations x 3 Total for 3 tanks Flow Splitter Indet Chamber AWRC Site Acceptance Testing (SAT) - Wet of Component MBR Trains	33.51 Top of Base 38.61 Wall Height 6.01 Top of Base 38.81 Top of Base 38.81 Top of Base 10.91 Top of Base 10.91 Top of Base 38.81	Top of Water for Test	0.33 300mm for stab 0.3 300mm for stab 0.3 0.3 0.3 0.3	4.50 Effective Water Depth 3.10 Effective Depth 6.00	Length Dia Length Length	0 7.00 Width 2.00 Area 2.00 Width	Area 84.00 8.00 Area 11.20 Volume (m^3) 75.40 226.19 Area	Volume 378.00 Volume 34.72 kL 75.40 226.19 Internal Wall Length	Total kL 378.00 Total kL 34.72 Internal Wall Width	Internal Wall Area		Volume	

Total

Pipelines Hydrotesting							
Treated							
lleated			1				
Water use for test (per 1 km)	0.63	kL					
Treated pipeline length	16.68	km	Pipeline design				
Total water use	10.43	kL					

Brine							
Water Use for test (per 1km section)	0.10	kL					
Brine pipeline length	23.95	km	Pipeline design				
Total Water use	2.49	kL					

Upper South Creek TRENCHLESS - HDD and Microtunnelling

Results Summary									
Wat-1	Base Case (ML)	Proposed Case (ML) - TBC	% reduction	Comments					
Microtunnelling	3.25								
HDD TOTAL	5.27								
TOTAL	8.52								

Inputs and Calculations

Pij	pelines Trenchless Crossings Sum	mary												
	Pipeline	Location	Crossing Type	Pipe Size (mm)	Pipe Type	Pit Size (m x m)	Length (m)	Maximum Depth IL (m)	Estimated Spoil Quantity (m3)	Program - Days	Per day approx (M3)	Water calculation (m3)	Water use (L)	Assumption
1	Brine	Elizabeth Dr - Western Road	HDD	DN450	PE100 PN20	2x2x2	366	11.15	180	20	8.98275		309,400.00	Received from subcontractor - SEE
2	Brine	Eastern Gas Pipeline	Micro Tunnelling	DN600 Jacking Pipe, DN450 Pipeline	RC (Jacking) PE100 PN20 (PVC)	6x3x6	140	5.72	429	25	17.14688	1286.016		Assume 3 m3 water used per m3 of spoil
3	Brine	Upper Canal	HDD	DN450	PE100 PN20	2x2x2	250	18.89	114	15	7.608333333		212,500.00	Received from subcontractor - SEE
4	Brine	M7	HDD	DN450	PE100 PN20	2x2x2	288	30.20	129	18	7.168888889		140,395.00	Received from subcontractor - UEA
5	Brine	Cowpasture Road/North Liverpool Rd	HDD	DN450	PE100 PN20	2x2x2	498	13.82	211	25	8.4586		243,612.00	Received from subcontractor - UEA
6	Brine	Elizabeth Dr	HDD	DN450	PE100 PN20	2x2x2	229	13.48	106	18	5.882361111		194,650.00	Received from subcontractor - SEE
7	Brine	Cabramatta Rd Culverts	HDD	DN450	PE100 PN20	2x2x2	236	10.68	109	15	7.242		212,500.00	Received from subcontractor - UEA
8	Brine	Cumberland Highway Crossing	Micro Tunnelling	DN450	PE100 PN20	2x2x2	150	10.47	75	10	7.4875	224.625	224,625.00	Quantity from Senior Project Engineer
9	Brine	Railway Crossing	HDD	DN400	PE100 PN20	2x2x2	271	16.88	122	16	7.64796875		109,874.00	Received from subcontractor - UEA
10	Brine	Lennox Reserve	HDD	DN450	PE100 PN20	2x2x2	178	15.90	86	15	5.724333333		151,300.00	Received from subcontractor - SEE
11	Brine	Prospect River	HDD	DN450	PE100 PN20	2x2x2	736	45.91	305	32	9.5275		357,591.00	Received from subcontractor - UEA
12	Treated Water	Badgery's Creek	HDD	DN1000	PE100 PN20	3x2x2	484	23.26	214	56	3.820892857		1,180,546.00	Received from subcontractor - UEA
13	Treated Water	Farm Dams - Elizabeth Dr	HDD	DN1000	PE100 PN20	3x2x2	322	26.06	150	40	3.759625		782,965.00	Received from subcontractor - UEA
14	Treated Water	The Northern Rd	Micro Tunnelling	DN1200 jacking, OD914	RC (Jacking), SCLSC FPBE	7x4x6	100	6.4	581	25	23.2525	1743.9375	1,743,937.50	Assume 3 m3 water used per m3 of spoil
15	Treated Water	Jerry's Creek	HDD	DN1000	PE100 PN20	3x2x2	302	19.25	595	37	16.07403649			Received from subcontractor - UEA
16	Treated Water	Nepean River	HDD	DN1000	PE100 PN20	3x2x2	400	32.5	716	51	14.04647059		781,570.00	Received from subcontractor - UEA
												HDD Total	5,266.026.00	

Info from UEA (project subcontractor)

 HDD Total
 5,266,026.00

 Microtunnel Total
 3,254,578.50

Crossing Location	Crossing Type	Pipe size (mm)	Cut size Inches		Expected Water usage (Litres)
Badgerys Creek	HDD	1000	49"	1246mm	1,180,546.00
Farm Dam	HDD	1000	49"	1246mm	782,965.00
Jerrys Creek	HDD	900	44"	1118mm	589,123.00
Nepean River	HDD	900	44"	1118mm	781,570.00
M7 Motorway	HDD	450	22"	558mm	140,395.00
Cowpastrure Road	HDD	450	22"	558mm	243,612.00
Cabramatta Rail	HDD	400	20"	508mm	109,874.00
Hume Highway/Prospect Creek	HDD	450	22"	558mm	357,591.00

Info from SEE (project subcontractor)

Brine Pipeline	Crossing type		Pipe dimensions	Pipe Type	Water usage (L)	
Elizabeth Drive Crossing	HDD	2040	2404	364	DN450 PE100 PN20	309400
Upper Canal Crossing	HDD	7750	8000	250	DN450 PE100 PN20	212500
Monash PI / Montgomery Rd -	100	14298	14527	220	DN450 PE100 PN20	194650
Elizabeth Drive Crossing No2	HDD	14298	14527	229	DN450 PE100 PN20	194650
Lennox Reserve (along Willowbank	HDD	22925	23103	170	DN450 PE100 PN20	151300
(res)	HUU	22925	23103	1/8	DN450 PE100 PN20	151300



Appendix B: Viability Analysis for Stormwater Harvesting of Ancillary Facility/ Compound Roof Canopy

Viability Analysis for Stormwater Harvesting of Ancillary Facility/ Compound Roof Canopy

Ancillary Facility/ Compound(Refer to Table 6-2 within CWRS)	Unit	AWRC Main Compound	C5	C6	С7	C11	C21
Ancillary Site Total Area	m2	3168.00	3595.93	26970.56	12636.93	4535.87	6580.00
Rooftop Capture Area (Note* If 0, No facilities to be Installed)	m2	1750.00	179.19	990.00	250.23	352.00	520.00
Period	Months	30.00	12.00	10.00	11.00	12.00	3.00
Mean Rainfall (*Note Extracted from EIS Appendix N)	mm	746.00	746.00	746.00	746.00	746.00	746.00
Monthly Rainfall	mm	62.17	62.17	62.17	62.17	62.17	62.17
Max Potential Rainwater Capture Per Month	kL	108.79	11.14	61.55	15.56	21.88	32.33
Total Rainfall Capture of Period of Ancillary Facility/ Compound	kL	3263.75	133.68	615.45	171.12	262.59	96.98
Sydney Water Supply Cost (2023–24 charge)	\$ a kL	2.67	2.67	2.67	2.67	2.67	2.67
Savings p/y (Syd Water cost * Max Potential Rainwater Capture)	\$	3485.69	356.91	1971.90	498.41	701.12	1035.75
Years on hire	Years	2.50	1.00	0.83	0.92	1.00	0.25
Total Savings over Installaiton (Compound) Life	\$	8714.21	356.91	1643.25	456.88	701.12	258.94
Plumber Quote for Instillation (14000Litre Tank and setup)	\$	7134.00	7134.00	7134.00	7134.00	7134.00	7134.00
Net Profit (Savings - Total Cost of Install)	\$	1580.21	-6777.09	-5490.75	-6677.12	-6432.88	-6875.06
Return on Investment (ROI) (net profit/total cost of install)	\$	22%	-95%	-77%	-94%	-90%	-96%
Simple Payback in years	Years	2.0	20.0	3.6	14.3	10.2	6.9

*Note - Sydney Water kL price extracted from Sydney Water Website. - 2023

*Note for Ancillary Sites where compound setout is still under development, a 15% spatial requirement for Project site sheds is assumed.

Appendix C: Indicative Site Layouts