SUPPORT TO THE CONTINUATION OF THE WATER RECONCILIATION STRATEGY FOR THE WESTERN CAPE WATER SUPPLY SYSTEM

ADMINISTRATIVE AND TECHNICAL SUPPORT GROUP MEETING #10

DATE: **12 AUGUST 2015** **TIME:** **08H30 – 13H00**

VENUE: **WORLEYPARSONS, BELLVILLE – BOARDROOM**

CHAIR: **ISA THOMPSON, DWS D:NWP**

ATTENDEES:

NAME		AFFILIATION	
Isa Thompson	IT	DWS D:NWRP	Study Manager
Anneke Schreuder	ASch	DWS RO Bellville	Berg-Olifants WMA
Nicolette Vermaak	NV	DWS RO Bellville	Groundwater
Derril Daniels	DD	DWS RO Bellville	Berg-Olifants WMA
Salona Moodley	SMo	DWS NWRP	
Barry Wood	BW	City of Cape Town	Bulk Water
Paul Rhode	PR	City of Cape Town	Bulk Water
Zolile Basholo	ZB	City of Cape Town	WC/WDM
Rowena Hay	RH	Umvoto Africa	Study Director
Fanie Botha	FB	Umvoto Africa	Technical Support
David McGibbon	DM	Umvoto Africa	Technical Support
Anne Beater	AB	IWR Water Resources	Technical Support
Jaco Human	JH	Worley Parsons	Team Leader
Gerrit van Zyl	GvZ	Consultant	PSP team member
Fanus Fourie	FF	DWS D:WRPS	Groundwater
Arne Singels	ASi	City of Cape Town	Bulk Water

APOLOGIES:

NAME		AFFILIATION	
Bertrand van Zyl	BvZ	DWS D:NWRI	Southern Operations
Catherine Bill	CB	DEA&DP	Pollution
Willie Enright	WE	Wateright Consulting	
Kornelius Riemann	KR	Umvoto Africa	Study Leader
Thembi Masilela	TM	DWS RO Bellville	D: Water Sector Support

MINUTES:

ITEM	DETAIL	ACTION	TIME
1	**Welcome and Introduction** IT thanked all for attending the meeting and introduced Anne Beater (AB) and Fanie Botha (FB), who have joined the PSP team.		
2	**Attendance and Apologies** The attendance at the meeting was noted in the attendance register. Apologies were noted on the register. The attendance register is attached (see Appendix A).		
3 3.1	**Minutes of ATSG #9, 14 May 2015** Approval of minutes The minutes were approved with the following corrections: Page 3, Item 3.2f: Change "part of the system" to "part of the WCWSS except when it is released from a dam." Page 4, Item 4.1c: Change "understood the" to "understood it that" Page 4, Item 4.1c: Change "and" to "where after it can come down" Page 4, Item 4.1d: Change "Wynlands" to "Wynland" Page 4, Item 4.1d, Change "split" to "differentiate" Page 6, Item 4.2: Add Paul Herbst to the Actions List Page 6, Item 4.4: Change Item 4.3 to Item 4.4 Page 7, Item 4.4: Change "disestablishment" to "decommissioning" Page 7, Item 5.1 Desalination: Change "local scale current patterns" to local-scale ocean current Page 9, Item 5.2 Other Studies: Change "DWS D:WS" to "DWS Water Services" Page 9, Item 5.2 Other Studies: Clarify the statement about the Berg WAAS study from IT. Page 10, Item 6: Change "is a necessary risk" to "is necessary for proper risk management" Page 11, Invited: Add that Simpiwe Mashicila is RBIG Programme Manager and that Wilna Kloppers works for DEA&DP.		

ITEM	DETAIL	ACTION	TIME
3.2	Matters arising Item 3.1: IT noted that a new DWS website is up and running which contains all documentation, including minutes and presentations. Item 4.1c: IT stated that the DWS has received two licence applications from CCT for 81 million m^3/a and for 28 million m^3/a, totalling to 109 million m^3/a. BW stated that the CCT met the previous week with the DWS Regional Office in this regard and that the CCT intends to pursue the licence for the temporary allocation of 28 million m^3/a from Theewaterkloof dam. Item 4.1q: IT asked how many of the new farm dams are being licenced. DD stated they have found some dams that were not licenced and are addressing the matter. GvZ stated that these dams capture the first flows, therefore licencing is critical for management of the WCWSS especially during droughts. IT noted that the impact of farms dams needs to be updated in the yield model as required. DD confirmed that dam size does influence the need to licence a dam but that farmers are evading the criteria by increasing their dam capacity by digging deeper during cleaning. GvZ stated farmers also lift the dam wall during maintenance, further increasing storage capacity.		
4	**Technical Support**		
4.1	Water Allocation RH presented summary tables showing the revised allocations and the breakdown of domestic and agricultural use allocations. RH requested that any amendments to the numbers and information shown in the table and the data summarised in the tabled hard copy be submitted to the PSP as soon as possible in order to get possible consensus on the numbers to be included in the 2015 Status report. It is recognised that numbers still under consideration or to be verified would be noted. RH observed that the updated list of allocations illustrate that the WCWSS is already over allocated, arising from updates to the agricultural allocations. GvZ emphasised how urgent the licencing of farmers is because the available yield of the WCWSS remains 582 million m^3/a and the actual current allocation is 609.1 million m^3/a. Total Domestic Allocation changed from 391.3 shown at the last SSC meeting to 392.9 because of the changes listed below: • West Coast DM changed from 22.7 million m^3/a to 22.8 million m^3/a. • Drakenstein LM changed from 2.1 million m^3/a to 1.2 million m^3/a. • Piketberg & PPC changed from 1.5 million m^3/a to 2.9 million m^3/a. • The addition of others industrial 1.1 million m^3/a Agricultural allocation changes from those presented at the last SSC meeting are bulleted below: • Lower Berg IB changed from 18.1 million m^3/a to 27.7 million m^3/a.		

ITEM	DETAIL	ACTION	TIME
	• Additional licences changed from 16.7 million m^3/a to 13.7 million m^3/a. • Additional releases changed from 9.1 million m^3/a to 0 million m^3/a. • Upper Berg River IB changed from 58.6 million m^3/a to 59.3 million m^3/a • Wynland and Banhoek IBs changed from 30.2 million m^3/a to 28 million m^3/a. These changes result in the Total Agricultural Allocation changing from 220 million m^3/a to 216.2 million m^3/a, with a difference of 3.8 million m^3/a. BW asked why the allocation to the Lower Berg IB had increased. DD stated that more licences have been awarded with a licence awarded in the Lower Berg most recently on the 3rd June 2015. BW correctly noted that additional releases cannot be 20 million m^3/a. This is been corrected in the tables and the presentation attached. It was agreed to edit the summary table and the presentation with corrections arising from this feedback from ASch and WE in the coming weeks. It was agreed this would be completed by end August and used for input to the 2015 Status Report. IT noted that for 5 years the releases to the Lower Berg River area has been a problem and the revised allocations emphasise that. DD stated that the V&V study has not been approved of yet but DWS Head Office is busy with the national tender now which should get the process started soon. GvZ stated that the majority of farm dams are located in the middle and upper Berg River, therefore it is urgent that the V&Vs are completed for the entire Berg River. RH emphasised that the Lower Berg River allocation is up to 7000 m^3/ha/a, but not a guaranteed 7000 m^3/ha/a from the WCWSS. AB indicated that this had been the understanding also from Anton Sparks of Aurecon who had maintained the WRYM, noting whether the full allocation is realised is a function of rainfall. There is no indication as to under what rainfall conditions the full allocation must be made available. Therefore it is dependent on competing requirements from and operation of the WCWSS. RH noted that minor changes to area and volume registered were made for the Upper Berg IB. IT noted that with the new licences awarded for agriculture, agriculture is now taking more than their capped volume and she questioned how it was possible to licence that much extra. This makes it imperative that the licence of 28 million m^3/a temporary which the CCT has applied for is resolved. ASi noted that the system yield is calculated on an assurance level and therefore the impact of changes in assurance of supply for different users on system yield needs to be tested. IT agreed and stated that thereafter the DWS can inform the farmers on what assurance level they will get under what circumstances. The Systems Options team should give guidance on the required operating rules. IT noted that the allocations and model need to be completed by the end of October 2015 for the Annual Operating Rules modelling	RH/WE/ ASch/GvZ BM (Beason Mwaka) RH/KR	30 Aug `15  31 Oct `15

ITEM	DETAIL	ACTION	TIME
	run. PR stated that he understood the 28 million m^3/a was only temporary from TWK but permanent from the system. PR added that this allocation resulted in the CCT making significant capital expenditure decisions for their future bulk water supply and treatment. He noted that the CCT is in talks with the DWS and awaiting a response. No time lines to reach agreement have yet been established.	PR/RK (Rashid Khan)	
	BW stated that CCT has been paying a capital cost on the 28 million m^3/a since the finalisation of the Riviersonderend-Berg-Eerste River GWS. GvZ agreed that from the beginning urban charges have included a capital cost component, but not the agricultural tariff. BW added that clearly there is an over allocation, exact volumes need to be agreed for use in the Status Report before the SSC in October. IT raised the concern that in the Western Cape there is only about 1 to 2 year carry-over from storage because the dams are so relatively small versus the growing requirements.		
	IT stated that personally she feels the 28 million m^3/a should be awarded to the CCT because they have been using and paying for it for years. IT added that she is concerned with the agricultural over-allocation but agrees with ASch that this might be due to losses along the river which have not been included before. GvZ stated that the farmers are also under pressure to make a profit and it is important that they know what their allocations are.		
	IT noted that the Upper and Middle Berg River circumstances are acceptable apart from the new farm dams that have been built. RH stated that this was last looked at 10 years ago in the Berg WAAS study. DD agreed and added that new dams have been built since then. RH undertook to follow up with WE.	RH/WE/ DD	
	JH requested that a map comparing the 2005 Berg WAAS study and present be made so that the number and location of new dams can be noted. IT asked that DD produce this map along with the volumes of the new farm dams.	DD	1 Oct '15
	In a drought situation the winter water does not reach the lower Berg River so the farmers request their full quota from the WCWSS to fill up their dams and this increases the risk that the CCT suffers in the following summer, especially if the summer allocations are released during the winter months. In this context BW noted that his understanding is that the V&V process is a legal basis for confirmation of existing lawful use and the issuing of formal water use licences.		
	IT stated that the Voëlvlei Dam's catchment did not receive enough rain this winter so far. GvZ noted that the farmers need water from March to September, so they take water from the tributaries for off-channel storage. He added that the farmers are becoming more efficient, so there is less irrigation return flow back into the tributaries that feed into the Lower Berg River.		
	DD asked what the Water Use Efficiency Directorate was doing with regards to getting the regulations on water meters finalised. IT stated that it is on agenda for the next SSC meeting and that it has been gazetted for comment. IT will provide update on progress in this matter.	IT	1 Oct '15

ITEM	DETAIL	ACTION	TIME
4.2	Water Resources Yield Model / Water Resources Planning Model AB stated that the WRYM will be updated with respect to the revised agricultural allocations. Currently the full irrigation allocation is applied unless the requirements are less than the allocation. AB stated that in the Western Cape the economy is built on agriculture, which relies on reliable water supply. RH requested that the PSP be informed when new licences are issued, so that the allocations in the WRYM can be updated. DD will provide PSP with contact details for the Licencing Manager. AB noted that the domestic allocations are not modelled; instead the present day domestic requirements are modelled. IT stated that this is where the Water Conservation and Demand Management is trying to reduce requirements and the updated domestic requirements will show how successful it has been. AB stated that the industrial sector's requirements are minor in the Western Cape and most of the requirement of this sector is supplied by reclaimed water and therefore will not impact the WRYM output significantly. AB stated that once the allocations are finalised then various model scenarios can be agreed upon and output reported. IT stated that the Eastern Cape had severe droughts previously that resulted in a 45% restriction on domestic allocations and 90% for agriculture in the Algoa area in 2009-2011. This resulted in 6000 job losses in agriculture alone. It was agreed that the reliance of the Western Cape on the agricultural economy would be a factor in determining drought management approaches. AB stated that a purpose of updating the model and running different assurance of supply scenarios would be to see their efficacy in possibly extending the planning date for implementation of the next intervention. RH noted that the modelling of timelines for required interventions will be updated when KR returns. It was agreed that the additional 'own' sources (e.g. of the West Coast DM and the CCT) will not be included in the model because they are used mainly as back up and emergency supplies. AB requested information on licenced/unlicensed dams in the Klein Berg and La Motte catchments for the model. She added that the removal of alien invasive plants (AIP) needs to be included in the model because it makes a difference to the yield. Working for Water (WfW) has already completed the removal of AIP's in the Upper Berg River, Berg River Dam catchment and the riparian zone near Darling. The 24 Rivers area has been identified for clearing in 2016. GvZ suggested asking WfW for their stance on the AIP clearing situation now. He added that if a forest is cut down, it can legally be re-planted within 2 years without the need of a licence. AB asked if forestry has declined over the years because this needs to be included in the model. GvZ and DD stated that it has. IT suggested speaking to forestry to get accurate figures for the model. It was suggested to contact Susanne Steyn in Forestry. DD stated that WfW struggles to get access to certain areas because the landowners do not allow it. GvZ reminded everyone	DD	1 Sept '15

ITEM	DETAIL	ACTION	TIME
	that if aliens are removed, it does not automatically mean more water is available because other vegetation or farmers will take it up. Furthermore the alien clearing needs to be maintained. IT said that the AIPs generally abstract much more water from the riparian zone than natural or agricultural vegetation. ZB requested support for the CCT to undertake utilisation and maintenance of the WRPM and the WRYM in-house. IT requested that capacity building be put onto the SSC agenda. IT stated that the DWS has consultants who host modelling courses and ZB should identify people who can attend the 5 day course. GvZ suggested that persons who undertake the field work be included as they are often the ones that know how the system works.	ZB	Mid Oct
4.3	Cape Flats Aquifer FB noted that in previous meetings a basic introduction to the Cape Flats Aquifers (CFA) strategy was presented. His presentation expanded on this and gave examples of locations where the approach to bioremediation of the aquifer could be implemented and integrated with improved storm water management currently underway or planned. He illustrated a schematic diagram of urban aquifer management with various remediation solutions such as infiltration basins, pre-treatment, post treatment and abstraction wells. He added that various combinations of these could be used to remediate the groundwater within the CFA. He emphasised that these are conceptual ideas, to show what is possible and presented preliminary costing for planning purposes. FB emphasised that although the CFA had been neglected in the past the proactive steps to rectify this were apparently being taken by the CCT. FB illustrated how the Cape Flats has changed over time with urbanisation, canalisation of rivers, WWTW and WTW by comparing aerial photographs from 1938, 1989 and 2014. BW stated that the map showing flooding is in fact the 100 year flood line mark. DM checked this and BW is correct but it also contained information of past flooding events. In the future both will be presented in different colours for comparison. BW added that the 100-year flood line includes the influence of climate change with a 0.6 m sea level rise and increased rainfall. He noted that the wetland found near Khayelitsha is the result of discharge from the WWTWs. DM stated that potential sources of pollution identified in previous studies are WWTW, solid waste sites, storm water and runoff from informal settlements. FB described potential ways of limiting the contamination from storm water canals could be to install artificial wetlands and gabions within the canals to clean the water. He presented various options of bioremediation that could be used to clean the groundwater and aquifer itself. He stated that the bioremediation of the CFA will involve different methods and scales including artificial wetlands, artificial recharge of treated effluent from WWTWs, bank filtration, de-canalisation of rivers and gabions to increase the flow paths and oxygenation. He illustrated options of constructing interconnected artificial wetlands and swales in the open area alongside the airport by way of a conceptual example. In principle part of this area (not designated for future development) and or others, can be used to remediate water from the Bellville and Borcherd's Quarry WWTWs and then infiltrate into		

ITEM	DETAIL	ACTION	TIME
	the CFA, so as to clean the CFA as it flows south towards False Bay. Options to use existing sand mining excavations once the mines are closed and requiring rehabilitation can be exercised in execution of the approach if it is planned in advance. If stakeholders are accepting it would be possible to join the various Philippi farm dams with swales that contain artificial wetlands cleaning the water as it moves down gradient. IT suggested the PSP consider how the existing natural vleis and lakes can be included in a conceptual scheme to be included in the strategy by way of illustration. BW agreed and added that the CCT has a Water Sensitive Design Policy for storm water in place which could be used in collaboration with the CFA strategy. Utilisation of non-potable water from boreholes in the CFA was discussed. ZB stated that treated effluent is already being used at schools and sports fields and this should be taken note of. He suggested informing the local residents of the plans. ASi agreed with ZB and suggested analysing what effect pumping treated effluent into the CFA and for irrigation and therefore influencing recharge would have on its other users. FB listed the number of schools in the study area and the price of installing a borehole along with an irrigation system. The costs vary between R93 000 to R331 000 but with the most practical option costing R120 000, which includes drilling, solar pump, security and an irrigation system. A 25 m^2 artificial wetland with security fencing could be installed for R16 500 and used for cleaning the water and form part of the academic curriculum. FB stated that the long-term goal is to remediate the CFA to a state where it can be utilised as a source for bulk water supply and or a storage facility for effluent treated for use prior to distribution. Water could be extracted from the southern portion of the CFA, where it would have had distance/time to be remediated within the aquifer, and piped to Faure WTP to become part of the bulk water supply. Another option is to have boreholes equipped with water treatment package plants situated near the stressed bulk water supply reservoirs, so that the CFA can supplement them directly. FB noted that before any of the steps are taken detailed hydro-chemical sampling (including trace metals and microbiological) and analysis are needed so that the true state of the CFA is known. This will allow decisions to be made on the best method of bioremediation and what the currently available water can or cannot be used for. FB stated that the CFA can be used as storage from which the return is 98%.	FB NV	Oct '15 Mar '16
5 5.1	**Update of current studies** CCT studies BW stated that he will present on behalf of PR • <u>Desalination</u> BW stated that they are still waiting for feedback from Eskom but PR is meeting with them on a regular basis. • <u>Reclamation</u>	BW	8 Oct '15

ITEM	DETAIL	ACTION	TIME
	BW stated that they will have provisional results by the SSC meeting in October and this can be added to the SSC agenda. IT noted that the WRC project has been completed which looks at how to communicate with the community on accepting treated water. She stated that indirect reclamation is more favourable than direct, e.g. the CFA as a storage area for treated effluent should be acceptable. BW stated that he would like the DWS to make a national statement on the use of reclaimed water for drinking. • TMG Aquifer BW stated that the City and Aurecon are finalising the contract and then the pilot study will be initiated. He noted that it might go ahead before desalination as the next scheme for bulk water supply because of its lower costs. • Lourens River BW stated that they are currently preparing to issue the tender calling for proposals. He added that the local community has issues with increased abstraction by the CCT. • Cape Flats Aquifer Discussed already in **Section 4.3**. • Albion Spring BW stated that the Albion Spring, situated in Newlands, is fully operational with a maximum treatment capacity of 4.5 Ml/day but the method of treatment will change from chlorine to UV. The spring is blended into the local reticulation network in the immediate area of Rondebosch. • Intercity springs and rivers BW stated that these are already used for irrigating Green Point Stadium and the parks around it and in its vicinity. • Peninsula springs The study is complete and a new contract for doing the licencing applications is required. • Atlantis Aquifer BW stated that it is operational again and producing 2-3 Ml/day but the softening plant is out of order, so the blend cannot be increased. Currently it is supplying the local resort. He added that the weir to the resort is being renovated. BW noted that load shedding is managed and not affecting water supply.	IT/TB	Nov '15
5.2	DWS studies • All Towns Reconciliation IT advised that approval for the study period to be extended for a year has been obtained but the VO documents still need to be signed. All the original strategies for all towns in the Western Cape are uploaded onto the DWS website and or can be requested from the PSP if not accessible on the website. The updated strategies are not yet available on the website, but can		

ITEM	DETAIL	ACTION	TIME
	be obtained from the PSP. • Voëlvlei augmentation The EIA consultant has not been appointed yet. It has been suggested that only winter water is pumped but allow the first water to flow through to clean the system before pumping. A decision is needed regarding the best location to input water in the dam that optimises this mixing. BW stated that the greatest concern is the alien fish which cause the water to become muddy. • Langebaan Road Aquifer NV stated that there is no update to report. They are working with UWC to gather information that can be input to this project. The wellfield has been fixed and became operational on the 15th June 2015. IT asked for an update on the Elandsfontein Aquifer linked to mining in the area. NV stated that they will have monitoring boreholes in the aquifer above and below the clay layer and she will forward any relevant information to the PSP on an ongoing basis.		
5.3	Breede-Gouritz CMA The erstwhile Breede-Overberg CMA did have a catchment management strategy and currently the ISP for the former Gouritz CMA will supplement this strategy and both will contribute to an upcoming project to develop a strategy for the new combined Breede-Gouritz CMA		
5.4	Other studies IT reported on behalf of BvZ, with regard to the proposed weir on the Lower Berg River as discussed in the ATSG #9 minutes on page 9. Pieter Wessels (PW) could not find a suitable site for the Lower Berg River weir because of no stable rocks. They are now aiming for existing structures across the river, e.g. a bridge, which will enable them to monitor water level but not flow. GvZ stated that you can build floating weirs and suggested they look at alternatives because data on water levels as well as flows from that location is very important to the operation of the system. He indicated that such a structure need not be of the permanent standard preferred and requested that IT liaise further with PW.	IT	Oct '15
	JH stated that the new electronic web-based WSDP system has been rolled out in the Western Cape. This is aligned with the IDP and STP and all existing infrastructure is on the system. BW stated the CCT is concerned that they are no longer receiving the weekly balance drawdown reports on dams from the DWS. BW noted that this is particularly important now because they are drawing from Voëlvlei Dam. BW added that he requested an early run of the model but has received nothing as of yet. IT stated that BvZ is waiting for the agricultural allocations but she will follow up with him.	BvZ/IT	1 Sept '15
	IT asked if the CCT is concerned about the coastal plumes around Cape Town arising from raw sewage water being discharged into the ocean and requested further information re the CCT's response to recent media reports. ZB stated that there are 3 raw sewerage		

ITEM	DETAIL	ACTION	TIME
	outlets; at Camps Bay, Green Point and Hout Bay. ZB stated that they have appointed a service provider to assess it. With regard to the contamination plumes in False Bay, BW stated that the CCT view is that it is natural and he would forward material in this regard to the PSP, which comment can be included in the strategy document being prepared. IT requested that a response be prepared for the SSC meeting, from CCT and DWS Regional Office (permit conditions). DD stated that the regulator is Coastal Management (Department of Environmental Affairs and Development Planning) and not DWS anymore. IT requested a written report prior to the SSC meeting on all items mentioned so that it can be read by members prior to the meeting to come better prepared. She requested that Umvoto send a timely reminder to all people tasked for actions. NV stated that a WRC funded project is aimed at Regional Water Sensitive Urban Design Scenario Planning for Cape Town using an Urban (geo)hydrology model focussing on the Cape Flats area and aquifer. She undertook to provide more information when available to the PSP.	PSP	15 Sept '15
6	**Preparation for SSC #14**		
6.1	Status Report 2015 RH stated that she is in the process of updating the October 2015 Status Report. She asked if everyone was happy with the structure of the 2014 Status Report which would be used as a basis for the 2015 report with particular additions pertaining to the update of the allocations from the WCWSS and inclusion of these in the WRYM and the WRPM, consideration of drought management and operation of the WCWSS. This was accepted subject to review of the draft by IT and CCT. IT requested that a draft Status Report be sent out as soon as possible to the Support Group members to comment on before the SSC meeting.	RH	1 Oct '15
6.2	News Release IT stated that there is concern about the dams' water levels because of a below average rainfall year so far. BW stated that they have warned residents in the CCT monthly news releases that there might be restrictions coming. BW undertook to send an example of the monthly news release to IT and the PSP. IT requested that GvZ help RH draft the press release and then send to BW to check before submitting to the DWS. She suggested that before the study ends, a news letter explaining all the various studies taking place, results and processes that were triggered during the study be compiled.	BW KR/RH	1 Sept '15
6.2	Agenda and Presentations for upcoming SSC It was discussed and agreed that the following presentations would be made at the upcoming SSC meeting: • CCT – Capacity Building • CCT response to raw sewage discharged into the ocean • CCT – Present on progress with/results of the water reclamation study	ZB BW PR	

ITEM	DETAIL	ACTION	TIME
	• DWS: DD to present on Berg River Partnership • DWS: DD to present on the upcoming delegation of authority to the proposed Western Cape CMA(s). • (Breede-Gouritz CMA: JvS to present on the Riviersonderend V&V results)	DD DD JvS	
7	**General** IT suggested that the CCT include how any proposed intervention as well as the WWTW's of the CCT would cope with a two week outage from load shedding. Their disaster management component should have plans in place.	BW	
8	**Next meetings of ATSG and Closure** The next meeting will be on Tuesday 27th October 2015. IT thanked all for attending.		

SIGNATURE ORIGINATOR

Umvoto Africa — Date: 27 Oct 2015

SIGNATURE DEPARTMENT OF WATER AND SANITATION

D: NWRP — Date: 27/10/2015

INVITED:

NAME		AFFILIATION	
Isa Thompson	IT	DWS D:NWP	Study Manager
Salona Moodley	SM	DWS D:NWP	
Fanus Fourie	FF	DWS D:WRPS	Groundwater
Pieter Viljoen	PV	DWS D:WRPS	Water Quality
Jenny Pashkin	JP	DWS D:WRPS	Systems Operation
Paul Herbst	PH	DWS D:WUE	
Nosipho Sombane	NS	DWS D:WUE	
Esther Lekalake	EL	DWS D:WRCS	Classification
Tembi Masilela	TM	DWS RO Bellville	Water Sector Support
Simphiwe Mashicila	SM	DWS RO Bellville	Water Sector Support
Penina Sihlali	PS	DWS RO Bellville	RBIG
Anneke Schreuder	Asch	DWS RO Bellville	Berg-Olifants WMA
Derril Daniels	DD	DWS RO Bellville	Berg-Olifants WMA
Nicolette Vermaak	NV	DWS RO Bellville	Groundwater
Mike Smart	MS	DWS RO Bellville	Groundwater
Bertrand van Zyl	BvZ	DWS D:NWRI	
Jan van Staden	JvS	B-G CMA	
Catherine Bill	CB	D:EA&DP	Planning
Amina Suleiman	AS	D:EA&DP	Planning
Wilna Kloppers	WK	DEA&DP	Planning
Peter Flower	PF	City of Cape Town	D: Water & Sanitation
Arne Singels	ASi	City of Cape Town	
Barry Wood	BW	City of Cape Town	Bulk Water
Paul Rhode	PR	City of Cape Town	Bulk Water
Zolile Basholo	ZB	City of Cape Town	WC/WDM Strategy
Collin Mubadiro	CM	City of Cape Town	WC/WDM
Mogamat Shahied Solomon	MSS	City of Cape Town	WC/WDM
Rowena Hay	RH	Umvoto Africa	Study Director
Kornelius Riemann	KR	Umvoto Africa	Study Leader
Jaco Human	JH	Worley Parsons	Team Leader
Gerrit van Zyl	GvZ		
Willie Enright	WE	Water Right	

Appendix A:

water & sanitation
Department: Water and Sanitation
REPUBLIC OF SOUTH AFRICA

UMVOTO WorleyParsons resources & energy

SUPPORT TO THE CONTINUATION OF THE WATER RECONCILIATION STRATEGY FOR THE WESTERN CAPE WATER SUPPLY SYSTEM – ADMINISTRATIVE AND TECHNICAL SUPPORT GROUP MEETING #10 – 12 AUGUST 2015

ATTENDEES:

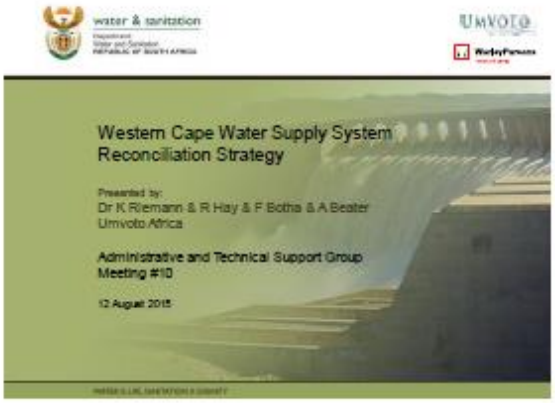
NAME	AFFILIATION	e-mail address	Telephone no	Signature
Isa Thompson	DWS D:NWRP	ThompsonI@dws.gov.za	082 805 2158	
Fanus Fourie	DWS D:WRPS	FourieF@dws.gov.za	082 8015578	
Pieter Viljoen	DWS D:WRPS	viljoenp2@dws.gov.za		
Jenny Pashkin	DWS D:WRPS	pashkinj@dws.gov.za		
Nosipho Sombane	DWS D:WUE	SombaneN@dws.gov.za		
Thembi Masilela	DWS RO Bellville	MasilelaS@dws.gov.za		Apology
Simphiwe Mashicila	DWS RO Bellville	MashicilaS@dws.gov.za		
Anneke Schreuder	DWS RO Bellville	Anneke@dws.gov.za	021 941 6186	
Derril Daniels	DWS RO Bellville	DanielsD@dws.gov.za	(021) 941 6186	
Penina Sihlali	DWS RO Bellville	SihlaliN@dws.gov.za		
Neels du Buisson	DWS RO Bellville	DuBuissonN@dws.gov.za		
Mike Smart	DWS RO Bellville	SmartM@dws.gov.za		Apology
Nicolette Vermaak	DWS RO Bellville	VermaakN2@dws.gov.za Zenziele@dws.gov.za	021 941 6267 073 012 1932	Nmvaak
Bertrand van Zyl	DWS D:NWRI	VanZylB@dws.gov.za		Apology
Salona Moodley	DWS	Moodleys2@dws.gov.za	084 423 4400	

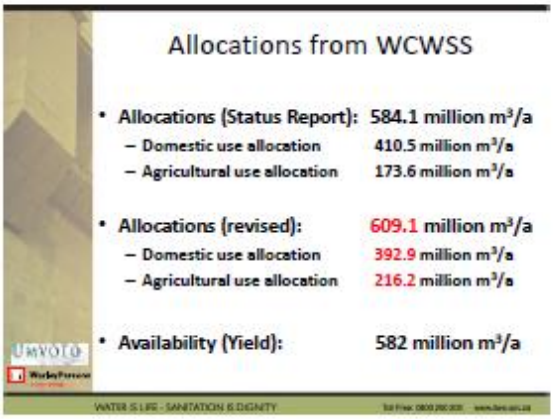
NAME	AFFILIATION	e-mail address	Telephone no	Signature
Cdette Smit	DWS	SmitO@dws.gov.za		
Esther Lekalake	DWS	LekalakeE@dws.gov.za		
Azwidohwi Neswiswi	DWS	NeswiswiA@dws.gov.za		
Jan van Staden	BOCMA	jstaden@bocma.co.za		
Wilna Kloppers	DEA&DP	Wilna.kloppers@westerncape.gov.za		
Catherine Bill	DEA&DP	Catherine.Bill@westerncape.gov.za		Apologys
Amina Sulaiman	DEA&DP	Amina.Sulaiman@westerncape.gov.za		
Paul Rhode	CCT Bulk Water	Paul.Rhode@capetown.gov.za	021 467 2487	
Peter Flower	CCT Bulk Water	Peter.Flower@capetown.gov.za		
Barry Wood	CCT Bulk Water	Barry.wood@capetown.gov.za	021 467 2586	
Zolile Basholo	CCT WDM	Zolile.Basholo@capetown.gov.za	021 590 1479	
Collin Mubadiro	CCT WDM	Collin.Mubadiro@capetown.gov.za		
Mogamat Shahied Solomon	CCT WDM	MogamatShahied.Solomon@capetown.gov.za		
Rowena Hay	Umvoto Africa	Rowena@umvoto.com	082 377 1327	
Kornelius Riemann	Umvoto Africa	Kornelius@umvoto.com		Apologies
Fanie Botha	Umvoto Africa	stelpos@mweb.co.za		
David McGibbon	Umvoto Africa	David.m@umvoto.com		
Eddie Wise	Umvoto Africa	Eddie.w@umvoto.com		
Anne Beater	DWA Water Res	anne@waterresources.co.za	082 853 1650	

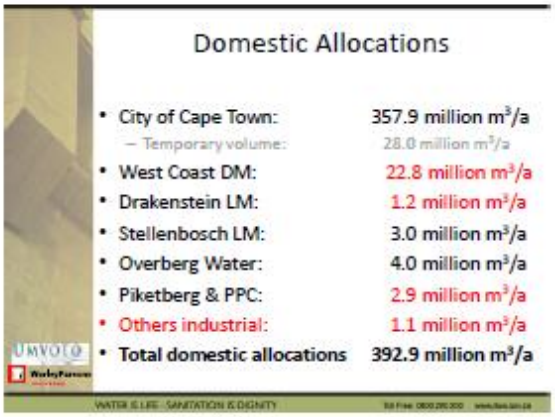
NAME	AFFILIATION	e-mail address	Telephone no	Signature
Jaco Human	WorleyParsons	jaco.human@WorleyParsons.com	0844318728	
Gerrit van Zyl	Consultant	gerritvz@vodamail.co.za	076 953 2001	
Anton Sparks	Aurecon			
Mike Killick	Aurecon			
Arne Singels	CCT Bulk Water	Arne.Singels@capetown.gov.za	021 242 2421	
Tyl Willems				
Willie Enright		Wateright1@gmail.com		Apology
Fanie Botha	Umvoto	Fanieb@umvoto.com	0829036216	

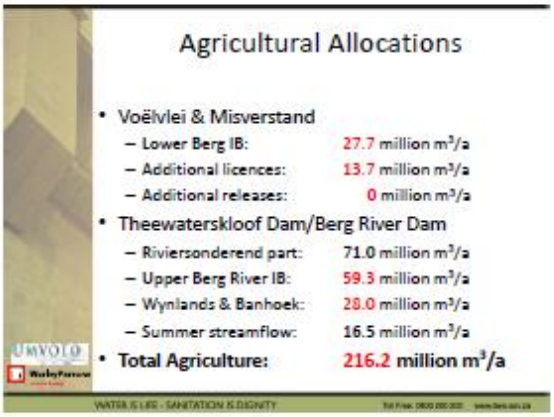
P:\830 DWA WC Reconciliation\7_Meetings\ATSG\ATSG10\ATSG No10_20150812 Attendance List.doc Page 3

Appendix B:

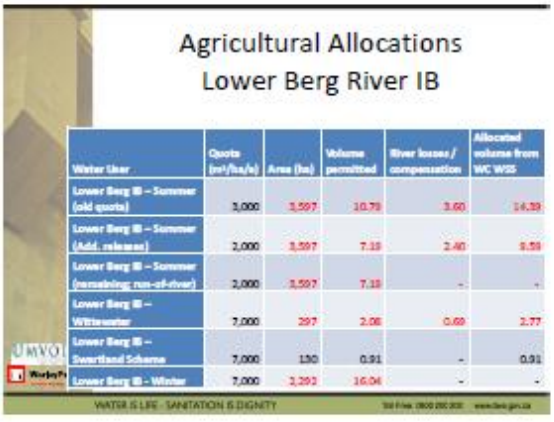

water & sanitation
UMVOTO
Western Cape Water Supply System
Reconciliation Strategy
Presented by:
Dr K Riemann & R Hay & F Botha & A Beater
Umvoto Africa
Administrative and Technical Support Group
Meeting #10
12 August 2015

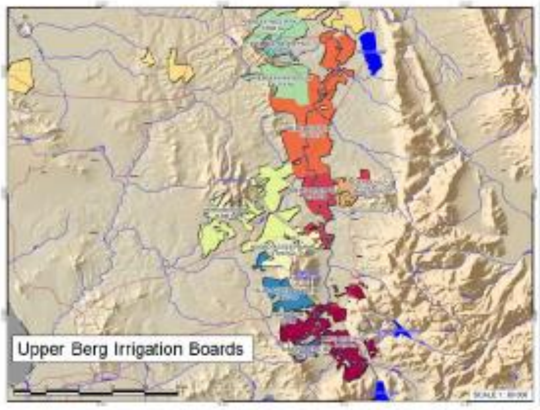

Allocations from WCWSS
Allocations (Status Report): 584.1 million m³/a
Domestic use allocation 410.5 million m³/a
Agricultural use allocation 173.6 million m³/a
Allocations (revised): 609.1 million m³/a
Domestic use allocation 392.9 million m³/a
Agricultural use allocation 216.2 million m³/a
Availability (Yield): 582 million m³/a


Domestic Allocations
City of Cape Town: 357.9 million m³/a
Temporary volume: 28.0 million m³/a
West Coast DM: 22.8 million m³/a
Drakenstein LM: 1.2 million m³/a
Stellenbosch LM: 3.0 million m³/a
Overberg Water: 4.0 million m³/a
Piketberg & PPC: 2.9 million m³/a
Others industrial: 1.1 million m³/a
Total domestic allocations 392.9 million m³/a


Agricultural Allocations
Voëlvlei & Misverstand
Lower Berg IB: 27.7 million m³/a
Additional licences: 13.7 million m³/a
Additional releases: 0 million m³/a
Theewaterskloof Dam/Berg River Dam
Riviersonderend part: 71.0 million m³/a
Upper Berg River IB: 59.3 million m³/a
Wynlands & Banhoek: 28.0 million m³/a
Summer streamflow: 16.5 million m³/a
Total Agriculture: 216.2 million m³/a


Lower Berg Irrigation Board


Agricultural Allocations
Lower Berg River IB
Water User
Quota (m³/ha/a)
Area (ha)
Volume permitted
River losses / compensation
Allocated volume from WC WSS
Lower Berg IB – Summer (old quota) 3,000 3,597 10.79 3.60 14.39
Lower Berg IB – Summer (Add. releases) 2,000 3,597 7.19 2.40 9.59
Lower Berg IB – Summer (remaining run-of-river) 2,000 3,597 7.19 - -
Lower Berg IB – Witzenberg 7,000 297 2.08 0.69 2.77
Lower Berg IB – Swartland Scheme 7,000 130 0.91 - 0.91
Lower Berg IB - Winter 7,000 2,293 16.04 - -



Agricultural Allocations
Upper Berg River Main IB

Water User	Quota (m³/ha/a)	Area registered	Volume registered	River losses / compensation	Allocated volume from WCWSS
Berg River IB (quota 1)	4,000	3,296	13.18		
Berg River IB (quota 2)	5,000	4,211	21.06		
Berg River IB (quota 3)	6,000	3,003	18.02		
Noord-Agter Paarl IB	5,000	980	4.90		
Suid-Agter Paarl IB	4,000	867	3.47		
Perdeberg IB	5,000	1,324	6.62		
Simondium IB	4,000	227	0.91		58.6
Simonsberg IB	4,000	125	0.50		
Groenberg IB (Distr 1)	5,000	211	1.06		
Groenberg IB (Distr 2)	5,000	104	0.52		
Riebeek Kasteel IB	6,000	224	1.35		
Riebeek Wes IB Distr 1	6,000	115	0.69		
Riebeek Wes IB Distr 2	6,000	135	0.81		
New Licences		107	0.57	0.19	0.75
Total Summer Allocation		14,933	73.65	(-) 14.3	59.3
Total Winter Allocation		1,259	5.94	-	-

Agricultural Allocations
Zonderend and Vyeboom

Water User	Quota (m³/ha/a)	Area (ha)	Volume permitted	River losses / compensation	Allocated volume from WCWSS
Zonderend IB – Summer, BWP	6,000	4,452	26.71	1.60	28.31
Zonderend IB – Summer, V&V	6,000	1,566	9.40	0.56	9.96
Compensation				3.19	3.19
Zonderend IB – Winter	8,000	1,389	11.11	-	-
TWK direct	7,100	4,156	29.51	-	29.51
Vyeboom IB	7,100	1,852	13,15	-	-
Pump from TwK	7,100	3,500	1,5	-	-

TWK direct includes Vyeboom IB

WATER IS LIFE - SANITATION IS DIGNITY

Agricultural Allocations
Zonderend and Vyeboom

- Zonderend IB
  - 1981 White Paper 23.5 million m³/a
  - 2003 BWP Agreement 31.5 million m³/a
  - 2015 V&V results 41.5 million m³/a
- Vyeboom IB and TWK
  - 2003 BWP Agreement 14.7 million m³/a
  - 2015 V&V results 29.5 million m³/a

WATER IS LIFE - SANITATION IS DIGNITY

Agricultural Allocations
Wynlands WUA & Banhoek IB

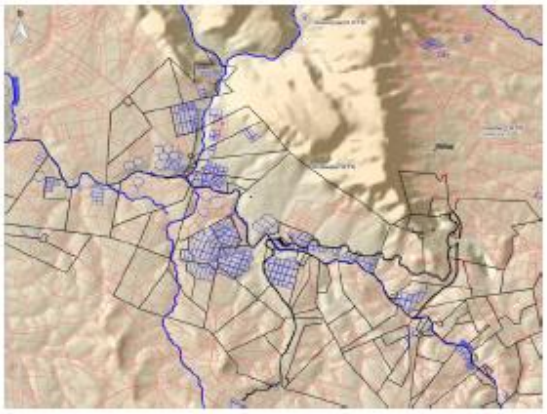
Water User	Quota (m³/ha/a)	Area (ha)	Volume permitted	Losses	Allocated volume from WCWSS
Wynlands WUA : Stellenbosch District	4,000	2,978	11.91	-	11.91
Wynlands WUA : Helderberg District	4,000	2,749	11.00	-	11.00
Wynlands WUA : Eerste Rivier District		514	1.95	-	1.95
Eerste River Lelwater releases			1.20	-	1.20
Banhoek IB	4,000	450	1.80	-	1.80
Dasbos outlet			0.18	-	0.18

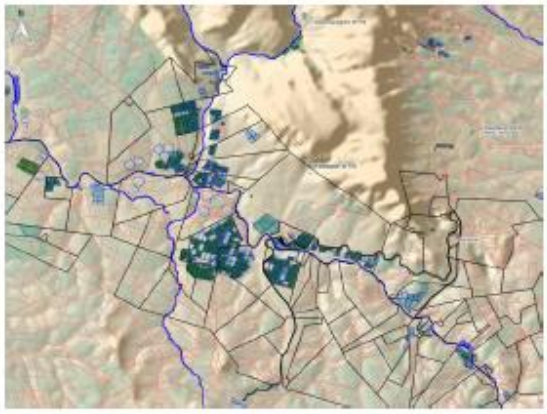
WATER IS LIFE - SANITATION IS DIGNITY

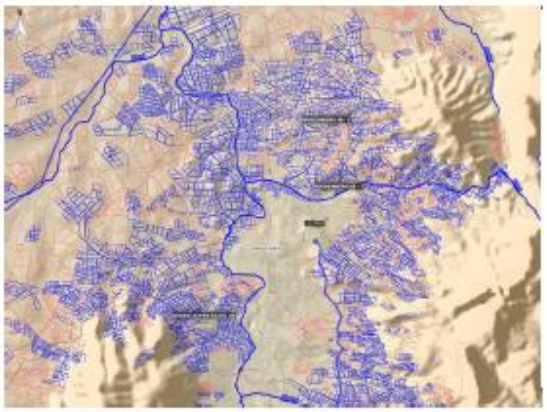
Scheduled area under irrigation

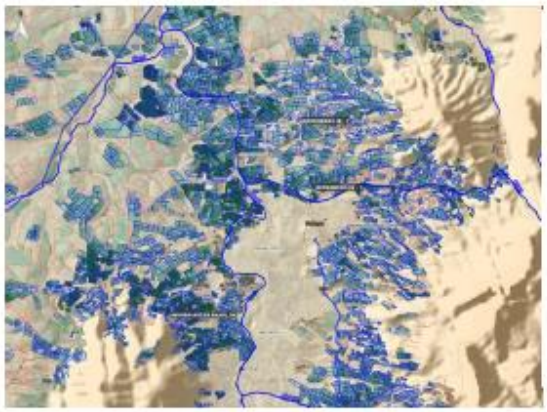
- Boundaries of irrigation boards
  - Lower Berg IB
- Information by Dept of Agriculture
  - Fields under irrigation
- Landsat imagery Dec 2014
  - NDVI

WATER IS LIFE - SANITATION IS DIGNITY







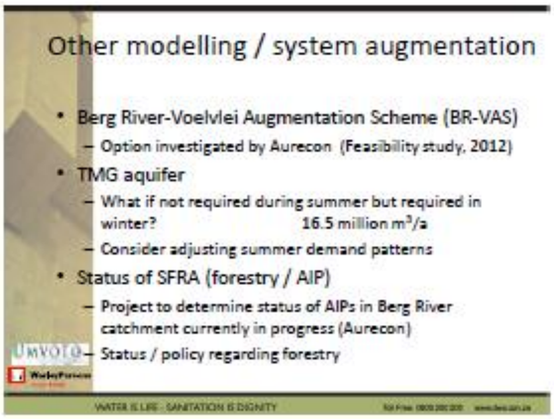


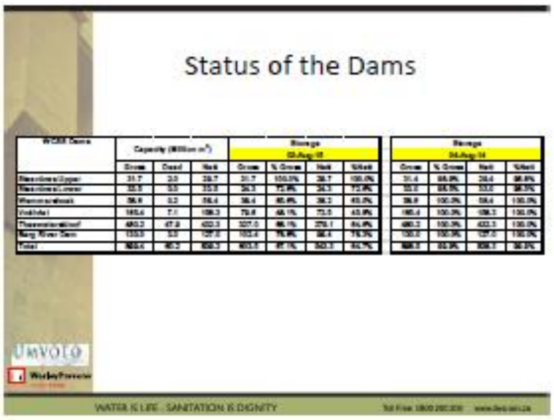
Conclusions

- Total allocations of 609.1 million m^3/a exceed system yield of 582 million m^3/a
- Agricultural allocations exceed previous capped volume of 173.6 million m^3/a
- Temporary allocation to CCT fully allocated to agriculture and not available for CCT
- Next intervention is required earlier than estimated in Status Report 2014

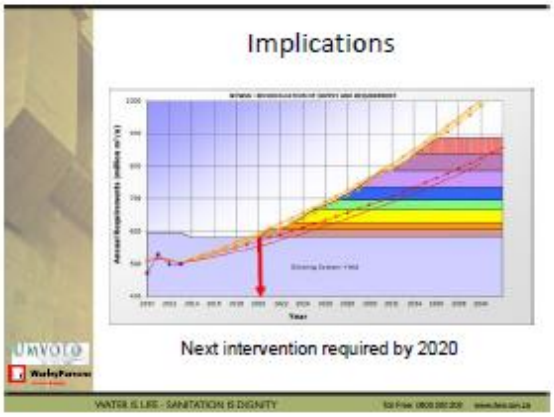
Recommendations

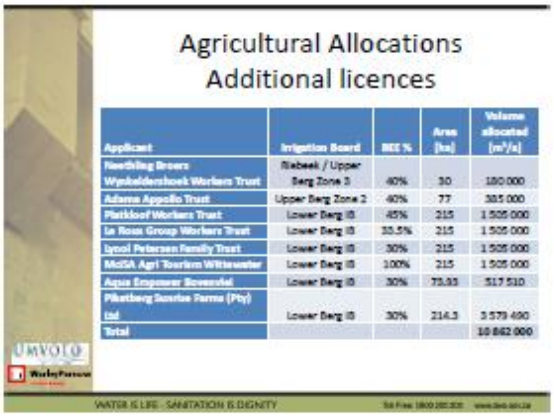
- Clarify outstanding queries regarding allocations
- Verify actual area under irrigation and water use by agriculture for all irrigation boards
- Determine equivalent allocation under different Assurance of Supply
- Update WRYM and WRPM
- Expedite the implementation of the next intervention



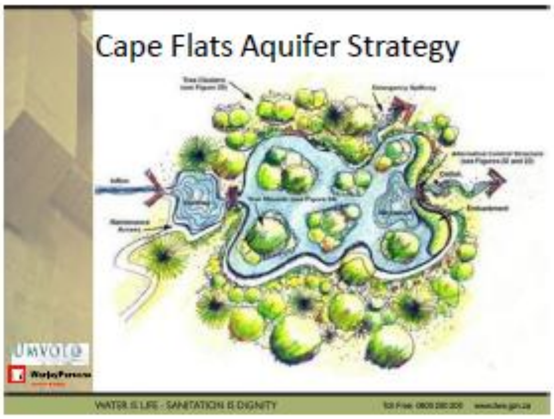


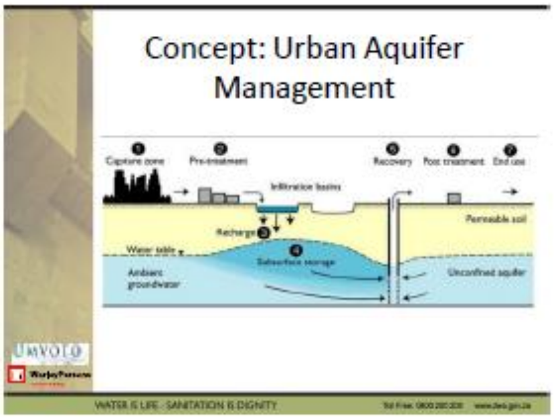
WCWSS Dams	Capacity (Million m³)			Storage [illegible]				Storage [illegible]			
	Gross	Dead	Nett	Gross	% Gross	Nett	%Nett	Gross	% Gross	Nett	%Nett
Steenbras Upper	31.7	3.0	28.7	31.7	100.0%	28.7	100.0%	31.4	[illegible]	28.4	[illegible]
Steenbras Lower	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Wemmershoek	[illegible]	0.2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100.0%	[illegible]	100.0%
Voëlvlei	[illegible]	7.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	100.0%	[illegible]	100.0%
Theewaterskloof	480.2	47.9	432.3	[illegible]	[illegible]	[illegible]	[illegible]	480.2	100.0%	432.3	100.0%
Berg River Dam	130.0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	130.0	100.0%	[illegible]	100.0%
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

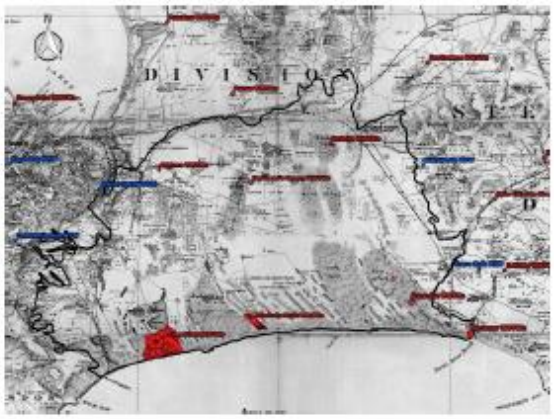


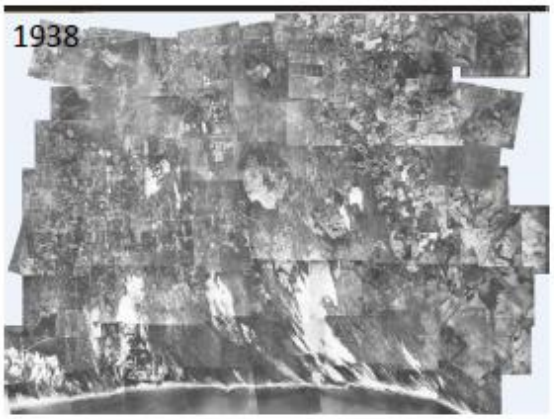


Applicant	Irrigation Board	BEE %	Area (ha)	Volume allocated (m³/a)
Noethling Broers Wynkeldershoek Workers Trust	Riebeek / Upper Berg Zone 3	40%	30	180 000
Adams Appollo Trust	Upper Berg Zone 2	40%	77	385 000
Platkloof Workers Trust	Lower Berg IB	45%	215	1 505 000
Le Roux Group Workers Trust	Lower Berg IB	33.5%	215	1 505 000
Lynol Petersen Family Trust	Lower Berg IB	30%	215	1 505 000
MeSA Agri Tourism Witteswater	Lower Berg IB	100%	215	1 505 000
Aqua Empower Bovendal	Lower Berg IB	30%	73.93	517 510
Piketberg Sunrise Farms (Pty) Ltd	Lower Berg IB	30%	214.3	3 579 490
Total				10 862 000








1938


1989


2014

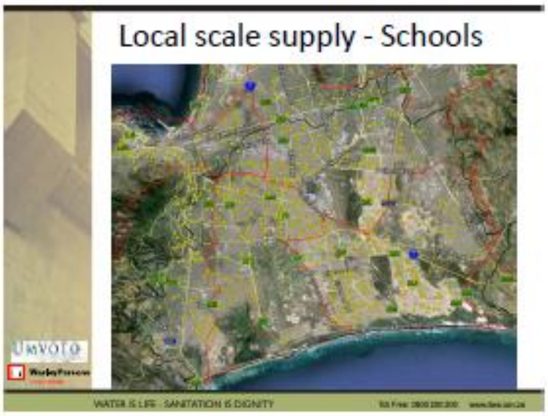

Table of Contents
• Stop potential pollution sources
• Local scale supply
• Bulk supply
• Bioremediation
• Local scale sanitation
WATER IS LIFE - SANITATION IS DIGNITY


Stormwater and Canal Rehabilitation
WATER IS LIFE - SANITATION IS DIGNITY

Stormwater and Canal Rehabilitation

Product	Quantity	Price
Kaytech Soilsaver	1m²	R 8.33
Artificial Wetland (shaping and vegetation)	1m²	R 380
Laywork (filter), shaping and vegetation	1m²	R 2 500

WATER IS LIFE - SANITATION IS DIGNITY

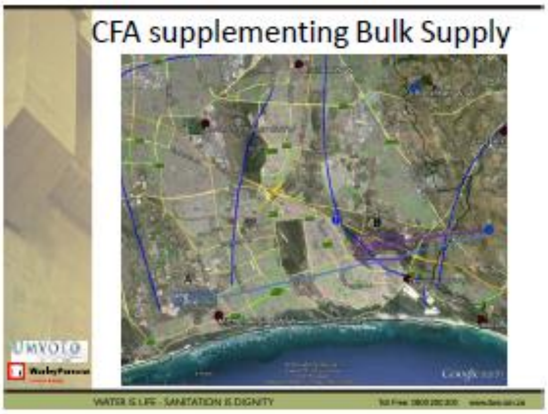


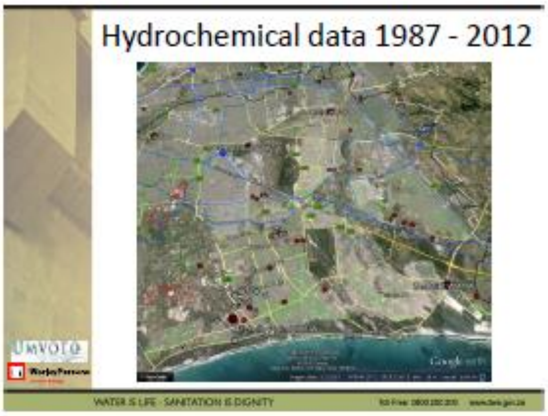
School Fields

Planning Districts	No. Schools	No. Schools in Study Area
Mitchells Plain/Khayelitsha	181	181
Cape Flats	158	158
Northern	87	0
Tygerberg	178	143
Table View	80	11
Blaauwberg	50	0
Helderberg	47	1
Southern	120	60

	Specification	Cost
Drilling	30m at 5"	R 40 000
Pump	Solar & all equipment (3 bar)	R 50 000
Pump	Electrical (3 bar)	R 15 000
Electricity pumping	R 1000/month * 8 month	R 8 000
Irrigation system	Canon Sprayer	R 35 000
Irrigation system	Sprinkler system & installation	R 150 000
Irrigation system	Basic sprinkler & installation	R 2 000
Fencing	razor wire (R2000/m)	R 24 000
Kiosk	130cm x 80cm	R 17 000
Brick housing	(2x3x1m) with lockable manhole cover and plinth	R 28 000
Artificial wetland	5x5m	R 9 500
Wetland fencing	20	7000

WATER IS LIFE - SANITATION IS DIGNITY





Cost of artificial wetland

A Plant	Flow/day (ml)	Wetland Area (hectares)	Wetland Cost	B Plant	Flow/day (ml)	Wetland Area (hectares)	Wetland Cost
Athlone	13245.5	13	R 50 633 282	Athlone	13245.5	13	R 50 633 282
Bellville	5170.68	5	R 19 520 864	Bellville	5170.68	5	R 19 520 864
Borchards	8457.26	4	R 13 473 759	Borchards	8457.26	4	R 13 473 759
Cape Flat	11120.5	11	R 42 985 808	Cape Flat	11120.5	11	R 42 985 808
Macassar	3676.71	4	R 13 861 151	Macassar	3676.71	4	R 13 861 151
Mitchell's	3607.4	4	R 13 796 811	Mitchell's	3607.4	4	R 13 796 811
Zandvliet	7917.26	8	R 30 293 559	Zandvliet	7917.26	8	R 30 293 559

WATER IS LIFE - SANITATION IS DIGNITY

Bellville and Borcherd's Quarry WWTW

WATER IS LIFE - SANITATION IS DIGNITY

Bellville and Borcherd's Quarry WWTW

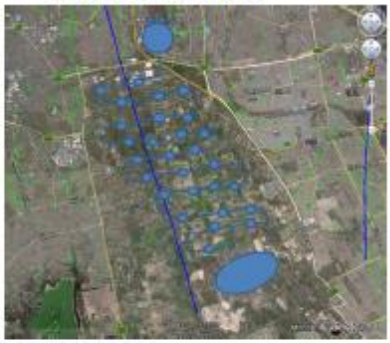
WATER IS LIFE - SANITATION IS DIGNITY

Land available for artificial wetlands

	Required Wetland Area (hectares)	Available area (hectares)
Athlone	13	17
Bellville	5	500
Borchards	4	500
Cape Flat	11	150
Macassar	4	20
Mitchell's	4	18
Zandvliet	8	30

WATER IS LIFE - SANITATION IS DIGNITY

Bioremediation



WATER IS LIFE - SANITATION IS DIGNITY

Current state of CFA

WATER IS LIFE - SANITATION IS DIGNITY