



1.1.1 Western & Northern Aqueducts

1.1.1.1 Background

The Western and Northern Aqueducts will provide water security for eThekweni for the next 30 years. It is the largest aqueduct project ever tackled by the city and the expenditure is in the order of R3bn. To date, approximately R1.7bn has been spent and a further R1.3bn will be spent over the next 5 years. Umgeni Water has indicated that they can currently supply 210 ML/day.

This water will be taken up by the Outer West (90ML/day), Inanda and Ntuzuma areas (70ML/day), Pinetown south (Tshelimnyama, Westmead, Dassenhoek, Kwadengezi - 30ML/day), Jerome drive, Wyebank, Berkshire Downs (10ML/day) and Umbumbulu (10ML/day).

These projects encompass the installation of bulk water supply mains of varying diameters in the western and northern regions of eThekweni Municipalities supply areas. The project has been divided into multiple phases for both aqueducts as discussed below and shown in Figures 6.6 and 6.7.

1.1.1.2 Western Aqueduct:

- Western Aqueduct Phase 1 – Cato Ridge to Inchanga - Construction of 11km of welded steel pipeline (DN1600)
- Western Aqueduct Phase 2 – Inchanga to Alverstone Nek Reservoir - Construction of 6.7km of welded steel pipeline (DN1600)
- Western Aqueduct Phase 2 – Alverstone Nek Reservoir to Ashley Dr BPT - Construction of 7.6km of welded steel pipeline (DN1400)
- Western Aqueduct Phase 2 – Ashley Dr BPT to Wyebank BPT - Construction of 9.5km of welded steel pipeline (DN1400)
- Western Aqueduct Phase 2 – Wyebank BPT to Ntuzuma Reservoir 5 - Construction of 14.7km of welded steel pipeline (DN1400 & DN1000)
- Western Aqueduct Phase 2 – Kloof to Tshelimnyama Reservoir 3 - Construction of 8.3km of welded steel pipeline (DN600 & DN500)
- Western Aqueduct Phase 2 – Wyebank BPT to Mt Moriah Reservoir: - Construction of 5.5km of welded steel pipeline (DN1000)
- Western Aqueduct Phase 2 – Ashley Drive BPT - Construction of a 20 Mega litre break pressure tank
- Western Aqueduct Phase 2 – Wyebank BPT - Construction of a 10 Mega litre break pressure tank

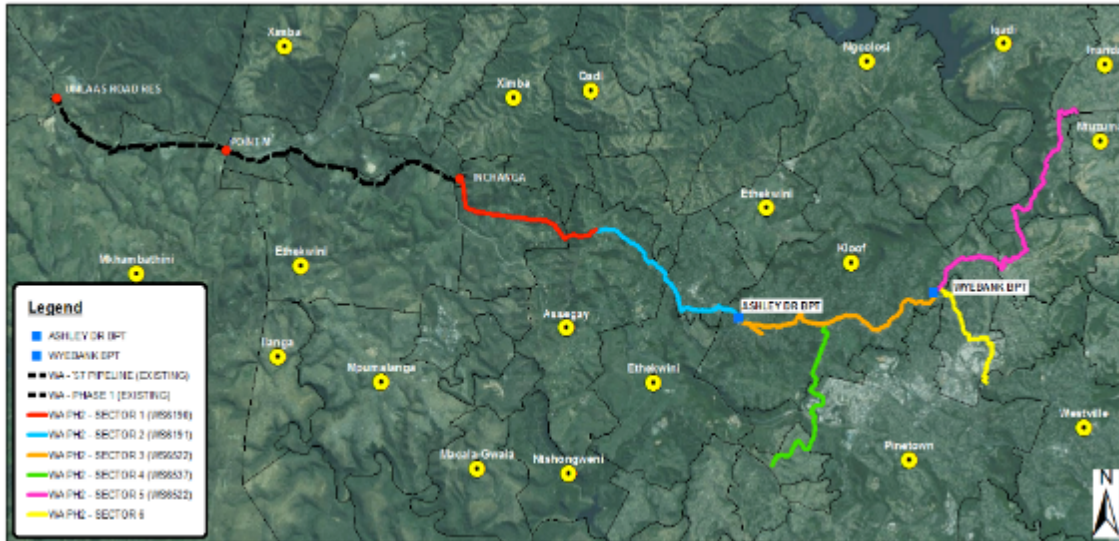


Figure 1: Western aqueduct development

1.1.1.3 Northern Aqueduct:

- Northern Aqueduct Phase 1 – Phoenix 2 reservoir to Umhlanga/Waterloo: Construction of 19.5km of welded steel pipeline (DN1200 to DN600)
- Northern Aqueduct Phase 2 – Ntuzuma 7 reservoir to Phoenix 2 reservoir - Construction of 18.5km of welded steel pipeline (DN1200)
- Northern Aqueduct Phase 3 – Duffs Rd to Phoenix 2 reservoir - Construction of 6.2km of welded steel pipeline (DN1200)
- Northern Aqueduct Phase 4 – Ntuzuma to Ogungini - Construction of 20km of welded steel pipeline (DN600)
- Northern Aqueduct Phase 5 – Duffs Rd to Durban Heights Reservoir - Construction of 11.6km of welded steel pipeline (DN1200)
- Northern Aqueduct Phase 1 – Phoenix 2 reservoir to Umhlanga/Waterloo
- Northern Aqueduct Phase 2 – Ntuzuma 7 reservoir to Phoenix 2 reservoir
- Northern Aqueduct Phase 3 – Duffs Rd to Phoenix 2 reservoir
- Northern Aqueduct Phase 4 – Ntuzuma to Ogungini
- Northern Aqueduct Phase 5 – Duffs Rd to Durban Height Reservoir



Figure 2: Western aqueduct development

The idea behind this flagship project is to improve on the assurance of supply and augment water in the western and northern region. These aqueducts will bring water to the western and northern region under gravity, thus saving on the huge energy cost. Currently the cost of pumping just from NR2 reservoir to all Ntuzuma reservoirs 3, 4, 5 & 7 is around R15.6million a year. This, together with a similar cost of pumping in the western region, will lead to savings of over 30million a year. That is going to be a huge saving and improvement on assurance of supply as whenever there was a power failure, Ntuzuma, Inanda and Tshelimnyama areas used to go without water.

1.1.1.4 Budget

The budget allocated to this project is summarised in Table 6.10.

Table 1: Capital budget for Western and Northern Aqueducts

Block sum or Project	Project No.	16/17	17/18	18/19
Western Aqueduct	X4625	200.100	87.141	50.793
Northern Aqueduct	X4764	134.548	228.257	247.893

1.1.1.5 Key Challenges

The key challenges under this programme are as follows:

- Quality Control on site
- Contractual claims
- Local labour issues



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1.1.1.6 Conclusion

The construction of both the western and northern aqueduct will secure water supply to the western and northern regions of eThekweni Municipality's area of supply for a minimum 30 year horizon which will allow for additional development within these regions.





1.1.1.7 Implementation Plan

The project is being/has been rolled out with multiple construction contracts as detailed in Table 6.11.

Table 2: Implementation plan for western and northern aqueducts

Contract	Description	Status	Contractor	Practicle Completion Date	Contract Value	Value of Work Carried Out to Date	Pipeline Length	Length Constructed	Comments/Status	
Western Aqueduct (WA)										
1.	Contract WS.6190	Inchanga to Alverstone Nek (1600dia.)	Complete	Cycad Pipelines	21/06/2015	R 130,000,000	R 110,583,273	7.0	7.0	Practical Completion Achieved 21/6/2015. Completion Achieved 30/11/2015
2.	Contract WS.6191	Alverstone Nek to Ashley Drive (1400dia.)	Complete	WK SA Construction	30/05/2015	R 164,293,666	R 147,458,552	7.3	7.3	Practical Completion Achieved 30/5/2015. Completion Achieved 16/10/2015
3 & 4	Contract WS.6522	Ashley Drive to Ntuzuma (1400/1000dia.)	Under Construction	Esorfranki	9/07/2017	R 450,706,218	R 289,916,813	25.0	16.8	Eight Weeks Behind Programme -Community Delay
5.	Contract WS.	Wyebank to Mount Moriah	Postponed							DELAYED BY EWS
5A	Sub-Contract	Shepstone Rd	Complete	WK SA Construction	30/6/2015	R 22,000,000	R 15,500,000	0.9	0.9	Practical Completion Achieved 6/7/2015. Completion Achieved Mid- December 2015
6.	Contract WS.6537	Kloof to Tshelimnyama	Under Construction	Esor Construction	25/08/2016	R 103,000,000	R 43,134,816	8.0	4.8	Six Weeks Behind Programme - Taxi Demands
7A.	Contract WS.6525	Ashley Drive Break Pressure Tank	Partial Completion Achieved	Icon	27/07/2015	R 51,613,760	R 51,470,641	0.5	0.5	Practical Completion Achieved 27/07/2015. Partial Completion Achieved 30/11/2015
7B	Contract WS.6715	Wyebank Break Pressure Tank	Under Construction	Icon	11/9/2017	R 76,627,856	R 28,128,963	0.8	0.0	Construction commenced mid January 2016
8	Contract WS.	West Riding Pipeline	TENDER STAGE							Tenders closed. Expected Construction to commence January 2017
Sub-Total (WACJV)						R 998,241,500	R 658,064,095	48.6	37.3	
12.	Contract WS.6372	Jerome Drive (300dia.)	Complete	Icon	14/02/2014	R 8,000,000	R 7,250,000	1.4	1.4	Complete
Sub-Total (EWS)						R 8,000,000	R 7,250,000	1.4	1.4	
WA TOTAL						R 1,006,241,500	R 665,314,095	50.0	38.7	
Northern Aqueduct (NA)										
1.	Contract WS.6423	P2 to Waterloo / Umhlanga (1200 to 600dia.)	Under Construction. Penalty Situation	Esorfranki	3/09/2015	R 186,078,175	R 137,636,501	16.1	16.1	Rectification works delay of 12 months. Practical Completion expected November 2016
2.	Contract WS.6524	P2 to Duffs Road (1200dia.)	Under Construction. Penalty Situation	Esorfranki	4/09/2015	R 93,972,350	R 65,146,785	7.0	7.0	Rectification works delay of 12 months. Practical Completion expected December 2016
3.	Contract WS.6566	Nyaninga (600dia.)	Under Construction.	Shula Construction	20/1/2017	R 31,050,000	R 2,834,302	3.5	0.5	Construction commenced end April 2016
4.	Contract WS.6816	Durban Heights to Duffs Rd (1200dia.)	TENDER STAGE							Tenders close 19/8/2016. Expected construction to commence February 2017
Sub-Total (KP/N)						R 311,100,525	R 205,617,588	26.6	23.6	
1.	Contract WS.6482	Steel Pipe Supply	Awarded	API/GROUP 5	31/07/2014	R 120,000,000	R 120,000,000	0.0	0.0	Complete
Sub-Total (EWS)						R 120,000,000	R 120,000,000	0.0	0.0	
NA TOTAL						R 431,100,525	R 325,617,588	26.6	23.6	
WA & NA TOTAL						R 1,437,342,025	R 990,931,683	76.6	62.3	

