ENVIRONMENTAL IMPACT ASSESSMENT

Second Draft Environmental Impact Assessment Report for the Proposed Construction, Operation and Decommissioning of a Seawater Reverse Osmosis Plant and Associated Infrastructure in Tongaat, Kwazulu-Natal

SECOND DRAFT EIA REPORT

CHAPTER 5:

ISSUES AND RESPONSES TRAIL

CONTENTS

5. COMMENTS AND RESPONSES TRAIL 1

5.1 INTRODUCTION 1

5.1 ISSUES AND RESPONSES TRAIL 3

FIGURES

Figure 5-1 Decision-making framework for identification of key issues for the EIA 2

5. COMMENTS AND RESPONSES TRAIL

This chapter presents an overview of issues raised following the submission of the Final Scoping Report and prior to the release of the Final EIA Report. Responses to these issues are provided.

5.1 INTRODUCTION

An important element of the EIA Process is to evaluate the issues raised through the interactions with authorities, the public, the specialists on the EIA team and the project proponent. In accordance with the philosophy of Integrated Environmental Management, it is important to focus the EIA on the key issues. A decision-making process has been developed to assist in the identification of key issues, based on the following criteria (refer to Figure 5.1):

1. Whether or not the issue falls within the scope and responsibility of the proposed Tongaat Desalination EIA Process; and
2. Whether or not sufficient information is available to respond to the issue or concern raised without further specialist investigation.

Following the 40-day comment period provided on the Draft EIA Report, additional issues and/or concerns have been raised by I&APs prior to the release of the Final EIA Report for I&AP review. Issues were sourced as follows:

- Letters and faxes - issues sent to the CSIR via fax or posted correspondence; and
- Email - issues sent to the CSIR via email correspondence.
- Public meeting – issues raised during the public meeting following the release of the draft EIA report

The Appendices of the Final EIA Report contain the detailed correspondence received. Comments received that are not relevant to or form part of this EIA Process are included in the Comments and Responses Trails below, and clear reasoning is provided as to why the comment received falls beyond the scope of this EIA. The detailed comments received are included in Appendix E of this Final EIA Report. Section 5.2 provides a summary of the comments received from I&APs during the comment period on the Final Scoping Report and during the 40-day review of the Draft EIA Report. The comments submitted have been grouped according to the following categories:

1. Issues related to site location, affected properties and land acquisition
2. Issues related to noise, nuisance and visual
3. Issues related to social and economic impact and heritage
4. Issues related to energy, greenhouse gas emissions
5. Issues related to freshwater/wetlands
6. Issues related to brine discharge, marine health and water quality
7. Issues related to terrestrial ecology and avifauna
8. Issues related to waste, wastewater, stormwater management
9. Issues related to EIA and Public Participation
10. Issues related to technology and strategic planning
11. Issues related to health and safety and transport

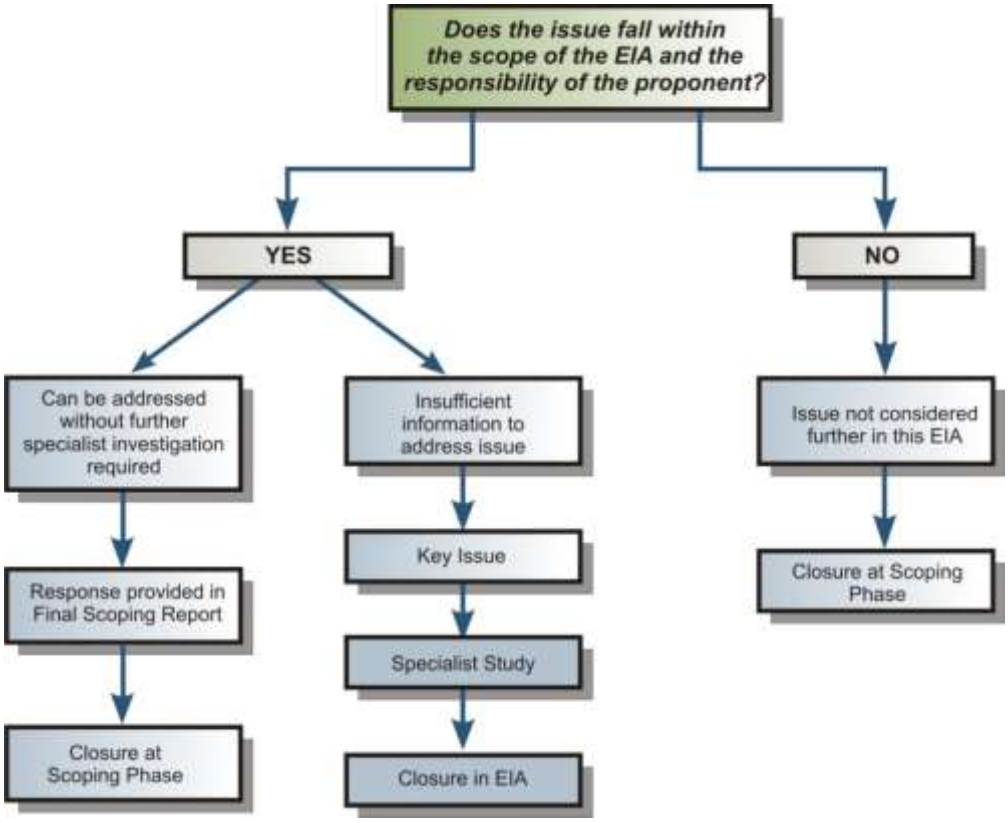

Figure 5-1 Decision-making framework for identification of key issues for the EIA

5.1 ISSUES AND RESPONSES TRAIL

The tables below summarize comments received after submission of the Final Scoping Report for I&AP review, together with a response from the EIA team. All comments received after the release of the Final Scoping Report, through meetings and written correspondence are attached as Appendix E to this report.

1. Issues related to site location, affected properties and land acquisition/land use

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE (from CSIR unless otherwise indicated)
1.1	Kindly send us the property description of the application.	12/08/2015	LesleyS, DAFF, Email	A description of the proposed project and surrounding environment are included in the scoping and EIA report. Also refer to Appendix B of the report for erf numbers and description of affected properties. Please also note that the following persons at this department are on our I&AP database and are kept informed of the project status and progress. Ms Mashudu Marubini, Ms Karen Moodley Ms N Sontangane Mr Jeffrey Maivha Ms Thembile Dlungwana
1.2	What is your selection criteria in choosing this site? Why Tongaat land? Can you give a reason? Who owns this property that you have earmarked? Could you not have approached bigger companies to acquire land from them such as THD because they have a lot of land?	13/04/2016	Vignesh Naidu, Private, Public meeting	*From Umgeni Water:* From an engineering point of view, there is very limited land that is suitable for desalination. There is a lot of land around where you can build a factory but that is not suitable for desalination. There are specific criteria that you have to take into account when constructing a desalination plant. We looked at a site in the vicinity of Sibaya, but is not suitable due to the geotech and the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE (from CSIR unless otherwise indicated)
				topography of the site, and there is not 7 ha of land available there that is suitable for putting a desalination plant close to the ocean. The presentation on site selection was placed on the project website. With regards to approaching Tongaat Hulett Developments: If we had found a site suitable for desalination on THD land then we would have approached them. As mentioned above, there are very strict criteria that have to be used in the siting of a desalination plant and the high dunes along the coastline preclude most of the areas. We were only able to find two suitable sites for the desalination plant, on the North Coast, and the one, after considering environmental concerns (phragmities) was excluded leaving us with the single site at Desainager.
1.3	Why not build it further in land (no buildings, no houses behind the dunes) and build a bigger plant to supply water to the whole area? What would happen if you want to expand the proposed 150Ml and you need more land and there is no land around?	13/04/2016	Mike Wilson, Private, Public Meeting	*From Umgeni Water:* As mentioned above, the criteria used in siting a desalination plant exclude the areas inland. The topography is such (high elevation above sea level) that these areas are not suitable for constructing a desalination plant.
1.4	There is an area near Sibaya that is flat. Why was the Sibaya area not chosen for the proposed desalination plant as opposed to Tongaat?	13/04/2016	Justin Wendler, Private, Public Meeting	Refer to response to issue 1.2
1.5	Tongaat Hulett is a landowner within the broader region, and has a large portion of land within the broader La Mercy area (753 hectares) which is currently undergoing an EIA to convert the land from agriculture to an integrated human settlement, incorporating	09/05/2016	Kate Ralfe, Tongaat Hulett Developments, Email	*From Umgeni Water:* Umgeni Water will liaise with Tongaat Hulett to ensure that the infrastructure developed can be accommodated by the development. We will supply shape files of the planned infrastructure

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	residential, industrial and commercial land uses. As such, this proposal has an impact on our planning processes. The need to expand bulk infrastructure to ensure adequate water provision into the future is critical. The broader northern area is acknowledged in the eThekwini Municipality Integrated Development Plan to be a major area of future growth, and as such ensuring reliable services is critical if this area is develop as envisioned by government. While the need to secure adequate bulk water for the future is acknowledged and supported, we have a number of comments on the proposals as they currently stand. The proposal contains several alternative alignments for electrical and water pipeline infrastructure to support the facility. We would welcome further interaction regarding the proposed alignments so that we can adequately assess how these impact on our development proposals. Specifically, a copy of the shapefiles would be useful. It is submitted that the developer consider placing the cables underground, so as to minimize their visual impact. Please note that the proposed servitudes will need to be acquired from Tongaat Hulett.			so that this can be used in the Tongaat Hulett Development planning process. *From CSIR*: SIVEST has been appointed by Tongaat to undertake an EIA to convert the land from agriculture to an integrated human settlement, incorporating residential, industrial and commercial land uses at La Mercy. Correspondence with SIVEST refers – *The approval letter from the department was reportedly received on 17 May 2016 for the Scoping and EIA. The EIA Phase has not commenced yet as SIVEST has been directed by Tongaat Hullet to place the project on hold while they are finalising some studies with the municipality. The process is being run under the 2010 regulations*. Note that CSIR has requested the Final Scoping report from SIVEST on 18 May 2016 and on 20 May 2016, but this request remains to date unsuccessful and this FSR was not available on Sivest website at the time of compiling this Final report. Unfortunately, an EIA cannot take into consideration all proposed development, in particular proposals for which the EIA phase have not yet started. The assessment of cumulative impacts as part of the EIA process takes into consideration existing developments and proposed development for which an Environmental Authorisation has been granted at the time of undertaking the specialist studies. Note that the Final Scoping report for Tongaat's proposed development has reportedly been approved in May 2016, which is after the draft EIA report for this proposed development has been released for review.

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1.6	Decommissioning. The report states that decommissioning is highly unlikely, however this has been assessed. According to the report, in the scenario where the plant is decommissioned, the buildings would either be demolished or converted to agricultural or industrial buildings. Further engagement is required on the potential use of the facility in the case of decommissioning, as given that the surrounding area is largely residential in nature it is unlikely that an industrial land use would be appropriate.	09/05/2016	Kate Ralfe, Tongaat Hulett Developments, Email	Noted. This request has been included in the EMPr.
1.7	There were sites proposed for desalination plant: Virginia Airport; Tongati; Umhlanga by Sibaya Casino, Mdloti and Tongaat near Desainagar. Virginia Airport and Umhlanga by Sibaya Casino were disqualified based on social and technical criteria. Tongaat near Desainagar proposed site is situated in the area between LaMercy and Westbrook which is one of the last undeveloped pristine ecosystems in greater Durban area. To re-zone it from farmland or residential in to industrial zone will open doors for further industry to creep in.	09/05/2016	Damir Percaic, Private, Email	*From CSIR:* Refer to response to issue 1.2 *From Economic specialist*: With regard to compatibility with land use planning, the Economic Specialist Report (Chapter 12) points out some level of planning uncertainty. Section 12.5.1 points out that, "Broad planning guidance for the site indicates that it has been earmarked for residential development in the future although it is currently used for agricultural purposes. This does not mean that strictly only residential development should take place on the site. It does, however, call for clear justifications for proposals for the site that do not entail residential development. One could argue that the supply of water for residential and other purposes would qualify as a reasonable justification in this regard. In essence, this is what eThekwini Municipality's Framework Planning Branch have done in their comments submitted to the EIA process where they raise no objections to the plant from a planning perspective given the potential for it to resolve water shortages in the Northern area of the

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				Municipality. It goes without saying that this conclusion assumes that environmental impacts can be kept to an acceptable minimum." The Economic Specialist Report also addresses the potential for a future industrial node to emerge in Section 11.5.8.1. It states that, "Concerns have been raised that the development of an essentially industrial facility in the area would open the way for more industrial development in the immediate vicinity of the site. In other words, an industrial node of sorts could form around the site. It is not possible to predict outcomes in this regard as future land use will depend on developer interest and what the Municipality approves. Residential development is, however, currently indicated in municipal planning for the area surrounding the site in keeping with its position and key advantages for residential development. Its suitability for industrial development beyond a desalination plant is thus not clear at this stage along with the potential for the development of an industrial node."
1.8	Perpetration of apartheid planning processes - It's clear that the department with this development is placing dirty and hazardous industrial facilities next to residential land. The CSIR is not proposing alternatives that place dirty industries in industrial zones; rather nutrient soil is being destroyed to cater for these industries. The biased evaluation of the alternative lands ensures that this practice continues and those real viable alternatives are not meaningfully investigated. This sort of investigation gives rise to conflict between communities, industries and	09/05/2016	Desmond D'SA, SDCEA, Email	*From Umgeni Water:* As a bulk water provider Umgeni Water has to consider all options for future bulk water supply. These include waste water reuse as well as traditional run of river storage systems and water treatment plants. eThekwini Municipality owns and operates the large scale waste water plants in and around Durban. Approximately five years ago eThekwini undertook a feasibility study to treat waste water to potable standards so that this could be injected into the system, however, due to public resistance and the stigma that is attached to waste water reuse, it was not possible to

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	authorities. The continued industrialization of residential and farming land is atoning to continuous discrimination that is unconstitutional and considered they by means of grabbing land for business and profit while the majority of people have no access to homes. Why are we not preserving the available land for the urgent need of housing and ecological but instead choosing to move in the direction of perpetrated apartheid planning means? Communities in this area have had to endured decades of abuse including insults to liberty and freedoms in terms of the groups areas act. There has been no proper spatial planning that considers how this massive erosion of living space will impact with inevitable intrusions into the social and environmental fabric of these be leagued communities of La Mercy and Tongaat. It is clear that the development imperatives of Umgeni Water and the interests and biasness of the CSIR is to allow our open spaces to be developed for purely economic and profit driven purposes.			pursue this option further. Other alternatives for supplying the area with water are being considered by Umgeni Water, the most preferred option being the uMkhomazi Water Project. However, if these options cannot be implemented due to a fatal flaw (such as with the reuse) then Umgeni Water must have an alternative to ensure that water can be provided to the citizens of the North Coast. Desalination is the option that is being considered for this purpose. Umgeni Water has a very comprehensive Infrastructure Master Plan which is available on the website www.umgeni.co.za and all bulk water supply options and future plans are presented in this document. At the outset of the Desalination Study, suitable areas for construction of a plant were considered based on a number of criteria, all of which are required for the appropriate construction and operation of a plant. These criteria include: Distance from sea, Height above sea level, Areas outside of dense residential housing, Environmental considerations both on land and off the coast, Estuarine areas and water quality considerations. The potential sites that were selected had taken all of these criteria into consideration and most of the areas along the coastline were excluded because of one or more of these criteria. Two sites on the North Coast fit the criteria mentioned above. One on the banks of the Mdloti River and the other is this site at Desainager. After undertaking a due diligence exercise to investigate preliminary geotechnical and environmental considerations at both sites, the Mdloti Site was excluded because of the impact to the Estuary and the Mangrove Swamps that border this. The Desainager site was

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				thenconsidered the most appropriate on which to position this desalination plant. *From CSIR:* In 2010/2011 Umgeni Water undertook an Environmental Screening Study (ESS) during the pre-feasibility phase. In this ESS, five potential sites along the North Coast of KZN were investigated for possible desalination implementation and these included a site near Virginia Airport; Tongati; Umhlanga by Sibaya Casino, Mdloti and Tongaat near Desainagar. The screening criteria used in this ESS included terrestrial ecology, estuaries, social impacts, heritage, marine hydrodynamic and water quality, marine ecology. Section 2.3.1 in Chapter 2 of this EIA gives more details on the results of this ESS and motivation on how/why the proposed Tongaat site was chosen. A social specialist study and an economic specialist study have been undertaken to assess the potential impacts of the proposed development on affected and surrounding communities. Please refer to Chapter 11 and Chapter 12 of the EIA report. Also please refer to response to issue 1.7 above.
1.9	Land Use Management Branch - No further comment received. Strategic Spatial Planning Branch - This Branch has assessed the proposal and raises no objections as the proposed Tongaat desalination facility would resolve	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.

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	the bulk water capacity limitations or shortages in the Northern area of the Municipality. Geotechnical Engineering Branch - No further comment.			
Comments on Final EIA Report				
1.10	**Strategic Spatial Planning Branch** – This branch has assessed the proposal and raises no objections as the proposed Tongaat desalination facility would resolve the bulk water capacity limitations or shortages in the Northern area of the Municipality.	11/08/2016	Claire Norton, eThekwini Municipality, email	Noted
1.11	Page 22 – Project Location: Background discussions on site locations not disclosed and unilateral decision taken about site location. The site location is a critical aspect of the process. Transparency is an essential requirement in legal process and impacts on several rights. The decision to locate the desalination facility in La Mercy was a fatal error and would have been rejected from the outset if process was made known. This investigation was covertly done to avoid objections. The choice of site as opposed to the other 5 demonstrates a disregard for the rights of the residents of this zone and values the rights of the neighbouring areas more highly amounts to a violation of the right to equality and environmental justice. The reasoning that the Umdhloti estuary is more environmentally sensitive than the La Mercy site which is a continuous beach zone is illogical. The Umdhloti	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	Refer to Final EIA report - Chapter 2, Section 2.3 and responses to issues 1.2, 1.7, 1.8 and 1.9 for details on site selection. The initial site selection process (as part of the screening study) has been presented at each public meeting. These initial sites were selected by Umgeni Water based on a range of environmental and technical criteria such as land zoning or ownership, access to services, coastline exposure relating to seawater intake and brine discharge; elevation, terrestrial and marine ecology, socio-economic aspects etc. This report is available to the authorities on request. The results of the feasibility study and environmental screening study have been presented to the public at each public meeting and are included in Chapter 2 Project description. The entire

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	lagoon area is indeed in a highly sensitive area but so is the whole stretch of coastal water adjoining the lagoon. No substantial tests have been conducted which indicates the contrary. This site was found to be the most convenient not the most suitable.(suggestive of not anticipating serious objections) The rejection and exclusion of the other 3 sites is not based on environmental principles but more about cost considerations and also hesitancy to deal with objections from the more affluent communities and elites. (Umhlanga is an upmarket area). Virginia Airport excluded for no clear logical reason.			feasibility/screening study has been included in this second draft EIA report for your information. *From Umgeni Water*: As described above, the topology of the coastal areas surrounding Durban have already been largely developed and there is little area left for the construction of a desalination plant of this nature (requires approximately 7.5ha). There are certainly no areas at Umhlanga that would be suitable for this development without buying and destroying large areas of residential or commercial property. In addition, one of the main difficulties with constructing a plant in Durban is how the water can be delivered to supply points. This was the exact reason why the Virginia Airport was excluded as an option. It would not be possible to construct large diameter pipelines from the airport to the supply points that required the water or this would become prohibitively expensive (eg using tunnelling options). This was communicated at the public meetings.
1.12	Page 635: Studies of site locations of desalination facilities in parts of the world where tourism, recreation and sport are substantial contributors to the economy, such as in Australia, California and Spain, show that these types of areas are unsuitable to use for industrial development., hence Umhlanga, Umdhloti and Ballito, all upmarket resort towns will not tolerate a large desalination facility on their beaches. It is decidedly a source of much dissatisfaction that Umgeni Water finds it convenient to plan an industrial type	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Refer to response to issue 9.36. Please also refer to Chapter 12 Section 12.5.1.2 eThekwini municipality has been involved in the proposed project from the outset of the EIA and has commented on every report released to the public. Refer to response to issue 4.13 below with regards to climate change. *From Umgeni Water*: The desalination project will supply approximately 75Ml/d north to Ilembe District Municipality and

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	development on La Mercy Beach which is sandwiched between Umdhloti and Ballito and an area which is and was used by residents of the area for more than a 150 years, as the community here was not allowed to use any of the neighbouring beaches just 20 years ago. The socio- economic background of the eThekwini municipality is one that is largely depressed. Unemployment is high, Basic utilities are not affordable to most resulting in large scale theft of electricity and water through illegal connections. Infrastructure vandalism is also widespread. There is rampant crime in the La Mercy area which also is under resourced in policing and security services. eThekwini has serious security challenges associated with rendering services in certain parts of La Mercy when employees have to deal with violent assaults and threats of violence. There are no recreational, sporting or community facilities whatsoever. La Mercy Lagoon and beach are all there is in terms of recreational facilities. Generally eThekwini has a long way to go to afford all its citizens just the very basic amenities. It is not surprising that eThekwini has not opposed Desalination. We doubt very much that any of the Department heads know enough about SWRO desalination technology to make meaningful input in this EIA process. This would be understandable because of the newness of desalination in Sub – Saharan Africa where most people live in dire poverty. All levels of government would need to focus funds to			75Ml/d south into eThekwini. This water will be for residential, industrial and commercial use and will be billed to consumers at Umgeni Waters Tariff and not at a ring fenced desalination cost. LaMRAG are incorrect in their statement of supply areas and beneficiaries. Between 150 000 and 200 000 households will ultimately be supplied with water from this plant. The supply areas will extend from Stanger in the North to Cornumbia, Verulam and Waterloo in the South. The plant is not proposed to serve the growth of Ballito alone but rather to serve the increasing demand along the entire North Coast Area. Both Ballito and La Mercy fall within this area of supply. Both desalination plants and traditional water treatment plants are large structures and, as in this case, can take up to 7ha of land for their construction. Wherever one of these plants is positioned, there will be an impact to the land or communities surrounding that area and these impacts will have to be mitigated as best as possible. The only alternative is to not construct these bulk water projects and then there will be a direct impact to people livelihoods when the current resources cannot supply the required demand.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE (from CSIR unless otherwise indicated)
	redress poverty. A costly new water source should not feature in any medium or even long term plan. Silence from eThekwini on desalination must not be interpreted as implied consent or approval. Our duty is to clear up the misinformation going around that desalination is the answer to our water shortage and drought situation. It is interesting to note that eThekwini has "climate change" on its priority list. This means that electricity generated through this source will be reduced. EAP has not even discussed this major issue either as a cost or environmental concern. We will revert to this below. **At time of finalising this document (10 June 2016) South Africa's economy is in a state of recession or negative growth.			

2. Issues related to noise, nuisance and to visual

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
2.1	Environmental Health Department. The Health comments made in response to the Background Information Document and the Draft Scoping Report have been included in the present report. The following additional comments are submitted: 7.2 Noise pollution. Please indicate whether the noise study will include recommendations on noise attenuation measures and architectural design parameters to abate potential noise during the construction and operational phases of the plant. It is not certain whether back-up generators will be installed at the plant. Should this be the case, then noise impacts from these must also be included in the study.	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	A noise specialist study has been undertaken and appropriate attenuation measures recommended. Please refer to Chapter 12 for more details.
2.2	In practice, realistically, what is actually going to be there? All that you are showing is theoretical, what is actually going to be the impact? What are they residents going to see? What is the noise that we are actually going to hear? You are painting this beautiful picture but in reality you are living in a country that can't even function, and how are you expecting this to come out looking beautiful and green like that? I don't think that as a community, this is anything that we should be even considering. Forget the water shortages.	13/04/2016	Justin Wendler, Private, Public Meeting	*From CSIR*: A visual and a noise impact assessment were undertaken and have assessed potential impacts on surrounding communities. Refer to Chapters 9 and 10 of the EIA report. A photomontage or 3D modelling can be done during the detailed engineering phase. This will give an idea of what the plant would look like and the views in various directions. *From Umgeni Water*: The architecture of the site and plant will be developed as part of the detailed design process and will be based heavily on recommendations from DEA and landowner concerns. The plant will be designed to fit in with the local surroundings as best as

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				possible. In addition, Umgeni will most likely design the plant with berms etc. surrounding the site so as to make the plant less visible to the public. All of this will be identified during the detailed design stage.
2.3	In terms of visual impacts, the height of buildings is supposed to be maximum 10 m. Did the specialists consider lowering the land and therefore the height of the buildings to decrease the visual impacts? It's better to sacrifice costs than visual impacts.	13/04/2016	Jeevah Pillay, Tongaat Civi Association, Public meeting	*From Umgeni Water*: It will be possible to undertake and architectural design of the plant to minimise the visual impact. In other countries plants have been constructed to have vegetation growing on the rooves so you can almost not see them from above. Other plants have been constructed slightly lower than ground level or with berms or trees surrounding the plant to minimise the visual impact. These considerations can be made during the detailed design and architectural design phase.
2.4	What about traffic impacts, dust impacts, pollution mitigation?	13/04/2016	Vignesh Naidu, Private, Public meeting	*From CSIR:* Traffic during operation of the proposed plant will be limited to the supply of chemicals (i.e. approximately 2 times per month) and normal staff traffic. Traffic during construction will include workforce travelling to site and large machinery accessing the site (mostly at the beginning of the project only as these vehicles will then remain on site). The impacts related to traffic are therefore expected to be negligible. The EMPr stipulates management actions (good housekeeping, waste management, accidental spillage etc.) to be implemented as part of the construction phase (Refer to Section 5. A of the EMPr). As per Umgeni Environmental Management, dust during construction activities will be controlled with water, chemical soil stabilizers or temporary surfacing to avoid physical and social significant impacts. (refer to Annex A of the EMPr)
2.5	The visual impact study contained in EIA suggests that every effort will be made to adequately screen the facility, however it is not totally clear what the end	09/05/2016	Kate Ralfe, Tongaat Hulett	Refer to response to issue 2.2

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	impact will be, as a design / architectural renders of the plant are not available as of yet. It is submitted that the developer consider further screening elements and "green building techniques", such as the example of the Victorian Desalination Project put forward in the public meeting. Regarding the proposed electrical servitudes, we would welcome further interaction with the developer when it comes to determining the final alignment of the pylons. As stated above, Tongaat Hulett intends developing some of the area which is affected by the powerline, thus integration with future planning for the area is crucial. According to the EIR, topography should be utilized to screen these powerlines from La Mercy residents, however future residents also need to be considered.		Developments, Email	*From Umgeni Water*: Discussions with Tongaat in terms of final positioning of pylons will be undertaken, in collaboration with the relevant specialists (aquatic and heritage specialists) as to minimise visual, heritage and freshwater impacts on existing and future surrounding communities.
2.6	According to the EIR, during the operational phase a noise survey is to be conducted to determine if the noise emissions on the site of the boundary are within the noise ratings limits, and to identify if further mitigation is required. It is suggested that these potential mitigation measures are detailed further. A key concern relates to the potential future sterilization of land for noise sensitive uses within close proximity of the plant. It is unclear whether or not this facility will be fitted with generators. If generators are to be used, the	09/05/2016	Kate Ralfe, Tongaat Hulett Developments, Email	*From CSIR:* The Noise specialist study (Chapter 9 of the EIA report) concluded that residents are not anticipated to be impacted by noise generated at either the main plant or the pump station during the operational phase. Long term noise impact from the plant during the operation phase will be concentrated in the immediate area around the facility (i.e. 45 dBA would be reached within a maximum of approximately 50 metres from the site boundary). The Tongaat Desalination Plant noise impact on receptors is predicted to be of low to very low significance during the construction and operational phases respectively, provided the recommendations for mitigating noise impacts are applied effectively.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	impact on this should be investigated from a noise perspective.			*From the noise specialist*: The electricity usage on site will exceed the capacity of a standby generator. The plant operations will therefore cease when the electricity supply is interrupted. A small generator may be placed inside one of the operational buildings to provide emergency lights to enable staff to evacuate. The noise from the generator will be of short duration to enable the evacuation process. The noise emissions will be contained inside a building and only an exhaust protruding. This noise source is considered insignificant as it can be mitigated with ease.
2.7	Due to proposed desalination plant approx. 7 hectares in size and possible electrical pylons being constructed, there will be considerable negative visual impact to adjacent residential property. 8.1. During meeting with LaMercy Residents Action group on 29/4/2015, Mr. Kevin Meier suggested that negative visual effect can be mitigated by building the entire plant underground and building a park over it. Is this a patronizing tactic? I challenge Umgeni Water and CSIR to prove feasibility and practicability of this undertaking. Perhaps this mitigation method could deal with visual and noise impacts to minimum level. 8.2. Introduction of high tension electrical lines, propagation of electromagnetic fields will also negatively impact residents in close proximity.	09/05/2016	Damir Percaic, Private, Email	Refer to response to issue 2.4. *From CSIR*: Visual impacts associated with the proposed powerline have been assessed as part of the Visual specialist study (Chapter 10 of the EIA report). The study concluded that residual visual impacts (after mitigation) associated with the construction of the proposed project are anticipated to remain *high* for the plant, *medium* for the marine pipeline and *low* for the proposed pipelines and powerline. During the operational phase, the impact on the landscape and the visual intrusion associated with the plant and powerline are expected to be of *medium* significance following the successful implementation of recommended management actions. Impacts associated with night lighting are anticipated to be of low significant with the implementation of recommended management actions. *From Umgeni Water*: It may be possible to develop the plant with a roof top covered in vegetation to mitigate the visual impact. It might also be possible to construct the plant with part of the plant below ground level, however, the feasibility of this can only be determined

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	8.3. Noise pollution emanated by the plant cannot be absorbed or taken away by existing noise. Total noise level will be increased by noise emanated by the plant. 8.4. Night lighting will also negatively affect surrounding area. 8.6. Negative effect to traffic flow and possible increased wear and tear to private vehicles due to roadworks / construction during projected 5 year construction will have a major negative effect. 8.7. Increased traffic volume during construction and operation will also be a major detriment to adjacent residents.			during the design process. There is a lot of water on site and the ground level is not significantly above sea level so these considerations will have to be taken into account during the detailed architectural design of the plant. At the meeting on the 29/4/2015 it was mentioned that there were many measures that could be adopted to mitigate visual risk such a constructing part of the plant below ground level. It was indicated that in some extreme instances entire buildings had been constructed underground. It is unlikely that this would be a feasible option for this plant but could be investigated at the detailed design stage. The impact of additional traffic on the roads will be negligible. The road already carries a lot of traffic from cars to trucks and the marginal increase in traffic during the construction or operational phase of the project is unlikely to further negatively affect the surface. However, if any traffic, as part of the construction phase of the project, is deemed to have a detrimental effect on the road then Umgeni Water would work with the department of transport to address this. *From Social specialist:* All transmission lines have servitudes in which people are not permitted to reside (servitude width increases as the voltage of the transmission lines increase). The purpose of the servitudes is to reduce possible impacts of EMFs (electromagnetic fields) as well as other possible dangers (tower collapse, etc.). In the case of a 132 kV transmission line which is required for the desalination plant, a servitude of 36 meters is required (18 meters either side of the centre line). There have been extensive studies on the effects of EMFs, all inconclusive.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				From Noise specialist: The noise from the plant will be attenuated by the general ambient noise (such as wind noise, traffic, sea shore noise etc.) up to a point where the plant noise exceeds the ambient noise. A person will only experience the louder of the two. The conclusion of the noise specialist study (Chapter 9) is that the Tongaat Desalination Plant noise impact on receptors is predicted to be of low to very low significance during the construction and operational phases respectively, provided the recommendations for mitigating noise impacts are applied effectively. *From Visual specialist:* The visual impact assessment concluded that if mitigation measures are not implemented or are not successful then the significance of the visual impact on sensitive visual receptors (viewers and viewpoints in the surrounding landscape) will be high which means that "the impacts will result in major alteration to the environment…". Sensitive visual receptors include residents of neighbouring properties, residents of Desainagar, Shaka Estate and La Mercy among others. The reason for the high significance of this impact is that the desalination plant is an industrial type development which is proposed for an agricultural/residential area (which in future is likely to become a mixed residential area according to the regional municipal planning documents). Existing views will change significantly but more importantly the development will not fit in with the existing or planned landscape since it has an industrial architecture and contain elements generally associated with industrial areas. The key to reducing the significance of the visual impact lies in screening the industrial aspects of the development from public view. Architects and landscape architects will be involved in the design

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				layout of the plant with the specific objective to hide industrial elements and make the plant fit in with its surroundings. The design will take cognisance of the future plans for the area as well as of existing views (including sea views which may be affected by the plant). Vegetation, landscaping and architectural design of structures and buildings will be used to minimise visual intrusion. As such, the impacts on the landscape as well as visual intrusion on sensitive viewers, associated with the operation of the proposed desalination plant and powerline are anticipated to be of medium significance. Night lighting of the plant has the potential to negatively affect the nightscape of the area. The assessment determined that without mitigation measures the significance of the impact of night lighting on the surrounding area will be medium (since the nightscape is already affected by many lights in the surrounding landscape). Mitigation measures will reduce the significance of the impact to low. Among other measures a lighting plan which clearly demonstrates that project lighting is shielded from surrounding areas (particularly neighbouring residences) will be prepared during the design phase of the project.
2.8	It seems uncertain whether the power supply to the proposed development will coincide with eThekwini's future development plan in the area which would provide a 132kV point of supply would be available within 1km from the proposed SWRO plant site. Should the proposed desalination plant precede the eThekwini electrical infrastructure expansion, UW would need to construct a single-circuit 132 kV transmission line from the nearest 132 kV point of supply (i.e. which is the supply from the La Mercy	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From CSIR:* The social/visual impacts associated with the powerline route proposed by eThekwini have been assessed as part of this EIA. Please refer to Section 10.7.1.4 (Chapter 10 Visual impact study) - During the operational phase, the impact on the landscape and the visual intrusion associated with the powerline are expected to be of *medium* significance following the successful implementation of recommended management actions, i.e. using the proposed alternative route (Alternative 1).

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Major Substation located approximately 5 km from the proposed site, on the western side of King Shaka international airport) to the proposed desalination plant site. While, where possible, UW intends to follow the route proposed by eThekwini as part of their electrical infrastructure expansion, an alternative route has also been proposed to mitigate visual intrusion on La Mercy residents. Both options are considered environmentally acceptable, i.e. the eThekwini future plans and the alternative, and are recommended for Environmental Authorisation. Issue: The visual intrusion on La Mercy residents will remain high should eThekwini's current route plan be used. The EIA has only considered the route from an environmental perspective. How/when will the impact on the residents, i.e. social impacts of this aspect of the project be addressed?			
Comments on Final EIA Report				
2.9	The visual impact of such an industrial site will deter any further development in the area. Eventually people will move out the area, leading to a slum area.	24/08/2016	Mario de Abreu, King Shaka Estate resident, comment form	*From Umgeni Water*: An architectural design would be undertaken to ensure the least visual impact on the plant to the surrounding environment. *From CSIR*: Potential visual impacts on sensitive receptors such as King Shaka Estate (and others) have been assessed by the visual specialist. Please refer to EIA report Chapter 10 (in particular Section 10.6.3.5, Table 10-5, Sections 10.7.1.2 and 10.7.2.2 in relation to King Shaka Estate) for details on this assessment, including recommended management actions aimed at mitigating anticipated visual impacts.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Note that overall, the significance of the visual impact of the desalination project will be high **before** mitigation. If the mitigation measures can be successfully implemented so that the desalination can at least fit partially into the landscape then the significance will be **medium**, *with the exception* of the potential visual impact of construction activities associated with a desalination plant which will **remain of high** significance during the **temporary** duration of the **construction phase**. With regards to the comment about people "moving out the area", whether people move into or out of the local area in the vicinity of the desalination plan will be a consequence of several planning and socio-economic and political factors that are well beyond the direct influence of the desalination plant.
2.10	Page 460: On the short term noise issue, LaMRAG question is What does short –term mean? There is no justification for communities which do not benefit from a development to endure intolerable decibels for two years or more. There is no reason to believe that the noise would not continue for 4 or 5 years during construction. LaMRAG will oppose this long duration of disturbance of quality of life. The serenity of the environment around La Mercy is the essence of lifestyle of the residents. Industrial development is bound to shatter the peace which people here value very highly. It will be too late and too expensive to	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Please refer to Chapter 4 Approach to EIA Section 4.7 for the definition of the assessment criteria. The construction is anticipated to last for 18 to 24 months (not for 4 to 5 years as stipulated by the I&AP). The total process of raising funds and undertaking the design of the plant and then constructing the plant would take five years although the construction period is unlikely to exceed 24 months. Noise impacts associated with the construction of the desalination plant and associated infrastructure are anticipated to be local and temporary (defined in this assessment as a period of less than 2 years). It must also be noted that noise impacts associated with the construction of the potable water pipeline/powerline on specific

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	restore the original quietness after the project is started.			sensitive receptors will be of very short term (<1 year) and will decrease as the line progresses away from the receptor. In addition, if current ambient noise levels already exceed the typical rating for noise, which was found to be the case in the areas monitored as part of this study during the day and night (Refer to Chapter 9, Table 9.4.), construction noise would only be considered a disturbance when the predicted noise levels exceed ambient noise by more than 7 dB. Please refer to Final EIA report Chapter 9 for the details of the assessment undertaken by the Noise specialist. The conclusion is that the Tongaat Desalination Plant noise impact on receptors is predicted to be of low to very low significance during the construction and operational phases respectively, provided the recommendations for mitigating noise impacts are applied effectively.
2.11	Page 497: King Shaka Estate which will be amongst the worst affected is also represented by LaMRAG in opposing this industrial development. EAP is confirming this high negative impact. Nowhere else in the developed world would such an industrial facility be allowed to be built in such a sensitive area? In our view this negative impact features as one of the top five reasons why this EIA should return a "fatal flaw" outcome. To argue that the visual impact can be mitigated is foolhardy when the NO – GO option is the most logical option.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Potential visual impacts on sensitive receptors such as King Shaka Estate (and others) have been assessed by the visual specialist. Please refer to Chapter 10 (in particular Section 10.6.3.5, Table 10-5, Sections 10.7.1.2 and 10.7.2.2 in relation to King Shaka Estate) for details on this assessment, including recommended management actions aimed at mitigating anticipated visual impacts. Note that overall, the significance of the visual impact of the desalination project will be high **before** mitigation. If the mitigation measures can be successfully implemented so that the desalination can at least fit partially into the landscape then the significance will be **medium**, *with the exception* of the potential visual impact of construction activities associated with a desalination plant which will

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	The visuals in this Draft Report misrepresent what the desalination facility will look like for King Shaka Estate and also for all the others impacted. This is not how a typical desalination plant looks. The cost of a facility like the Australian one will be vastly greater even on a smaller scale. The photograph below is a desalination plant in Saudi Arabia and is very different from the one serving Melbourne.  The outside view also belies the inside of this plant in Victoria. As one reporter describes it "The Victorian Desalination Plant is an intricate mess concealed elegantly among the dunes, writes Marc Moncrief." Read more: http://www.theage.com.au/victoria/inside-the-desalination-plant--your-guided-tour-20151118-gl20ck.html#ixzz48NxFG4dX At that time, it was spoken about as our last, best protection against a brutal drought. Then the drought broke. Read more:			**remain of high** significance during the **temporary** duration of the **construction phase**. Note that the photograph included by LAMRAG in this issue represents a **multi-stage flash process (thermal) desalination** plant and **NOT A REVERSE OSMOSIS PLANT** and is therefore **NOT AT ALL A REPRESENTATION OF THE PROPOSED DEVELOPMENT AT TONGAAT**. (Source: http://www.dlr.de/tt/Portaldata/41/Resources/dokumente/institut/system/projects/aqua-csp/WP01_AQUA-CSP-Technologies-Final.pdf)

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	http://www.theage.com.au/victoria/inside-the-desalination-plant--your-guided-tour-20151118-gl20ck.html#ixzz48NzM2D77 The Coalition government that followed painted it as a useless, unused, expensive white elephant. Read more: http://www.theage.com.au/victoria/inside-the-desalination-plant--your-guided-tour-20151118-gl20ck.html#ixzz48NzX9FwQ [1] The point is Desalination by SWRO is not pretty. If it is made pretty then we will not be able to afford it all. For all the good outside look, this prettified factory has not delivered any water yet!			
2.12	If EVGR, Visual impact on homeowners on the hillside estate property value.	13/04/2016	Claire Lilford, Private, Public meeting Comment form	Please refer to Responses to Issues 2.9 to 2.11

3. Issues related to social and economic impacts, and to heritage impacts

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
3.1	I have a home next to the property that is going to be used for this project What would happen to the value of this property? How would we be affected?	13/05/2015	Jayarani Govender, Email	Impacts on property values have been assessed as part of the Economic impact assessment study. Refer to Chapter 13 of this Draft EIA report
3.2	You are probably aware that LaMRAG has been invited by Acer Africa Environmental Consultancy to a Focus Group Meeting with regards to a SIA that is being undertaken. We are a little uncertain at this time where this SIA fits in the EIA process that we know is still in the Draft Scoping Phase. Duncan Keal from Acer informs us that the SIA is being done for the EIA and not for the Draft Scoping Report. So please clarify this issue. We are also of the view that an economics specialist`s input will be required at some stage since I believe that a CBA is critical. The costing done for the previous draft scope was bare and superficial to say the least. We understand that this was a preliminary report. However, the economics are such an important matter that more attention ought to have been given to it at the earliest possible time, at least the same level of attention given to the technical report and the environmental reports.	29/04/2015	B Rawheath, LAMRAG Adviser, Email	The SIA was undertaken as part of the EIA process which includes a scoping phase and an impact assessment phase. Potential impacts in the various fields of studies have been assessed as part of the specialist studies. Please refer to Chapter 12 (Social Impact Assessment) of this Draft EIA report. A socio-economic study has been undertaken as part of this EIA as mentioned in the Final Scoping report and Draft EIA report, Chapter 1, Section 1.6 EIA Team. Also refer to Chapter 13 (Economic study) of this draft EIA report.
3.3	Negative impact on our property values, No person wants to live near an industrial plant.	29/05/2015	Marlene Naidoo, Email	Impacts on property values have been assessed as part of the Economic impact assessment study. Refer to Chapter 13 of this Draft EIA report

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
3.4	Will fisherman be affected, and how many?	13/04/2016	Unknown, Private, Public Meeting	*From social/economic specialist*: During construction there will be an exclusion zone (onshore and offshore) implemented for a period of approximately 18 months. The exact size of the exclusion zone is not known but it is expected that it would extend approximately 500 m either side of the proposed marine pipeline. Fishermen will be able to continue with activities either side of the exclusion zone. During operation it is understood that activities can continue as per normal. In Section 12.5.4 (Chapter 12), the Economic specialist report finds that, "At an overall level the Marine Assessment found that, with few exceptions, mitigation measures would reduce the negative impacts to a low significance level. This finding along with the relatively small potential sacrificial zone associated with the project indicates that impacts on fishing would be low during construction and operations with mitigation." The sacrificial zone would be in the order of 40 m wide by about 80 m long which should result in very limited impacts on fishing.
3.5	Lots of people have invested in property in this area. Prime real estate will now be transformed into an industrial area. Although everyone is aware of the water shortage, the proposed development is still upsetting for people buying property there. Decrease in property value. Quantification of the economic property loss?	13/04/2016	Mike Wilson/Justin Wendler/Vee Govender, Private, Public Meeting	*From Economic specialist*: Section 12.5.6 of the Economic specialist report addresses impacts on property values. It is found that the project would entail risks to property values particularly as a result of its lack of compatibility with surround land uses (a large industrial facility into a sea-side residential and small scale farming area). With respect to the significance of impacts, the study found that "Without additional mitigation, the impacts or risks to property values are predicted to be of a medium to high negative significance during the construction phase given its high intensity but temporary nature and a high negative significance during the operational phase. With the effective implementation of key mitigation measures, impacts should reduce to a medium negative significance during the construction and operational phases. This is largely in keeping with the findings of the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				VIA of medium overall visual impacts with mitigation. Note that the achievement of medium impacts during operations would require particularly stringent mitigation of visual and noise impacts. Note also that impacts are not likely to be evenly spread and higher intensity impacts would be associated with the loss of views in particular." Risks are therefore made clear albeit not quantified in monetary terms.
3.6	What does heritage actually mean, and I will come back to that about how important this space is to these communities that live here because we were affected by the Group Areas Act and that impacts directly on this space. So heritage also includes that - I noticed that it wasn't included so it is going to be an important point. The landowners actually wanted to sell the land and tried to get Umgeni Water to buy the land even before this desalination plant becomes a reality. I am including this point because of the point that you raised about the heritage value of the land and the value the people attach to the land. The very owners of this property are willing to sell the land.	13/04/2016	B Rawheath, LAMRAG Adviser, Public Meeting Jeevah Pillay, Tongaat Civic Association, Public meeting	*From Social specialist:* The 'Emotional Impact Due to the Loss of Land and Housing' is discussed under Potential Impact 11 (Chapter 11). Again, while it is understood that this is a significant impact for local people, it needs to be placed in the context of the need for a secure water supply.
3.7	Why is there no mitigation for the impact on commercial and recreational fishing and tourism and recreation and property value?	13/04/2016	D D'Sa, SDCEA, Public Meeting	*From Social specialist:* The exclusion zone is likely to be small and fishermen can move either side of it and continue with activities. Refer to response to issue 3.4. Mitigation for the 'Temporary Restriction on Access to Recreational Areas' which also deals with tourism is provided in the report (Impact 4 – Chapter 11). Impacts on property values are dealt with in the Economic Impact Assessment – refer to response to issue 3.5.
3.8	How many people of your team live in La Mercy? You are all outsiders. You don't feel for this piece land like	13/04/2016	B Rawheath, LAMRAG	Refer to response to issue 3.6.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	we do. So you can never understand what we are talking about. This has been a historic farm area for Indians for the last 100 years. We live on the North Coast, this is a North Coast issue, not just a La Mercy issue.		Adviser, Public Meeting Ken Leaver/Vee Govender, Private, Public Meeting	
3.9	Job creation vs job losses on the farm land. This does not justify the project.	13/04/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From Social specialist*: The impact on current employees on the market gardens is discussed in Chapter 11 under Potential Impact 13. It is reported that approximately 100 people are currently employed on the land (Section 11.5.2.3) to be used for the desalination plant, who would be affected, including the possibility of job losses. In contrast, in the region of 350 unskilled jobs will be created during construction, albeit it is acknowledged that these are temporary. Mitigation measures to reduce the impact on job losses are also discussed. The loss of jobs also needs to be placed in the context of the need for a secure water supply. It is understood that plans will be put in place to ultimately upskill local people (South Africans) to ensure that over a period of time all employees are local. *From Economic specialist*: The Economic Specialist study (Chapter 12) reports that the project would indeed not be a significant job creator during operations. Limited jobs opportunities on the site are therefore not a justification for the project, the key benefits of which would be at a more strategic level in the form of water provision.
3.10	50 % of the water will go to the Ethekwini and 50% to Illembe Municipalities? That is the problem. The whole of the La Mercy zone uses a tiny fraction of the water. You are going to ruin our whole space in order to get	13/04/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From Umgeni Water*: The desalination plant will provide water to residential, commercial and industrial development both north and south of the plant site. Between 150 000 and 200 000 households will ultimately be supplied with water from this plant. Both desalination

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	this water to someone else somewhere else to water their golf courses.			plants and traditional water treatment plants are large structures and, as in this case, can take up to 7ha of land for their construction. Wherever one of these plants is positioned, there will be an impact to the land or communities surrounding that area and these impacts will have to be mitigated as best as possible. The only alternative is to not construct these bulk water projects and then there will be a direct impact to people livelihoods when the current resources cannot supply the required demand.
3.11	Main plant and skills will come from overseas – so our people here will not be used at all?	13/04/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From Umgeni:* Most of the large scale desalination plants, constructed worldwide, have been done so using overseas expertise. However, the general staff on site will almost certainly be mostly locally based. Umgeni Water strives to include local labour and companies in all of its construction initiatives. If an international expert were used in this project then it would be a great opportunity for local companies, who would partner with the international company, to gain the experience required to ultimately lead the construction of one of these plants. In this way there would be a positive technology transfer occurring where international expertise would build the local capacity. In addition, there is at least one local company that has expertise in constructing large scale desalination plants so it is not correct to simply say that the main plant and skills will definitely "come from overseas".
3.12	EIA report refers to "emotional impact due to permanent loss of land". Various factors determine the price of residential area. One of those is desirability. Potential buyer will prefer a natural view over view of 7 ha desalination plant with electricity pylons spilling night lighting and a constant hum in the background.	09/05/2016	Damir Percaic, Private,Email	*From Economic specialist*: Please see response to Issue 3.5 above regarding impacts on property values which have been assessed including a consideration of impacts on views. The Economic Specialist study found that there would be risk to property values. If 'technical' mitigation measures (such as noise reduction and visual mitigation) are not effective enough and definite long term property values losses can be linked to the project, then there could be grounds for considering some form of compensation if this were only informed by

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	As owner invested in a property at King Shaka Estate, 50 Valley Roady, Desainagar, located approx. 300 m airline from proposed desalination plant , whom will compensate me for the loss of profit (decrease of property value) shall I decide to sell my property any time onward from when the plant is going in to construction stage? I don't believe this qualifies as "emotional impact" but rather a financial impact to adjacent residents.			economic theory which advocates the internalisation of externalities. However, the potential for compensation for property value losses has a strong legal dimension and it needs to be recognized that compensation is not necessarily required under South African law for properties adjacent to industrial sites, new infrastructure and similar projects.
3.13	The land in question is simply too large and strategic as well as enhancing our tourism industry which creates thousands of jobs, yet the developer Umgeni water and the EAP, CSIR want to determine its fate without doing the proper and meaningful research with the affected residents of La Mercy. The potential of tourism is not even explored in this development. There are questions around this contentious development and inevitable further disruption to the communities of the La Mercy and Tongaat area. In light of massive change in land use, from recreational to industrial, we believe that this will destroy, not only the green area but also the needs of the communities of La Mercy, that enjoy peace and tranquility which this development will be destroyed once this desalination plant starts up. Should this desalination plant proceed, information provided by the developer shows only a few jobs and most of it will be expert and skills based jobs which we do not have in South Africa and therefore Umgeni Water will have to import the labor force?	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: Impacts on tourism and recreation, job creation, nearby residents have been assessed in the various specialist studies (refer to Chapters 9 to 12 of this EIA report). *From Umgeni*: There are a number of institutional arrangements available for implementation of a project of this nature. Because it is a technology that is not commonly used in SA and not on a large scale, Umgeni Water would most likely contract a company which has sufficient international expertise in developing large scale desalination although there would be a local requirement so that South African companies could be upskilled in this form of development. In this way there would be a positive technology transfer occurring where international expertise would build the local capacity. Once constructed the plant would most likely be operated as a joint scheme with the experienced partner and UW and once the knowledge of operations of the scheme have been passed to UW then the scheme would be taken over as an Umgeni Water asset and wholly operated by the water board from that time going forward.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
3.14	Social enhancement studies We need independent research done on the impacts of this project in regard to people's livelihoods, quality of life and a cost base analysis done on the health the residents will endure from the chemicals emanating from the development. Must include the loss of crops, food security, employment, and local businesses and how this will impact on them-agriculture- markets	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR:* Impacts on people's livelihoods, quality of life etc. (e.g. positive spending injections into the area (impacts on employment and associated incomes), impacts on recreation and tourism, visual/noise impacts on surrounding communities etc.) have been assessed in the various specialist studies. Refer to Chapters 9 to 12 of this EIA report for further details. Opportunity costs associated with use of land (loss of crops), have been assessed in the socio-economic study (Chapter 12 Section 12.5.2 of this EIA report). There will be no air/chemical emissions from the plant. Refer to response to response to issue 11.7 below. *From the Social specialist:* Quality of the living environment is dealt with in Chapter 11, Section 11.7.1.2. None of the impacts identified during the construction phase were considered to be above a medium significance. People livelihoods – this is discussed in Chapter 11, under Section 11.7.1.5 and Section 11.7.2.3. There will be no chemical emissions from the desalination plant. Concentrated saltwater (brine) will be discharged into the sea which will then dilute with the seawater. The concentrated seawater will be devoid of chemicals in any quantity considered to be harmful. The possibility of Chemical Spills is dealt with in Chapter 11, Section 11.7.2.1 and the impact is considered low prior to and with mitigation. In addition, there will be no air emissions from the plant. Considering the above there is no need, in our opinion, to undertake a cost-benefit analysis on the health of residents.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Under Section 11.7.1.5 (Chapter 11), the 'Loss of income for market garden employees' (Impact 12) and the 'Economic Loss due to permanent loss of land and housing' (Impact 13) are both identified as high prior to mitigation. With mitigation measures, which are written into the EMPr, these are reduced to medium and low significance, respectively. Importantly, the impact on the livelihoods needs to be considered in the context of the need for a secure water supply. In terms of the impact on agricultural markets, our projection is that the loss of agricultural land, less than 11 ha, as a result of the project, is unlikely to have a noticeable impact on markets. In this regard, it is important to note that alternate land can be used to continue agricultural activities.
3.15	These proposed lines cross my property on Sub 209 of Cottonlands No. 1575. Please be aware that there is a graveyard on this sub and I would imagine these lines would go straight through it. Graveyard is at co-ordinates 29 38 14.46 S 31 07 00 36 E. I have an issue with two servitude lines going through my property (by the way you have not included Sub 210 of 211 in your notice and these servitudes goes through it.)	14/04/2016	Murray Jackson, Private, Email	*From CSIR*: The proposed powerline and potable water pipeline would not cross this graveyard. A map with the proposed corridors was sent to Mr Jackson. According to the information CSIR has, Sub 210/1575 is not affected (located to the south east of 211/1575). Sub 211/1575 has been included in the notice. In addition, corridors of 50 to 200 m have been applied for to allow for slight deviations of the proposed route in order to avoid/minimise potential aquatic/heritage/visual impacts.
3.16	Economic Development Unit - No further comment received.	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	Noted
3.17	What is the percentage value that the properties will decrease by this plant	13/04/2016	Asaon Naidoo, Private, Public	Please refer to response to issue 3.5.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
			meeting Comment form	
Comments on Final EIA Report				
3.18	I have read the EIA in regards to the above proposed project and I must raise my objection to this desalination plant going ahead. **Economic impact:** Desaigner and La Mercy have recently been attracting people wishing to escape the crowded urban areas. As Umhlanga and Ballito get over populated, La Mercy which in the past was overlooked is currently undergoing a surge of interest from developers in the area. The prospect of such an ugly industrial structure in the vicinity will deter property developers as well as other potential retail and entertainment potential in the area. The potential for current home owners to move out the area due to an unsightly industrial complex on the doorstep is huge, leading to the creation of another slum area. This would be most unfortunate because the area has the capacity and potential to become an upmarket, environmentally friendly suburb which would contribute greatly to the coffers of the municipality.	24/08/2016	Mario de Abreu, Eskom, email	<u>*From CSIR*</u>: A socio-economic impact study has been undertaken. Please refer to Chapter 12 Socio-economic study for details on the assessment on risk factors for residential property values. The study states: "*Estate agents and residents have expressed concern regarding the introduction of what is essentially a large industrial facility into a sea-side residential and small scale farming area that would use technology (i.e. desalination) which is not familiar in the South African context. These concerns, which include an element of stigma or averse public perceptions, are valid given the little-know nature of the technology to be used and because the project will result in higher risks relative to more compatible uses such as residential development. It is thus considered likely that the project would be associated with some level of stigma with potential negative impacts on the property market nearby. If the project does go ahead, it will be very important that the applicant institutes mitigation measures to limit the formation of ill-informed perceptions regarding the project. This should help to limit the emergence of unfounded stigma.* *The construction phase would be associated with high intensity visual, noise and dust impacts along with disruptions. This would entail risks to the short-term saleability of surrounding property as would be the case with virtually all major construction projects. The property market is, however, likely to take its lead from <u>permanent</u> impacts. During the operational phase the visual impacts of the plant*

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				and powerlines would be the key driver of impacts as noise and marine impact would be relatively more manageable. The following mitigation measures have been recommended by the visual specialist to lower the significance of the visual impact: extensive use of vegetation and architectural design to break up straight lines of buildings and to reduce visibility of industrial structures. "
3.19	Page 581: The loss of livelihood is understated and underestimated. Loss of workplaces and displacement of several hundred people will result when farmland is converted to industrial land. There will be permanent loss of income for the hundreds of fishers both anglers and ski – boat fishers. Nothing in the Draft EIA suggests that there is any plan in place to mitigate this social and environmental injustice. The loss of value of property has not been estimated. The whole residential property market will be negatively affected in view of a large industrial facility being located in the middle of a residential area. In fact this loss should be factored into the Cost Benefit Analysis which has not been undertaken at all. What exactly is the "emotional aspect?" Can "emotional "damage be quantified? How does EAP plan to mitigate emotional damage that will be virtually impossible to calculate in monetary terms? This entire expert report is an oversimplification of the complexities of issues associated with land dispossession. The finding is inconsistent with the	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Noted. Please refer to Final EIA report Chapter 11 for details on the assessment of social impacts associated with the proposed project (in particular Potential Impact 13 related to the impact on current employees on the market garden). Contrary to this I&AP statement (i.e. *Loss of workplaces and displacement of several hundred people*), it is reported that approximately 100 people are currently employed on the land (Section 11.5.2.3) to be used for the desalination plant, who would be affected, including the possibility of job losses. In contrast, in the region of 350 unskilled jobs will be created during construction, albeit it is acknowledged that these are temporary. It is understood that during the operational phase, plans will be put in place to ultimately upskill local people (South Africans) to ensure that over a period of time all employees are local. Refer to responses to issues 3.6, 3.9, 3.11 and 3.13. Also refer to responses to issues 3.4 and 3.7 regarding potential impacts on fishermen. Regarding Property values – Please refer to responses to issues 3.5 and 3.12.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	negative impact and not justified given the strong disapproval of community to taking residential land for an industrial development that will cause irreparable harm without substantial benefit for this community.			Regarding Emotional aspect – refer to Chapter 11 Section 11.7.1.3 Impact 11. This impact is recognised in the EIA report as being a high significance impact. While it is understood that this is a significant impact for local people, it needs to be placed in the context of the need for a secure water supply. In addition, as cited by Mr Jeevah Pillay from the Tongaat Civic Association - "*The landowners actually wanted to sell the land and tried to get Umgeni Water to buy the land even before this desalination plant becomes a reality. I am including this point because of the point that Mrs Rawheath (LANRAG) raised about the heritage value of the land and the value the people attach to the land. The very owners of this property are willing to sell the land.*"
3.20	Chapter 13: LaMRAG has repeatedly drawn attention to the "heritage" element of the environmental right. Any development that has the potential to negatively impact on heritage in its various representations needs to be carefully scrutinised. We believe that this report glosses over the deep historical significance of this area to the Indian community who have been using this area as their living space for over 150 years. This community is still largely composed of descendants of indentured labourers and began farming here for over 100 years and continue to have a cultural base in this piece of land. The people here value family, cultural and spiritual lives. Most still live here because La Mercy was always	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Please refer to Final EIA report Chapter 13 Table 13.2 which lists observations of heritage resources within the study area. In addition, impacts on the quality of the living environment, sense of place (perceived aesthetic etc.), family and community impacts (perceived discrimination, emotional impacts) have been assessed as part of the Social impact assessment specialist study. Please refer to Chapter 11, Sections 11.7.1.2 to 11.7.1.4. Please refer to Chapter 4 Section 4.4 as well as Response to issue 9.19 for a detailed description of the public participation process undertaken as part of this EIA, to ensure that information is shared appropriately. In light of the public participation process undertaken for this project, CSIR therefore believes that the project team has

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	a place that was a haven of peace and serenity and one of only a few places of natural beauty along the east coast where Indians were historically allowed ownership of land. At this time most people in the area know little about the potential impact of the proposed Desalination factory. LaMRAG has been working at information dissemination. But we have some way to go in that regard. With full knowledge we have no doubt that the residents and neighbouring areas who use the M4 or the Mdloti Lagoon for recreation will strongly oppose the upheaval that will destroy the tranquillity of the area and the destruction of the environment. Although we do not presume to fully understand the struggle of the Amadiba community in the Eastern Cape against the Australian Mining company (MRC) that is intent on dispossessing this community of ancestral land, the emotional impact on the Greater La Mercy Community of their right to maintain the ambience of their living space must not be underestimated. "The assassination of Rhadebe has garnered national media attention, especially since he was the chairperson of the Amadiba Crisis Committee (ACC). ACC has been embroiled in **a longstanding battle** with Mineral Commodities Ltd (MRC), an Australian mining company, over MRC's on-going attempts to mine sections of coastal dunes in the **Xolobeni area** along the Eastern Cape coast."			gone over and above the legal requirements with the explicit aim of encouraging public awareness.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	In other words we foresee that people will probably become angry when they start to experience the many negatives that will manifest themselves as the project proceeds if it is allowed to proceed. In our view the "heritage" issue for this community has not been sufficiently explored or investigated. This is a fatal flaw which together with so many other negative impacts must lead to the final dismissal of the application			

4. Issues related to energy and CO_2/GHG Emissions

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
4.1	<u>eThekwini Electricity Department.</u> The Electricity Department has no objection to the plant however the construction of the pipelines would have to be sent to this Department as there are planned lines, cables and substations in this area. Further, please note: 1.1. The applicant must consult eThewkini Electricity's main records (held in the drawing office at eThekwini Electricity Headquarters, 1 Jelf Taylor Crescent, for the presence of underground electrical services. In addition should any overhead line and/or servitude be affected, the specific permission of the Head: Electricity must be sought regarding the proposed development. 1.2. The relocation of MV/LV electrical services, if required in order to accommodate the proposed	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	Comment noted. The applicant will consult eThekwini Electricity's main records during the detailed engineering design. It is understood that the relocation of electrical services, if required, would be carried out at the expense of the applicant.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	development, will be carried out at the expense of the applicant.			
4.2	Cost of electricity to run the plant Availability of electricity	26/05/2015	Geoff D A Pullan, Email	Cost of electricity and impacts on water tariffs have been discussed as part of the Social and Economic studies (refer to Chapter 12 and 13 of this Draft EIA report) The eThekwini Electricity has indicated that electricity supply for the Tongaat site would be available for the proposed project; however written request will need to be submitted by Umgeni Water for the connection. If the supply is coincided with eThekwini's future development in the area, then the 132kV would be available within 500m from the proposed Tongaat site. Refer to Chapter 2 Project Description of this Draft EIA report
4.3	Desalination plant required cast energy power, with energy crisis at the moment, it is not energy efficient to have a desalination plant.	29/05/2015	Marlene Naidoo, Email	Please refer to response to issue 4.2.
4.4	Issue about Energy Consumption and Greenhouse Gas Emissions. Refer to Article "Key issues for seawater desalination in California – Energy and Greenhouse Gas Emissions. Pacific Institute, May 2013" (Appendix E of the Final EIA report).	09/05/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From CSIR*: The Article "Key issues for seawater desalination in California – Energy and Greenhouse Gas Emissions. Pacific Institute, May 2013" is noted. Climate change is a key reason behind the need for the desalination plant, in that climate change is predicted to lead to an increase in the variability of rainfall and an increase in extreme events (including droughts). The desalination facility would assist Umgeni Water in buffering water supply against variability in water supply sources based on surface run-off (such as dams, which are affected by drought and other effects of climate change). The extra 150 Ml/day of freshwater would constitute approximately 15% of the current level of water supply by Umgeni Water.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				The proposed plant would require 4 kWh of power per m^3 of potable water produced. In addition, power will be required for pumping sea water to the plant and potable water to the end user. This leads to the project requiring a total power capacity of 32 MW (when running at full capacity, i.e. only a few years after construction) which will be sourced from the eThekwini municipality grid. Please refer to Chapter 2 (Sections 2.4.2.1 and 2.4.7) for further details on energy requirements and energy recovering systems proposed as part of the desalination plant. This power requirement is not anticipated to significantly add to the current power demand for South Africa which was approximately 231 445 GWh for 2014. eThekwini annual electricity consumption is about 11 000 GWh, which correspond to approximately 5% of SA production. The proposed development would therefore result in a 0.1% increase in South African power demand and approximately 2% increase in eThekwini electricity consumption, which is relatively minor compared to the benefit of supply of water for approximately 750 000 people in the eThekwini municipality and the Ilembe District, as explained below. The facility would produce approximately 150 Ml/day of freshwater. This amount of water equates to providing 187 500 four-person households with water each day, assuming 200 litres per person per day. This translates to water supply to approximately 750 000 people in the eThekwini municipality and the Ilembe District, which is in the order of 18% of the eThekwini metro and the Ilembe District population. It is beyond the scope of this EIA to extrapolate the potential effect of approximately 0.1% increase in South African power demand on climate change and associated consequences such as sea level rise. However, it is worth noting that South Arica's energy

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				policy clearly shows a commitment to an increased percentage of power generation from renewable energy sources, such as wind, solar photovoltaic and hydro. Over the past 4 years, as part of the REI4P programme, 92 renewable energy projects power projects approved by the Department of Energy with a generation capacity of 6327 MW; and 3725 MW commissioned by early 2016. *From Umgeni*: It must be noted that at approximately 4kwh per kl, it means that the amount of power required to produce the needs of the average household would only be the equivalent of the power required to run an old fridge. Operational requirements and costs were determined as part of the feasibility study. In developing these costs a number of scenarios have been used to project Eskom price increases. These include standard inflation, Eskom full requirement to pay back its debt and a middle road cost as projected by the industry. The most likely cost, and hence the one used and presented as part of this EIA, is a cost for electricity which is above inflation and at a rate which industry expects. In developing the projected operations and maintenance costs a detailed breakdown of all costs was developed. This included costs associated with the abstraction of seawater, the treatment using reverse osmosis and the delivery of the potable water. In this way all expected operations and maintenance costs have been accounted for in the study.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
4.5	Given the existing constraints on power within South Africa, it is submitted that the developer consider alternative, renewable energy sources for the ongoing running of the plant.	09/05/2016	Kate Ralfe, Tongaat Hulett Developments, Email	*From Umgeni Water*: Refer to response to issue 4.4 above. Umgeni Water is a bulk water provider and focuses on providing bulk water to its customers. The provision of power in the country is the responsibility of ESKOM and renewable and alternative energy sources have to be investigated by them. Umgeni Water, as with all other businesses and consumer relies on Eskom and the municipality to provide electricity in the cheapest and greenest means possible.
4.6	Clarification on Electric power requirements. The report suggests 40 MW but the presentation suggested 25-30 MW. How and from where is this power to be supplied? We have power supply problems on the North Coast as elsewhere. No power station? Solar/wind/sea power supplies?	13/04/2016	Ken Lever, Private, Public meeting (comment form)	*From Umgeni Water*: The proposed desalination plant is anticipated to have a total energy demand of approximately 32 MW (i.e. approximately 4 kWh/m³ of potable water produced, while additional power will be required to pump water to the plant from the sea and to deliver potable water into the existing bulk supply infrastructure). It is expected that the total electrical connection to the proposed plant would be approximately 40 MVA. The extent of energy required for the proposed desalination plant will be sourced from Eskom's national electricity grid through eThekwini Municipality as the local distributer. eThekwini Electricity has indicated that electricity supply for the Tongaat site would be available for the proposed project. There are currently no alternative/renewable energy generation plants in the vicinity of the proposed desalination plant site. The only successful alternative energy plants operated in the eThekwini municipal area are those generating energy from the burning of natural gas at waste sites, however these are located a significant distance from the proposed desalination plant site and can only feed into their surrounding local grid. However, it must be noted that, over the past 4 years, as part of the REI4P programme, 92 renewable energy projects power projects approved by the Department of

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				Energy with a generation capacity of 6327 MW; and 3725 MW commissioned by early 2016. (refer to Chapter 2 Section 2.4.6 of this EIA report).
4.7	Climate change We see no reference to climate change. Nowhere in the document do we see emphasis on climate change and its impacts. We vehemently disagree with this approach and call that climate change is the biggest challenge facing the earth which has and will impact on North Durban. The current development with the use of huge energy and emissions of carbon dioxide and this has not been quantified in the documents. We need an investigation into what the power consumption will be of the new development and also what power saving technologies will be incorporated into this new development and what lighting design will be used to ensure it operates at maximum efficiently. Will this development utilize renewable sources of energy such as solar, wind, hydro? We need to have the information on the design technologies in order for the public to understand this process. How will this development aim to reduce our international commitments on greenhouse emissions? The cost of climate change must be looked at so that programs can be put in place immediately to reduce the drought and remove those systems such as industrial forests, eucalyptus trees from the ground. Why has this not been addressed? The main causes of our droughts are these trees and plantations are yet these are not dealt with to ensure that underground water boreholes,	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: Energy, in the form of electricity, is a major cost input for SWRO desalination plants, accounting for 45% - 60% of the total operating costs. It is for this reason that energy recovery systems using pressure exchangers are now incorporated into all medium to large seawater desalination facilities. Where energy recovery is installed, the energy requirement for RO is currently between 2.5 and 2.8 kWh/m^3, however, the total energy requirement is between 4.0 and 4.5 kWh/m^3 (1 m^3 = 0.001 Ml) including the costs of pumping of seawater, desalinated water and for various other processes (1 m^3 = 0.001 Ml). The recovery of energy is a critical design consideration for large seawater desalination plants because of the impact of the energy cost on the final price of water. With energy recovery systems approximately 40% of the total energy required for the reverse osmosis process is derived from the energy recovery device. While the average power demand is estimated to be 24.15 MW, the proposed electrical substation will be designed for a total load of 32 MW. For a two pass system, the increase in power demand would be about 0.54 kWh/m^3. Please refer to Chapter 2 (Section 2.4.1.1) of this EIA report for further details. Refer to response to issue 4.4 above.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	rivers and dams are not drying up because of these plantations.			
4.8	Electricity costs These costs have not been properly considered, yet Eskom continues to ask for increases of approximately 25% per annum. This will increase the costs of water and electricity. This study must be done in order for it to include all costs so that it reflects what people will have to pay on an annual basis for the life of the plant.	09/05/2016	Desmond D'SA, SDCEA, Email	*From Umgeni Water*: Refer to response to issue 4.4 above. It is not possible to exactly predict the growth in electricity costs going into the future. For this reason a number of scenarios were investigated as part of the feasibility study. These included cost increases at standard inflation, a cost increase at Eskom's required debt repayment rate and cost increases at a rate realistic with existing increases. By investigating these three scenarios it is possible to project the range of operating costs likely based on electricity increases and the risks associated with this can be quantified and these have been detailed in the feasibility report and will be used when budgeting for the plant.
4.9	Where is the source of this power? Is it from the power sub-station on the old Umdloti/Verulam road?	14/04/2016	Murray Jackson, Private, Email	*From CSIR*: The power line has been proposed to tie into the existing 132kV line between Ottawa Major and La Mercy Major, near the vicinity of Mount Moreland (South West of the Airport). Please refer to Chapter 2 Section 2.4.6 for further details.
4.10	The Electricity Department has no objection to the plant however please note: 1.1. This Department has strategic future 132kV Overhead Transmission Lines that will be constructed in the vicinity. 1.2. A new 132/11kV substation and overhead line is proposed in the vicinity of the Treatment Plant. This is shown in the EIA report and was provided by this Department. This is subject to change and will be dependent on the high voltage network in the area at the time of construction.	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	Noted. As mentioned in Chapter 14 – Section 14.6, if the power supply to the proposed development is coincided with eThekwini's future development plan in the area, then a 132kV point of supply would be available within 1km from the proposed Tongaat site (Figure 14.1 - Point A). In this case, Umgeni would construct a transmission line from the latter point of supply to the proposed desalination plant. In the event, however, that supply to the proposed desalination plant precedes eThekwini electrical infrastructure expansion, Umgeni would construct a single-circuit 132 kV transmission line from the nearest 132 kV point of supply (i.e. which is the supply from the La Mercy Major Substation located approximately 5 km from the proposed site, on the western side of King Shaka international airport) to the proposed desalination plant site. Where possible, Umgeni intends to follow the route proposed by eThekwini as part of their

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	1.3. It is advised that the 132kV overhead line and substation be included in the EIA to avoid delays should an EIA be required in the future. 1.4. The applicant must consult eThekwini Electricity's mains records (held in the drawing office at eThekwini Electricity Headquarters, 1 Jelf Taylor Crescent, for the presence of underground electrical services. In addition should any overhead line and/or servitude be affected, the specific permission of the Head: Electricity must be sought regarding the proposed development.			electrical infrastructure expansion, however, an Alternative route (Alternative 1 – Figure 14.1 – Chapter 14) has also been proposed to mitigate visual intrusion on La Mercy residents. Both options are considered environmentally acceptable, i.e. the Proposed powerline route (orange route – eThekwini future plans) and an Alternative 1 route (green) (Figure 14.1 – Chapter 14) and are recommended for Environmental Authorisation. This will enable eThekwini to evaluate environmental as well as engineering and planning factors in determining whether they retain their current route plan, noting that visual intrusion of the proposed eThekwini powerline route (orange route) on La Mercy residents will remain high.
4.11	Electricity Supply/Powerline Alignment 1. Figure 14-1 shows the final infrastructure layout which takes into consideration the findings of the specialist studies. In particular, during the assessment it was determined that the initial alignment of the 132 kV transmission line constituted a fatal flaw as it crossed the Mount Moreland wetland. Issue: Has the alternative alignment been approved by the service provider – eThekwini Municipality? Should this not have been resolved the alignment as proposed by the proponent would remain a fatal flaw as offset mitigation would not compensate for its authorization.	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From CSIR*: The proposed alternative has not been officially approved by eThekwini. However, refer to eThekwini Municipality - Electricity Department – comment above (Refer to comment 4.10).
Comments on Final EIA Report				
4.12	The eThekwini Electricity Department has no objection to the plant however please note:	11/08/2016	Claire Norton, eThekwini Municipality, email	Noted with thanks. The 132kV powerline required to supply the proposed desalination plant has been included as part of this EIA.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	1.3.1 This Department has strategic future 132kV Overhead Transmission Lines that will be constructed in the vicinity 1.3.2 A new 132/11kV substation and overhead line is proposed in the vicinity of the Treatment Plant. This is shown in the EIA report and was provided by this Department. This is subject to change and will be dependent on the high voltage network in the area at the time of construction. 1.3.3 It is advised that the 132kV overhead line and substation be included in the EIA to avoid delays should an EIA be required in the future 1.3.4 The applicant must consult eThekwini Electricity's mains records (held in the drawing office at eThekwini Electricity Headquarters, 1 Jelf Taylor Crescent, for the presence of underground electrical services. The approval of the Head: Electricity must be sought regarding the proposed development prior to construction.			
4.13	Page 26 – Introduction: It is accepted that climate change has devastating consequences especially for the poor. However It is unbelievable that the EAP is suggesting that a desalination plant is a suitable response to the effects of climate change. This is illogical beyond belief and displays ignorance about the causes of climate change. Is CSIR denying that fossil fuel emissions are a cause of climate change? Climate change is precisely the reason why world over fossil fuel is being replaced by renewable energy. Electrical energy in massive quantities generated by burning coal is what will be	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Please refer to response to issue 4.4, 4.7 and 10.38. Also refer to Final EIA report Chapter 4 Approach to EIA, Section 4.7.2. CSIR has responded to this concern in details and is very well aware of the consequences of climate change. It is acknowledged that an increase in fossil fuel emissions due to an increase in electricity usage would negatively contribute to climate change. However, and ironically, this water supply technology does also increase resilience to water scarcity. At the same time, South Africa has an abundance of renewable energy resources which are becoming increasingly cost-competitive and are being considered as part of a long-term sustainability alternative to current carbon intensive coal powered generation. The South African energy mix is not static. In the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	the power source to construct and operate a desalination plant. Needless (hopefully) to point out that the emissions will not help reduce the carbon footprint or achieve climate change goals set by our nation at COP 21 in Paris just a few months ago.			electricity sector specifically, the Integrated Resource Plan of 2010 (DoE, 2013) envisioned a future state where only about 64% of power generation is coal-based by 2030 with the balance made up of nuclear and renewables (solar PV and wind). The draft IRP (2016) Base Case proposes a 68% energy share from coal by 2030 declining to 33% by 2050 complemented by nuclear (28%), natural gas (9%) and renewable energy at ≈30% (dominated by solar PV and wind) (DoE, 2016). The commitment to an increased percentage of power generation from renewable energy sources, primarily wind and solar PV, can be seen from the results of the Renewable Energy independent Power Producer Procurement administered by the South African Department of Energy. Between 2012 and 2016, 92 renewable energy power projects projects have been granted preferred bidder status with generation capacity of 6 327 MW and of this, 3 134 MW were commissioned by the end of 2016. Solar resources in South Africa range from 1450 to 2300 kWh/m2 with a total 300 GW solar capacity estimated in the EIA areas applied for as part of the REIPPPP and settlement areas (urban environments). By the end of 2016, 1.5 GW solar PV was installed.

5. Issues related to freshwater/wetlands, municipal infrastructure and alternative water resources

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
5.1	Environmental Planning and Climate protection department. The Final Scoping report prepared for proposed desalination plant project has been assessed and the following comments have relevance: This Department has reviewed the responses provided in the report to the concerns raised during the draft scoping report circulation. For most part, this Department acknowledges the responses to the issues raised and the method of incorporation into the Environmental Impact Assessment (EIA) The following issue has still not been addressed to the satisfaction of this Department: As previously detailed, the pipe reticulation network will cross or be in close proximity to a variety of wetland habitats in order to connect to existing infrastructure. Specifically, the La Mercy to Waterloo pipeline will cross the Mdloti Estuary (adjacent to the N2 freeway) and as such this department is still of the opinion that an assessment of the potential impact on that system must be included in the EIA. An assessment or suitably considered statement as to the potential impacts must be conducted as part of the EIA.	25/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	The impacts associated with crossing of wetlands and the Mdloti estuary have been assessed as part of the Aquatic ecology study. Please refer to Chapter 8 of this Draft EIA report.
5.2	Important concern re. the loss of wetlands and the proposed (compromise) conservation of wetlands off-	13/04/2016		*From CSIR*: The aquatic ecology study has identified the loss of transformed wetlands on the desalination plant site as a high environmental impact and has as such recommended to undertake

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	site in exchange for wholesale loss of wetlands on the site.			offsite rehabilitation of wetlands which are currently transformed and degraded. The residual impact has been assessed as of medium to high significance. Also refer to response to issues 5.3 and 5.4 below.
5.3	It is critical that surface and subsurface hydrological function be retained, at least in part, to ensure the delivery of freshwater to the frontal dune environment which is situated immediately east of the SWRO plant. Alteration of surface and subsurface hydrology due to the construction of the stormwater and drainage systems in and around the SWRO plant is a high significance impact likely to affect the state of the frontal dune unless appropriately managed (i.e. suitable planning and management as recommended). Issue - Loss of wetland function due to the construction of the SWRO is a factor which must be considered in addition to stormwater runoff and how it is managed to ensure minimal alteration to flows to the frontal dune system. Specific information on the loss of wetland area and function due to the construction of the plant is not given	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From Freshwater specialist*: Agreed. The specialist wetland report rates it as a high impact. The wetland report describes the impact as associated with wholesale loss of wetland function in the area; other than that hydrological function in terms of passage of water through the area towards the beach out let will continue. There are no flow data with which to quantify this factor. Loss of wetland function is described qualitatively and ecosystem services have been calculated. The report notes the following: Potential Impact 1: Destruction of wetlands on the desalination plant (which includes the proposed pump station): Specifically, both the northern and the southern wetlands shown in Figure 8-4 would be destroyed by construction of the desalination plant, if it extends across the full extent of the site. In addition to loss of (now largely artificial excavated) wetland habitat, presumably as a result of wetland infilling, this impact would destroy all ecosystem services offered by these wetlands – however, such services are specific to their current use – namely agriculture, and centre on some trapping of sediments and nutrient amelioration. In the absence of agricultural use of the site, the requirement for such services would largely fall away. Wetland services such as flood attenuation are however also provided by the wetlands on site, and the loss of such services would be likely to affect

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				downstream wetland integrity, with the passage of increased flows downstream, and onto the seep daylighting onto the beach. This impact would be considered negative, and associated with the permanent loss of wetlands and their functions on the site, thus also constituting an opportunity cost, in that future wetland rehabilitation would no longer be possible either. Thus despite the fact that these have already been highly and permanently modified from natural, such impacts are assessed as occurring at a high scale of intensity, associated with a notable alteration in natural patterns and processes (particularly hydrology) but not impacting wetland fauna or flora directly, given that these have been largely eliminated from the site already. The extent is considered local, given that these coastal / dune wetlands occur along the abutting coastline in several areas (albeit many of them are already impacted). The impacts are however considered irreversible, definite and of high significance.
5.4	It is said that, in summary, most impacts can be mitigated through judicious design and planning, as well as management interventions during and post the construction and operational phases of the project. We find that certain aspects need particular consideration. Issue - Wetland Loss. The wetland area which will be lost due to the construction of the SWRO plant must be quantified in terms of ecosystem services, including habitat and space in the landscape. To inform the decision making process, suitable candidate offset area needs to be identified, together with rehabilitation/restoration plans, and approved by relevant commenting authorities. It has been	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From Freshwater specialist*: Agreed. Candidate offset sites have been identified – a full offset identification and calculation process must be engaged in – this would need to be a condition of authorisation and if such offsets were not adequately identified and made available, it is the understanding that project implementation could not proceed. It is premature in the EIA to continue along a full offset calculation and assessment route, when the project may not be authorised at all. Please refer to Chapter 8 Appendix B for a draft discussion document: "Considerations around the use of wetland offsets to address impacts associated with the proposed Tongaat Desalination Plan"

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	recommended that additional offsite wetland rehabilitation should actively improve the condition of similar or more threatened wetland habitat to a condition that is better than Category D. Possible targets for offset mitigation are mentioned but it seems that no investigation into whether offset requirements will be met has been undertaken.			
5.5	Water Body Crossings. Although a recommended alternative route avoids the Mount Moreland wetlands there remain significant water bodies to cross. Have all alternatives which would further minimise impacts on water bodies been evaluated such as: -Looking at Fig. 14-1 is there an option of the powerline running adjacent to the potable water line and turning inland further to the south to avoid a major crossing immediately above the upper reaches of the estuary? Could the powerline turn inland north of the Mdloti river? This would involve crossing only a minor tributary.	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From CSIR:* The terrestrial ecology and aquatic ecology specialist studies have assessed impacts on the Mdloti estuary/river associated with the proposed powerline route as **low** significance impacts, with the effective implementation of the recommended management actions – e.g. No transmission line support towers should be located below the 12 m contour or within the 1:50 year floodline of the river, whichever is the greater distance from the channel – effectively, this means that the transmission lines in this area would need to span a distance of between 350 and 400m, rehabilitation, alien vegetation management etc. Although deviations to the proposed routing may further minimise impacts (to be assessed), the route coincids with eThekwini's future development in the area.
5.6	Environmental Planning and Climate Protection Department: This Department has reviewed the Draft Environmental Impact Report (DEIR) prepared for proposed desalination plant project and the following comments have relevance:	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	*From CSIR:* CSIR was only made aware of the Northern Wetland Offset Framework (NWOF) and King Shaka Conservation Area in April 2016 after releasing the draft EIA report for comments. To our knowledge these are not yet in the public domain. The KSIA Conservation area plan was not available at the time of undertaking the specialist studies for the proposed desalination plant EIA and was only recently

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	• Following review of the assessments and specialist studies presented, this Department is not in a position to support this application in its current form. The report, as presented, fails to adequately recognise and address notable impacts highlighted in the specialist assessments – specifically the Aquatic Assessment and the Terrestrial Assessments. • Until such time as this Department is satisfied that impacts identified have been fully considered and addressed, the Environmental Planning and Climate Protection Department does not support authorisation of this project. <u>Wetlands</u> • Wetland habitat within the eThekwini Municipality is under significant threat. Wetland mapping carried out by this Department has ascertained that up to 90% of wetland habitat has already been lost withe the eThekwini Municipal Area. Of the remaining habitat only 1% is considered good or intermediate in condition. As such, this Department does not support the loss of any further wetland habitat. • The Terrestrial and Aquatic Assessments both highlight the value of the wetlands proposed for destruction. The degraded status of these systems is noted, however, as detailed in the Aquatic Assessment, the functional value of these habitats and importantly, their rehabilitation potential remain good. Considering the landscape level value of these systems and the			approved (December 2015). Please note that we can only take into consideration approved projects/proposals that are in the public domain at the time of conducting the specialist studies. However, it is understood that the intention of the KSIA Conservation area offset plan is to remove sugar cane and re-establish a grasslands mosaic across much of the area. Discussions with the Terrestrial ecologist confirmed that although impacts associated with the proposed powerline on the proposed grassland would be definite, these would remain limited to the tower footprint. As such, we do not see the proposed transmission line as a fatal flaw neither as preventing the offset objectives, in particular grasslands mosaic. It would also be recommended that Umgeni Water/Eskom falls within the management plan of the proposed offset (in particular with regards to maintenance, alien vegetation management etc.). *From Freshwater specialist*: Agreed. Unfortunately the "no development" alternative does not leave the wetlands on the site in a particularly good condition either (PES E), and there is no scenario where rehabilitation to a sustainable condition (D or better) is likely. Thus while the development of the desalination plant would definitely destroy wetlands on the site, if the offset mitigation of rehabilitation of existing wetlands downslope of the site, which also have no likelihood of being rehabilitated for conservation purposes in any other scenario, is pursued, at least a more sustainable wetland condition might be achieved in this coastal area. Offset mitigation is the only mitigation available, without which the development would be accorded a High negative significance - there is no direct "mitigation" for wetland loss other than in the form of

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	need to improve systems that currently operate below their sustainability threshold, further loss of any habitat cannot be supported. • The proposed 'offset' also lacks detail in its current form and requires much more information before any consideration can be given to this proposed method of impact resolution. The extent of habitat restoration and protection must be shown to be achievable before any idea of offsetting can be entertained. • This Department acknowledges and in principle supports the recommendation of the Aquatic Specialist to have the water line between the Desalination Plant and the La Mercy Reservoir re-aligned to avoid the local watercourse. <u>Pipeline and Powerline Routing</u> • This Department does not support the current alignment of the La Mercy to Waterloo potable water pipeline. This pipeline will impact directly on wetland habitat directly linked to the Mdloti Estuary and currently included in the planned Northern Wetland Offset Framework (NWOF). Habitat forming part of this Framework cannot be compromised or impacted upon. The NWOF must form part of all planned infrastructure layouts. Detail of the extent of these offset receiving areas can be provided to allow realignment of routes. • Similarly, the current alignment of the 132kV power line and the proposed realignment (as suggested by the Aquatic Specialist) are also in conflict with those areas			offsets. The details of offset mitigation would need to be calculated as a formal offset identification and calculation process, and both this process and its successful resolution would need to be a condition of any authorisation. If such offsets were not adequately identified and made available, it is the understanding that project implementation could not proceed. It is premature in the EIA to continue along a full offset calculation and assessment route, when the project may not be authorised at all. Please refer to Chapter 8 Appendix B for a draft discussion document: "Considerations around the use of wetland offsets to address impacts associated with the proposed Tongaat Desalination Plan" The conservation of these areas was not yet in the public domain at the time that the specialist study was compiled: the King Shaka Conservation Area was approved in December 2015 and the Offset receiving areas on the Mdloti, Tongati an Ohlanga have not yet been finalised. This said, with the proposed mitigation measures, including the pipejacking of the pipeline from the outer edge of the riparian fringe or 50m width on either side of the estuary / channel (whichever is the greater) plus the mitigation around post-excavation rehabilitation should result in a LOW significance impact. The same is considered for the powerline – both these systems pass through **highly degraded areas** although recognised as CBAs by the municipality. Given the late stage at which these conservation proposals and authorisations have been approved, it might be constructive rather to include additional wetland rehabilitation activities within these areas, decided on in conjunction with the relevant authorities, than to

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	set aside for the NWOF and must be realigned to avoid these areas. • Furthermore, the alignment is also in conflict with the King Shaka Conservation Area. This area has recently been formally delineated and approved by the Department of Environmental Affairs as part of the offset process for the King Shaka International Airport and Dube Trade Port Company. In terms of the conditions of establishment for this Conservation Area, no infrastructure may be placed within the delineated boundaries. Re-alignment will be required to avoid these areas. The application in its current form fails to fully address and mitigate the impacts to wetland and riparian habitat. The specialist Aquatic and Terrestrial studies both highlight the importance of the onsite wetland habitats and yet limited or superficial detail is provided as to how the direct loss of these wetland habitats can truly be mitigated. Similarly, the associated infrastructural requirements for the desalination plant both conflict with ongoing conservation projects with the City and directly impact on proclaimed and formally recognised land parcels set aside for offset. Until such time as significantly more detail is provided to allay the concerns and issues detailed above, this Department cannot support this application.			reroute the infrastructure, which would essentially require the proponent to begin this stage again. This is particularly as there is already infrastructure within these corridors.
5.7	Environmental Planning and Climate Protection Department	09/05/2016	Diane Van Rensburg,	*From Freshwater specialist*: The impacts to wetlands are considered readily mitigable. See response to issues 5.3 and 5.6.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Particular note is taken of the following • The potable water pipeline route to La Mercy reservoir through forest and wetlands. • The positioning of the plant and infrastructure (page 11 and 14 of the main report) within a wetland and critical biodiversity area as identified in the specialist reports. • The weighting of the proposed power-line route in favour of reduction of the visual impact to local residents at the cost of further environmental degradation to the wetland. • The disposal of 20 – 100 kg/month nutrient rich screening material at landfill site as opposed to use in composting or food security projects. <u>Conclusion / Recommendations</u>: The selection of the site for the construction of the proposed desalination plant appears to have been heavily influenced by considerations of convenience and cost savings in terms of the construction of the intake and discharge pipelines and reduction of the gradients from the source to the desalination plant which necessitate pumping seawater against gravity. This has resulted in the selection of a site which is identified as a critical biodiversity area (wetland) with no possibility of offset.		eThekwini Municipality, Letter	The alternative power line route (refer to Figure 2.8 Chapter 2 – Alternative 1 in green) in fact crosses fewer drainage lines than the preferred (Orange line on Figure 2.8 Chapter 2), and was preferred by the aquatic specialist for this reason. Note that the pines would cross over these watercourses, but the water courses themselves would not be physically disturbed. With regards to site selection, Offset possibilities are available. It is agreed that there is no possibility of direct impact mitigation. The only reason there is some sanction for the development is that the existing wetlands have poor function, are in a poor condition and are unlikely to improve in the future without development driven intervention.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	The applicant has attempted to justify this against the rising consumption of the available water resources which has resulted from the rezoning and transformation of agricultural land to residential and commercial properties. It is acknowledged that the provision of potable water is an obligation of the state but not at the expense of the natural environment in general and critically endangered habitats in particular the protection of which is a constitutional obligation. Department's Decision: The Parks, Leisure and Cemeteries Department objects to the construction of the proposed desalination plant at the current proposed site. Any Water Use Licence application for the current site will not be supported. An alternative site must be identified which does not entail loss of irreplaceable critical endangered habitats.			
5.8	The impact of the proposed plant on the hydrology of the site and the down slope systems has not been fully assessed. Both the Aquatic Assessment and Terrestrial Assessment highlight the critical value of the water moving through the primary dune systems to the east of the site in maintaining these habitats. However, insufficient detail has been presented to show these systems can be maintained and enhanced post impact.	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	*From Terrestrial ecology*: A baseline assessment of sub surface freshwater flows associated with the frontal dune cordon has been recommended as part of the EMPr. It is proposed that this study be undertaken in line with detailed design and geotechnical assessments of the structures and inform the Stormwater Management Plan. Refer to EMPr – Section B. 4.4 *From Aquatic ecologist*: The principle has been presented as a condition for inclusion in detailed design – at present we lack any data regarding hydrology

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
Comments on Final EIA Report				
5.9	The Environmental Planning and Climate Protection Department has reviewed the Final Environmental Impact Report (FEIR) prepared for the proposed desalination plant project. Responses to issues and concerns raised during review of the Draft Environmental Impact Assessment have been noted and the following comments are relevant: Wetlands: • This Department acknowledges the offset discussion document prepared by the aquatic specialist and supports, in principle, the mitigation steps outlined in the document around compensation for the loss of wetland habitat associated with the construction of the desalination plant. • The offset plan must be finalised and accepted by this Department and other relevant stakeholders prior to construction commencing. This requirement must be made a condition of approval should a positive Environmental Authorisation be issued. • Note a small point of clarity regarding the calculations presented around the required offsets. All offset units are Hectare Equivalents and not direct area values – i.e. The required offset values are 1.8 Functional Hectare Equivalents and 4.8 Habitat Hectare Equivalents respectively.	11/08/2016	Claire Norton, eThekwini Municipality, email	Wetlands: Noted. Please refer to Chapter 8 Aquatic ecology study for the wetland offset study. As requested by eThekwini, the offset plan will be discussed and approved by eThekwini municipality prior to submission of the Final EIA report to DEA. Pipeline routing: Noted. Wetland mapping was based on: • NFEPA data • Updated Biodiversity and Spatial Planning outputs of Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) (Ezemvelo KZN Wildlife 2016); • King Shaka International Airport (KSIA) Conservation Zone data; • Wetland offset and conservation areas included in the Northern Spatial Development Plan for the Mdloti area (Macfarlane 2015); • Ground-truthing of all mapped wetlands within the 1000m corridors. Accurate delineation of wetland habitat has been recommended to be carried out during the determination if the final alignment (refer to EMPr – Section 4. D. 4.9). Please refer to the aquatic specialist study for further details on how the planned Northern Wetland Offset Framework (NWOF) has been taken into consideration. Included in the design of offset areas is an acknowledgement (Mr G. Mullins, eThekwini Municipality, pers. comm.) of the need for some routing of infrastructure through the offset areas – these so-called

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Pipeline Routing: • This Department notes the proposal to tunnel/directionally drill beneath the Mdloti Estuary to link the La Mercy Reservoir to Waterloo Reservoir. This proposal is acceptable to this Department provided the tunnelling commences outside of the area currently included in the planned Northern Wetland Offset Framework (NWOF). As previously stated, habitat forming part of this Framework cannot be compromised or impacted upon. The NWOF must form part of all planned infrastructure layouts. This requirement has specific relevance to this Department's requirement that the valley bottom and floodplain wetlands on the northern fringe of the Mdloti Estuary are avoided. Drilling must commence outside of the boundaries of these systems. • As wetland mapping in the EIR was limited to only FEPA systems, accurate delineation of the wetland habitat within the pipeline corridors must be carried out to ensure that these systems are avoided during determination of the final alignment. Where systems must be crossed, drilling or pipe-jacking must avoid both wetland and buffer zones. Powerline Routing: • This Department highlighted significant concerns regarding the planned alignment of the 132kV			"infrastructure corridors" had not been formally identified at the time of compilation of this report, but the existing N2 highway would certainly form one such corridor. Powerline routing: An alternative powerline route that avoids Lake Victoria and the KSIA conservation area has been assessed as part of this Second draft EIA report. Please refer to Chapter 14 for conclusions and recommendations. Note that the EIA process runs on a legislated time schedule and the KSIACA plans were not placed in the public domain at that stage of the ESIA. Therefore it is reasonable and acceptable that they could not be included within the time period for the specialist studies

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	powerline during the Draft EIR comment phase. As previously stated, the alignment is in conflict with the King Shaka Conservation Area (KSIACA). This area has recently been formally delineated and approved by the Department of Environmental Affairs (DEA) as part of the offset process for the King Shaka International Airport and Dube Trade Port Company. In terms of the conditions of establishment for this Conservation Area, as previously stated **no infrastructure may be placed within the delineated boundaries**. The original and proposed re-alignment routes will both impact on this area and thus **cannot be supported**. • The response provided by the consultant regarding the above issue (Chapter 5, Page 5-37 to 5-40) is also not accepted. The reasoning that, due to apparent late notification regarding the restrictions associated with the KSIACA, the specialist reports could not be updated or the alignment of the powerline reconsidered, is unacceptable. Given the significance of the issue raised, failure to address the matter could constitute a fatal flaw in the EIA process and is grounds for an appeal. By not addressing such a critical matter it could be construed that the consultant is merely running through a process rather than actively engaging and addressing issues of significance. One could question what the purpose of commenting on the Draft EIR is, if			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	issues raised are merely dismissed as being raised too late in the process and thus unavoidable? • The specialist studies also highlighted significant issues around the potential impacts to avi-fauna relating to these powerlines. The reports however fail to unpack and assess these risks in any detail. Given the presence of the important Bird Area (IBA). In the absence of any meaningful avoidance or mitigation, this Department's position as presented in the first bullet above remains. Although some of the concerns raised during the Draft EIR commenting have been addressed, the application in its current form still fails to fully address and mitigate the impacts associated with the proposed 132kV powerline. The alignment conflicts with current and on-going conservation projects with the City and directly impacts on proclaimed and formally recognised land parcels set aside for offsets. Until such time as significantly more detail is provided to allay the concerns and issues detailed above, this **Department cannot support this application**.			
5.10	The Department of Parks, Leisure and Cemeteries does not object to the construction of the proposed desalination plant at the current proposed site on condition that: 1.5.1 A Water Use Licence application for the current site and river and wetland crossings must be applied for.	11/08/2016	Claire Norton, eThekwini Municipality, email	Noted. A water use licence will be applied for if the project is confirmed to go ahead. *From Umgeni Water*: Umgeni Water has to obtain way-leaves from SANRAL before crossing their road reserve. These would be obtained before construction. SANRAL prefer not to have large diameter pipes

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	1.5.2 The wetland and river crossing must be made by means of using the existing N2 Bridge and N2 road reserve.			attached to their bridges although Umgeni Water has successfully negotiated for this be undertaken in the past with a 600mm and an 800mm diameter pipeline on the South Coast. During the design process Umgeni Water will contact SANRAL to investigate the option on connecting the pipeline to the bridge but if permission cannot be obtained for this activity then the pipeline would have be trenched under the river by means of a pipe jack or horizontal directional drilling or similar.
5.11	I have read the EIA in regards to the above proposed project and I must raise my objection to this desalination plant going ahead. **Environmental Impact:** The estuary of Desaigner is one of a very few left untouched along the North coast. It is an area that still attracts a whole variety of birds including several fish eagles that have made this area their home because of the relative untouched nature of the area. I do not agree with the assessment that the environmental impact on the area will be low.	24/08/2016	Mario de Abreu, King Shaka Estate resident, comment form	*From CSIR*: Please refer to Chapter 8 Aquatic ecology for further details on potential impacts on the Mdloti estuary. A marine ecology specialist study has been undertaken to assess the potential impacts of proposed brine discharge into the marine environment. The conclusion from this study concluded that: "*With the exception of the disturbance and destruction of subtidal sandy biota during pipeline laying, excavation and rock blasting for riser pits which will remain of medium significance, recommended management actions and mitigation measures will reduce the negative impacts of medium and high significance to* ***low*** *significance. No residual impacts of high significance are anticipated.* *Ideally, a small-scale pilot plant should be developed to facilitate detailed assessments of expected impacts and validate the predictions of the brine dispersion studies. An entrainment study should form part of this approach."*

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				The impact of proposed powerline and pipeline on the Mdloti estuary has been assessed as part of the Aquatic ecology specialist study (refer to Chapter 8) which concluded that: "*The required crossing of the Mdloti River estuary by the proposed powerline and pipeline – although the physical impacts of crossing of this estuary with its wide floodplain wetlands and inflowing valley bottom / seep wetlands are considered essentially mitigable to a high degree, the area itself forms part of an offset receiving area, and as such ought in theory not to be further impacted by any such developments. The proposed alignments do however fall close to the N2, thus consolidating infrastructure impacts, and mitigation measures further require additional rehabilitation of two 30m consolidated corridors along these alignments. With the effective implementation of recommended mitigation, the impact significance would be expected to shift from Medium – High (no mitigation) to* ***Low***." *From Umgeni Water*: A Pilot Plant has been developed, at the Scottburgh Caravan Park, to test pre-treatment scenarios. This plant was being commissioned in April 2018 and will operate for a year using different pre-treatment options to identify the most practical and cost effective process.
5.12	Page 384: The negative impact on wetlands is a fatal flaw. Hence the project is not recommended. LaMRAG of course supports the NO – GO option which is the only reasonable option.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents'	*From CSIR*: please refer to Chapter 8 Aquatic ecology specialist study for details and interpretation of the assessment of anticipated impacts on wetlands. The study concludes that: "The proposed desalination plant site includes in its extent two large wetland areas. Although these have been degraded to a highly significant degree,

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
			Action Group, La Mercy, email	they remain both functional (in some respects) and rehabilitable. Their loss to the development would be considered a highly significant (negative) impact. On-site mitigation measures such as shifting the development platform southwards, to allow for the rehabilitation of a portion of the northern wetland proved incompatible with the proposed landuse. As a result, offsite mitigation is required, in the form of rehabilitation and ongoing management of a swathe of wetlands between the site and the coast. **If such offsets were not adequately identified and made available**, it is the understanding of this specialist that project implementation could not proceed. Even with this rehabilitation, it was found that the proposed development would still be associated with residual cumulative impacts that were of high significance, and additional off-site offset mitigation in the form of rehabilitation of similar, or more important wetland ecosystem types, to a condition of PES Category C or better, has been recommended to address this impact. " The aquatic specialist has not assessed this impact as a fatal flaw but as a high significance impact. With the implementation of the recommended management actions (offsets, locally indigenous wetland vegetation, ecological corridor), the significance of this impact is anticipated to be medium to high.

6. Issues related to brine discharge, marine health and water quality

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
6.1	At this point of the environmental assessment for the operation of the proposed desalination plant Coastwatch is concerned about the effects of brine disposal, for which a Coastal Waters Discharge Permit will be required should environmental authorisation be granted. For the purpose of this Permit marine dispersal studies will be required and it does not seem that the Marine Ecology specialist study (section 6.5.3) will address this aspect. Coastwatch believes that all studies relevant to the construction and operation of the plant need to be considered as part of a single assessment and Terms of Reference for all relevant studies provided. Within the eThekwini precinct Coastwatch works in collaboration with WESSA, Durban Branch, and Birdlife Port Natal and the organisations are included in this correspondence.	8/06/2015	Carolyn Schwegman, *Coastwatch KZN, Email*	Numerical modelling was undertaken of the near-field dilution of the brine as it exits the diffuser ports, and the far-field dispersion modelling (Aurecon, 2015). For the latter, a three dimensional hydrodynamic model was set up of the Tongaat site. The model was calibrated against site measurements, including 12 months of current measurements in 17 m water depth. Results have been considered in the Marine ecology specialist study. Please refer to Chapter 6 of this Draft EIA report for further details.
6.2	We also need to know further about your Marine Environmental Specialist. Who he or she is and what phase is this specialist involved with. Is there a focus group meeting with the marine and coastal environmental specialist? Will this be an independent EAP?	29/04/2015	B Rawheath, LAMRAG Adviser, Email	The marine specialist is Dr Andrea Pulfrich from Pisces Environmental Services (please refer to the Draft EIA report, Chapter 1, Section 1.6 EIA Team for specialists details). Dr Pulfirch is an independent specialist. All specialists are signing declarations of independence, which will be included in the draft EIA report. The specialist study has included all issues (within the scope of this EIA), raised during the public meetings and during the commenting periods on the draft scoping report. There are no focus group meetings

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				planned with the specialists. The outcomes of the specialist studies will be presented during the next public meeting. Please refer to Chapter 6 for further details on the Marine specialist study.
6.3	Besides, there are a few other issues relating to the specialist investigation on the marine impact that we need some clarity on.	29/04/2015	B Rawheath, LAMRAG Adviser, Email	Refer to response to issue 6.2
6.4	There should not be any salinity sitting there, right around that pipe? So it's going straight out. You are showing us a pretty picture of what is growing on the pipe and so on and so forth but what is actually around it?	13/04/2016	Justin Wendler, Private, Public Meeting	*From Marine specialist*: As the discharge pipeline will be fitted with diffuser ports, the discharged brine will be 'injected' into the receiving water body at a high velocity and at an angle. This will ensure rapid mixing of the brine with the surrounding water column thereby ensuring rapid dilution of the brine to <36 psu within 20 m of the pipeline. The diffuser will thus also prevent pooling of the high density brine on the seabed. Marine communities will be present within the sacrificial zone (i.e. it will not be a 'dead' zone), but community composition may be slightly different, with higher representation by more salinity tolerant species.
6.5	Fish at sea live off the seaweed that would be taken out of the intake water and we have fisherman in this city. You made it look like seaweed is not an important food for fish. My understanding is that seaweed is important.	13/04/2016	Desmond D'Sa, SDCEA, Public Meeting	*From Marine specialist*: It is not clear whether the stakeholder means phytoplankton or algal wrack when referring to 'seaweed'. Both serve functions in primary productivity in the food web, and both will be entrained at the seawater intake. Phytoplankton is consumed by zooplankton, which in turn serves as the food source for filter-feeding invertebrates and planktivorous fish such as pilchards. Entrainment of phytoplankton at the intake would result in a highly localised reduction of plantivorous food sources. However, considering the naturally highly variable abundance of plankton (both spatially and temporally) and the highly mobile behaviour of small pelagic shoaling fish, any indirect effects through reduced food availability would be negligible.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Algal wrack comprises drifting seaweed that has become detached from the seabed through wave action, natural mortality or cropping by grazing herbivores. Although seldom serving directly as a food source for herbivorous fish, the wrack serves an important function in nutrient recycling on the beaches. Any losses of algal wrack through impingement and entrainment at the seawater intake would be negligible when seen in the context of the highly variable abundance and distribution of algal wrack on both spatial and temporal scales.
6.6	Will sardines be affected?	13/04/2016	Desmond D'Sa, SDCEA, Public Meeting	*From Marine specialist*: Sardines will not be directly affected by either the seawater intake or the brine discharge. Intake velocities will be low enough to avoid impingement, and brine concentrations will be rapidly diluted around the discharge. Potential indirect effects include highly localised reduction of plantivorous food sources through entrainment at the intake, but considering the naturally highly variable abundance of plankton (both spatially and temporally) any indirect effects on sardines would be negligible.
6.7	Raw water intake - It is said that "Ideally, a small-scale pilot plant should be developed to facilitate detailed assessments of expected impacts and validate the predictions of the brine dispersion studies. An entrainment study should form part of this approach". Issue: No information is given on the small-scale pilot plant as recommended. Where will it be positioned, when will it be constructed and for how long will it be required to operate to achieve the desired information necessary to inform the detailed planning of the SWRO system?	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From Umgeni Water*: Umgeni Water is in the process of constructing a pilot plant at the Scottburgh Caravan Park. This plant is likely to be operational within the second half of this year and will be operated for a minimum of 12 months so that the pre-treatment options can be evaluated. Although the pilot plant is positioned on the South Coast, the water quality samples taken off both the South Coast and North Coast (over a 12 month period) during the detailed feasibility study show that the range and concentration of determinants is similar and hence the testing at the pilot plant on the South Coast would be relevant to the conditions on the North Coast.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
6.8	Construction of pipelines - Blasting in the marine environment is always a major concern and it should be kept as a last resort and be undertaken only out of the migratory seasons for all cetaceans. Issue: Should blasting be required it must be discussed in more detail and a blasting protocol supplied.	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	Noted. As mentioned in the EMPr (Section E. 4.16), a robust blasting protocol would need to be compiled in the event of blasting.
6.9	Supported – As the beach-dune continuum is the most sensitive ecological component and it is an ecosystem most at risk of transformation we support the proposed tunnelling of the seawater intake and brine discharge pipelines under the frontal dune. This is anticipated to reduce the residual impact on the coastal environment to low significance	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	Noted
6.10	Brine Disposal/Co-disposal of brine and other chemicals The EIR informs readers that the ecological assessment is limited to a desktop approach and relies on existing information only. Based on results from the initial dilution modelling and far-field brine dispersion modelling studies undertaken by WSP Africa Coastal Engineers (Pty) Ltd) there are some important conclusions and associated impact assessments, with recommendations being given in the report. The predictions of these models, whilst considered to be robust in terms of the major discharge constituent, need to be validated by field observations and subsequent monitoring. To this end it has been	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From CSIR*: Please refer to EMPr for details on the recommended baseline of shallow subtidal invertebrate macrofaunal communities (Management Objective 4.20). Methodology: Undertake a grab sampling survey of benthic macrofauna in a pre-established grid around the discharge position. Frequency: For at least 2 years before the commencement of construction. *From Umgeni Water*: A baseline study will be effected before and during the plant's construction. Monitoring will be undertaken once the plant is operational to ensure that the actual concentrations are consistent with the modelling. If the measured concentrations are not consistent with the modelling, and this is causing a negative impact on the marine environment, then mitigation measures will have to be considered to improve the mixing of the bring. These could include changes in the design of the diffusers or increasing the number of

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	strongly recommended that a well-designed monitoring plan is developed and implemented to ensure that the required level of dilution (as predicted by the numerical modelling) is in fact achieved and that typical brine and thermal footprints are confirmed, both to assess the performance of the discharge system and to validate the numerical model predictions. Issue: 1. It is recommended that the SWRO Plant environmental requirements include establishing a baseline of shallow sub-tidal invertebrate macrofaunal communities before any construction commences. More information is required on this aspect such as when such a study would commence and its duration. That is, timelines for the conclusion of the study need to align with construction should environmental authorisation be granted and the project implemented. 2. "If field observations and monitoring fail to mirror predicted results, the forecasted impacts will need to be re-assessed." This statement needs to be discussed in further detail, in particular what interventions will be considered, or in fact can practically be considered once design and construction is complete, should monitoring fail to mirror predicted results?			diffusers etc but could only be determined as part of a design process and with discussion with the relevant environmental authorities.
6.11	Management actions proposed by UW - The EIR, Section 14.2, sets out management actions proposed	06/05/2016	Carolyn Schwegman ,	*From CSIR*: UW Construction Specifications for Environmental Management (Appendix B of the EMPr) include general good

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	by UW to minimise impacts. Under Marine Ecology – Construction – "Comply with Umgeni Water Construction Specification for Environmental Management." Issue: As a bulk water provider we would not anticipate that the proponent has been involved in extensive work in the marine environment. Please either provide a list of projects within the marine environment or the provisions of the environmental management specifications which pertain specifically to activities in this environment. Should the construction of the SWRO plant and associated infrastructure not be addressed in UW Construction Specification for Environmental Management this needs to be addressed in depth in the EMPr.		Coastwatch KZN, Email	management practices, e.g. Section PSZB 1.1 Construction methodology. Contractor will provide method statements for construction activities relating to drilling and/or blasting of rocks; PSZA 4.2 Control of pollutants dealing for spillage clean up and containment. These have been re-emphasised in the EMPr. Details of the key recommended management actions specific to marine ecology (recommended by the specialists and not included in the UW Construction Specifications for Environmental Management) are included in the second column of Table 14.2 as well as in the EMPr.
6.12	Coastal Waters Discharge Permit. In response to our request for information pertaining to the CWDP for the proposed UW Lovu SWRO project we were informed that public review of the document is not a requirement. We fail to understand the reasons for the reluctance to make the information available and again request that it is provided.	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From CSIR*: The CWDP application for the project has been included in the Final EIA report – Refer to Appendix F.
6.13	As distinguished in a 2005 California Energy Commission analysis, "seawater…is not just water. It is habitat and contains an entire ecosystem of phytoplankton, fishes, and invertebrates" (York and Foster 2005). Given the extinction of marine life due to industries polluting along our coast the cumulative effects previously studied. The development should	09/05/2016	Desmond D'SA, SDCEA, Email	*From Marine specialist*: Cumulative impacts: it was stated under 6.5 in the marine specialist report that "The magnitude and significance of these [cumulative impacts] to the nearshore benthic ecosystem and potential cascade effects on higher order consumers are .... difficult to predict and impossible to quantify. Of importance is the recognition that cumulative effects may occur..."

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	not be done in isolation of all other impacts. As CSIR have already done studies on rivers and oceans e.coli, heavy metals entered through sewage plants should be included in this study and should be used to assess the oceans carrying capacity of pollution and at what rate can it increase. Any decision made must consider food, plant resource which will be destroyed if the desalination plant is granted. All information should be studied and placed before the decision maker; so decisions are made encompassing all information which this project requires before any go ahead is given. Over 20 000 recreational fisher folk eke out a livelihood on the entire Indian Ocean with permits and licenses registered with Ezemvelo Wildlife and yet no mention or engagement has taken place that we see captured in the information provided or presented by the CSIR and how they will be affected. These affected parties have not been invited to public participation meetings, nor have they been informed about this proposed desalination plant. There are many cases of marine life such as whales and fish species that are washed up dead on shores of beaches around the world that are victims of desalination plants. The seaweed that provides food for marine life will be sucked up by pipes which will destroy the primary food source for marine life. Entrainment occurs when organisms small enough to pass through the intake screens, such as plankton, fish eggs, and larvae, are killed during processing of salt water, in this draft EIA the study of the loss of livelihoods have not been			Impingement and entrainment of plankton and potential effects on primary production was covered above. An impingement and entrainment study as recommended would provide quantitative information of the fish species potentially affected by entrainment of eggs, larvae and ichthyoplankton. Effects of the desalination plant on fishers in the area and possible loss of livelihoods was not part of the marine specialist ToRs and should have been covered by the socio-economic study. Mortality of marine mammals and fish as a direct result of brine discharges have to my knowledge not been documented anywhere in the available literature. There seems to be some confusion here between desalination plant discharges and alleged impacts of seismic surveys. Residual chlorine in the discharge will be neutralised and will be below the recommended marine water quality guideline i.e. <3 µg/ℓ. Dechlorination will reduce the potential formation of halogenated by-products. Should they occur, concentrations would be very low.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	conducted. Quantifying species that will be affected and those that will migrate. A major pollutant of distillation processes is chlorine, which is added to the desalination plant feed water to biofouling on heat exchanger surfaces. The use of chlorine also leads to the formation of oxidant by-products such as halogenated organics. These compounds with effect to humans can be explained as cancer causing chemicals; with reference to the marine environment these compounds are usually rather persistent and that some of them are carcinogenic to animals.			
Comments on Final EIA Report				
6.14	I have read the EIA in regards to the above proposed project and I must raise my objection to this desalination plant going ahead. **Environmental Impact:** The proposed brine discharge into such an ecologically sensitive area would cause immense damage locally and with further ramifications down the coast.	24/08/2016	Mario de Abreu, King Shaka Estate resident, comment form	<u>*From CSIR:*</u> A marine ecology specialist study has been undertaken to assess the potential impacts of proposed brine discharge into the marine environment. The conclusion from this study concluded that: "*With the exception of the disturbance and destruction of subtidal sandy biota during pipeline laying, excavation and rock blasting for riser pits which will remain of medium significance, recommended management actions and mitigation measures will reduce the negative impacts of medium and high significance to* ***low*** *significance. No residual impacts of high significance are anticipated.* *Ideally, a small-scale pilot plant should be developed to facilitate detailed assessments of expected impacts and validate the predictions of the brine dispersion studies. An entrainment study should form part of this approach."*

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				From Umgeni Water: A Pilot Plant has been developed, at the Scottburgh Caravan Park, to test pre-treatment scenarios. This plant was being commissioned in April 2018 and will operate for a year using different pre-treatment options to identify the most practical and cost effective process.
6.15	Page 215: The following are extracts from the Draft Report The following are the assumptions and limitations of the study: • The study is based on the project description provided to the specialist; • The marine ecological impact assessment is limited to a "desktop" approach and thus relies on existing information only; • Some important conclusions and associated impact assessments and recommendations made in this EIA are based on results from the initial dilution modelling and far-field brine dispersion modelling studies undertaken by WSP Africa Coastal Engineers (Pty) Ltd. LaMRAG view is that no approval can be given by the Environment Authority based on the fact that there are severe limitations to the studies undertaken. EAP agrees that the specialist was constrained by hearsay reports and that only a desktop approach was relied on. This is a far cry from what proper on site studies	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Although a desktop approach was taken, the report was based on peer-reviewed publications and reliable unpublished reports as well as on in depth knowledge of the specialist of the marine environment in that region and not on 'hearsay'. Desktop approaches in areas where the marine ecology is comparatively ubiquitous, are considered adequate for EIA purposes, especially where detailed monitoring plans will form part of the EMP requirements as part of the clearance certificate. The project information shared with the specialists was provided by Aurecon who did the engineering design for the proposed project. This is a typical limitation statement that specialist include in their report to cover themselves in the event of some project information not being shared with them. Please refer to issue raised by Mrs Carolyn Schwegman (Issue 6.10): "*The EIR informs readers that the ecological assessment is limited to a desktop approach and relies on existing information only. Based on results from the initial dilution modelling and far-field brine dispersion modelling studies undertaken by WSP Africa Coastal Engineers (Pty) Ltd) there are some important conclusions and*

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	verified by a second independent study could produce. We accept that the expense could be enormous. This is why Desalination costs are high. The failure to undertake proper studies is a risk that no responsible authority should force a community to accept. The no- go option will not harm anyone and although desalination may provide some communities with large quantities of water at great cost, the benefits for ordinary low and middle income groups are minimal and the dangers too great.			*associated impact assessments, with recommendations being given in the report. The predictions of these models, whilst considered to be robust in terms of the major discharge constituent, need to be validated by field observations and subsequent monitoring. To this end it has been strongly recommended that a well-designed monitoring plan is developed and implemented to ensure that the required level of dilution (as predicted by the numerical modelling) is in fact achieved and that typical brine and thermal footprints are confirmed, both to assess the performance of the discharge system and to validate the numerical model predictions*" Furthermore, although the environmental description and assessment were based on a desktop review it was recommended in the specialist report that a structured BACI (Before-After-Control-Impact) study be undertaken focussing specifically on the final site location, construction approaches and pipeline routes before construction commences. This would provide far more focussed and relevant site specific information as a baseline for subsequent longer-term impact and recovery monitoring studies. Please refer to Final EIA report, Part B EMP – Section 4.E. for management actions and monitoring recommendations. Monitoring will be undertaken once the plant is operational to ensure that the actual concentrations are consistent with the modelling. If the measured concentrations are not consistent with the modelling, and this is causing a negative impact on the marine environment, then mitigation measures will have to be considered to improve the mixing of the bring. These could include changes in

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				the design of the diffusers or increasing the number of diffusers etc but could only be determined as part of a design process and with discussion with the relevant environmental authorities. Also refer to response to issue 10.17.

7. Issues related to terrestrial ecology and avifauna

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
7.1	Kindly find attached Comments for the Final Scoping Report (FSR) for the Proposed Construction, Operation and Decommissioning of 150ML/day Sea Water Reverse Osmosis (SWRO) Plant and Associated Infrastructure at Tongaat Kwazulu Natal. DEA REF NO: 14/12/16/3/3/2/652. "The Department of Agriculture, Forestry and Fisheries (DAFF) appreciate the opportunity given to review and comment on the DSR in the 29th May 2015 for the above mentioned project. The department acknowledges that the concerns and requirements outlined in the comments previously issued dated 19/05/2014 and 29/10/2014 have been incorporated and addressed in the FSR. The response to these comments indicate that " the presence of species of conservation significance and the potential impacts of the proposed development on nearby natural coastal and/or dune forest(s) will be assessed further as part of the Terrestrial ecological study (TES)". The summary of	08/06/2015	Mmbudzeni Patience Matamba, DAFF, Email and letter	Noted. Refer to Chapter 7 Terrestrial ecology study for further details.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	the TES provided in the FSR indicates that affected environments within the project area include Coastal dune and beach environment, Furthermore, in some area secondary vegetated areas show successional return to a forest structure. These factors will be further investigated in the Draft Environmental Impact Assessment report. Therefore, the Department will further comment upon receipt and review of the DEIAR			
7.2	Departments have their laws such as DMOSS, how has that been considered for a project of this nature?	13/04/2016	Vignesh Naidu, Private, Public meeting	*From Terrestrial ecologist*: DMOSS is a spatial planning and land use management tool, which is a town planning creation. We have undertaken an ecological assessment which is based on the physical state of the land and the current and historical state of such land. The findings of the terrestrial ecology study are therefore based on observation and interpretation, rather than social and academic aspirations. For further details and findings on potential impacts of the proposed development on DMOSS, please refer to Section 7.3 Power Line and Figure 7.20 in Chapter 7 Terrestrial ecology study.
7.3	Avian Mortality - It has been advised that bird flight diverters are provided on all powerlines, positioned strategically along the line route. It is also recommended that behavioural changes and avian mortalities are monitored along powerlines. Issue: Is comprehensive baseline information on avian populations and their behaviour in the region available to give effect to the outcomes of the monitoring programme? If not, how will this be addressed?	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From Terrestrial ecologist*: The most appropriate method of evaluation would be to: 1. Establish bfd's as indicated 2. Establish powerline reconnaissance procedure – e.g. walk the powerlines on monthly / weekly periods and record mortalities, if any 3. Review collected data 4. Undertake any interventions based on above data. SABAP (SA Bird Atlas Project) is the most appropriate means of obtaining longer term data for the area. CWAC could also be used for baseline data.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
7.4	Clearance of Natural Forest - It is said that if "forest" (as defined) is to be disturbed then a permit is required prior to such disturbance. In this regard, a permit is likely to be required for construction within/in the vicinity of the desalination plant site and along the proposed pipeline routes. The EIR provides that "Upon final survey and confirmation of the line, consideration is given to the presence of forest as per the NFA, and a suitable permit application made." Issue: The Department of Agriculture, Forestry and Fisheries (Indigenous Forest Regulation and Oversight) is a commenting authority in the EIA and would be required to approve the layout prior to environmental authorisation being granted. The Department, in terms of its mandate, is able to refuse to issue a permit once environmental authorisation is given.	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	Noted. Refer to Comments from DAFF on the Draft EIA report (Issue 7.9 below). *From Terrestrial ecologist*: Note that, as per proposed project description, only the powerlines may have a direct impact on the forest form during construction. An indirect impact on forest may arise with excavations at the desalination plant in the west. The former would have to be undertaken considering the nature of how the powerlines are established (e.g. stringing could be undertaken by helicopter if required, or alternative shot line), while the indirect impacts are generally not definitive and may arise over an extended period of time. DAFF would be appraised of the exact nature of forest loss (if any), once final survey has been undertaken. Remembering that all forest is in fact secondary and contains in some instances relic orchard specimens and exotic vegetation, the applicant also has the option of minor rerouting and variation to the various project elements in order to avoid any key forest community structures or specific areas close to forested areas. Corridors of 50 to 200 m have been applied for to allow for slight deviations of the proposed pipeline/powerline routes in order to avoid/minimise potential terrestrial impacts.
7.5	Construction in the coastal environment - In discussing this aspect it is said that pedestrian traffic through the dune environment for all activities will be managed (ie cordoning off the area). Issue: Strict control of all vehicles permitted in the coastal zone, too, must be ensured.	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	Noted

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
7.6	Endangered and rare species, both flora and fauna have not been properly identified nor considered and once this development starts including the pipelines, their habitat will be removed and will be lost forever, to current and more importantly to future generations. We do not see proper studies done to inform us how the development of pipelines, roads and desalination plants is going to avoid and not in danger these species and how they will not be destroyed.	09/05/2016	Desmond D'SA, SDCEA, Email	*From Terrestrial ecologist*: I am uncertain of the presence of the flora and fauna referred to in this issue. The habitat is currently and primarily "canelands". It is removed annually by means of fire. The most significant floral / habitat is located in the frontal dune form between the beach and desalination plant and it is understood that this area will remain intact as all pipeline work will be undertaken through tunnelling at depth. The balance of the affected environment is cultivated canelands Perhaps the IAP has some specific "endangered and rare" species in mind that live within a highly transformed habitat? I would be interested to hear of these, or possibly see evidence of them.
7.7	The proposed power supply is situated next to the largest Barn Swallow roost in South Africa where 3 to 5 million Barn Swallows roost, this is both a local and international tourist attraction. The alternate route 2 should be the only option, there can be no compromise on this matter. As you state in your summary, you are well aware of the high ecological sensitivity of the Mount Moreland area and it is extremely disappointing that the proposed power supply was considered along this route, Mount Moreland is the only IBA (Important Bird Area) in eThekwini and must be acknowledged, preserved and protected.	02/04/2016	A Wilken, Mount Moreland Conservancy, Email	*From CSIR*: The Alternative route 2 is indeed the only route that is recommended (the original proposed route was rated as a fatal flaw by the aquatic specialist – refer to Chapter 8 Section). Please also refer to Chapter 14 – Section 14.6 For the EAP final recommendations.
7.8	The main concern related to the proposed powerline route adjacent to Lake Victoria. Not only would the powerline result in serious visual impact on the barn swallow viewing site in Mount Moreland, the area is an IBA and the powerline has the potential to impact on the barn swallows who roost in lake Victoria. The	30/03/2016	J Taylor, Mount Moreland Conservancy, Email	Please refer to response to issue 7.7.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	proposed route also falls within a bird flight corridor where many larger bird species such as herons, pelicans and raptors follow the water course from the estuary to the Hazelmere dam. The powerline would have serious impact on the flight corridor. The shorter alternative route should be used.			
7.9	With regards to the DEIAR and the site inspection conducted on the 09th May 2016, the proposed development site comprises of areas disturbed by agricultural activities (such as sugarcane lands and garden) and infrastructure (roads and buildings), however there is a Coastal forest situated adjacent to the development footprint. Coastal/Dune forests are protected in terms of the NFA provisions and they are categorized as endangered/threatened ecosystems in terms of National Environmental Management Biodiversity Act No 10 of 2004. The coastal forest adjacent to the proposed plant site must be demarcated during construction. Should the area with the coastal forest be purchased by the developer, the forest ought to be a conservation area and no developments are permitted within the forest. The intake and outake shaft/pipelines will be tunnelled 10m underground; therefore the Dune/Coastal forest will not be impacted upon although it still forms part of the servitude. Therefore, the Department has no objections towards the proposed development provided that there are no natural forests and/or protected trees species in terms of the NFA that will be negatively impacted upon by the development.	11/05/2016	N Sontangane, Forestry Regulations and Support, KZN, Letter	Noted. As mentioned in Chapter 7 Terrestrial ecology study, Section 7.5.3 – "*Clearance of Natural Forest. Where "three or more indigenous trees form a contiguous canopy" the legal definition of "forest" applies. If a "forest" is to be disturbed, then a permit is required prior to such disturbance. In this regard, a permit is likely to be required for construction activities within/in the vicinity of the desalination plant site and along the proposed pipeline routes. Upon final survey and confirmation of the line, consideration is will be given to the presence of forest as per the NFA, and a suitable permit application will be made*." Therefore, upon final survey and detailed engineering design for the proposed development and associated infrastructure, a Permit in terms Section 7.1 of the national Forests Act will be applied for, if and where required. Please refer to response to issue 7.4.

Comments on Final EIA Report				
7.10	Rehabilitation – How many years will this take?	13/04/2016	Claire Lilford, Private, Public meeting Comment form	*From Terrestrial ecologist*: This should be a rapid and simple procedure under a managed regime. Stabilisation could be brought to disturbed sites within a matter of months, with reasonable seral (succesionary) stages being achieved within 24 months (shrub- small, secondary trees)
7.11	The Environmental Planning and Climate Protection Department has reviewed the Final Environmental Impact Report (FEIR) prepared for the proposed desalination plant project. Responses to issues and concerns raised during review of the Draft Environmental Impact Assessment have been noted and the following comments are relevant: Powerline Routing: • This Department highlighted significant concerns regarding the planned alignment of the 132kV powerline during the Draft EIR comment phase. As previously stated, the alignment is in conflict with the King Shaka Conservation Area (KSIACA). This area has recently been formally delineated and approved by the Department of Environmental Affairs (DEA) as part of the offset process for the King Shaka International Airport and Dube Trade Port Company. In terms of the conditions of establishment for this Conservation Area, as previously stated **no infrastructure may be placed within the delineated boundaries**. The original and proposed re-alignment routes will both impact on this area and thus **cannot be supported**.	11/08/2016	Claire Norton, Professional Planner, Manager: Land Use Management, email	Powerline routing: An alternative powerline route that avoids Lake Victoria and the KSIA conservation area has been assessed as part of this Second draft EIA report. Please refer to Chapter 14 for conclusions and recommendations. Note that the EIA process runs on a legislated time schedule and the KSIACA plans were not placed in the public domain at that stage of the ESIA. Therefore it is reasonable and acceptable that they could not be included within the time period for the specialist studies

	• The response provided by the consultant regarding the above issue (Chapter 5, Page 5-37 to 5-40) is also not accepted. The reasoning that, due to apparent late notification regarding the restrictions associated with the KSIACA, the specialist reports could not be updated or the alignment of the powerline reconsidered, is unacceptable. Given the significance of the issue raised, failure to address the matter could constitute a fatal flaw in the EIA process and is grounds for an appeal. By not addressing such a critical matter it could be construed that the consultant is merely running through a process rather than actively engaging and addressing issues of significance. One could question what the purpose of commenting on the Draft EIR is, if issues raised are merely dismissed as being raised too late in the process and thus unavoidable? • The specialist studies also highlighted significant issues around the potential impacts to avi-fauna relating to these powerlines. The reports however fail to unpack and assess these risks in any detail. Given the presence of the important Bird Area (IBA). In the absence of any meaningful avoidance or mitigation, this Department's position as presented in the first bullet above remains. Although some of the concerns raised during the Draft EIR commenting have been addressed, the application in its current form still fails to fully address and mitigate the impacts associated with the proposed 132kV powerline. The alignment conflicts with current and on-going conservation projects with the City and			

	directly impacts on proclaimed and formally recognised land parcels set aside for offsets. Until such time as significantly more detail is provided to allay the concerns and issues detailed above, this **Department cannot support this application**.			
7.12	The Department of Agriculture, Forestry and Fisheries (DAFF) appreciates the opportunity given to review and comment on the final EIAR received on the 13th of July 2016 for the above mentioned development. DAFF reiterates the comments previously issued for the DEIAR dated 11/05/2016	15/8/2016	N Sontangane, DAFF, Pietermaritzbur, email	Noted. Please refer to response to Issue 7.9 (Final EIA Report, 2016). The intake and outake shaft/pipelines will be tunnelled 10m underground; therefore the Dune/Coastal forest will not be impacted.
7.13	I have read the EIA in regards to the above proposed project and I must raise my objection to this desalination plant going ahead. **Environmental Impact:** I do not agree with the assessment that the environmental impact on the area will be low. In constructing this plant, acres of forest will be lost forever. We pride ourselves as a country offering foreign tourists a range of bio diversity including flora and fauna and yet here we are, ready to destroy one of the last vestiges of such bio diversity.	24/08/2016	Mario de Abreu, King Shaka Estate resident, comment form	*From CSIR*: Please refer to Chapter 7 Terrestrial ecology for further details on potential impacts on terrestrial ecology (including forest). The proposed desalination plant will be constructed on a land currently used for agriculture and it is therefore incorrect that acres of forest would be lost during its construction.

8. Issues related to waste, wastewater and stormwater management

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
8.1	Durban Solid waste. This department has no requirements for this proposal	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.
8.2	Coastal, Stormwater and catchment management. This Department has no objection	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.
8.3	eThekwini water and sanitation department. This department can only provide a comment once the sewer disposal plant details have been provided	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.
8.4	Who will manage the construction process? What about the litter that comes from the construction site? What will happen when the wind blows the waste and litter onto beach into the ocean? Who is going to control that waste, where is that waste going to go? How is that waste going to impact on the environment because I don't think that was touched on once during the presentation.	13/04/2016	Justin Wendler, Private, Public Meeting	*From Umgeni*: There are a number of institutional arrangement on how a project like this would go forward. Because it is a technology that is not commonly used in SA and not on a large scale, we would probably use an overseas company, with Umgeni Water to design, build and operate the plant for about 7 years where after Umgeni Water would take over complete operation of the plant. *From CSIR*: The EMPr includes a number of good housekeeping and general recommendations to be implemented during construction activities (Section A. 5.1), including details on waste management, potential spillage of effluent/fuel/chemicals etc. Also refer to Chapter

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				8 Aquatic ecology study, Sections 8.6.1.1 (Impact 1) and 8.6.1.2 (Impact 6).
8.5	eThekwini Water and Sanitation Department - No comment. Durban Solid Waste - This Department has no further requirements.	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.
8.6	Coastal, Stormwater and Catchment Management. No development seawards of the Bruuns 1000 line will be permitted	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	Noted. All significant infrastructure will be placed landward of the setback lines determined by the Municipality, however the marine pipelines will be placed by necessity, within these areas at depths below natural ground level.
Comments on Final EIA Report				
8.7	**Coastal, Stormwater and Catchment Management** – No development seawards of the Bruuns 1000 line will be permitted	11/08/2016	Claire Norton, eThekwini Municipality, email	Noted
8.8	**eThekwini Water and Sanitation Department** – Water and Sanitation Engineering: Sanitation Design Branch. This Branch has not seen the sewer disposal plant details. In this regard please liaise with Noelene Chellan on 031 – 311 8166 to determine their requirements.	11/08/2016	Claire Norton, eThekwini Municipality, email	Noted. The eTekwini Water and Sanitation Department will be contacted to obtain the requirements for the sewer disposal plant prior to finalising the detailed engineering design.

9. Issues related to EIA and Public Participation

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
9.1	We are still concerned about the independence and transparency issues. CSIR and Umgeni water are both state funded institutions. We do not question your integrity however in a court of law, not only must an entity be independent in all its actions but also seen to be so. How do you propose to ensure the credibility and integrity of your investigations and assessments? We notice that the previous Project Managers were dismissed rather abruptly. CSIR has not yet revealed the reasons for this. Hence I believe we are justified in questioning CSIR`s transparency	29/04/2015	B Rawheath, LAMRAG Adviser, Email	The CSIR was appointed as the independent environmental assessment practitioner (EAP) to conduct the EIA following a competitive tender process as was released by Umgeni Water (Tender No. 2012/206). It should also be noted that in terms of Regulation 17 of the EIA Regulations, the EAP has no business, financial or other interest in the proposed activity other than fair remuneration for work performed, and that there are no circumstances that compromise the objectivity of the EAP. As previously mentioned, the EAP is an individual, not an organisation. Therefore, whilst there exists an employer/employee relationship between the CSIR and the EAP, the EAP was appointed as such due to his being independently certified and duly registered EAP, and not the CSIR. In addition, the EAP has signed a declaration of independence as an EAP and his signing of such a declaration is supported by the fact that he is certified and registered with EAPASA as a qualified EAP in his personal capacity. The previous project managers have not been dismissed. They requested a transfer from our group and have moved to another department within the CSIR. This was announced at the last public meeting. *From Umgeni Water*: Umgeni Water is a parastatal falling under the Department of Water and Sanitation. Being a parastatal the organisation must be self-sufficient and in that way autonomous. Umgeni Water is, therefore, not a “state funded entity”.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
9.2	We have been communicating with you for a while now. We are still not confident that our concerns and objections are being heeded. Before we move this process forward please find a way to address these matters that are important to us. We also believe that the authorities from whom the proponents seek approval will regard them as important also. We look forward to an open and frank discussion with CSIR on the above concerns and several more. When can we do this?	29/04/2015	B Rawheath, LAMRAG Adviser, Email	All I&APs concerns (within the scope of this EIA) are duly noted and have been incorporated in the issues and responses trail (Chapter 5 of the Draft EIA Report). Note that some concerns (e.g. alternative sources of water and concerns related to strategic planning and municipality infrastructure) are unfortunately out of the scope of this EIA which only covers the proposed desalination plant. It is recommended that those concerns be taken up directly with the relevant authorities and that LaMRAG present them alternative ways of ensuring adequate water supply for residents. All issues falling within the scope of this EIA have been (as part of the Scoping Report) or will be (as part of the EIA report) responded to. Please keep in mind that the proposed desalination plant is only one option that Umgeni is considering for bulk water supply. The preferred option remains the uMkhomazi Water Project. A public commenting period will be organised as part of the draft EIA report, where all queries will be noted and answered.
9.3	Thank you for the reply. It is much appreciated. However, I would rather discuss some of these directly with you. Please schedule an appointment by telephone for a suitable time at your earliest convenience. I believe that the residents of the affected areas have some justification for distrusting the Proposers of the Desalination facility. This issue has not been dealt with at any of the meetings nor is it properly addressed in the draft scope.	04/05/2015	Betty Rawheath LAMRAG Adviser, Email	The draft scoping report for the proposed desalination plant at Tongaat was released on 10 September 2014 for public comment. Thereafter, in February 2015, a letter was released conveying that a second public commenting period on the draft scoping report was provided, to allow for further engagement with the I&APs. This second commenting period was closed on 24 March 2015. Note that the draft scoping report had not changed from the first to the second comments period. The time provided for the public to comment on the draft scoping report was therefore well in excess of the requirements specified in the EIA Regulations.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				From a public participation perspective (and in accordance with the requirements as set out in the 2010 NEMA EIA Regulations and its amendments), all the legal requirements in terms of public announcement and review of the draft and final report have been met. Our commitment as the EAP is to conduct a credible and legitimate process in terms of the EIA Regulations. If there are issues of "distrust" between LaMRAG and the applicant or municipality which are beyond the scope of this EIA process, these are outside the responsibilities of the EAP and the EIA process. We look forward to further engagement with LaMRAG at the designated public participation periods in the future and commit to addressing all project related concerns to the best of our ability in line with our duties and responsibilities.
9.4	Our position must be made clear for the record whether or not CSIR engages with our concerns. It is particularly important that the authority to whom the final EIR is submitted for consideration is made aware of the challenges we as an under - resourced civic body encountered in dealing with the power of a Mega City such as eThekwini and a major para - statal body that is Umgeni Water. Hence the lack of balance of power is a pertinent issue when people challenge bad development proposed by the state or corporations. We need to document these here and now lest at some stage later it is argued by any party that these were not raised in good time. As an environmental legal adviser I have to ensure that our	11/05/2015	Betty Rawheath LAMRAG Adviser, Email	Please refer to response to issue 9.3 above. The final scoping report has been released for Public review on 15 May 2015 for a 21 days commenting period. All comments (within the scope of work of this EIA) received during this commenting period have been incorporated in this draft EIA report.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	organisation works not only with narrow environmental regulations but broadly under constitutional legal principles. It will be appreciated if this conversation is embodied in the appropriate documentation. That said it will be appreciated if the Scoping Report that is about to be released be emailed to us at your earliest convenience.			
9.5	Please find La Mercy Action Group's Response form to the Scoping Report and a Power Point Document of a summary of the objections. We confirm that we oppose the desalination bid by Umgeni water and call for the immediate halting of the EIA process.	07/06/2015	Betty Rawheath, LAMRAG Adviser, Email	Noted
9.6	La Mercy Residents Action Group has opposed this development from the beginning and will continue to do so as long as it takes. We have put out a series of documents that explain our objections. Some of these are contained in the Scoping Report. A summary is contained in this attachment which is a Power Point Presentation Paper delivered at an Environmental conference last year. The main points we want to highlight here are the following.	07/06/2015	B Rawheath, LAMRAG Adviser, Email	Comment noted. Please refer to response to issue 9.1 above.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	• The CSIR is a Public Funded Company. It will not be perceived as objective in this matter because it was appointed by Umgeni Water which is also a Public funded body. We have reason to believe that the two previous project managers Mr. Moodley and Mr.Banoo both withdrew for this reason. The opposers of the development do not feel confident that only the most independent investigators will be appointed to investigate the feasibility of the development as CSIR may be constrained to favour the Proposer which will be paying for the EIA and EIR. Umgeni Water was not open and transparent when the process was started to enable the affected communities to participate when the process was in its planning stages.			
9.7	The following organisation should be involved: Desainagar Rate Payers association Seatides Rate paters association	29/05/2015	Marlene Naidoo, Email	These I&APs have been added to the database
9.8	The following organisations should be involved: Ethekwini Municipality Engineering services, Environment, Energy , Planning, Housing Economy and Tourism KwaZulu Natal Human Settlements.	07/06/2015	B Rawheath, LAMRAG Adviser, Email	These I&APs are already on the database and have been kept informed of the EIA process. Comments have been received from all of these departments. Refer to issues raised via Mrs Diane Van Rensburg, eThekwini Municipality. This I&AP has been added to our database.
9.9	We had the pleasure of having Dr Hugo van Zyl in our office yesterday discussing this proposal. It was very informative, & also very entertaining as a number of	29/05/2015	Cindy Bogan, Branch Manager -	This I&AP has been added to the database.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	my brokers live that side of Ballito. Would you be kind enough to include me in your database of interested parties when you send out information or updates? We sell quite regularly in that area & surrounds, so it's good for us to have the proper info when dealing with clients, especially if it goes ahead. People are only scared of what they don't know, so it would help us tremendously to be as knowledgeable as possible should prospective clients enquire.		Wakefields Ballito, Email	
9.10	Would you be able to send me a copy of the scoping report for the proposed Desalination plant at Tongaat? I was a hydrologist before I became an Anglican priest but I still have an interest in my local water resource management issues.	06/07/2015	Revd Peter Houston, Parish of Umhlali Diocese of Natal (Anglican), Email	The link to the Final scoping report was sent to this I&AP and his name was added to our I&AP database.
9.11	I just want to know we have been through meetings before; we had meetings on the Scoping Report and before the Scoping Report and we had several meetings, and all that has happened is that Umgeni Water and CSIR just sold us a desalination project. If people had known about this already and we have been working through the whole process, I just want to know why do we have to attend this all over again? Isn't this the time now for us to decide what the people want? I think you released your report and the report, I know, has been disseminated, and I know everybody who is here probably has the report, so where is the need to actually go into the whole issue of what Umgeni Water wants? I think now this is about us.	13/04/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From CSIR*: The objective of the public meeting held on 13 April 2016 was to provide background about the project and the need of the project, to present a summary of the Draft EIA Report released on 22 March 2016 and to give an opportunity to hear any comments from I&APs and discuss issues regarding the positive and negative impacts that have been identified around the project. This meeting is taking place as part of a regulated environmental assessment process. This meeting did not cover much about Scoping and the previous phase of the project as that has already been covered at previous meetings. The purpose of the environmental assessment process is to provide information to the national Department of Environmental Affairs (DEA) who will then make a decision whether or not they authorise the project. In the decision-making process, DEA wants to know what are the concerns of the people, what studies have been done, what issues have been raised and that is part of the purpose of this meeting here,

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				to identify what are your concerns and issues and have they been captured and been understood.
9.12	The national department, what is the name?	13/04/2016	Desmond D'SA, SDCEA, Public Meeting	*From CSIR*: National Department of Environmental Affairs.
9.13	Is there a representative from the national department here at the meeting?	13/04/2016	Unknown, Public Meeting	*From CSIR*: National Department of Environmental Affairs (DEA) was not present at the public meeting. DEA usually does not attend public meetings as there are continuously meetings like this happening all over country.
9.14	Is the full report available and will we get copies? I will suggest that we get the reports; we need the reports for us to make any comments. We can't get to the libraries. People need the reference material that will be affected on this side.	13/04/2016	Desmond D'SA, SDCEA, Public Meeting	*From CSIR:* A summary was sent to all registered I&AP and it was also available at the public meeting. The draft EIA report is available at Tongaat Beach Library and on the CSIR website.
9.15	What is your role as the CSIR? Dual roles – leading scientist, EAP and facilitator? Are you facilitating independently or not? Fair process? CSIR's perceived bias towards the proposal. Concerns about the independence of the CSIR. Many of the recommendations appear to be completely biased. Please refer to Notes of the meeting in Appendix E for further details.	13/04/2016	Desmond D'SA, SDCEA & B Rawheath, LAMRAG Adviser, Public Meeting	*From CSIR*: CSIR's role is to provide a balanced objective scientific assessment of what are the risks or the costs or the positive and negative aspects or the costs and benefits of a desalination plant and how do you change the design of the plant to minimise the impacts and maximise the benefits. It is not CSIR role to make a decision whether it goes ahead or not, that is what the national DEA does under the Minister of Environmental Affairs.
9.16	And your work in this province, what you do in this province as the CSIR? No experience with desalination in a sub-tropical area. Please refer to Notes of the meeting in Appendix E for further details.	13/04/2016	Desmond D'SA, SDCEA, Public Meeting	*From CSIR*: CSIR is a science council involved in doing research and using science to support livelihoods of people in South Africa. For example, in Durban CSIR is involved in water quality monitoring along the coast and part of its role is to make sure that science is used and applied to improve the quality of lives of people. As such, CSIR gets involved in

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				new areas of science like desalination is a new technology that has not been used widely in South Africa on a large scale, there are a couple of small projects. CSIR has been involved in desalination for larger projects in Namibia, Walvis Bay and Swakopmund and on the West Coast of South Africa.
9.17	Should this not have been done in the day, because we can come through and engage with you, I think it is unfair to expect that you do a presentation of this nature and you are just skipping through it and you can't ask some critical questions. At the end of the day, it looks like you are just looking for a record of decision and that you are just ticking the boxes to say the process has been followed.	13/04/2016	Desmond D'SA, SDCEA, Public Meeting	*From CSIR*: The first meeting for this project was scheduled for 5pm and we have received requests from I&APs to hold future meetings later in the evening to allow for people who work to attend the meetings. Opportunities to ask questions is always given to all participants during the meeting. Refer to this chapter that collate all
9.18	Are the specialists available to answer questions? Not here at the public meeting?	13/04/2016	Desmond D'SA, SDCEA, Public Meeting	*From CSIR*: Specialists have not attended the public meeting, however they are available to answer questions. As such, issues and concerns in this document, related to their field of study, have been responded by the specialists.
9.19	You have not come and spoken to us and the people living behind us and say that you are proposing a project of this nature. So many people are not aware – this is why you have such a limited crowd. Many people don't actually know what is going on. You need to inform the greater community. Newspaper doesn't really mean anything. Did somebody actually knock at the doors and say we are planning to put up this mega structure here and it is going to affect certain areas?	13/04/2016	Lucille and Justin Wendler/Mike Wilson, Private, Public Meeting	*From CSIR*: At the outset of the project (March 2014), CSIR has drafted a list of I&APs. Six site notices (3 English and 3 isiZulu) have been put up at three locations surrounding the project site and Background Information documents explaining the project and the EIA process as well as letters and comment/registration forms have been sent to all I&APs on the original list. As part of the public participation process, the release of the draft scoping report and the draft EIA report, including details regarding the public participation meetings, were advertised in English in the Mercury and in Zulu in the Isolezwe. A second public commenting period on the draft scoping report was provided, to allow for further engagement with the I&APs, and was advertised in an

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	It was on social media and in three newspapers and the radio. With the new generation, you have to be on the page. People are still aware of it, take for example Wade Holland who lives in Mdloti, he drives all the way here for meetings and he is aware of it. Take Jackson for example, he lives in Jackson Estate and he is aware of it yet he does not get a newspaper delivered to his house. Lots of people are aware of it. Whatever media you have, please read it, this is where the info is. It is three newspapers published in the Tongaat area, as well as the North Coast courier.		Alimuthu Perumal, Private, Public Meeting	additional 4 local newspapers including Coastal Weekly, Makhulu News, Northern Star and North Coast Courier (as recommended by I&APs). At that time, an additional 8 notice boards were put up at the project site and three areas that the public frequent (i.e. at Tongaat Beach Library, Seabelles Restaurant and La Mercy Beach Hotel). isiZulu pamphlets were also provided to landowners of the project site to circulate amongst farmworkers and a batch of pamphlets was sent to Mr Jeeva Pillay (Tongaat Civi Association) for distribution. All letters sent to I&APs have been sent in both languages too. A Zulu speaking colleague has also attended all previous public meetings (Mendy Shozi) and Mrs Phumi Ndlovu from Umgeni was available for any Zulu translation at this last public meeting. Hard copies of reports have always been made available at the public library for people who do not have access to internet (Tongaat Beach Library). In light of the above, we therefore believe that the project team has gone over and above the legal requirements with the explicit aim of encouraging public awareness. In addition to the above, the Social specialist has met and discussed the project with the following I&APs: Les March — King Shaka Estate - Chair/Trustees Kay Naidu PP. Sal Pillay — King Shaka Estate Coston — King Shaka Estate Damir Percaic — King Shaka Estate Krish Ganesh — King Shaka Estate

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Mr Jeevah Pillay from the Tongaat Civic Associations confirmed the following: We have the 21 civics in Tongaat under and I also served on La Mercy Rate civic Association (Rate payers association), both were informed of the proposed project. STRACA (Seatides) chairman was also made aware of the project.
9.20	Is it not feasible to extend the timeframe to give us a bit more time so that we can make more meaningful contributions to the process and engage with the studies? Strategically, you had a meeting at Tongaat and not at La Mercy so you could leave out the affected people. It would have been crucial to have their inputs. How do you engage the broader community of La Mercy where the plant is proposed to be put? I think it is a travesty of justice when you move the meeting to an area where lesser people will be affected.	13/04/2016	Desmond D'SA, SDCEA, Public Meeting	*From CSIR*: Please refer to response to issue 9.19 for details on the public participation process undertaken as part of the EIA process for the proposed development. Letters of notification of the public commenting period on the Draft EIA report for the proposed desalination plant at Tongaat have been sent out to I&APs on 19 March 2016 and Adverts have been published in newspapers between 22 and 25 March 2016. Taking the last advert dated 25 March 2016, this gives I&APs 45 calendar days for reviewing the report. This complies with the 2010 EIA Regulations and the Integrated Environmental Management Guideline Series 7 - Public Participation in the EIA Process (2010) published by National DEA.
9.21	Who is this EIA being submitted to for approval?	13/04/2016	Vignesh Naidu, Private, Public meeting	*From CSIR*: National Department of Environment
9.22	All the assessments and studies done by your experts, the end results, would be low impact or medium impact or high impact ideally as you have shown. When do these recommendations become a reality? Who will check it will be actually be done? Does this apply to all dams under operation by UW? My concern is that UW did not follow those on a dam.	13/04/2016	Sharmla Ramharry, Private, Public meeting	*From CSIR*: All key management actions recommended by the specialists in each of the specialist studies, have been included in the EMPr which would be a condition of the Environmental Authorisation should it be granted. The Umgeni Water Environmental Officer will be responsible for monitoring the implementation and compliance with the Environmental Management Programme and associated documents,

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				including Umgeni Water Particular Specification for Environmental Management of Construction Projects and any other environmental requirements on a daily basis. An independent ECO must be appointed to monitor the compliance of the proposed project with the conditions of Environmental Authorisation (should such authorisation be granted by the DEA) during the construction phase (and possibly the operational and decommissioning phases, depending on the requirements of the DEA). The ECO must also monitor compliance of the proposed project with environmental legislation and recommendations of the EMPr. Please refer to Section 3 of the EMPr (Part B of the EIA report) for the various roles and responsibilities.
9.23	The cumulative impacts are going to be so devastating to this stretch of land that you will never be able to rehabilitate it. Is it worth it? Growth in this community not sufficient to warrant this plant. Have not looked at cumulative effects.	13/04/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From CSIR*: Cumulative impacts have been assessed. Please refer to the various specialist studies (Chapters 6 to 12) and to Chapter 14 Section 14.3 for more details on the assessment of cumulative impacts.
9.24	We note with concern the revival of the above matter. Please advise as soon as possible why this process is being resumed at this stage. We are of the view your client is not taking our community into its confidence by arbitrarily allowing another important meeting to be held without working with us to decide on a date for the next phase of the EIA. This date 13th April 2016 is much too short notice for us to resume and expand our objections especially as several public holidays are included in the notice period. The draft EIA is not a small or simple	28/03/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From CSIR*: Please refer to response to issues 9.19 and 9.20 for details on the public participation process undertaken as part of this EIA.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	document by any means, hence it is incredible that CSIR could have thought this would be sufficient notice to enable reasonable preparation opportunity. If you decide to go ahead with this process and there is a poor turnout and or inability to engage because of preparation time constraints, we will argue that substantive due process was not complied with. We would have thought that CSIR should be distancing itself from this process especially as the draft report that the specialists have compiled leave no doubt that this project will be confronted with a number of significant challenges even if it were to get approval from the authorities eventually. We seek a further focus group meeting before any further public participation as per EIA procedures meetings takes place. We suggest that the nature of the meeting to be held on the 13th April be changed from public participation meeting to a focus group meeting. LaMRAG represents the Greater La Mercy Coastal Zone. (The area between the Mdloti and Tongaat catchments) The draft document involves several technical issues that we are entitled to obtain counsel on before we can meaningfully participate on equal terms. The conclusions in the draft report are not consistent with the factual findings in the most significant chapters			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	viz. environmental damage, socio - economic impact, replacement of an agricultural area with an industrial one within a residential area and the costs, especially costs of energy and massive implication for South Africa's and KwaZulu Natal's climate change international obligations.			
9.25	The lack of engagement with municipalities who are clients of Umgeni Water is a matter that should not have been glossed over.	28/03/2016	B Rawheath, LAMRAG Adviser, Public Meeting	*From CSIR*: Please refer to response to issues 9.19 and 9.20
9.26	We the South Durban Community Environmental Alliance (SDCEA) would like to request an extension on the commenting period of the draft EIA Report. We would like to include expert specialists to engage in the process, so we are able to contribute substantial comments of quality. We feel the commenting period should be extended to the 29th May 2016, and you will receive comments by 4:30pm. I think you are missing the point we as the SDCEA need to find experts to comment to a completely new development in a very short space of time who can give freely of their time to community organisations. I want to point out that since Wednesday the 13th April 2016 where we attended the meeting to the 9th May 2016 is only 26 days and this includes holidays and weekends for us to comment.	15/04/2016 18/04/2016	D D'Sa, SDCEA, Email	*From CSIR*: Letters of notification of the public commenting period on the Draft EIA report for the proposed desalination plant at Tongaat have been sent out to I&APs on 19 March 2016 and Adverts have been published in newspapers between 22 and 25 March 2016. Taking the last advert dated 25 March 2016, this gives I&APs 45 calendar days for reviewing the report. This complies with the 2010 EIA Regulations and the Integrated Environmental Management Guideline Series 7 - Public Participation in the EIA Process (2010) published by National DEA. As mentioned on numerous occasions, CSIR has acted as an independent party throughout the project, and the specialist studies have also been undertaken by independent specialists not employed by the CSIR. However, should you wish to make use of external specialists to verify information and provide comments after the commenting period has lapsed, those comments need to please be sent to the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Please can you explain how you have got 40x days hence you cannot extend the commenting period. As the facilitator you have to act independently without bias unless you are favouring the development and are wanting this project to go ahead without any comments that will delay the process. This then goes to what the Umgeni Water speaker stated that this project is only a backup in case the UMKOMAAS dam is held back .In the event that you proceed we will not hesitate to seek a legal opinion on public participation given that the process so is already flawed with a number of the population not involved nor invited.			National DEA case officer directly for consideration and a copy of those comments sent to the CSIR. Please also refer to responses to issues 9.19 and 9.20 for further details of the public participation process undertaken as part of this EIA.
9.27	LaMRAG has been repeatedly saying, formal compliance is not equal to substantive compliance which the constitution demands. What we all would like to know is the real reason for suddenly hurrying this process along. We get the distinct impression that you want this process finalised as quickly as possible. Civil society is the primary stakeholder which cannot be denied its legitimate space and time to protect itself from unscrupulous developers. We suggest that you communicate our sentiments to your client and DEA, after all you claim to be independent. We will of course make our own representations to DEA about all the reasons why Desalination in La Mercy or anywhere in the Greater	22/04/2016	B Rawheath, LAMRAG Adviser, Email	*From CSIR*: All issues and concerns raised by I&APs have been included in this Issues and responses trail, as part of the EIA report which is submitted to National DEA for review. Please refer to response to issue 9.32 with regards to CSIR's independence.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	eThekwini area is not acceptable to the people who live and work here. We look forward to some indication in your actions and responses that CSIR is as independent as it claims to be. Your experts too cannot claim to be truly independent as we have not had the opportunity to test this claim. Besides, we find it difficult to accept that all the experts have in the final analysis favoured Umgeni Water's proposal in the face of devastating harm on many significant aspects. Please advise how we can find common ground about the further progress of this process.			
9.28	LaMRAG notes that today is the deadline set by yourselves for comment by I & APs. We have tried to meet the deadline however as we anticipated, did not have sufficient time to respond in a satisfactorily substantial manner to the rather voluminous document. Further as we will point out in due course there are several gaps and ommissions in the Draft Report that should not be allowed to slip by without analysis and comment. As indicated in our earlier correspondence we will submit our detailed response directly to the Department of Environmental Affairs and copy you. Please acknowledge receipt of this email and it will be appreciated if you refer us to the exact same office	09/05/2016	B Rawheath, LAMRAG Adviser, Email	*From CSIR*: Noted. Contact details of the case officer have been sent to this I&AP.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	and officer that will be attending to this particular application.			
9.29	The environmental impact area of study – and extent of potential pollution does not seem to have been clearly defined. How far north, south, east will be affected? Ballito?	13/04/2016	Ken Lever, Private, Public meeting (comment form)	*From CSIR*: The extent of potential pollution (visual impact, noise impacts, impacts on terrestrial, aquatic and marine ecology, etc.) have been assessed in each specialist study (refer to the impact assessment tables where the extent for each impact has been assessed). The extent of the impacts will depend on the nature of the impact and also on the impact pathway. Most of the residual impacts are anticipated to remain local (< 2km from the proposed development). Some impacts such as, for example, negative visual impacts associated with the proposed powerline, impacts associated with an increase in electricity demand or positive impacts associated with expenditures on the project, job opportunities or secure potable water supply of 150 Ml/day have been assessed to be regional (up to 30 km from the proposed infrastructure). For more details, please refer to the various specialist studies (Chapters 6 to 12). The impact assessment methodology is detailed in Chapter 4 Section 4.7.
9.30	Water Use Licence. It is explained that the application for a Water Use Licence will be submitted after release of final EIR. We trust that should this application have information additional to that set out in the EIR it will be provided to stakeholders and I&APs	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From CSIR*: The Water use licence application will undergo a public participation process on its own as required by the draft Regulations (Notice 126 of 2015) regarding the procedural requirements for licence applications in terms of section 26(1) (k) of the National Water Act, 1998.
9.31	Public Participation A very problematic process hosted in Tongaat. Public meetings hosted were very limited, and consultants	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: The first meeting for this project was scheduled for 5pm and we have received requests from I&APs to hold future meetings later in the evening to allow for people who work to attend the meetings. This meeting was under no circumstances limited to 2 hours and in fact

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	were in a haste to tick boxes and little time was allocated to consulting and questions. This meeting was not meaningful, noting that it was not held in residential areas that will be affected by this development. We find it strange that the meeting was held in Tongaat and not in La Mercy where the development of the desalination plant is said to take place. The meeting was held at night and limited to probably a little more than two hours. Miss Annick Walsdorff of CSIR was questioned as to why the meeting was late and limited to two hours, she responded and said she had a long day traveling far distances to spend long hours to address communities; which we objected to this limited times spent discussing a two billion project. The community requested further meetings at a venue suitable at La Mercy on a weekend where the proposed desalination plant is said to be, furthermore this was not responded to. Very few people were informed and most found out by word of mouth. A vast majority of ISIZULU speaking people were not invited nor were they informed. Yet they are the ones that stand to be relocated either by pipeline or road infrastructure development of the desalination plant. There were few Zulu speaking people either from Umgeni Water, CSIR or local government but there was no translation			lasted for more than 3 hours. It must be noted that Mrs Annick Walsdorff has never made any reference to "a long day travelling" neither to "spending long hours to address communities". Public meetings organised by the CSIR as part of the EIA for the proposed development, have always been ran in a fair and open minded manner and time allocated to the meetings is never limited, should there be meaningful concerns and inputs to the project/process. At the outset of the project (March 2014), CSIR has drafted a list of I&APs. Six site notices (3 English and 3 isiZulu) have been put up at three locations surrounding the project site and Background Information documents explaining the project and the EIA process as well as letters and comment/registration forms have been sent to all I&APs on the original list. As part of the public participation process, the release of the draft scoping report and the draft EIA report, including details regarding the public participation meetings, were advertised in English in the Mercury and in Zulu in the Isolezwe. A second public commenting period on the draft scoping report was provided, to allow for further engagement with the I&APs, and was advertised in an additional 4 local newspapers including Coastal Weekly, Makhulu News, Northern Star and North Coast Courier (as recommended by I&APs). At that time, an additional 8 notice boards were put up at the project site and three areas that the public frequent (i.e. at Tongaat Beach Library, Seabelles Restaurant and La Mercy Beach Hotel). isiZulu pamphlets were also provided to landowners of the project site to circulate amongst

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	so they could understand clearly; this meeting was hosted in Tongaat.			farmworkers and a batch of pamphlets was sent to Mr Jeeva Pillay (Tongaat Civi Association) for distribution. All letters sent to I&APs have been sent in both languages too. A Zulu speaking colleague has also attended all previous public meetings (Mendy Shozi) and Mrs Phumi Ndlovu from Umgeni was available for any Zulu translation at this last public meeting. Hard copies of reports have always been made available at the public library for people who do not have access to internet (Tongaat Beach Library). In light of the above, we therefore believe that the project team has gone over and above the legal requirements with the explicit aim of encouraging public awareness. Mr Jeevah Pillay from the Tongaat Civic Associations confirmed the following: We have the 21 civics in Tongaat under and I also served on La Mercy Rate civic Association (Rate payers association), both were informed of the proposed project. STRACA (Seatides) chairman was also made aware of the project. Letters of notification of the public commenting period on the Draft EIA report for the proposed desalination plant at Tongaat have been sent out to I&APs on 19 March 2016 and Adverts have been published in newspapers between 22 and 25 March 2016. Taking the last advert dated 25 March 2016, this gives I&APs 45 calendar days for reviewing the report. This complies with the 2010 EIA Regulations and the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Integrated Environmental Management Guideline Series 7 - Public Participation in the EIA Process (2010) published by National DEA.
9.32	Consultation and Information - It is clear that consultants want very limited consultation and are effectively ensuring that there are no obstacles and development goes ahead without obstruction and limited objections. We believe that the consultants, CSIR have done lots of work for the Umgeni Water Local Municipality as well as the National Water Affair and or privy to programmes of this department and Umgeni Water and government and therefore acted in a bias manner. The whole programme of CSIR and Umgeni Water was to argument that the desalination plant was the best option; without providing independent, unbiased, scientific evidence with cost analysis of every project that they were presenting on, as well as not looking in to water leak from stand pipes and taps in residential areas.	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: The CSIR was appointed as the independent environmental assessment practitioner (EAP) to conduct the EIA following a competitive tender process as was released by Umgeni Water (Tender No. 2012/206). It should also be noted that in terms of Regulation 17 of the EIA Regulations, the EAP has no business, financial or other interest in the proposed activity other than fair remuneration for work performed, and that there are no circumstances that compromise the objectivity of the EAP. As previously mentioned, the EAP is an individual, not an organisation. Therefore, whilst there exists an employer/employee relationship between the CSIR and the EAP, the EAP was appointed as such due to his being independently certified and duly registered EAP, and not the CSIR. In addition, the EAP has signed a declaration of independence as an EAP and his signing of such a declaration is supported by the fact that he is certified and registered with EAPASA as a qualified EAP in his personal capacity. *From Umgeni Water*: Umgeni Water is a parastatal falling under the Department of Water and Sanitation. Being a parastatal, the organisation must be self-sufficient and in that way autonomous. Umgeni Water is, therefore, not a "state funded entity".
9.33	Notwithstanding previous meetings between Umgeni Water (UW) and Interested and Affected Parties (IAP) when objections to proposed desalination plant were voiced, UW continue with their plans without delay. UW are assuring the affected parties / concerned	09/05/2016	Damir Percaic, Private, Email	*From CSIR*: The EIA started in March 2014 and CSIR was appointed as an independent EAP to undertake this process. At the public meeting, Umgeni has confirmed again that the proposed desalination plant is one option to alleviate water restrictions, although not Umgeni's

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	individuals that this desalination plant will not be built. By now, it became obvious they we are being patronized in order to proceed with their agenda. Disappointingly, according to draft EIA, probability of Desalination plant being commissioned is extremely high. This is in contrary to our last public meeting with LaMercy Residents Action group on 29/4/2015 when IAP's were assured that Desalination plant is the last resort and only 2nd or 3rd option. UW stated that Desalination plant location on South coast was to precede location at Tongaat, Desainagar.			preferred option at this stage. The Introduction chapter clearly confirm this – please refer to section 1.5 Need and Desirability of the project in Chapter 1.
9.34	Scientific Reports - No proper assessment of comparing international best practices and how they impact on people in other parts of the world. In regard to the huge amounts of energy going to be used and how expensive the cost and only 50% of water will be drinkable, 50% concentrated brine containing 5.7% salt. The large red plume of high iron content of concentration in the sea and how this has impacted upon destroying marine life. Highlighting, that CSIR monitors our rivers and oceans and therefore should be in a better position to understand the state of our water quality. The seabed is critical for a healthy diversity of marine species and upsetting this will lead to whatever pollution lifted from the bottom. Documentation and presentations presented to us were skimmed over. Around the	09/05/2016	Desmond D'SA, SDCEA, Email	*From Marine specialist*: Other desalination plant EIAs and specialist studies undertaken internationally were consulted during the compilation of the marine specialist study. Although Ferric chloride (FeCl3) will be used as the primary coagulant or flocculant in the pre-treatment system, any sludge resulting from the filter backwash process will be gradually blended into, and co-discharged with, the brine effluent. Residual ferric hydroxide in the brine will thus be minimal to undetectable and no 'red plume' will result. "pollution lifted from the bottom" presumably refers to resuspension of heavy metals in the sediments following their potential accumulation in the sediments after discharged in the brine (if present in the brine

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	world there are stringent regulations that govern how chemicals must be reduced. In South Africa despite the Air Quality Act, there are no standards control or sanctions applied for these. These scientists should be scrutinized thoroughly and peer reviewed by communities and independent researchers payed for by Umgeni Water. While major accidents could occur and glossed over and our concern is the uses of the beach and the sea, residents that live by the beach that walk and swim daily on the beach will consider this hazardous desalination plant. The noise emissions will increase and yet we require this to be properly researched and precautions to be taken to safe guard people. The type of equipment that is developed and used we request all information to be provided for community to peruse to assess the impacts of this development on quality of life and health. Scientists appointed by CSIR and Umgeni Water describe it as a "very low negative", that this is not the truth and when one reads up on international literature on desalination.			from corrosion processes in the RO Plant). Monitoring recommendations include regular monitoring of heavy metals in the discharge until a profile is determined. South Africa does have stringent water quality guidelines for discharges into the marine environment, and any desalination plant discharge will have to comply with these. *From CSIR*: Potential impacts on the environment have been assessed by independent specialists well qualified in their field of expertise (i.e. marine ecology, terrestrial ecology, visual, noise and socio-economic). Potential impacts (visual, noise and socio-economic) on beach users and residents near the beach have been assessed in the various specialist studies. Please refer to chapters 9, 10, 11 and 12 of the EIA reports for results of these studies.
9.35	Absence and involvement of Government officials - Government officials have been conspicuous by the absence at meetings and we are not aware what positions they are presenting to Umgeni water and the consultants. The IDP in its draft status, talks about meaningful community engagement and yet we see Government officials are extremely reluctant to participate in this process where water is a key component of life and in the IDP. We need access to	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: All relevant government parties have been included on the I&AP database at the outset of the project and have been kept informed of the project progress. All registered I&Aps have also been invited to the public meetings and to comment on the reports. We have received comments from eThekwini municipality on all reports submitted for public review.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	all comments from all stakeholders including the Government departments in order for us to engage and provide meaningful comments for sound decisions to be made.			
9.36	It clearly confirms our thinking that CSIR is concerned only with its client's interest. We believe we will be able to argue successfully that CSIR independence is questionable at best because the processes did not adequately include bona fide engagement with us (the main objectors) to give us sufficient time to get our own counsel to scrutinise the facts, evaluations and recommendations in the draft EIA. We will argue that the process is flawed. We have reason to think that Umgeni Water and CSIR would rather rush through this process for political expedience rather than accommodate the reasonable requests of the mostly negatively affected communities. This we gather from comments in the media about the desire of Umgeni Water to put up a Desalination facility in La Mercy to satisfy the needs of Ballito which will not tolerate a Desalination facility in its own area. La Mercy and Tongaat are not the main consumers of the water from Hazelmere. This belief is not irrational, considering that a spokesperson from Dolphin Coast Conservancy stated that Desalination is in demand for the growth of Ballito. The same person in the same breath said something which in our view is quite preposterous; that Desalination would be an answer to Climate	07/04/2016	B Rawheath, LAMRAG Adviser, Email	*From CSIR*: The CSIR was appointed as the independent environmental assessment practitioner (EAP) to conduct the EIA following a competitive tender process as was released by Umgeni Water (Tender No. 2012/206). It should also be noted that in terms of Regulation 17 of the EIA Regulations, the EAP has no business, financial or other interest in the proposed activity other than fair remuneration for work performed, and that there are no circumstances that compromise the objectivity of the EAP. As previously mentioned, the EAP is an individual, not an organisation. Therefore, whilst there exists an employer/employee relationship between the CSIR and the EAP, the EAP was appointed as such due to his being independently certified and duly registered EAP, and not the CSIR. In addition, the EAP has signed a declaration of independence as an EAP and his signing of such a declaration is supported by the fact that he is certified and registered with EAPASA as a qualified EAP in his personal capacity. *From Umgeni Water*: Umgeni Water is a parastatal falling under the Department of Water and Sanitation. Being a parastatal, the organisation must be self-sufficient and in that way autonomous. Umgeni Water is, therefore, not a “state funded entity”.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Change Concerns. Is this the sector for which this haven of peace and serenity and healthy marine habitat is being sacrificed? This is not just immoral and unethical but utterly irresponsible and we may add demonstrates shocking levels of ignorance about climate change factors. After your refusal to grant a reasonable request about further preparation time, we do not believe there is anything to discuss with your team if not every expert who has submitted a report is not present to answer the numerous questions that arise on just a cursory reading of the report. We are a registered NPO and do represent the Greater La Mercy Coastal Zone (the only formalised organisation representing the entire zone (GLaMCZ) and would like to obtain written comments on the issues we intend to raise. We call for all the experts to be present to consider our points and respond in person followed by written responses that we can take to our own experts for evaluation and advice. We take it that you will ensure that they are all present on the 13th April 2016.			The desalination plant will provide water to residential, commercial and industrial development both north and south of the plant site. Between 150 000 and 200 000 households will ultimately be supplied with water from this plant. The supply areas will extend from Stanger in the North to Cornumbia, Verulam and Waterloo in the South. The plant is not proposed to serve the growth of Ballito alone but rather to serve the increasing demand along the entire North Coast Area. Both Ballito and La Mercy fall within this area of supply. Both desalination plants and traditional water treatment plants are large structures and, as in this case, can take up to 7ha of land for their construction. Wherever one of these plants is positioned, there will be an impact to the land or communities surrounding that area and these impacts will have to be mitigated as best as possible. The only alternative is to not construct these bulk water projects and then there will be a direct impact to peoples livelihoods when the current resources cannot supply the required demand.
9.37	I confirm that my firm is instructed by and act for several concerned residents and homeowners in respect of the proposed desalination plant. We are requested to place on record the following: 1. It is rather opportunistic as to the timing that this Desalination issue has yet again reared its ugly head. 2. We are in the throes of a water shortage, which we might add, was predicted a decade ago or so.	28/03/2016	T Giyapersad, Private, Email	*From CSIR*: This EIA started in March 2014. This project was never put on hold and our offices have **never** confirmed that it will GO ON or be commissioned. The EIA process is undertaken by the CSIR, as an independent EAP (refer to response to issue 9.36 above), to provide information to the national Department of Environmental Affairs (DEA)

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	3. We must place on record that NOTHING was done towards gearing up for the predicted drought by our present Government save to perpetuate the raping of state coffers. 4. Whilst we do not wish to get caught up in political rhetoric, we must state so as the above is a nuance which has set this destructive monstrous plan into motion. 5. We are given to understand that the EIA processes and public participation is merely ensuring that the legal processes have been deemed to be followed BUT regardless of the community input, the desalination plant will GO ON and parties have already been earmarked for this project. 6. This information was received from a source in YOUR OFFICES. 7. Whilst this may be scandalous, there is no surprise here given the manner in which this process has run from commencement. 8. We are curious to know just how many projects CSIR have investigated and found against favor of its client Umgeni Water and the Municipality. 9. We are curious to know the statistical evidence herein. 10. Also, how much monies has CSIR made of the Scoping of this project and what is the anticipated future costs of monies to be made by your offices. 11. What has happened to the questions raised by the Community especially the alternative solutions offered as opposed to Desalination.			who will then make a decision whether or not they authorise the project. Please refer to responses to issues 9.19 and 9.20 for details on the public participation process undertaken as part of this EIA – we believe that we have gone well beyond legal requirements. Please refer to responses to issue 10.16 with regards to alternatives to Desalination plant. These have also been discussed in details at each of the public meeting and in Chapter 1 of the EIA report. The proposal for this project was submitted to Umgeni Water as part of a competitive bidding process in line with PMA requirements to ensure a value for money EIA process. The widening of the berth of the Umgeni river bank (along the Durban North area) and Estuary are out of the scope of this EIA. Please kindly contact Umgeni to discuss these issues. *From Umgeni Water*: The proposed desalination plant would provide a continuous reliable source of water to the North Coast. This plant will not be constructed in response to the current drought but is rather regarded as a long term water resource option for the area. There is no large scale desalination plant in Cape Town. A 15Ml/d desalination plant was constructed at Mossel Bay to supply and industrial zone during a drought period. Once the drought lifted then

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	12. Please enlighten us on the two failed Desalination plants in Cape Town, Mossel Bay in particular reference to the first plant that has never operated to the expense of tax payers monies and the second one which "over-salinates" the water thus making it undrinkable. 13. Further to this also explain why your client is widening the berth of the Umgeni river bank (along the Durban North area) and Estuary in anticipation of flooding whilst a mere 20km away we are being prepared for water shortages and drought. The last time we checked the North coastal area is not indistinguishable from the Umgeni Estuary area. These are questions that we raised in the previous meeting which still remains to be answered some six (6) months later.			this plant was moth balled and the cheaper traditional water resources are now used to supply the area during the water abundance period. The desalination plant proposed in this project is to be constructed for long term continuous augmentation and not as a drought measure. In other words there would be no alternative source for this area even during not drought periods.
Comments on Final EIA Report				
9.38	According to the media, the EIA process is complete and the project has the go ahead. Is the EIA process complete? Secondly the EIA discusses marine life in depth (under the environmental impacts chapter) but it doesn't say much about the impact of desalination on the marine life itself.	14/09/2016	Renell Soobramanian, email	*From CSIR*: The EIA process is not completed. The DEA has requested that an alternative route for the proposed powerline and potable water pipeline be assessed – which is the purpose of this second draft EIA report. DEA has also requested additional information and documents. Please refer to Chapter 1 Section 1.9. The impact on marine life that are anticipated to be associated with the proposed desalination plant have been assessed in depth as part of Chapter 6 Marine ecology specialist study.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
9.39	**Comment in response to the Draft EIA report on the Umgeni Water Proposal for Desalination by SWRO Technology in La mercy** Introduction La Mercy Residents' Action Group (LaMRAG) objects to the construction and operation of the desalination plant in La Mercy. LaMRAG represents the communities of the Greater La mercy Coastal Zone (GLaMCZ) a mainly residential zone containing an approximately 10 hectare agricultural zone upon which Umgeni Water is proposing this development. It is our duty and responsibility as a civil society non – profit voluntary organisation to show to the authorities seized with the decision -making on this application that this proposal which is in fact an industrial development is inconsistent with and a grave violation of the principles set out in section 24 of the Constitution[2] "everyone has the right – (a) to an environment that is not harmful to their health or well- being." The right of access to sufficient food and water is also a socio-economic right included in the Constitution at section 27 (1).Indeed LaMRAG's work is about ensuring that our communities access all basic utilities and services which all people are entitled to for healthy and dignified living. Needless to say the supply of clean water will always be a priority for the City, province and State.	06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: refer to response to Issue 9.49 below.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Our point of departure is the notion of the water wants and water needs and the cost of water wants in relationship to the plan to satisfy possible demand for water in the future for a presently economically and socially challenged community that is not in a desert or semi – arid area. Even without an extensive study of the technical aspects of methods of sourcing sufficient water supplies, the mathematics of the costs of wanting water to insure future water supplies and the expense of for this source to be insured by desalination of sea water is irrational. A desalination facility is nothing more than an insurance policy against the risk of future water shortage caused by drought. Insurance premiums must be affordable to be economically beneficial to the insured. Even though desalination technology has become somewhat cheaper in the last few years the most significant negative indicator for desalination by sea water reverse osmosis technology is still the exorbitant overall cost.			
9.40	This is our response to the DRAFT EIA report issued by CSIR as part of the EIA process engaged in on behalf of the applicants seeking approval for this industrial development. The report is apparently quite comprehensive dealing with the technical aspects of the facility itself, its proposed location, several environmental issues, socio - economic issues and general evaluation and overviews. On closer examination it is evident that emphasis is	06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR:* Please refer to responses to issues 9.1, 9.32 and 9.35. regarding the EAP's independence. Public meetings organised by the CSIR as part of the EIA for the proposed development, have always been ran in a fair and open minded manner and time allocated to the meetings is never limited, should there be meaningful concerns and inputs to the project/process. Please refer to response to Issue 9.1 and to Chapter

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	tilted in favour of the applicant while it generally addresses serious environmental concerns in a rather superficial way and is even dismissive of concerns with a generic approach that the issue can be readily mitigated. There are enormous gaps and omissions in the Draft report that at best are indicative of neglect, at worst, deliberately intended to mislead. The public and focus group meetings appear to have been opportunistically used to craft rebuttals and counter legitimate and serious dangers that cannot be realistically or economically mitigated. In hindsight we observe that the meetings at which we genuinely participated were more useful to the applicants who were required to comply with the formalities of the EIA (tick off the boxes) than for negatively affected parties. Further one extremely worrying issue is that the cost of the project is given as R3billion. This is a blatant falsification. The various other incorrect statements and misrepresentations that abound in this document also will be detailed in the following chapters.			4 Section 4.4 for further details on the public participation process undertaken as part of this EIA. Project cost, including cost of energy, has been disclosed at every public meeting as part of a presentation by Umgeni Water. Also refer to response to issue 10.6, 10.14, 10.20, 10.23. This presentation has also been loaded on the public project website (https://www.csir.co.za/eia-report-tongaat-part). The estimate of capital cost for the project (in 2015) was R3.957 billion. This excluded engineering fees, environmental, land acquisition and some other relatively minor amounts. The total cost of the project including these additional fees was estimated at approximately R4.4 billion. These figures were communicated at the public meetings following the feasibility study and are contained in the EIA report. This capital cost is likely to increase at inflation up to the time at which the plant is implemented. The capital costs of the project were compared to cost of similar project both locally and around the world and are indicative of the cost of a plant of this nature. The capital cost was developed by breaking down each component of the project and undertaking a detailed cost analysis for each item. A recent report by the WRC on large scale desalination also supports this capital cost estimate.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
9.41	Page 5 – Introductory: CSIR is not an independent entity. It is a SOE and so is the applicant. Obvious bias in conclusions and recommendations inconsistent with actual fact findings Failure to disclose costs of project. Failure to disclose cost of energy to operate the facility. Failure to give sufficient and reasonable consideration to public concerns to create impression that concern was not serious.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Regarding Independence - Please refer to responses to issues 9.1, 9.32 and 9.35. The CSIR was appointed as the independent EAP to conduct the EIA following a competitive tender process that was released by Umgeni Water (Tender No. 2012/206). The tender was adjudicated based on a number of criteria, one of which was experience of the tenderer which accounted for 20 % of the score. Project cost, including cost of energy, has been disclosed at every public meeting as part of a presentation by Umgeni Water. Also refer to response to issue 10.6, 10.14, 10.20, 10.23. This presentation has also been loaded on the public project website (https://www.csir.co.za/eia-report-tongaat-part). All I&APs concerns (within the scope of this EIA) are duly noted and have been incorporated in the issues and responses trail. CSIR committed to addressing all project related concerns to the best of our ability in line with our duties and responsibilities. Refer to responses to issues 9.2 and 9.27. These have also been discussed in the socio-economic study (refer to Chapter 12) Issues and concerns in this document, related to their field of study, have been responded by the specialists.
9.42	Page 14 – Introductory: Calculation of all the negatives equals negative results overall. It is defies logic how EAP can arrive at a positive.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Responses to Questions in Table 1-3 of the Introduction chapter state that "*the positive impacts generated by the project are associated with the economic benefits from employment opportunities, knowledge gained from conservation of potential fossil finds and the fact that the proposed facility is largely compatible with relevant water supply planning. Of high significance is the positive*

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				benefit that the proposed project would bring to alleviating serious water shortages in the study area and surrounding regions". It does not states that negative impacts do not exist. In fact, the responses also states that "*The negative impacts identified in the specialist studies are unavoidable, however, considering the mitigation measures inherent to the design and the additional mitigation measures provided by the specialists, the overall impact of the proposed project on the surrounding ecology is expected to be of very low to medium significance, with the exception of a high visual impact associated with construction activities as well as the emotional impact due to permanent loss of land and housing*." Please refer to Final EIA report Conclusion Chapter 14 Section 14.1.8 for a detailed explanation of the EAP's overall recommendation. The conclusions chapter of this Final EIA Report provides a detailed professional opinion by the EAP in terms of the environmental impacts of the proposed project and the EAP's opinion on whether the project should receive Environmental Authorisation or not.
9.43	Page 17: The time that it would take to obtain the various licences has not been factored in when the idea of a quick facility to address urgent need was conceived. The most destructive aspect of the SWRO facility terrestrially is the plan to rezone the location from agricultural to industrial. LaMRAG is strongly opposed to this plan. It will be devastating to our	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	Noted *From Umgeni Water:* The desalination plant would be developed as a long term solution for water provision to the North Coast area. This project could be implemented within a five year time frame if needed. The uMkhomazi Water Project is likely to take between 10 and 15 years for implementation. If there is a delay in the implementation of the uMkhomazi Water Project, and it becomes clear that demands will

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	sense of well – being from various perspectives and a blatant and insensitive violation of our rights in terms of section 24 of the Constitution. This will be a key point in any legal argument on our behalf in any future legal action that may be necessary.			exceed supply on the North Coast within this time frame, and all other local augmentation options are exhausted, then the Desalination Project would be required.
9.44	Page 48: The Association of EAPs with corporates which are more concerned with and biased towards development rather than the environmental issues disqualifies the EAPs in this EIA process. The EAPs may have technical expertise but have no sense of the value of this area or its peoples. They are from an entirely different culture and sphere, geographically, socially and emotionally. Their work experience is mostly in the West Coast rather than the east which is the area of concern. They display no understanding of the underlying dynamics of the realities of the people and the heritage associated with dispossession of land with impunity. They display a highly clinical outlook not at all neutral and absolutely devoid of socio – historical knowledge and understanding. This statement is based on the generally dismissive, rationalising approach to the serious concerns of community. The experts appointed in the various sectors did not communicate with the community groups, except for the social aspect expert, who crafted a report noting our concerns but attaches no substantive value to them and ultimately recommends that concerns should have no impact on the	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Please refer to responses to issues 9.1, 9.32 and 9.35. above with regards to Independence of the EAP. It must be re-iterated that in terms of Regulation 17 of the EIA Regulations, the EAP has no business, financial or other interest in the proposed activity other than fair remuneration for work performed, and that there are no circumstances that compromise the objectivity of the EAP. Therefore, the EAP is not concerned with and biased towards development rather than environmental issues. The CSIR has significant experience in conducting EIAs for desalination plants, using SWRO technology, along the west coast of South Africa (as described in Chapter 1 of the EIA Report). The experience and knowledge gained during these EIAs, despite them being undertaken on the west coast, has been used to benefit this EIA Process. Furthermore, the CSIR also has significant experience with projects in KZN, including the eThekwini Municipality, which has positively influenced the EIA Process. It is also important to note that the CSIR undertakes many Environmental Assessments, EIA and BA Processes for projects that are located outside of the province within which the EMS offices/EAPs are based (i.e. Stellenbosch and Durban). For example, the CSIR have undertaken several projects (for private developers and organs of state) in Port Elizabeth (Eastern Cape), Kenhardt (Northern Cape) and Dealesville (Free State), to name a few, and this excludes all the work undertaken in Africa. These projects have received positive Environmental Authorisations from the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	development. We have left with no doubt about the high levels of bias demonstrated in this Draft EIA.			Competent Authorities, despite the EAPs having a different culture and geographic location than the study areas in question. The latter has never been a concern in the past based on the thorough PPP and best practices followed by the CSIR, which has been undertaken no differently in this EIA. In fact, the CSIR has undertaken a more rigourous PPP for this project, as described in detail in Chapter 4 of the Final EIA Report and the Scoping Report. This is not unique to the CSIR as it seems that most large scale environmental consultancies operate under the same model. Kindly also refer to Chapter 11 which includes the Social Impact specialist study, undertaken by ACER South Africa located in Durban to see how these aspects have been assessed by the specialist.
9.45	Page 333: This final evaluation indicates a substantial negative in our view. Therefore it cannot be reconciled with the following statement. "In conclusion, the siting of a desalination plant as proposed cannot be precluded on the grounds of unacceptable impacts on the terrestrial mesic environment." This is just one example of several throughout this Draft EIA that the findings even of the EAP's own appointees are contrived and artificially forced to favour the proposed development.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: As mentioned on numerous occasions, CSIR has acted as an independent party throughout the project, and the specialist studies have also been undertaken by independent specialists, well qualified in their field of expertise and not employed by the CSIR. The Specialists meet the requirements for independence stated in the EIA Regulations, and have the necessary professional qualifications and registrations to conduct the studies for this EIA process. The study also stipulates "*In summary, most impacts can be mitigated through judicious design and planning, as well as management interventions during and post the construction and operational phases of the project* ", statement which was omitted in this I&APs comment. The terrestrial ecological assessment study shows that the proposed desalination plant is anticipated to have **low or limited** significance

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				impacts on the mesic terrestrial environment (following implementation of the recommended actions).
9.46	Page 746: The Conclusion reached after considering that there are vastly more negatives than positives to this application, is non sequitur meaning that it is not a logical conclusion based on holistic evaluation.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: The EIA process is not an opinion poll. The purpose of the EIA is to identify issues and provide an evidence-based assessment as to whether there are substantive impacts (positive or negative) on the receiving socio-ecological environment. Secondly, it is also important to note that whether or not the projects proceeds is dependent on wider provincial scale factors and planning imperatives (and not based only on local issues) as well as decision by National Department of Environmental Affairs. The EIA has investigated and assessed the significance of the predicted positive and negative impacts associated with the proposed Desalination Facility. Through this EIA process, clear recommendations have been provided to ensure that this project succeeds in meeting the environmental management objectives of protecting the ecologically sensitive areas and supporting sustainable development and the use of natural resources, whilst promoting justifiable socio-economic development (refer to Sections 14.1.1 and 14.1.7). Provided that the recommended management actions are implemented effectively, no residual negative impacts have been identified within the ambient of this EIA that, in the opinion of the Environmental Assessment Practitioner, should be considered "fatal flaws" from an environmental perspective, and thereby necessitate substantial re-design or termination of the project.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Based on the need for the desalination facility and associated benefits (positive impacts) and the residual impacts identified and assessed by specialists during the EIA process (including inputs from the local community), it is the reasoned opinion of the EAP that the proposed 150 Ml/day SWRO facility would contribute to sustainable water supply in a responsible manner. It is therefore the recommendation of the EAP that this application should be granted Environmental Authorisation from the Department of Environmental Affairs on the condition that key management and monitoring actions are implemented in order to mitigate the main potential negative impacts of the project (refer to Figure 14-1 for the final proposed layout). These management actions include the recommendation for off-site offset rehabilitation of degraded wetlands to a condition of PES Category C or better, to address cumulative impacts associated with the destruction of wetlands. Provisional identification of a degraded wetland systems was undertaken as a possible option for further consideration (refer to Chapter 8 Appendix B).
9.47	Omissions: LaMRAG draws attention to some significant gaps in the Draft EIA. These would probably be dismissed as "beyond the scope" of this report. However we are of the view that "scope" would be too narrowly interpreted for these omissions to be justified. 1. The Failure of the Applicant or the EAP to investigate the challenges confronting eThekwini and iLembe regarding water usage, wastage and	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Please refer to responses to issues 10.5, 10.18, 10.29, 10.33, 10.48, 10.50 *From Umgeni Water*: Umgeni Water has met with LaMRAG individually to address these issues and has already presented the information in this forum. In addition, the information was presented in two public meetings at which LaMRAG participants were present. At the second of these meetings we invited the eThekwini

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	equitable distribution of potable water. The following newspaper report is self – explanatory and appropriately supports our point (Report by Tony Carnie in IOL on 18 May 2016). LaMRAG and other I&Aps have repeatedly called for engagements with the municipalities to explain the "need" they create for the bulk water supply received from UW. UW has shrugged off this issue as "not our concern". We believe that the use of the water by clients would have a direct bearing on the principle of "supply and demand". As a responsible SOE UW approach should not be to satisfy demand at any cost. This will have the effect of inequitable distribution of a basic human resource and is arguably unconstitutional. UW is fully aware that 36 %to 38 % of the water sold to eThekwini is wasted or non- revenue water. UW is willing to at great cost to ratepayers and the environment access large volumes of potable water to pour down literally bottomless wells and into the ocean. 2. The failure of UW to clearly point out that much water is lost because of leaks through breakages. 3. The maintenance or lack thereof of infrastructure has been a cause for water loss and so also the vandalism of water pipes. This issue ought to have been addressed under the heading "Need for Desalination" 4. The silence, omission and non- disclosure by UW, iLembe and eThekwini during the EIA process and in the scoping and draft reports that the major			Municipality Water Loss manager to present the current status of the Non-Revenue Water and which components were water loss and which were meter inaccuracies and theft. This was comprehensively addressed in the meeting. The total yield of Hazelmere Dam (without the wall being raised) was 55Ml/d. This could not sustain the water demand during the 2014/2015 at the required assurance level although the drought that was experienced was outside of what is agreed as a level of assurance that has to be served. As a result restrictions were imposed along the entire North Coast Area from Verulam to Stanger. All areas were required to save up to 50% of their water use. Sembcorp Siza Water, which acts as an implementing agent for iLembe and reticulates water from Ballito to Groutville, achieved the greatest saving in the area by restricting their all of their users and implementing punitive measures to high water use. The raised level of Hazelmere Dam has increased the yield of the water resource to 75Ml/d. This is, however, inadequate to accommodate the increase in demand from proposed development in eThekwini and on the North Coast and as such a much larger augmentation option, such as desalination at 150Ml/d, is required. The total water "loss" from the Hazelmere System is approximately 15 Ml/d (of the current 55Ml/d served). Umgeni Water would not consider constructing a 150Ml/d desalination plant to simply serve this relatively small water need and reiterates that the basis for construction of an augmentation option is to serve a much greater development need.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	consideration behind a Desalination facility in the north of Durban and close to iLembe (Ballito) is directly associated with the difficulties to use the full potential capacity of Hazelmere Dam. Hazelmere dam was under threat for poor water quality for some time. Efforts to have it restored to a satisfactory state have been an impediment to water supply for several years. The effects of lessened capacity from Hazelmere were the increased tension in all communities this dam served. We have it on good authority that water meant for allocation to La Mercy and Desainagar was diverted to supply Ballito during high summer. La Mercy residents have been patient and considerate and readily reduced consumption voluntarily and coped with the situation although the thousands living in informal settlements in and around La Mercy struggled through these dry periods artificially created by inequitable allocation of water sourced from Hazelmere. The motivation for desalination and the impetus is the demand created by iLembe on behalf of Balito. We are aware that Dolphin Coast Conservancy in Balito strongly supports the proposal that the desalination plant be constructed in La Mercy. (See North Coast Courier report April 1 2016) No environmental group or conservatory anywhere in the world has ever supported an industrial development in the midst of a residential area especially one that is naturally beautiful in a coastal dune and green zone. LaMRAG will not support this type of development in the			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	proposed location or anywhere else on principle. This is an obvious case of double standards, unethical and hypocritical conduct on the part of a group that claims to be a conservancy. UW and EAP have been remiss in not exposing these sinister undertones. Transparency is an administrative principle that applies in all executive action. Affected people have the right to know everything about the applicant and the application. This is a critical issue for communities that will be compelled to endure harm without the benefit that usually is forthcoming from sustainable developments. In this case a neighbouring affluent community is demanding all the benefits of this development without being prepared to accept any of the harmful consequences. There is no good story to tell for La Mercy Residents who will be sacrificed on the altar of corporate self-centeredness. If we are wrong on this count then UW and the EAP ought to be held responsible for allowing this misperception to take place by not opening up a conversation with stakeholders before presenting such a proposal for consideration.			
9.48	Conclusion: The proposal by Umgeni Water to construct and operate a Desalination plant in La Mercy was from the earliest time objected to by all those who had some knowledge and understanding of the risks associated with an industrial facility being located in the community's living space. As water is a primary resource and its equitable distribution to all	06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Refer to response to Issue 9.46 *From Umgeni Water*: Umgeni Water has considered many options for supply of bulk water to the area. The growth that is expected from Northern eThekwini to KwaDukuza is likely to occur within the next ten to fifteen years. There most feasible long term option for supply to the area is the uMkhomazi Water Project. This project has a current

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	unconditionally is any city's essential responsibility, the community is mindful that securing its water supply is critical. Yet not any I & AP in the community has given support to encouraged or recommended the proposal. The recommendation of CSIR, the EP, is at best half hearted. Even more remarkable is the applicant's diluted interest in this development at the stage of the release of the Draft EIA at the public meeting. If Umgeni Water had initially thought that this development would offer a quick fix solution to the water supply problems of the north coast when the plan was conceived, there is a clear shift in that outlook. The applicant is on record as stating at the meeting that it would only pursue this proposal should its other preferred supply sources be fatally flawed. Seen in this light, this comprehensive response from an I&AP may appear to some to be overkill. This document however, is testament to the serious concerns of people who will be negatively affected by this development which once commenced cannot be reversed harmlessly. Firstly therefore the risk of the project receiving approval is one too great to take. Secondly, this document is intended to start a discussion about developments that claim to offer essential services that benefit more people than they harm. Our recommended approach as a civil society organisation is that bona fides developers			R28 billion CAPEX estimate and would take approximately 10 to 15 years to implement. There are also some potential fatal flaws in the EIA of this project. As a result, Umgeni Water must consider alternative options for implementation and be in a position to implement these alternatives if the uMkhomazi Water Project does not proceed in time to support the water needs of the North Coast. Desalination is the next most feasible option for long term augmentation of the area and hence a Detailed Feasibility Study and EIA are being undertaken for this project. Umgeni Water met with the local community (landowners that would be directly affected by the scheme) before embarking on the EIA. The locally affected landowners showed support for the project. It was understood that further public participation would be undertaken during the EIA and it was not felt prudent to address the larger community before the Detailed Feasibility Study had been undertaken to prove technical viability or before the EIA regulatory process was instituted.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	ought to seek and obtain large scale support of the greater geographically affected communities before formally launching the EIA process by extensive information drives. If this was done for the desalination proposal by the applicant, we suggest, this premature EIA process would not have been necessary hence saving a considerable amount of costs. Thirdly, it is hoped that the Department of Water and sanitation, the Department of Environmental Affairs and other stakeholders involved with equitable and quality delivery of water undertake thorough research into the impact of new water sources such as desalination before including them in plans for supply of water to meet demands. This draft EIA is by even by the EAP's and applicants own admissions not at all thoroughly investigated for impact in the proposed location. In our view it is irresponsible to recommend a development that will negatively and directly affect the receiving environment without these detailed and independent studies. We were compelled to do the research about desalination at short notice; hence we are still constrained in our protest by paucity of knowledge on the subject. Thus we respectfully suggest that the authorities concerned with this application are unlikely at this stage to be fully knowledgeable of the true potential environmental impact of a desalination facility in or near the proposed location.			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Fourthly the draft EIA is a rather inward looking enterprise in the sense that it tends to isolate this development from its holistic sphere of influence: suggesting it applies for this development because it can and it should because it has to have some plan to meet the future demand for water. This response draws attention to just how shallow and limited in value this process has been. For instance the failure to engage with the municipalities and other concerned parties about the issue of large scale wastage, and alternatives to new water sources such as conservation, recycling and use of renewable energy in water supply is a serious limitation of the application rendering it incomplete from an environmental perspective. It is with respect time to end this EIA process before it incurs more wasted costs. We urge the Department of Environmental Affairs to do so. From all the a foregoing fully substantiated arguments presented by LaMRAG on behalf of its members and on behalf of those who are concerned about the environment and its protection for future generations we submit that Desalination as proposed by the applicant is not a sustainable development in terms of section 24 of the Constitution of the Republic of South Africa and therefore seek that the application be rejected.			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
9.49	Our email and attached comprehensive comment document sent to on 13th June 2016 and your reply on the 14th June 2016 bear reference. LaMRAG also refers to the comments of the EAP (CSIR) per Annick Walsdorff pursuant to our view that the EAP and Applicant (Umgeni Water) have not pertinently and substantially responded to most of the issues raised in our comments nor to the many concerns raised by other groups and individuals. With respect to the EAP, and Ms Walsdorff, in particular the comments by ourselves to the Draft EIR are not the same as our comments to the Final EIR. Obviously if the EIR was finalised before our comments reached the EAP, they cannot be regarded as dealt with before. Further, LaMRAG, supported by individuals and groups of GLaMCZ (Greater La Mercy Coastal Zone) such as King Shaka Estate and South Durban Communities Environmental Association, has submitted a detailed point by point analysis of the Final EIR. Simply dismissing our comments as addressed as part of the paper trail falls considerably short of the depth of engagement that our report calls for. As you are aware section 24 of the Constitution and the NEMA, our environmental laws are interpreted in the light and spirit of the right to an environment not harmful to health and well – being and the right to protection of the environment for the benefit of	05/08/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Note that all comments on the Draft EIA report received from LaMRAG on 13th June 2016 have been responded to and addressed in detail in a table sent to Mrs Nkosi (case officer), with copy to LaMRAG. These comments as well as comments sent on 06 October 2016 have also been included in this Issue and Response trail. NEMA and the EIA Regulations are specifically aimed at meeting these requirements of the Constitution. And the EIA process has been conducted in accordance with the requirements of NEMA and the EIA Regulations. With regards to whether there is "local support" or not expressed for a desalination through this EIA process, firstly, it is important to note that the purpose of the EIA is to provide a transparent process whereby I&APs can raise issues and those issues can be responded to and addressed. The EIA process is not an opinion poll. The purpose of the EIA is to identify issues and provide an evidence-based assessment as to whether there are substantive impacts (positive or negative) on the receiving socio-ecological environment. Secondly, it is also important to note that whether or not the projects proceeds is dependent on wider provincial scale factors and planning imperatives as well as decision by National Department of Environmental Affairs.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	present and future generations by law and other measures that prevent pollution, ecological degradation, promote conservation and secures ecologically sustainable development. LaMRAG mission is to ensure that our communities' rights under law are not violated. LaMRAG would not oppose sustainable development that can be shown to bring relief economically and socially to the thousands of residents who are homeless and jobless. LaMRAG has been supporting these communities from its establishment. Our view is that any application seeking approval for large scale harm to our environment without clearly showing that the benefits for our communities are substantially greater than harm must be refused. The EAP has shown no understanding whatsoever about the critical needs of our communities in terms of economic and social development. As our Constitution indicates all development will have to be sustainable in relation to the environment. LaMRAG and all communities in the area and Environmental agencies throughout the municipality oppose the SWRO desalination because it is not a sustainable development. An important consideration when application is sought for development that has negative environmental implications is the level of support for such development against the level of			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	resistance. Going by the comments of I & APs there is no group or individual that actively supports Desalination in Tongaat while there is an overwhelming level of resistance to the proposal. Few communities, if any, have been as badly affected by the shortage of water as La mercy. The shortage which has been an on - going problem from 2010 is associated with the poor capacity of Hazelmere Dam, which has been falling into disrepair for some time. Water for La Mercy has been diverted to supply areas outside the eEThekwini municipal area. Hence, the fact that we are not overjoyed by the idea of no future shortage of such an essential need is an indication that SWRO desalination in Tongaat or anywhere in the east coast of South Africa is not a feasible option to ensure that the region's future demand for water is met.			

10. Technology and strategic planning

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.1	The proposed reverse osmosis process is very expensive to install and operate. Whereas it works technically in that it purifies water it produces very little compared with the volume processed, the majority being discharged as effluent.	28/05/2015	Allan Childs, Email	*From Umgeni Water*: Reverse Osmosis converts approximately 45% of the intake water to potable water. This process is the most widely used, worldwide, to convert seawater to potable standards. There are a number of other processes that can desalinate seawater, of which electrodialysis is one of them, however, Reverse Osmosis is still

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	A much better process in that of electrodialysis. Recent developments of this relatively new process claim that it is much cheaper to install and operate and produces a much higher percentage of pure water and much less effluent.			considered the most viable option for large scale (greater than 50Ml/d) desalination.
10.2	Environmental Planning and Climate protection department. No further comment received. Parks Department, Land use management Branch, Economic Development Unit, eThekwini Transport Authority, Geotechnical Engineering Branch: No further comment received.	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.
10.3	Framework Planning Branch. The Framework Planning Branch has assessed the proposal and raises no objections as the proposed Tongaat desalination facility would resolve the bulk water capacity imitations or shortages in the Northern area of the municipality	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	Noted.
10.4	Alternative of a dam on Illovo River	26/05/2015	Geoff D A Pullan, Email	*From Umgeni Water*: The Lovu River is on the KwaZulu-Natal South Coast and a dam / treatment plant at this position would not be able to supply the North Coast (distances would make the projects excessively expensive). In addition, the yield from the Lovu River would not support a plant of 150Ml/d capacity.
10.5	Concerns were relayed to Mareike Stragli of Acer Africa Consultants at meeting on Wednesday 29 April. Main concern: nor enough alternative considered. No 1 No dam on Tugela River	06/05/2015	K Ganesh, Private, Email	*From Umgeni Water*: A number of alternatives to the proposed desalination plant have been considered. As previously noted, the Spring Grove Dam was constructed as part of an inter-basin transfer scheme between the Mooi River and the Mgeni Catchment to augment the water resources in the Mgeni. However, with the current growth in water demand, even this scheme will soon not be enough to provide

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				the required assurance of supply to Durban, Pietermaritzburg and surrounding areas. The Department of Water and Sanitation's Reconciliation Strategy Study for the Kwazulu-Natal Metropolitan Coastal Areas indicates that even with further augmentation of the Mgeni System (including the implementation of Spring Grove Dam and the planned Mooi-Mgeni Transfer Scheme Phase 2) by an additional 137 Ml/day (50 million m3/a), the supply of water in future will still not exceed the required 99% assurance of supply. Therefore, alternative schemes such as the proposed Mvoti Dam and uMkhomazi Water Project are also being considered. Phase 1 of the proposed uMkhomazi Water Project is planned to secure an additional 600 Ml/d (220 million m3/a). This involves the potential development of Smithfield Dam located along the central reaches of the uMkhomazi River, with a storage capacity of 250 million m^3 (250 000 Ml). The capital cost for the proposed Smithfield Dam and associated infrastructure would be about R17 billion and the scheme would take many years to construct. Therefore Umgeni Water identified a 150 Ml/day sea water desalination plant in the Tongaat area using RO technology as a possible short-medium term alternative that could be implemented fairly quickly to meet the growing water demand and ensure the sustainable economic development of the region. This project would supply water to Umgeni Water's North Coast Supply System and to some of the areas supplied by eThekwini's Northern Aqueduct by reversing the flow from Waterloo Reservoir. The Department of Water and Sanitation have a number of proposals for constructing dams on the uThukela River. However, the size of this

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				river makes the construction of dams very expensive (they would have to sustain really large flood conditions). The construction of a dam on the uThukela River would also take at least fifteen years to plan and construct.
10.6	Recent reports (North Coast Courier 5 June 2015) that Umgeni Water failed to deliver on its promise of 8 to 12 million litres of water per day to Hazelmere Dam by means of an emergency pipeline costing R38million, confirms our fears that it will not be capable of undertaking a R20Billion desalination project in the near, or midterm. In the current depressed state of our economy, a substantial budget allocation to fund a project that is currently unlikely to be beneficial to the affected communities is much too risky for the taxpaying community.	07/06/2015	B Rawheath, LAMRAG Adviser, Email	According to Umgeni Water (2015), parts of the Umgeni Water operational area are currently in a state of drought. The affected areas are the north of the eThekwini Municipality, parts of the iLembe District and the Middle South Coast. In the north, the level of the Hazelmere Dam has been decreasing and is at an extremely low level. In the south, levels of two of the three dams that serve the Middle South Coast (i.e. the Nungwane and Umzinto) are currently below 50% and the overall system storage of the South Coast System is below 50%. In order to ensure that the amount of water that is available in Hazelmere Dam lasts until the next rains, Umgeni Water has reduced the production of potable water, and water rationing and 30% mandatory restrictions have been applied by the relevant municipalities. In addition, Umgeni Water has implemented an emergency scheme that transfers water from the uThongathi River to Hazelmere Dam to augment supply in the dam. Measures put in place have been effective in slowing down the drop in the level of the Hazelmere Dam (Umgeni Water, 2015). In the south a 25% restriction has been gazetted and Umgeni Water has implemented a temporary emergency scheme to pump water from the Mpambanyoni River to E J Smith Dam to augment supply. The current levels of the dams indicate the serious need for water within the region, and therefore Umgeni Water is considering the proposed desalination plant as a possible short-medium term alternative to assist with the water shortages. Refer to Chapter 1, Section 1.4 For additional details on the Needs and Desirability of the project.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				From Umgeni Water: Umgeni Water consistently transfers 8Ml/d (maximum capacity of the scheme) between the uThongathi River and Hazelmere Dam with an average transfer of 6Ml/d since inception. This scheme is reliant on flows in the uThongathi River to ensure full supply operations. The total capital cost of the desalination project proposed is just greater than R4 billion and not R20 billion as indicated by Ms Rawheath.
10.7	In an editorial page report by a councillor and eThekwini executive member, Z Mncwango (Sunday Tribune 31 may 2015) it is noted that the municipality is due to spend R4.1billion on bulk water purchases. Of this 38 percent is lost due to bad planning of the maintenance budget and massive under spending on sanitation and solid waste.	07/06/2015	B Rawheath, LAMRAG Adviser, Email	*Noted*. However this issue falls out of the scope of this EIA which covers the construction and operation of a desalination plant. *From Umgeni Water*: As a point of clarity, the 38 percent indicated here, and presented by eThekwini at the Public Meeting, refers to Unaccounted for Water and not water leaks. Water leaks make up a component of this water whilst metering inaccuracies, illegal connections etc make up the remainder.
10.8	According to "Corruption Watch" a feature column in the Sunday Times dated 31 May 2015, " Among other important obligations the board of directors of a public entity , a parastatal such as Eskom, SABC, Telkom etc." and Umgeni Water (our emphasis) must take effective and appropriate steps to prevent fruitless and wasteful expenditure – defined in the Public Finance Management Act as "'expenditure which was made in vain and would have been avoided had reasonable care been exercised" .	07/06/2015	B Rawheath, LAMRAG Adviser, Email	*Noted*. However this issue falls out of the scope of this EIA which covers the construction and operation of a desalination plant. *From Umgeni Water*: Umgeni Water must plan to provide bulk potable water to its customers. Without this planning the sustainability of supply to consumers would be compromised. The growth in demand in areas along the north coast means that projects will have to be implemented to augment the current sources of water and these cannot be done without capital cost implications. Umgeni Water, together with the Department of Water and Sanitation, consider all viable options for bulk water augmentation and will implement the one with the least cost, time and environmental implications.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.9	Section 195 of the Constitution requires public enterprises to promote the efficient and economic use of resources. La Mercy Action group objects to the construction of a desalination facility in our residential space because this will be wasteful expenditure. Local government , Umgeni Water and consumer communities must work together to find cost effective and environmentally considerate alternative ways to meet the demand for fresh water instead of rushing headlong into proposals, investigations, assessments and reports that will long before approval stage cost the taxpayer a huge sum of money and resources. We are of the view that this EIA process must be halted immediately to avoid running up further costs.	07/06/2015	B Rawheath, LAMRAG Adviser, Email	Refer to response to issue 10.6 and 10.8 above. *From Umgeni Water*: The cost of feasibility studies and environmental impact assessments is a very small fraction of the total cost of infrastructure that would be developed to augment the areas. Umgeni Water feels that it is better to undertake proper planning, albeit at this cost, to ensure that the correct solution is implemented at the lowest overall project cost.
10.10	An urgent priority for the province should be the proper housing of the large number of people living in informal settlements around the area of the proposed development. Finding residential space for housing developments in a residential zone makes more economic sense than trying to convert a residential area into an industrial zone to put up a desalination facility that has no economic value for this community and still leaves people without shelter and sanitation.	07/06/2015	B Rawheath, LAMRAG Adviser, Email	*Noted*. However this issue falls out of the scope of this EIA which covers the construction and operation of a desalination plant.
10.11	LaMRAG is and has been since the outset opposed to Umgeni Water's proposal to install and operate a Desalination plant in Tongaat at La Mercy Beach. Our comprehensive objections are on record but if the process advances to the next phase we will be obliged	26/05/2015	B Rawheath, LAMRAG Adviser, Email	*Noted*.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	to appoint our own independent consultants to investigate the various points of objections and submit reports accordingly. However, our thinking is and we have maintained that the whole EIA process is an unnecessary expense at this stage and should be halted now rather than later. All the directly involved entities, CSIR, Umgeni Water, eThekwini and Ilembe are funded by the public and should be processing EIAs responsibly and without spending tax monies wastefully. The Scoping report clearly indicates at least latterly that Desalination is only an alternative option proposal to various other water supply projects that are already being undertaken: one or two are likely to be supplying fresh water within the next year or two. It seems too that for the short term the Hazelmere Dam Raising project is being resumed. In recent meetings Umgeni Water is on record having said that Desalination is only an option and a long term one if at all it is approved. Under the circumstances it is not cost effective to fully investigate and explore the ramifications of the feasibility of the proposal at every level at this time. This is a highly complex, intensive and extensive investigation without similar precedent anywhere else in the world.			Please refer to response to issue 10.5 with regards to the Need and desirability of the proposed project. *From Umgeni Water*: Umgeni Water, together with the Department of Water and Sanitation, is investigating a number of options for supply to the KwaZulu-Natal North Coast. The process of undertaking detailed feasibility studies and environmental impact assessments is an onerous one and hence, we undertake these investigations of a number of options at the same time. It is true that the uMkhomazi Water Project would be the preferred options to supply the area, however, it would have a minimum R17 billion cost and its own environmental considerations it there is therefore a chance that the project might encounter a fatal flaw. If this were to be the case then the desalination plant would be a viable alternative.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	It is unrealistic to hope that the region's economy which is in the throes of recession to cope with funding projects that will cost taxpayers Billions. The last census shows clearly that most people living here are impoverished. They will not benefit from this facility.			
10.12	Why should the EIA project proceed any further and seek certification and approval from so many entities at great cost when the likelihood of it being approved is minimal for implementation in the short or medium term? If approval is given now and implementation does not take place soon, the process will have to begin afresh at further cost then as the EIR would have expired. We are of the view that if the process is halted now until all other water supply projects have been completed then reassessment and re-evaluation of the proposal may be appropriate. If the EIA is finally approved by the authorities our communities will appeal against the decision. (The trail of objections in the Scoping Report refers) The matter will be tied up in court or arbitration for some time. In order to save costs all round LaMRAG recommends that the process be halted at this stage after comment on the Scoping Report.	26/05/2015	B Rawheath, LAMRAG Adviser, Email	*Noted*. The likelihood of this project to be approved and the final decision will be taken by the competent authority (in this case National DEA) once the Final draft EIA report has been submitted for decision making. This decision will be based on the EIA outcomes and comments/issues raised by the public.
10.13	The following organisation should be involved: eThekwini municipality	26/05/2015	B Rawheath, LAMRAG Adviser, Email	The various department of eThekwini municipality are already on our database and have commented on the draft and final scoping report via Mrs Diane van Rensburg.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.14	Cost of proposed facility – what is the date of the cost?	13/04/2016	B Rawheath, LAMRAG Adviser, Public meeting	*From Umgeni Water*: The cost (4.4 billion) dates from July 2015. These costs have been updated as desalination costs can vary with exchange rate. Much of the equipment and membranes are purchased from international suppliers and hence the overall capital cost of the plant can vary as exchange rate varies.
10.15	The whole energy equation you gave us was based on a pressure and a filter of 100 micro. For consumption, we need to be below 2 micro to eliminate all other bacteria. So we are saying that the amount of energy used to desalinate that water is basically to get grey water and then clean it up and send it out again after 2 micro. Is that correct?	13/04/2016	Roy Singh, Private, Public meeting	*From Umgeni Water*: The first level of filtration is the intake with bars which are 10 cm apart, then it goes through a screen, then it goes through two stages of filtration (i.e. one gravity filter – the other type of filter is to be confirmed using results from the pilot plant). After that, the water goes through a RO membrane that has pores so small that the salt can't even go through. The quality of the water that is coming out of the proposed plant would have zero turbidity.
10.16	Why do you think that the proposed desalination plant is still a viable alternative as opposed to the Lower Tugela which is supplying water anyway and is already in the process of construction? Phase 2 of the Lower Tugela would increase that capacity and have satisfied the full requirements?	13/04/2016	Wade Holland, Private, Public meeting	*From Umgeni Water*: This is not an alternative to the Lower Tugela. The Lower Tugela will supply 110 Ml/day of water to the North Coast (55 ML per Phase). The next project which is going ahead is the raising of the Hazelmere Dam which can supply 75 Ml/day – this makes a total of 185 Ml/day. However, water requirements in this area and the growth around the airport is expected to even exceed that in the next 10 to 20 years. Therefore, the next option is to bring water in from the Umkomaas Water project or alternatively from the proposed desalination plant.
10.17	Concerns regarding the buoy with annual data. The 1 in 50 return period mentioned in the presentation is based on historical data. You can't simply take one years' worth of data and put together this model and base your feasibility study on this. The theory is based on historical data, it's the same application.	13/04/2016	Vignesh Naidu, Private, Public meeting	*From Umgeni Water*: The 1:50 mentioned in the presentation refers to the assurance of supply that Umgeni Water provides to its customers. I.e. UW assures them of water 49 out of 50 years and normally refers to a catchment abstraction where we can be guaranteed of a certain amount of water for that assurance. In terms of dispersion modelling, the year's worth of data that was collected as part of the feasibility study provides us with a very good indication of the variability of the determinants (i.e. an idea of the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				strongest and more importantly, weakest currents that exist). It is agreed that some outliers could be experienced in extreme events, however, the conditions that prevailed over the year of monitoring provide us with a high level of certainty of what to expect in the water quality data. *From WSP / Coastal Engineers*: The currents at the site vary considerably, responding primarily to the wind conditions. The current model was calibrated using actual wind and current data measured over a 7 month period. This is considered more than acceptable, given that such models are usually calibrated against only one month of data. The simulations of the brine dispersion were done using wind data that was determined to be representative of typical conditions. A five year long dataset from the Port of Durban was evaluated for this purpose. Such historical data is typically used, as the variability of actual conditions can be assessed. The model simulations included data from summer and winter, in order to allow representation of seasonal variability. Periods of calm and high winds were included. It was found that the net differences in brine dispersion between summer and winter were limited, notwithstanding the variability in conditions
10.18	In your calculations for the water supply needs for the area, what consideration have you taken in for wastage and the possibility of recycling. And also what consideration have you taken for siltation? Tugela River is silting up very quickly, how is that going to affect your 55 Ml/day plus 55 Ml/day say in the next 15 years.	13/04/2016	Ken Leaver, Private, Public meeting	*From Umgeni Water*: We take growth into account in our planning. UW is aware that there is water loss and unaccounted for water in the municipalities. Those are two different things. Unaccounted for water is not just water loss, it is also illegal connections, it can also be meter inaccuracies. UW has no control over unaccounted for water. As Umgeni Water, our mandate is to make sure there is enough water in the system within our control to give to people so that they do not run out. There are no large scale wastewater treatment plants on the North

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	How does the proposed 150 Ml/day plant compare in terms of the water supply? What is Umkomaas going to provide per day?			Coast and hence the reuse of treated effluent is not an option for supply to this area. eThekwini Metro are ultimately planning a large scale wastewater plant for the area but this would not have the capacity to supply up to 150Ml/d and would not be fully operational for many years. This is not considered a viable option for future water supply to the area. Refer to responses to issues 10.29 and 10.33 for details on assessment of recycling options. Dams are inherently difficult to desilt and hence this practice is not used for any large dams in the world. It is possible to desilt small dams and canals but the amount of silt deposited in large dams precludes this operation. As an example, one of the relatively small dams that Umgeni Water operates has reduced from 22 million m^3 to 18 million m^3 within the space of 40 years. A truck can only transport about 6 m^3 of silt at a time and hence it would require 660 000 truck-loads to desilt this relatively small dam. That would be one truck load every 76 seconds for an entire year to desilt the dam. The environmental and economic cost of an operation such as this precludes this option and also indicates why dams are constructed and not dug. Siltation at Hazelmere Dam is a point, it has gone down from 22 million m^3 to 17 million m^3, (5 million cubic metres). We have to take this into account in our planning. It is not feasible to desilt the dam and hence alternative water resource options have to be considered to mitigate this loss of storage. The Umkomaas project would supply 600 Ml /day.
10.19	What allowance and have you got any kind of documentation or scientific fact to factor in climate change in this area over the next 50 years? How is it	13/04/2016	Ken Leaver, Private, Public meeting	*From Umgeni Water*: Umgeni Water has undertaken a number of climate change studies to try to project the impact on inland water resources. The GCM's which currently project changes in climate, however, show inconsistent results and although an increase in climate

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	going to affect inland collection? Is that factored in at all anywhere?			variability is likely, it is unknown exactly how seriously this will affect Umgeni Water's water resources. One positive comment about desalination is that the water treatment is unaffected by climate variability.
10.20	Initially the cost of the project was 5 billion Rands in September 2014. At the second public meeting in May 2015, we understood the cost of the proposed plant to be 15 billion Rands. From a community perspective, we need to know the factored cost, because if you take the King Shaka Airport as an example, the proposed cost was 2.7 billion and the completed cost was 8.7 billion and it impacted the rate payers, so that is the concern that we have.	13/04/2016	Jeevah Pillay, Tongaat Civi Association, Public meeting	*From Umgeni Water*: The R15 billion was the original price for the Umkomaas Water Project and not the desalination project. This expected cost has now gone up to R 19 billion, and every single year that this project is not implemented, the capital is going to get escalated. The cost of the proposed desalination plant (as per last year figures) is approximately 4.4 billion rands.
10.21	Desainager plant would not be a choice plant as such? The preferred options are the Umkomaas and Smithfield project and the Tugela Bulk Water System (Phase 1 and Phase 2) would be the booster project to carry us to 2024? Do we still stand on this?	13/04/2016	Jeevah Pillay, Tongaat Civi Association, Public meeting	*From Umgeni Water*: That is correct.
10.22	Did you consider a short term project because we are in the drought now and there is a water shortage now? Should Umgeni Water not consider some sort of a portable mini-purification plant to put on the banks of the Mdloti river or other coastal areas such as Desainager, La Mercy, as Desainager only consumes I think between 2.5 to 3 million litres a day?	13/04/2016	Jeevah Pillay, Tongaat Civi Association, Public meeting	Portable mini-purification plants fall outside the scope of work of this EIA. *From Umgeni Water*: Umgeni Water has other plans to mitigate the current drought and constructing large scale desalination is currently not the preferred option.
10.23	The costs shown in the presentation does not take into account the myriad of mitigating costs that are going to be involved here. There are going to be many measures needed to mitigate the	13/04/2016	B Rawheath, LAMRAG Adviser, Public meeting	*From Umgeni Water*: As part of the detailed feasibility study an international expert advisor was consulted to provide the expected costs of constructing a large scale desalination plant such as the one proposed. This expert has been involved in the construction of many

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	environmental impacts. So I want to know how much that is going to cost on top of the total cost for the actual structure.			other large scale desalination plants internationally and has used this information to develop the budget breakdown for this project. *From CSIR*: If the project is approved and if it goes ahead, Umgeni Water will have to meet the management objectives specified in the EMPr, in a cost effective manner and will need to go through a procurement process to implement those actions. It is not appropriate for the cost of future services to be disclosed while it will still have to undergo a procurement process.
10.24	Escalation of the water costs - There has not been a comparative costs of the different units, for example the desalination costs, what does it cost exactly, how much has been spent on the process already, and to say that it might not go ahead. I'm sure it has costed really a lot of money to appoint these people such as CSIR, how much have you spent already?	13/04/2016	D D'Sa, SDCEA, Public meeting	*From Umgeni Water*: To date Umgeni Water has spent approximately R17 million on investigating the feasibility of two large scale desalination plants and for undertaking the EIAs of these two projects. This may seem like a lot of money but it is worth spending when considering the implementation of a multi-billion rand project. *From CSIR*: A presentation on the estimated escalation of water costs was given at each of the public meetings and was loaded on the public website for the proposed project https://www.csir.co.za/eia-report-tongaat-part. This has also been assessed as part of the economic specialist study - please refer to Chapter 12 Section 12.5.3.
10.25	The international best practice that you have shown us in Australia, Perth and Melbourne – What are the benefits, and effects and concerns of the people above all and what studies were done as part of those projects? That would help us to determine whether this desalination plant is good or not.	13/04/2016	D D'Sa, SDCEA, Public meeting	*From Umgeni Water*: Experience of the plants in Australia shows that it is not economical to construct these plants to mitigate drought but to rather construct them as a long term water resource augmentation measure. The plant proposed at Desainager would be a long term water resource augmentation option. Outside of financial considerations there have been little or no other long term impacts of these projects. As mentioned earlier, the use of Nikolay Voutchkov (well regarded as an international expert in large scale desalination) was used as a resource during the detailed feasibility study and the preliminary

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				designs presented have being undertaken with the best international practice in mind. *From CSIR*: Other desalination plant EIAs and specialist studies undertaken internationally were consulted during the compilation of the marine specialist study. International best practices have also been considered when compiling the Environmental Management Programme, i.e. visual impacts mitigation through architectural design, chemical management, general construction good practices etc.
10.26	What will be the height of the tallest building in the plant and will the freshwater pipeline be underground or aboveground?	13/04/2016	Les March, Private, Public meeting	*From Umgeni Water:* The freshwater pipeline will be underground, all of our pipelines will be underground unless they go over an area where it can't be put them underground but this is very scarce. The highest buildings would be approximately 10 m high but it might be higher if you are constricted by the amount of land that we have available. The maximum height is expected to be 10m although this can only be confirmed during the detailed design stage of the project. As such, a maximum height of 18m has been adopted for the visual impact assessment as a worst case scenario.
10.27	If the pipelines are underground, that means a lot of digging has got to take place on the soil.	13/04/2016	B Rawheath, LAMRAG Adviser, Public meeting	*From Umgeni Water:* Digging using excavators will need to be undertaken in the construction of the pipelines. This is done for all Umgeni Water pipelines throughout the municipality.
10.28	The presentation showed a single diffuser, what about a double diffuser (i.e. two pipelines)?	13/04/2016	Unknown, Public meeting	*From Umgeni Water*: Based on the modelling studies undertaken, a single diffuser is sufficient to disperse the brine (by achieving good mixing) and the increase in salinity of one part per thousand is experienced less than 50m from the diffuser. No significant issues anticipated. The proposed diffuser structure was designed based on international designs that have been implemented for best mixing.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.29	eThekwini loses a lot of water to waste, do you know what that volume is in comparison to what volume they put out there? What will be done to fix leaks so that water doesn't have to be continuously fed to a damaged system? How many desalination plants are you going to have to build? eThekwini provided an official at the last public meeting, who said that they are looking at reducing the water loss and also looking at returning 550 million litres of treated grey water into the system. This is something that you can follow up with the municipality.	13/04/2016	Vee Govender, Private, Public meeting Jeevah Pillay, Tongaat Civi Association, Public meeting	*Mr Geoff Pullan/ Niren Appalsamy (eThekwini municipality)*: Water unaccounted for is 40.8%. *From Umgeni Water*: Water loss would be about 50% of that amount. Umgeni Water is a bulk water provider and has to undertake plans to develop bulk infrastructure to provide water to large areas over long periods of time. Umgeni Water has a negligible water loss in its infrastructure. Umgeni Water sells water to municipalities who reticulate this water to consumers. Some municipalities have relatively high Unaccounted for water (water loss, meter inaccuracies, water theft and unbilled use). eThekwini's unaccounted for water is approximately 38% and have spent hundreds of millions of rands to maintain even this figure. Umgeni Water as a bulk water provider cannot interfere in the municipal function of delivering water to consumers and is required by its bulk supply agreements to provide the municipalities with bulk water at a high assurance of supply. Water loss studies within municipal areas cannot be considered a function of the water board. It is recommended that Mr Govender takes this point up with eThekwini Municipality as water losses are outside the scope of work of this EIA. In addition, as previously mentioned, it is not UW mandate to look at water losses.
10.30	Your projection were based on the costing and how much you will generate etc. I tell you the 0.15 m/s and 200 microns, you will not get what you want. I also think that you don't even have a drawing of what it is actually going to be at Tongaat? What will it look like?	13/04/2016	Roy Singh, Public meeting	*From Umgeni Water*: Umgeni Water has prepared preliminary layouts to describe the site. The architecture of the site and plant will be developed as part of the detailed design process and will be based heavily on recommendations from DEA and landowner concerns. The plant will be designed to fit in with the local surroundings as best as possible. In addition, Umgeni will most likely design the plant with

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				berms etc. surrounding the site so as to make the plant less visible to the public. All of this will be identified during the detailed design stage.
10.31	Unstable grounds at Tongaat - putting more pipes in unstable ground will lead to problems			*From Umgeni Water*: There are engineering methods that can be adopted for construction in unstable areas. These have been employed before and the geotechnical conditions at the site will be taken into consideration during the design of the plant.
10.32	Where are you getting access from - are you taking this off the main road, the M4?	13/04/2016	Vignesh Naidu, Private, Public meeting	*From Umgeni Water*: There is an existing small road / driveway that access the site from the M4 (at the traffic circle). It is likely that this driveway will be upgraded to allow for construction traffic but essentially the traffic will access the site from the existing point on the M4. This will be confirmed during the detailed design of the project.
10.33	Recycling should have been considered first, way before desalination should have been considered. Alternatives are inadequate. In the northern area, there is about 240 Million litres of grey water down to sewer – wastage. If we can address the water we lose every day, this would be way ahead of desalination and associated Carbon footprint, wetlands impacts and all impacts on that area. Why is UW not pushing for recycling?	13/04/2016	Wade Holland, Private, Public Meeting	*From Umgeni Water*: Wastewater reuse is another option for supply to end users. You can take water from a sewerage plant – treat it directly and distribute to consumers or you can send it to Hazelmere dam first and then treat it in a water works and deliver to end users. They are all options, but it doesn't mean that desalination is not an option. We did not compare treatment versus desalination in the EIA in the same way that we don't compare desalination to water demand management. Alternatives are based on infrastructure that we are planning to develop as part of this project and not between projects. We have been investigating desalination in the same way that we have investigate water re-use as an option. eThekwini pursued a long investigation on re-use of wastewater in approximately 2010. There was a lot of public resistance (petitions) to this project and hence it is no longer considered a feasible option by eThekwini Municipality (Bill Pfaff (eThekwini Metro), Personal communication).
10.34	The most obvious one is the non- disclosure of the ACTUAL costs not only the arbitrary estimated cost of just the installation and operation of the plant.	30/04/2016	B Rawheath, LAMRAG Adviser, Email	*From Umgeni Water*: As part of the detailed feasibility study an international expert advisor was consulted to provide the expected costs of constructing a large scale desalination plant such as the one proposed. This expert has been involved in the construction of many

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Affluent societies in the USA and Australia have struggled with escalation of costs and had to suspend processes and construction on account of the difficulties with financing and budgeting. We in East Africa and Southern Africa have no chance of succeeding with these cost issues as we have no experience whatsoever about Desalination costs, financially, economically environmentally and in a host of indirect ways we cannot foresee. We can use a fraction of the estimated costs to save the large volumes of water that goes to waste every year instead. We have reason to believe that only foreign companies who will tender for the project will benefit (apart from the huge potential for corruption locally). Our research also shows that we will have to import technology and skills from abroad, mostly from USA. Studies also show that contracts with most companies involve guarantees to pay even at down times (many times each year) when there are surpluses, We will be paying for a facility we are not using for a large part. Durban ratepayers, a relatively small group, just cannot afford this in the short or medium term. Our current growth rate just does not justify a project so unpredictable from a costs perspective and even more unpredictable from an environmental perspective.			other large scale desalination plants internationally and has used this information to develop the budget breakdown for this project. UW has used these costs to project the increase in its tariff. Umgeni Waters tariff is applied to all users in UW's area and in this way the project will not only be paid for by the beneficiaries of the water from the plant but by all beneficiaries of water that UW produces. UW has implemented many large construction projects and project management of this project will follow the same principles to keep costs to a minimum. Both local and international companies would be given the opportunity of tendering for the project. There is at least one local company that can develop a project of this nature. If an international company was contracted then UW would have stipulations that one or more local companies partner with the international company to not only benefit financially but also as a technology transfer exercise.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.35	eThekwini engineering services, we have been given to understand, is planning alternatives to deal with short and long term water shortages for this region. Umgeni Water also has delivered on a water supply source for north coast communities that will be in operation this week. These should not be left out of the equation especially as Desalination is only a last resort for us in South Africa where we ought to prioritise the upliftment of the thousands who would be unable to benefit from this expensive and destructive water factory.	28/03/2016	B Rawheath, LAMRAG Adviser, Email	*From Umgeni Water*: Umgeni Water meets with eThekwini often to ensure that, as a water provider, the provision of bulk water meets their need for distribution to consumers.
10.36	More specific information on siting/size/profile section – Graphics of the plant – in stages if necessary – and not just aerial views- ground level as well. Berms/banks/trees etc.	13/04/2016	Ken Lever, Private, Public meeting (comment form)	*From Umgeni Water*: The architectural design will be undertaken as part of the detailed design of the scheme. At that stage UW would meet with affected parties to ensure that there is a minimum visual impact.
10.37	Ultimately, Desalination plant is utterly unsustainable solution from environmental and technological aspect and from electricity demand, in South African realm, it is should be a criminal undertaking! It is very obvious that current 1-in-50 year drought is being used to motivate commissioning of such plant.	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: This project was planned well before the drought became evident. The feasibility study was initiated in 2011 and the EIA in 2013 (before the drought). The sustainability of large scale desalination has been proved in many international companies.
10.38	EIA report states: "positive benefit that the proposed project (desal plant) would bring to alleviating serious water shortages in the study area and surrounding regions, in particular given increased variability in rainfall as a result of climate change."	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: Many studies indicate that climate change is likely to cause a higher variability in rainfall. I.e. more droughts and more intense droughts (as well as floods). The modelling of water resources in dams does not take this variability into consideration and if a higher variability is experienced then the water resources will not

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	By calling upon climate change being one of the motives for such plant, this statement is ambiguous. I believe climate change was used in context of El Niño (dry period in RSA) related to global climate change which S Africa is experiencing presently (2015 / 2016). Reason I use word ambiguous next to above statement is due to facts that there is incredible amount of fresh water required in environmentally harmful processes used during: a) mining of coal from ground b) production of power in coal fired power plants Coal is used to produce approx. 80% of electricity in S. Africa and UW will use coal powered electricity source for proposed desal. Plant Further attributes to climate change in power generation in S Africa are: a) Coal production and use of it creates waste containing arsenic, cadmium, chromium and lead b.) Additionally, abandoned coal mines are flooded with sulphite salts, heavy metals, benzene and toluene. All of which are very poisonous substrates and had been proven to be deadly to environment after that effluent spills in to ground waters			be sufficient to meet the demand for water. A desalination plant would be able to operate at full capacity even in the worst drought. *From CSIR*: The use of freshwater for other processes such as mining of coal and production of power in coal fired power plants and the contribution from those to climate change is outside the scope of work of this EIA. Climate change is a key reason behind the need for the desalination plant, in that climate change is predicted to lead to an increase in the variability of rainfall and an increase in extreme events (including droughts). The desalination facility would assist Umgeni Water in buffering water supply against variability in water supply sources based on surface run-off (such as dams, which are affected by drought and other effects of climate change). The extra 150 Ml/day of freshwater would constitute approximately 15% of the current level of water supply by Umgeni Water. The proposed plant would require 4 kWh of power per m^3 of potable water produced. In addition, power will be required for pumping sea water to the plant and potable water to the end user. This leads to the project requiring a total power capacity of 32 MW (when running at full capacity, i.e. only a few years after construction) which will be sourced from the eThekwini municipality grid. Please refer to Chapter 2 (Sections 2.4.2.1 and 2.4.7) for further details on energy requirements and energy recovering systems proposed as part of the desalination plant.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Coal power plant's addition of huge amounts of greenhouse gasses in to atmosphere All above attributes are causing same climate change CSIR refers to when talking about need for more potable water in North Coast and need for desalination plant to be built. Perhaps CSIR did not think this through carefully and on larger scale. After one considers all stages of operating a desal plant holistically, that statement is indeed ambiguous.			This power requirement is not anticipated to significantly add to the current power demand for South Africa which was approximately 231 445 GWh for 2014. eThekwini annual electricity consumption is about 11 000 GWh, which correspond to approximately 5% of SA production. The proposed development would therefore result in a 0.1% increase in South African power demand and approximately 2% increase in eThekwini electricity consumption, which is relatively minor compared to the benefit of supply of water for approximately 750 000 people in the eThekwini municipality and the Ilembe District, as explained below. The facility would produce approximately 150 Ml/day of freshwater. This amount of water equates to providing 187 500 four-person households with water each day, assuming 200 litres per person per day. This translates to water supply to approximately 750 000 people in the eThekwini municipality and the Ilembe District, which is in the order of 18% of the eThekwini metro and the Ilembe District population. It is beyond the scope of this EIA to extrapolate the potential effect of approximately 0.1% increase in South African power demand on climate change and associated consequences such as sea level rise. The sourcing of electricity is a national policy issue and is beyond the scope of work of this EIA. The IRP 2010 commits to reduce the use of coal for power generation and to increase the renewable energy component. It is worth noting that South Arica's energy policy clearly shows a commitment to an increased percentage of power generation from renewable energy sources, such as wind, solar photovoltaic and hydro. Over the past 4 years, as part of the REI4P programme, 92 renewable energy projects power projects approved by the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				Department of Energy with a generation capacity of 6327 MW; and 3725 MW commissioned by early 2016. With regards to the comment that "Umgeni will use coal powered electricity source for the proposed desalination plant, this is incorrect as Umgeni Water will source electricity off the grid, which is a combination of various sources of electricity.
10.39	However, all of this talk about coal power plant impact when building a desalination plant was not of Umgeni Water (UW) Mr. Kevin Meier's concern as, during meeting with LaMercy Residents Action group on 29/4/2015 he stated: "UW are not in business of power generation". Such statement is so blatantly ignorant, short sighted and irresponsible. This goes to show how institutions such UW together with CSIR vested with power to build sustainable future solutions for S Africa can shoot their own (and their fellow citizen's) foot.	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: Umgeni Water is a bulk water provider and has to consider all options to provide this resource. Desalination is one of these options. Umgeni Water is not a power provider and hence, if power is required, will rely on the major power producers in the country to deliver this power. Umgeni Water relies on the national power bodies to produce power in the most economical and environmentally friendly method. The desalination plant will require power, as does most other industry. The amount of power required will be more than from a standard water treatment process. However, at approximately 4kwh per kl, it means that the amount of power required to produce the needs of the average household would only be the equivalent of the power required to run an old fridge. However, it is worth noting that South Arica's energy policy clearly shows a commitment to an increased percentage of power generation from renewable energy sources, such as wind, solar photovoltaic and hydro. Over the past 4 years, as part of the REI4P programme, 92 renewable energy projects power projects approved by the Department of Energy with a generation capacity of 6327 MW; and 3725 MW commissioned by early 2016. The pump station however has

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				been set back using information on the dune retreat which accommodates climate change scenarios. A number of companies have expressed interest in developing the desalination model for Umgeni Water. Some of these companies propose developing the desalination model together with some form of power generation utility. The sustainability and cost effectiveness of these proposals would have to be considered at the time of tendering.
10.40	Environment impact / eco system degradation. Be it direct by desalination plant or indirect in coal mining and coal power generation stage, UW will have to accept both direct and indirect environment impacts if they are to choose sustainable solutions. Fact is that proposed desalination plant cannot function without 40 MW power supply. After all there, is only one Earth. If our leaders plan their actions with blinkers around their eyes and destroy this land, no amount of feeling sorry for their today's actions will fix the future generations suffering.	09/05/2016	Damir Percaic, Private, Email	Please refer to response to issue 10.39.
10.41	In the EIA report, CSIR identifies the following as motivation for desalination plant: "The proposed Umgeni Water desalination plant will aim to ensure the promotion of sustainable economic development by serving the interests of a growing population as well as other commercial interests in the region."	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: Umgeni Water is a bulk water provider to municipalities. The municipalities distribute this water to consumers. It is the municipal responsibility to influence how water should be consumed and whether consumption should be restricted. Umgeni Water, as a bulk water provider is required to plan for future water supply to the municipalities as per the bulk supply agreement that they have with the municipalities. It is important to note here that, even during the current drought, it has been near impossible to change

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Likewise, I also consider potable water as essential amenity for, but I have a different vision to a sustainable solution; see : "conclusion" section at bottom. Inevitably, population density will reach a point where potable water supply capacity using any particular or combination of methods will not be able to meet the demand. What I am proposing is a SUSTAINABLE SOLUTION. Change the demand part of the potable water system and not he supply! UW and CSIR are making a classic judgment error which countries and governments had been doing to their own (end their ecosystem's) detriment from time of industrialization revolution. Take China's polluted air for example; They became the World's industrial leader (world's engine), but they paid the price for going past the point of sustainable engineering products production capacity by building too much heavy industry. Now the Chinese people, their flora and fauna breathe polluted air and suffer various medical problems in consequence. If leaders, planners and policy makers do not act now to find a SUSTAINABLE SOLUTION, this will happen to KZN North Coast (and S Africa) sooner rather than later. This is a logical conclusion and if			the behaviour of consumers without imposing mandatory restrictions. The current drought has also show that there is a high impact of these restrictions on the local economy. Both industry and tourism are affected by the restrictions. If the area is to ensure sustainable growth then a reliable source of water will be required. Umgeni Water has a negligible water loss in its infrastructure. Umgeni Water sells water to municipalities who reticulate this water to consumers. Some municipalities have relatively high Unaccounted for water (water loss, meter inaccuracies, water theft and unbilled use). eThekwini's unaccounted for water is approximately 38% and have spent hundreds of millions of rands to maintain even this figure. Unfortunately Umgeni Water does not have any control over eThekwini unaccounted for water. Any sustainable solution (as mentioned here) would need to be investigated at a Department and Municipal level to prove the applicability as a long term solution. There is no proof in this country of this option being sustainable. South Africa is a country with a diverse requirement for water from Rural to Residential, Commercial and Industrial. Water has to be served to provide the basic human needs requirement and for economic development. To adopt this type of strategy it would have to be agreed at a ministerial and political level and applied throughout the country. The alternative is that certain communities will feel marginalised and ultimately will move to areas where water supply is not restricted and this will affect growth and the local economy.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	nothing is done, the system is on a path of a "Titanic" doomed to fail. Conclusion - With all the different projects UW has in place to balance potable water production capacity against ever increasing demand, the desalination plant is by far the least sustainable solution and should be taken out of consideration. UW's important agenda and motive for proposed desal plant is that they need to provide the resource (potable water) required to stimulate development in their jurisdiction. Development can still be sustained, but UW and stakeholders have to sell the idea of changing the irresponsible water consumption habits to sustainable habits to their customers. That might be a challenge in beginning, but more and more people are embracing new practices of modern times as those are sustainable by nature. Similar goes with solid waste recycling. It was taboo a decade ago but now is normal. We must all preserve the existing fresh water resources. This can be enforced by regulating that: • All new construction sites to be self-sustainable on water requirements.			*From CSIR*: It is recommended that this I&AP contacts the eThekwini municipality and shares his ideas on water usage restrictions and public awareness on water usage for the municipality to implement.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	• All water consumed for other than for human consumption (domestic and industrial irrigation, filling up swimming pools, industrial and agricultural use etc.) must not be potable water. • All new built sites to have potable water and alternative water source (rain harvested water, atmospheric moisture precipitator or borehole installations). • Only water points for human consumption would have potable water supply (sinks) and all others (geyser, bath, laundry washing machine, dish washing machine, shower, toilet, garden tap) would have alternative water supply. Such radical changes in regulations will decrease production capacity requirement for municipal potable water thereby decreasing the need for such massive increases in production capacity. It will decrease the load on maintenance and requirement to increase capacity of reticulation networks. And it will most likely bring forward-thinking consumers in to their jurisdiction and set a precedent for future generations. Reduce water loss! According to the auditor-general's report for the 2013/2014 financial year, these losses amount to R602.6 million because eThekwini loses 237 Ml/day from it's water reticulation system. That is almost double the proposed desal plant capacity (150			

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Ml/day). What a waste! If this is attended to and eliminated, no need to build a desal plant. We all just need to think out the box with big picture in view.			
10.42	Further, CSIR's objectives for this project are: 10.1. "develop a long term, sustainable alternative water source for the east coast region that is rainfall/climate-independent and ensures long-term security of supply". Instead of continuously increasing potable water supply in order to be ahead of ever-growing potable water demand, Umgeni Water, Municipalities and CSIR should educate, change and promulgate use of alternative water sources (non potable) to end-user. After all, only a fraction (less that 3 %) of potable water is consumed as drinking water in an average household). 10.2. "establish a world-class and cost-effective desalination plant, whilst minimising the harmful environmental impacts of the desalination plant through comprehensive scientific investigation and consistent stakeholder engagement" There is no such thing as cost-effective desalination plant. Considering South African cost of electricity generated by coal fired power station required for	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: Umgeni Water is a bulk water provider to municipalities. The municipalities distribute this water to consumers. It is the municipal responsibility to influence how water should be consumed and whether consumption should be restricted. Umgeni Water, as a bulk water provider is required to plan for future water supply to the municipalities as per the bulk supply agreement that they have with the municipalities. The process of desalinating seawater requires approximately 2.4kwh/kl (for the reverse osmosis system only. The remainder of the energy requirement (i.e. approximately 2kwh/kl) is required for processes such as pre-treatment, pumping the water to reservoirs etc. The standard electrical operating requirement for a water treatment plant is between 1 and 2kwh/kl (depending on where the plant is positioned and how much pumping is required to deliver water to consumers). There are many sustainably run desalination plants operating globally. Desalination is not a new technology. There are many large plants in many countries around the world. Almost all of these plants are cost effective or they would not have been constructed. There are plants that have been constructed and which are not cost effective (mostly plants that were constructed as drought alleviation measures in Australia). These few "failures" should not be regarded as the global norm.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	the power-hungry desalination plant. These plants are green gasses intensive. Proposed power hungry plant will have total energy requirement between 4.0 and 4.5 kWh/m3. How does that compare to water catchment treatment plant or waste water in to potable water treatment plant?			
10.43	EIA report states: "Rainfall in South Africa is highly variable in spatial distribution and unpredictable, both within and between years. Much of the country is arid or semi-arid". Umgeni Water is proposing to build a desalination plant in KZN North coast, Tongaat which has more than 1000 mm rainfall annually. Why is the "country " in its entirety being discussed? This is misleading	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: The average annual rainfall recorded at Umgeni Waters Hazelmere Water treatment Plant is 821mm per annum. The variability in this rainfall shows that in some years the rainfall amount can fall as low as 300mm. Although the 821mm is higher than the country average (approximately 400mm), it is still lower than the global average of almost 1000mm. The variability in rainfall is the key point which was discussed in the document. *From CSIR*: Rainfall in region has been presented in Chapter 3 - Section 3.3.1. Please refer to Chapter 3 Description of the Environment for more details.
10.44	EIA report states: "Desalination plant may be constructed in two phases over a period of five years" Mvoti Dam and uMkomazi project / Smithfield Dam could be completed within similar time frame thereby eliminating the need for desalination plant project which will take 5 years (estimated projection). CSIR goes on to state that Smithfield Dam construction would take many years to	09/05/2016	Damir Percaic, Private, Email	*From Umgeni Water*: The Mvoti Dam is unlikely to ever be constructed as the imposed in stream flow requirements mean that the dam will not have a sustainable yield. The uMkhomazi Water Project will cost approximately R19 billion and will take at least 10 years to complete once approval is granted by the Minister. The desalination plant would be completed within five years (following approval). The uMkhomazi Water Project is Umgeni Waters preferred option for supplying water to the area, however, if this project cannot be constructed in the time frame that is required or if there is a fatal flaw on the project then

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	complete and compared it to Desalination plant's "fairly quick" completion thereby making a desalination plant a better choice in their conclusion. We all know that projects of such scale more often than not end up being completed later that projected. Therefore, efforts should be invested in a more SUSTAINABLE options, which are catchment water treatment plants and change in consumer behavior.			Umgeni Water has to have an option for long term supply and this option would be the desalination plant proposed in this project.
10.45	The consequences of South Africa's water limitations are currently very evident. While society needs to appreciate the need to change how we use our resources and actively participate in making the necessary changes Government must pursue a blend of solutions to the country's serious water shortages. This includes, inter alia, infrastructure maintenance, repair and replacement programmes; rebuilding ecological infrastructure; ongoing citizen awareness; grey water and effluent re-use; as well as closed systems becoming standard in industry. Augmentation schemes which are detrimental to our ecosystems, such as in-stream impoundment and inter-basin transfers, are not supported as a default option without consideration of all other options. While SWRO is a respected technology it is not without challenges. Regarding energy efficiency estimates put the cost of desalinated water at about	06/05/2016	Carolyn Schwegman , Coastwatch KZN, Email	*From Umgeni Water*: Eskom is the bulk provider of electricity to eThekwini Municipality who distribute this to consumers. Umgeni Water, being a bulk water provider, relies on the national provider and the municipality to determine the most environmentally friendly and cost effective means of generating electricity. If electricity could be generated as part of the desalination project then Umgeni Water would consider this, however, Umgeni Water will rely on Eskom and the Municipality with regards the sustainable supply of electricity to the area outside of the project. A number of companies have expressed interest in developing the desalination model for Umgeni Water. Some of these companies propose developing the desalination model together with some form of power generation utility. The sustainability and cost effectiveness of these proposals would have to be considered at the time of tendering. There are no large scale waste water plants within the area and from which the energy, required to operate this plant, could be obtained.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	three times that of surface water as the process requires large amounts of energy with 45 – 60% of total operating costs being attributed to energy use. It is said that existing desalination plants in South Africa use RO technology due to its substantially lower energy use, thus RO is expected to have a much lower lifecycle cost than thermal distillation and contributes much less to greenhouse gases. However, logic is defied where in South Africa electricity generation is water intensive (water cooled power stations) and this electricity is then used to power another process to produce water for human and economic consumption! Alternatives must be looked at and options could include supplementary electricity from, for example, closed system opportunities associated with a waste water treatment works (requiring re-siting the SWRO plant), and investigation into newer technologies such as wave energy which is in use internationally			Generating electricity using wave energy is still being investigated and has only been applied on a small scale. The current project is too costly to include this type of technology before it has been properly proven. It would, however, be possible to retrofit this technology to the plant post construction if the technology proves to be sustainable and cost effective. If wave energy was a current cost effective and sustainable means of generating electricity then the municipality and/or Eskom would be considering this as a means of generating their own electricity already.
10.46	Governments war on leaks project which was created to prevent water loss as a result was not even discussed or in the information presented yet we are suffering from a severe drought. With reference to the governments war on leaks project we can question why the CSIR and UMGENI Water have not come up with a solution to deal with this problem that can save thousands of liters of water. Why is the CSIR and UMGENI Water not investigated why silt has filled up most of the dams and no plan put in place to remove this from dams. CSIR and	09/05/2016	Desmond D'SA, SDCEA, Email	*From Umgeni Water*: eThekwini Municipality presented their program for dealing with Unaccounted for Water at one of the public meetings. This is a municipal responsibility. Umgeni Water, as a bulk water provider has to plant for bulk water provision and cannot rely on the water loss initiatives to simply drive down water demand in the future. The developments that are planned on the North Coast will double the demand for water over the next 10 to 20 years and reducing unaccounted for water in the area will not satisfy this demand increase. It is not cost effective or environmentally effective to desilt dams and that is the reason why it is not done on a large scale in other countries

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Umgeni Water need to provide evidence why dams are not properly maintained. When investigating and looking at alternatives to solving the problem of the drought we need to ensure that proper and cost saving investigations are done to provide water for everyone. Why is there no investigation on how recycling water plants are developed and used for industry use and move industries away from the use of clean running water? Why is there recycling waste and other water in South Durban and yet this option does not seem to be the case for investigation for the industries north of Durban. There has not been argument put forward by UMGENI Water and CSIR. We know that there is enough water for residents to use? We note from reading documents that these studies must be done in order to assess the development impacts on humans and ecology of the area.			around the world and also the reason why we build dam walls to store water as opposed to digging holes to store it. Hazelmere Dam has between 4 and 5 million cubic meters of silt. If a truck load can only carry 6 cubic meters of silt it is clear that it would not be sustainable to remove all of this silt. This would also only provide a marginal increase in the yield of the dam 10Ml/d whereas the requirement in the area is for 100 to 150 Ml/d. Waste Water Reuse has been considered by the municipality although public resistance has meant that this project cannot continue. Please also refer to responses to issues 10.18, 10.29 and 10.33 for further details.
10.47	Proper costing of the development of the desalination plant - We need detailed information on the cost of the desalination plant from the purchasing of land, to the development of the plant including the hiring of boats and rigs as well as any equipment, pipelines made in the sea and on land. The infrastructure changes such as roads will also impact on the community and environment (trucking a huge concern) will also need to be discussed. This information must be based on evidence from independent research studies and international best	09/05/2016	Desmond D'SA, SDCEA, Email	*From Umgeni Water*: Umgeni Water appointed consultants Aurecon to undertake the Detailed Feasibility Study for this project and Aurecon in turn contracted an international expert Nikolay Voutchkov to assist in the study. Aurecon developed a detailed cost breakdown of the proposed plant using Nikolay's international expertise together with their local knowledge of the civil and marine engineering industry. Costs included all civil, mechanical and electrical infrastructure needed for the project whilst also including land acquisition costs, environmental mitigation, project management, design and contingencies. In developing the cost breakdown Aurecon and Nikolay have also included international trends in the construction of large

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	practice methods. We would also like to ensure that the cost does not escalate like we see in many other governments based projects like the Eskom Medupi and Kusile power stations as well as the Transnet pipeline and of course our white elephants such as the Moses Mabida Stadium.			scale desalination plants so that escalation, outside of what can be regarded as standard escalation, can be avoided.
10.48	Maintenance and costing of water leaks, dams, rivers and estuaries Before embarking on the desalination project a maintenance and costing analysis of water leaks should and must be done. This report must be done by independent consultants who have no links to any parastatal or Government departments. This report should also investigate what lead to the current water crisis and what must be done to fix the problem such as water leaks from pipes and taps as well as illegal water use. This study should also look at what are the costs of these losses. The study should also look at the maintenance of our dams with huge amount of silt and no removal of this. Further we should look at the skills shortage in regard to Umgeni Water as well as the Water department both locally and nationally and this costing should then be compared to the building of desalination plants and whether or not there is desperate need to have one. There is very limited information that provides us with a true reflection of why our rivers and estuaries are not maintained or and we need to have an integrated study that tells	09/05/2016	Desmond D'SA, SDCEA, Email	*From Umgeni Water*: Dealing with Unaccounted for Water is the responsibility of the Municipality and they have plans in place to address this. The municipality can be contacted to provide information regarding this. Umgeni Water is a bulk water provider to the municipality and as such must provide the future water needed by the municipality. It should be noted that the total demand for water on the North Coast is currently 70Ml/d (outside of drought times) and that the maximum saving if all leaks were repaired (which is impossible) would be approximately 20Ml/d. The desalination plant would be constructed to provide the future demand increases on the North Coast of up to 150Ml/d. *From CSIR*: Terrestrial supply of water is reaching its limits (many catchments are already overdeveloped) and the provision of desalinated water would allow a decrease in the amount of riverine water extracted, leading to more freshwater being available to maintain ecological function of rivers and estuaries.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	us how the rivers will be remediated so that water flows freely and the dams are able to fill up.			
10.49	International best practice - We believe that the assessment documents presented did not thoroughly discuss the international methods and practices of the desalination plants and deliberately chose to mention just a few that does not address the concerns in detail.	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: Other desalination plant EIAs and specialist studies undertaken internationally were consulted during the compilation of the marine specialist study. International best practices have also been considered when compiling the Environmental Management Programme, i.e. visual impacts mitigation through architectural design, chemical management, general construction good practices etc. *From Umgeni*: As mentioned earlier, the use of Nikolay Voutchkov (well regarded as an international expert in large scale desalination) was used as a resources during the detailed feasibility study and the preliminary designs presented have being undertaken with the best international practice in mind.
10.50	Could you explain why the power and water line cross the N2 South of the Umdloti River rather than staying on the Western side. Are their engineering reasons why this was done and if so could I have sight of them please. There is concern about the lines bisecting the Victoria wetlands. If the lines went due North towards the airport into a planned industrial area, this could be averted. It was stated that Metro had pencilled in the route for the powerline. This is at odds with their published macro plan of having industry West of the N2 and housing East of the N2. Could I see the correspondence please.	14/04/2016	Murray Jackson, Private, Email	*From Aurecon:* The proposed routes supplied by Ethekwini Municipality have several future Major substations planned en-route. It would appear they have selected the proposed route to tie into these substations which in some cases fall on the south of the N2 forming a ring-feed back to La Mercy Major Sub. There is also a major valley further west and the off-ramp to the airport. This probably was considered when selecting a route (clearances). The map from Ethekwini shows the proposed Major Subs (white squares with pink surrounds) on the proposed yellow 132kV lines (please refer to Figure 2.17 In Chapter 2). For the potable water pipeline – Aurecon has investigated both options, crossing to the North and South of the Umdloti River from an engineering perspective. From an engineering point of view both options would be feasible. Aurecon has recommended the current

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				route (south of the river) as part of our preliminary study and this is the route that was assessed as part of the EIA. *From CSIR*: Please refer to the EIA report (Chapter 2 - Figure 2.19) showing the recommended alternative route for the powerline to avoid Victoria wetlands. Refer to eThekwini issue 4.10: "*The Electricity Department has no objection to the plant however please note:* *1.1. This Department has strategic future 132kV Overhead Transmission Lines that will be constructed in the vicinity.* *1.2. A new 132/11kV substation and overhead line is proposed in the vicinity of the Treatment Plant. This is shown in the EIA report and was provided by this Department. This is subject to change and will be dependent on the high voltage network in the area at the time of construction*."
10.51	Could you please give me more detail on the structure and size of both water and power lines, servitude widths, height, depth, how close one can build to them etc.	14/04/2016	Murray Jackson, Private, Email	*From Aurecon*: The construction type for the power line would be steel lattice for 132kV, usually around 16 to 20m in height. With regards to clearances, please see attached clearance chart, it shows the servitude to be 36m with building restrictions of 18m from the centre line. The potable pipelines ranges from 450 mm diameter to DN 1400 mm diameter. We dictate that a minimum soil cover over the pipe must be 1.2 m, therefore the depth of the pipe invert would be the pipe cover plus the pipe diameter. In some areas the pipe cover depths might reach up to 4 m. The servitude for the pipelines would be a minimum

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				of 5 m either side of the pipeline. No building activity is allowed within the servitude. Concerning the pipelines. We allow for a typical 25 m construction working width during the construction stage. This can be narrowed down to 10 m depending on the sensitivity of the area the pipeline is crossing. The contractor is not allowed to work outside of this demarcated working area i.e. the trench, soil stockpile and pipe material is all contained within the working area, irrespective of the pipe depth.
10.52	Please send maps of proposed area with more info.	12/04/2016	S Freegard, Private, Email	*From CSIR*: This I&AP was directed to the website where the draft EIA report was published.
10.53	I picked up your details from an advertisement while cycling near Mount Moreland. I am a resident of Umdloti. Could you please register me as an IAP for the EIA into the desalination plant. In particular: • Is this a private sector project? • Which communities will benefit from the new supply of potable water, and at what price?	31/03/2016	B Gibson, Private, Email	I&AP added to database. Notice of release of draft EIA report was emailed to this I&AP, including notification of public meeting. This project is proposed by Umgeni Water and is proposed to supply water to the eThekwini municipality and the Ilembe District – please refer to Chapter 1 of the EIA report for further details.
10.54	Interest as a resident of Tongaat and interest in water treatment (work in the field)	13/04/2016	Renata Naram, Private, Public meeting Comment form	Noted. I&AP added to database.
10.55	The costs of putting a desalination plant. The electricity running costs.	13/04/2016	Geoff Pullan, eThekwini Municipality,	*From CSIR*: Please refer to response to issue 4.6 regarding electricity usage. Please refer to responses to issues 10.18, 10.29 and 10.33.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Enough rainfall in the area but we let most of it flow into sea. Recycling of water is a cheaper option. Umkomazi water supply may be a better option since it will provide 4 times more water		Public meeting Comment form	
10.56	It's important that all incharge of supply of water don't xxx in silos – we are noticing that there is large scale development of Dube Trade Port, Nyaminga, Zimbali, xxxx and Umhloli- again eThekwini is not really pushing for harnessing of grey water- as well as for building purposes. Also they are not really enforcing water use reduction as requested by the MEC of COGTA. Also it must be noted that municipalities are not pushing for harnessing of rainwater and the installation of water conserving devices in all new projects. Why is Umgeni water no promoting recirculation of sewer water for consumption after additional purification – as we won't need desalination to take place if this is done. The issue of water loss cannot be addressed in Silos. CSIR must ensure that Umgeni Water as the supply authority must ensure that all water distributors must be accountable for reduction of water loss and if this is done there is no need to build constant infrastructure or upgrade supply infrastructure.	13/04/2016	Allimuthu Peruma, Private, Public meeting	*From CSIR*: Please refer to responses to issues 10.33, 10.44, 10.41 and 10.46 *From Umgeni Water*: The total quantum of waste water or for that matter water that can be harnessed from rainwater harvesting, is not sufficient to supply the growing needs of the North Coast. Dams are in effect a means of rainwater harvesting and a dam three times the size of Hazelmere would be needed to supply the same quantity of water that the desalination plant could produce. There is no river that could accommodate and fill a dam of that size on the North Coast and it is not feasible to construct rainwater harvesting tanks with an equivalent capacity of approximately 60 million m^3. The use of grey water and the use of rain water harvesting at a local level could decrease the demand marginally but would not fulfill the future needs of the North Coast.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
Comments on Final EIA Report				
10.57	Lack of information on Financing of proposed desalination plant. *The Economics and Financing* The cost of the water produced and the financing of the project are key factors that will impact on the success of Desalination. The construction of a desalination plant is expensive and requires considerable up-front capital investment. To cover these costs, project developers often rely heavily on debt financing, which involves borrowing money from a lender with the intent of repaying the principal of that debt and interest. LaMRAG has consistently emphasised the point that the EIA process thus far failed to show how this desalination project will be financed. Financing of SOE projects in South Africa has attracted much controversy in the recent past. At this time there is no concrete plan to fund this facility. This is probably because UW has little confidence in this application's success. If the application were to be granted the funding and costs issue would be the first hurdle to get past and UW will be found wanting with regard to an approved comprehensive cost account plan. Reference made to Heather Cooley and Newsha Ajami of the Pacific Institute for Water Program in *Key Issues for sea water desalination in California.*	13/06/2016 & 06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	*From CSIR*: Refer to Final EIA report Chapter 1 Section 1.5.1. *From Umgeni Water*: Umgeni Water currently has a CAPEX which exceeds R5 billion. The organisation implements large scale projects and funds them off balance sheet or through the raising of capital loans. This project would be no different to any other CAPEX project which Umgeni Water were to implement. There are two options for funding the project. Either Umgeni Water would raise the capital needed for the project itself and fund the contract or enter into a Public Private Partnership with an external contracting company (who would provide the capital funding and construct the plant) and then enter into a tariff agreement with the PPP enterprise. This was all mentioned in the public meetings that were held. Umgeni Water will decide on the institutional arrangement when / if the project goes to construction. Umgeni Water has a very competent finance department to manage its finances and prepare budgets. Extensive financial planning of the scheme has been undertaken with impacts on tariffs and expected debt repayments being determined.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.58	Concern of demand risk leading to reduced viability and failure of the facility The Draft EIA has completely ignored this concern of **demand risk** and how developers in the quest to keep unit costs low make projects larger than necessary thus in terms of demand risk contributes to the reduced viability and failure of the facility. Reference made to *Key Issues for sea water desalination in California* (Heather Cooley and Newsha Ajami of the Pacific Institute for Water Program).	13/06/2016 & 06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	*From CSIR*: Refer to Final EIA report Chapter 1 Section 1.5. *From Umgeni Water*: Umgeni Water has a very competent and capable planning services division which undertakes demand forecasts for all areas supplied by Umgeni Water. The proposed desalination plant is to be constructed to meet the future need for water of the North Coast area. The Australian example cannot be extrapolated to this plant. Most of the plants built in Australia were done so to mitigate a drought and these plants were not constructed for continuous long term supply but merely as an assurance option. The Perth Plants were constructed for continuous supply to meet future demands and these plants are operated continuously. This proposal is for a desalination plant which would run continuously to supply the regions future demand. If this plant were constructed then it would be in place of alternatives and hence there would not be an additional option for supply and the existing supply schemes will not have the capacity to supply the future needs.
10.59	Capital and Operation and Maintenance Costs - two most expensive commodities are the cost of financing the capital and the cost of energy Supply of electricity by Eskom and cost of electricity Capital and Operation and Maintenance Costs	13/06/2016 & 06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	*From CSIR*: Refer to Final EIA report Chapter 1 Section 1.5.1. Please refer to responses to issues 4.4, 4.7, 4.8, 10.24 A presentation on the estimated escalation of water costs was given at each of the public meetings and was loaded on the public website for the proposed project https://www.csir.co.za/eia-report-tongaat-part. This has also been assessed as part of the economic

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	Reference made to *Key Issues for sea water desalination in California* Energy and Greenhouse Gas Emissions (Heather Cooley and Newsha Ajami of the Pacific Institute for Water Program). Unit costs are also highly variable among projects. Variability among desalination projects is driven by a range of site- and project-specific factors. Land prices and labour costs, for example, can vary considerably among projects. Likewise, energy prices can have a major impact on the project cost. In fact the two most expensive commodities are the cost of financing the capital and the cost of energy. LaMRAG has repeatedly expressed our concern about the overall costs of this development but most especially about the energy component which is apart from financing the single largest cost factor. It is common knowledge in our municipality as in other metropolitan areas that costs of electricity are prohibitive. Eskom has experienced crisis after crisis in falling short in meeting energy demands of the cities. UW, the EAP and eThekwini are not realistic in their expectation that that Eskom will be ready and able to supply the demand to develop and operate this facility. After all the non – committal attitude of eThekwini could not have inspired confidence enough for the applicant to propose this			specialist study - please refer to Final EIA report Chapter 12 Section 12.5.3.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	development with the knowledge that electricity supply could be a deal breaker.			
10.60	As a quantity surveyor this proposed project makes no financial sense. It is a very expensive way of producing water in a country with electricity shortage. The visual impact of such an industrial site will deter any further development in the area. Eventually people will move out the area, leading to a slum area.	24/08/2016	Mario de Abreu, King Shaka Estate resident, comment form	*From Umgeni Water*: Umgeni Water considers all options of augmentation before implementing project. Criteria that are used in these analysis include risk, reliability and most importantly financial viability. Umgeni Water has to consider these variables when implementing project and foremost on this list is the lowest cost of water to the end user. Desalination, as a technology has improved in financial viability over the past few decades and is now a viable option for the augmentation of water resources. There are other options available for supply to the area, including the uMkhomazi Water Project, although these have their own challenges (the uMkhomazi Water Project is now likely to cost R28 billion). If the uMkhomazi Water Project cannot be constructed to mitigate the risk of non-supply to eThekwini and the North Coast then this desalination plant would be the next most viable option.
10.61	I would like to know what this proposal will cost in South Africa. How much will water prices go up? 1. The eThekwini Metro Water Department must inform everybody to lower their rate of water consumption. 2. The dams do not have water, everybody's water bills must be shown or decreased. 3. There must be use of grey water, purify used water so that it can be used again. 4. Because this project will have a high cost, all divisions of the Municipality and National	06/2016	Allimuthu, Activist, Watsonia (comment was in Zulu)	*From Umgeni Water*: eThekwini Municipality implement a number of strategies to try to get users to save water. Unfortunately, Umgeni Water, as a bulk water provider, cannot influence these initiatives although we can support them by any means. The reuse of treated effluent is one such project where Umgeni Water would like to assist eThekwini in any way possible. Umgeni Water, essentially, has one tariff across all of its water supply areas. In this way the cost of a project in one area is covered through water sales over the entire area. The cost of water, if ring fenced and sold from the desalination

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	Government must work together to ensure that the people use Greywater to water their plants; to flush toilets and watering Golf Courses (Golf courses use a lot of water) 5. All new developments should use greywater; that is why we are saying government should work together with other divisions. * This is a common thing. 6. Those that wash cars should also use water that has already been used before (Grey Water). 7. All households should have water tanks for rain water harvesting. 8. SARS should assist people to purchase rain water tanks, when somebody goes to SARS to do their tax returns they should produce the receipt of purchasing a rain water tank and where that tank is located. • SARS should then payback the VAT of that purchase. • SARS should ensure that each and every household has a rain water harvesting tank.			plant by itself, would be approximately R15 per cubic meter. However, with the costs of this infrastructure blended into the Umgeni Water CAPEX mix, the impact of the project on the tariff will not be significant (approximately R1 per kl). *From CSIR:* Thank you for your inputs. The scope of work of this EIA is to assess environmental and social impacts associated with the proposed construction and operation of a desalination plant at Tongaat and does not include the assessment of alternative water supply options. Although your comments and recommendations are extremely valid, the assessment of alternative water supply as well as public awareness regarding water saving measures fall beyond the scope of work of this study. Please also refer to response to Issue 1.8. *From Umgeni Water*: "*As a bulk water provider Umgeni Water has to consider all options for future bulk water supply. These include waste water reuse as well as traditional run of river storage systems and water treatment plants. eThekwini Municipality owns and operates the large scale waste water plants in and around Durban. Approximately five years ago eThekwini undertook a feasibility study to treat waste water to potable standards so that this could be injected into the system, however, due to public resistance and the stigma that is attached to waste water reuse, it was not possible to pursue this option further. Other alternatives for supplying the area with water are being considered by Umgeni Water, the most preferred*

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				option being the uMkhomazi Water Project. However, if these options cannot be implemented due to a fatal flaw (such as with the reuse) then Umgeni Water must have an alternative to ensure that water can be provided to the citizens of the North Coast. Desalination is the option that is being considered for this purpose. Umgeni Water has a very comprehensive Infrastructure Master Plan which is available on the website www.umgeni.co.za and all bulk water supply options and future plans are presented in this document."
10.62	I have read the EIA in regards to the above proposed project and I must raise my objection to this desalination plant going ahead. **Financial sense:** It is a widely known fact worldwide that desalination is a prohibitively expensive way to produce water. The plant is expensive to establish and expensive to run and maintain. Places that use this technology do not have much choice - Saudi Arabia, Dubai, Bahrain for example. We live in a country with electricity shortages, with the ever present danger of load shedding. I do believe that Umgeni Water have other alternatives for producing water which are financially much more feasible with the potential to produce vastly much more water than this proposed desalination plant. I firmly believe that that is where the focus should be diverted rather than indulge in experimental, expensive pastimes.	24/08/2016	Mario de Abreu, Eskom, email	*From Umgeni Water*: Umgeni Water considers all options of augmentation before implementing project. Criteria that are used in these analysis include risk, reliability and most importantly financial viability. Umgeni Water has to consider these variables when implementing project and foremost on this list is the lowest cost of water to the end user. Desalination, as a technology has improved in financial viability over the past few decades and is now a viable option for the augmentation of water resources. There are other options available for supply to the area, including the uMkhomazi Water Project, although these have their own challenges (the uMkhomazi Water Project is now likely to cost R28 billion). If the uMkhomazi Water Project cannot be constructed to mitigate the risk of non-supply to eThekwini and the North Coast then this desalination plant would be the next most viable option.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
10.63	• Why desalination instead of conservation and the application of the environmental ethical code – RECYCLE, RE – USE, REDUCE? • Why is there no provisional COST BENEFIT ANALYSIS? The main challenge for SWRO technology for 50 years has been the actual cost. The following extract from National Academies Press "A National Perspective" 'The costs and benefits of Desalination.' indicates why a desalination proposal must consider not only the actual costs of technology but also the environmental costs. www.nap.edu/read/12184/chapter/8 "In assessing the future prospects and promise of desalination technology it is particularly important to examine the current and prospective economic and financial circumstances that are likely to surround the technology as it develops. An examination of the structure of desalination costs and of the determinants of those costs is important in identifying areas in which research might be pursued with the greatest effect. A consideration of the availability and costs of alternative supplies helps to place the future role of desalination in perspective. Finally the issues of reliability, water quality and environmental impacts need to be understood if the costs and benefits of desalination technology are to be broadly understood."	05/08/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From Umgeni Water*: Umgeni Water considers all options of augmentation before implementing project. Criteria that are used in these analysis include risk, reliability and most importantly financial viability. Umgeni Water has to consider these variables when implementing project and foremost on this list is the lowest cost of water to the end user. Desalination, as a technology has improved in financial viability over the past few decades and is now a viable option for the augmentation of water resources. There are other options available for supply to the area, including the uMkhomazi Water Project, although these have their own challenges (the uMkhomazi Water Project is now likely to cost R28 billion). If the uMkhomazi Water Project cannot be constructed to mitigate the risk of non-supply to eThekwini and the North Coast then this desalination plant would be the next most viable option. The cost of water from the desalination plant, if sold at the fence (i.e. costs would be borne by users of the desalinated water only), would be approximately R15 per cubic meter. Umgeni Water, however, essentially has a single tariff across its entire supply area and the capital and operating costs of any one plant or project are therefore borne by all consumers. As a result, the impact on the tariff is likely to be approximately R1 per cubic metre although this would not be a step increase as CAPEX is already budgeted within Umgeni Water's tariff. This must, however, be placed in context. All the close and cheap water resource options are already fully utilised. The alternatives to desalination are also expensive. The tariff increase on

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	LaMRAG submits that the neither the applicant nor the EAP has proved that the costs of desalination will be the most economical alternative to meet the present or future water demands of the region. • There are environmental challenges that are immense in this zone. The harm will impact the terrestrial and marine ecology, the dunes, the fishing economy, the agricultural economy, the real estate development, the visual impact, the noise pollution, the heritage considerations which are less direct. The industrialization of this zone will negatively impact its tourism and recreational development potential. • The energy requirements have not been studied. The application is flawed without such an important investigation. In our view the energy which will come from electricity generated with coal power cannot be justified when South Africa is obliged to reduce its emissions to comply with its climate change obligations. LaMRAG is of the view that with those seized with the function of water quality, allocation and distribution have not undertaken these responsibilities with due diligence. This view is confirmed by scientist and water expert Dr. Anthony Turton: "The microcystin levels found in a number of major dams – including Hartbeespoort, Hazelmere,			water as a result of the uMkhomazi Water Project would be approximately R3 per cubic meter (if implemented as a step tariff increase). Umgeni Water supports the theory of Recycle, Re-use and Reduce, however, as a bulk water provider to the municipalities we have to consider supply at an assurance level that will allow for future growth in demand and at present those options will, either not mitigate the future needs, or are not viable options for Umgeni Water to implement. *From CSIR*: Thank you for your inputs. The scope of work of this EIA is to assess environmental and social impacts associated with the proposed construction and operation of a desalination plant at Tongaat and does not include the assessment of alternative water supply options. These issues are valid as part of integrated water planning and management, and part of a wider socio-political and planning process that is outside the purpose of the EIA. As such, the assessment of alternative water supply as well as public awareness regarding water saving measures fall beyond the scope of work of this study. Please also refer to response to Issue 1.8. - From Umgeni Water: "*As a bulk water provider Umgeni Water has to consider all options for future bulk water supply. These include waste water reuse as well as traditional run of river storage systems and water treatment plants. eThekwini Municipality owns and operates the large scale waste water plants in and around Durban. Approximately five years ago*

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	Midmar and the Vaal Dam – are amongst the highest ever measured in the world." "Microcystin toxin levels become a concern in developed countries at far below the levels commonly found in South Africa." "Moreover, nothing is being done here to remove the toxin. There are only two known technologies capable of neutralising microcystin, and neither is in mainstream use in any of the country's bulk potable water treatment plants." "Worse still, no one knows whether these technologies can in fact neutralise microcystin at the concentrations found in South Africa. In this regard, we are truly flying blind." Instead of dealing with these difficult issues, the Government is under-reporting the extent of eutrophication. Official reports suggest that only 5% of the national water resource is at risk, but a recent study by the Council for Scientific and Industrial Research (CSIR) has found that at least two thirds of South Africa's largest dams are already eutrophic. The more eutrophication proceeds, the more the 38 billion cubic metres of water in our dams are likely to become unusable… says Turton. LaMRAG wants to emphasis the point that all the alternatives that are not harmful to the environment must be explored thoroughly before desalination by SWRO technology is even			*eThekwini undertook a feasibility study to treat waste water to potable standards so that this could be injected into the system, however, due to public resistance and the stigma that is attached to waste water reuse, it was not possible to pursue this option further. Other alternatives for supplying the area with water are being considered by Umgeni Water, the most preferred option being the uMkhomazi Water Project. However, if these options cannot be implemented due to a fatal flaw (such as with the reuse) then Umgeni Water must have an alternative to ensure that water can be provided to the citizens of the North Coast. Desalination is the option that is being considered for this purpose. Umgeni Water has a very comprehensive Infrastructure Master Plan which is available on the website www.umgeni.co.za and all bulk water supply options and future plans are presented in this document*." Please refer to response to issue 10.60 with regards to Energy requirements.

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	considered by the national water authority. Umgeni water should not have been allowed to investigate desalination before engaging all concerned sectors. Water is a national resource and must benefit all communities. The Department of Environmental Affairs is now urged to step into the breach and prevent this travesty of justice from taking place. We respectfully request that the application be rejected as it has no merit and is does not prove that desalination by SWRO technology is an environmentally sustainable development. We attach again our full response to the final EIR that EAP has not commented onto the full extent required. La Mercy Residents' Action Group (LaMRAG) objects to the construction and operation of the desalination plant in La Mercy.			
10.64	Page 7 – Introductory: Misrepresentation of Need. No drought at time the proposal commenced. No water restrictions anywhere in the UW supply area until 2015. No restrictions in eThekwini area until April 2016 when drought intensified. The Hazelmere was allowed to fall into disrepair for several years and water quality was deteriorating from 2010. The need was created by failure to invest in the maintenance of Hazelmere Dam. Misrepresentation that Desal at Tongaat would be much cheaper and be quickly constructed compared	6/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Refer to Final EIA report Chapter 1 Section 1.5 Needs and Desirability where the need for the project is clearly described and not directly linked to the current state of drought. Refer to responses to issues 10.6, 10.16, 10.18 and 10.48 *From Umgeni Water*: The statement relating to Hazelmere Dam falling into disrepair is complete conjecture and has no basis. The statement that Desalination would be cheaper than the uMkhomazi Water Project also has no basis. The projects are completely different in their make-up. The uMkhomazi Water project will cost approximately R19

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	with the Smithfield option. No proper cost benefit analysis was carried out.			billion whilst the Desalination project will cost approximately R4.5 billion. The effects of both of these projects, on Umgeni Waters Tariff has been modelled. **However**, the basis of which project will be implemented is not being made on price. Umgeni Water will have to augment supply on the North Coast if growth in demand is not to be curtailed. As mentioned to LaMRAG many times, the uMkhomazi Water Project is Umgeni Waters preferred project to implement as it will ultimately provide 600Ml/d to eThekwini and surrounding areas. This is also the preferred option by the Department of Water and Sanitation as documented in their reconciliation strategy study. However, if the uMkhomazi Water project cannot be implemented (for environmental or financial reasons) then Umgeni Water has to have an alternative long term supply option for the North Coast and this would be Desalination.
10.65	Page 25 – Introduction: Incorrect that there is substantial economic or population growth that justifies the need for a desalination plant in the La Mercy/Desainagar area. The only area that has grown commercially is about 20km away in Ballito in ILembe Municipality. The water usage in La Mercy is minute compared to Ballito. UW is failing to supply Ballito because Hazelmere which is their source of water was allowed to fall into disrepair and the failure to complete the dam raising project before the drought set in. A desalination plant in La mercy will be devastating for all but will drought proof a handful of	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Refer to response to issue 9.36. Also refer to response to Issue 10.64 above. *From Umgeni Water*: The Desalination Plant is planned as a augmentation to serve growth in water demand in eThekwini and iLembe. This plant would support the need for water from Cornubia to the Dube Tradeport development zone and further to the southern portions of iLembe. Approximately half of the water would be provided to the northern areas of eThekwini and the other half to iLembe. This scheme was never conceptualised to only supply La Mercy and is rather an option for supply to a far greater regional area. The ultimate capacity of the plant is 150Ml/d and this would serve

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	commercial interests in an affluent community which will not tolerate desalination in its stretch of beach. We have it on good authority that La Mercy beach and environment is being unnecessarily sacrificed to accommodate the commercial interests of Ballito an affluent coastal resort town that has no interest in La Mercy which is located outside the iLembe municipality.			between 150 000 and 200 000 households from low income to up market residential areas. The graph on how water demands are expected to grow is shown in the report and it is clear from this graph that a substantial augmentation option is required to provide the needs for the area. Raising Hazelmere Dam Wall has only added 20Ml/d of assured yield to the system.
10.66	Page 16 – Introductory: This evaluation is clearly highly qualified. The SWRO facility is only a contingency plan of UW, the bulk water provider, to document the plan and action it is duty bound to present for sufficient water to be available to meet demand of its clients. In other words the primary reason for this whole EIA process is politically motivated: UW not wanting to be perceived as failing to have a plan in place to ensure that it executes its mandate and not wanting to be seen as a failed SOE like ESKOM. LaMRAG makes this statement on good authority having had a number of one on ones with UW representatives.	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Refer to response to Issue 10.16 *From Umgeni Water:* LaMRAG are correct in the fact that Umgeni Water is required to have a plan in place to serve water to its customers in the long term. The plan in this instance is to either develop the uMkhomazi Water Project or to develop this Desalination Plant. One of these options will have to be constructed to ensure long term water supply to the areas. Umgeni Water develops their plans for implementation and not to simply satisfy some administration requirement. LaMRAG is completely incorrect in its assumption of the requirement for this planning process.
10.67	Page 36: The IDP of eThekwini (La Mercy included) does not include a plan for any type of desalination in the north coast. The IDP identifies this area as residential. There is a critical shortage of housing in this area. There are thousands of people living in informal settlements in the La Mercy/Desainagar/Seatides coastal zone who need access to water and sanitation at low cost. These	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR*: Responses to Questions in Table 1-3 of the Introduction chapter state the following: "*in the IDP (2014/15) of the eThekwini Municipality identifies the provision of adequate water supply as one of the key development challenges in the Municipality, thus indicating that the proposed desalination development is well within the scope of the IDP.*" The report does not state that the IDP of eThekwini include a plan for any type of desalination in the north coast.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	impoverished communities will not be able to afford a new source of expensive water. The priority of eThekwini is housing and sanitation for the informal settlements. Desalination may be within the scope of the IDP but not part of the plan. eThekwini has not until last month imposed any water restrictions in the whole area, except in La Mercy which is served by Hazelmere Dam which owing to mismanagement aggravated by drought is unable to deliver full capacity. La Mercy which uses the least water will be easily supplied by other reserves in eThekwini. The Desalinated water is mainly for Ballito in ILembe municipality not eThekwini. Ballito is disinterested in the concerns of La Mercy and Tongaat generally although many of the workers serving Ballito are housed in informal settlements around Tongaat. It is in fact irresponsible for an EAP to disregard all the highly damaging effects of industrialising this area on the basis that it can make an argument in favour of desalination when desalination does not even feature in the eThekwini IDP.			The Economic specialist study further elaborates on the compatibility of the proposed project with economic development and spatial planning (Please refer to Chapter 12 - Section 12.5.1.2). *From Umgeni Water*: The desalination project will supply approximately 75Ml/d north to Ilembe District Municipality and 75Ml/d south into eThekwini. This water will be for residential, industrial and commercial use and will be billed to consumers at Umgeni Waters Tariff and not at a ring fenced desalination cost. LaMRAG are incorrect in their statement of supply areas and beneficiaries.
10.68	Page 114: Comparison with large desalination plants around the world show that in subtropical climates with rainfall over 500mm per annum are extremely rare if they exist at all. The reasons are obvious; the main one being the need to shut down the supply of desalinated water during rains, yet the machinery cannot be turned off. The wastage is immense. Even	06/10/2016 & 13/06/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, email	*From CSIR:* Please refer to Chapter 1 Section 1.5. *From Umgeni Water*: Reverse Osmosis desalination plants can and do operate in any kind of weather. Large Scale Desalination Plants have been constructed in many countries around the world (both Arid and Temperate). There are desalination plants that have been constructed in the past as a drought mitigation measure and once normal rainfall returns then the plant is no longer operated with the

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	in arid regions as in California and Australia, desalination plants are not operational most of the year. Locally Mossel Bay is an example where the plant is not in use.			water provider favouring traditional sources of water with lower operating costs. This desalination plant will not be constructed to mitigate the current drought but as a long term supply option similar to the plants in Perth, Australia which operate continuously all year round. The Mossel Bay plant was developed to mitigate an extreme drought and to supply an industrial facility during this drought. The circumstances relating to the development of this project are different to that of the East Coast Desalination Plant at Tongaat. The desalination plant at Tongaat would be developed for medium and long term continuous augmentation and supply to consumers and not simply as a drought alleviation measure.
10.69	<u>Environmental Impact</u> This chapter consists of a series of extracts of documents from various expert sources which collectively and emphatically illustrate the points LaMRAG takes issue with against the proposal by the applicant to build and operate a SWRO desalination facility in La Mercy. We fully acknowledge the sources next to the extracts and generally in the endnotes. In view of the time and resource constraints we have not yet had the opportunity to engage with	06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	The various extracts of documents shared by LAMRAG have been acknowledged and consulted.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	more local expertise on the various aspects of this presentation: which will undoubtedly and persuasively demonstrate that the east coast of Durban is not a suitable location for a desalination facility at this or any other time in the future. Please refer to Annex A for the various extracts of documents shared by LAMRAG			
10.70	Lack of information on Financing of proposed desalination plant. <u>*The Economics and Financing*</u> The cost of the water produced and the financing of the project are key factors that will impact on the success of Desalination. The construction of a desalination plant is expensive and requires considerable up-front capital investment. To cover these costs, project developers often rely heavily on debt financing, which involves borrowing money from a lender with the intent of repaying the principal of that debt and interest. LaMRAG has consistently emphasised the point that the EIA process thus far failed to show how this desalination project will be financed. Financing of SOE projects in South Africa has attracted much controversy in the recent past. At this time there is	13/06/2016 & 06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	<u>*From CSIR*</u>: Refer to Final EIA report Chapter 1 Section 1.5.1. This issue has also been discussed in depth during the public meetings. <u>*From Umgeni Water*</u>: Umgeni Water currently has a CAPEX which exceeds R5 billion. The organisation implements large scale projects and funds them off balance sheet or through the raising of capital loans. This project would be no different to any other CAPEX project which Umgeni Water were to implement. There are two options for funding the project. Either Umgeni Water would raise the capital needed for the project itself and fund the contract or enter into a Public Private Partnership with an external contracting company (who would provide the capital funding and construct the plant) and then enter into a tariff agreement with the PPP enterprise. This was all mentioned in the public meetings that were held. Umgeni Water will decide on the institutional arrangement when / if the project goes to construction. Umgeni Water has a very competent finance department to manage its finances and prepare budgets. Extensive

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	no concrete plan to fund this facility. This is probably because UW has little confidence in this application's success. If the application were to be granted the funding and costs issue would be the first hurdle to get past and UW will be found wanting with regard to an approved comprehensive cost account plan. Reference made to Heather Cooley and Newsha Ajami of the Pacific Institute for Water Program in *Key Issues for sea water desalination in California.*			financial planning of the scheme has been undertaken with impacts on tariffs and expected debt repayments being determined.
10.71	Concern of demand risk leading to reduced viability and failure of the facility The Draft EIA has completely ignored this concern of demand risk and how developers in the quest to keep unit costs low make projects larger than necessary thus in terms of demand risk contributes to the reduced viability and failure of the facility. Reference made to *Key Issues for sea water desalination in California* (Heather Cooley and Newsha Ajami of the Pacific Institute for Water Program).	13/06/2016 & 06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	*From CSIR*: Refer to Final EIA report Chapter 1 Section 1.5. *From Umgeni Water*: Umgeni Water has a very competent and capable planning services division which undertakes demand forecasts for all areas supplied by Umgeni Water. The proposed desalination plant is to be constructed to meet the future need for water of the North Coast area. The Australian example cannot be extrapolated to this plant. Most of the plants built in Australia were done so to mitigate a drought and these plants were not constructed for continuous long term supply but merely as an assurance option. The Perth Plants were constructed for continuous supply to meet future demands and these plants are operated continuously. This proposal is for a desalination plant which would run continuously to supply the region's future demand. If this plant were constructed then it would be in place of alternatives and hence there would not be an additional

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				option for supply and the existing supply schemes will not have the capacity to supply the future needs.
10.72	Capital and Operation and Maintenance Costs Two most expensive commodities are the cost of financing the capital and the cost of energy. Supply of electricity by Eskom and cost of electricity Reference made to *Key Issues for sea water desalination in California* Energy and Greenhouse Gas Emissions (Heather Cooley and Newsha Ajami of the Pacific Institute for Water Program). Unit costs are also highly variable among projects. Variability among desalination projects is driven by a range of site- and project-specific factors. Land prices and labour costs, for example, can vary considerably among projects. Likewise, energy prices can have a major impact on the project cost. In fact the two most expensive commodities are the cost of financing the capital and the cost of energy. LaMRAG has repeatedly expressed our concern about the overall costs of this development but most especially about the energy component which is apart from financing the single largest cost factor. It is common knowledge in our municipality as in	13/06/2016 & 06/10/2016	B Rawheath, Adviser, La Mercy Residents' Action Group, La Mercy, Email and Letter	*From CSIR*: Refer to Final EIA report Chapter 1 Section 1.5.1. Please refer to responses to issues 4.4, 4.7, 4.8, 10.24 A presentation on the estimated escalation of water costs was given at each of the public meetings and was loaded on the public website for the proposed project https://www.csir.co.za/eia-report-tongaat-part. This has also been assessed as part of the economic specialist study - please refer to Final EIA report Chapter 12 Section 12.5.3. *From Umgeni Water*: Umgeni Water has communicated with eThekwini and have been able to confirm that the future electrical demand can be accommodated. It must also be noted that the plant will required approximately 30MW of electricity to operate at full capacity. This is equivalent to other processing industries. If compared to the total electrical requirement of Eskom it is considered marginal. Umgeni Water has considered the risk of non-supply of electricity by either the Municipality or Eskom, however, with the current infrastructure that is being planned by both organisations the risk is not considered great. The desalination plant will use approximately 4kwh of electricity to produce one kilolitre of water. This is the equivalent to the amount of electricity required to power an old fridge and is not significant when compared to the total electrical requirement of a household (assuming 1kl per day water use per household). The total operating cost for the plant would be between R350 and R400 million per annum of which the electrical

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	other metropolitan areas that costs of electricity are prohibitive. Eskom has experienced crisis after crisis in falling short in meeting energy demands of the cities. UW, the EAP and eThekwini are not realistic in their expectation that that Eskom will be ready and able to supply the demand to develop and operate this facility. After all the non – committal attitude of eThekwini could not have inspired confidence enough for the applicant to propose this development with the knowledge that electricity supply could be a deal breaker.			component would make up approximately R210 million per annum. This operating cost has been included in the financial evaluation of the project to determine its viability. The economic viability and expected cost of water / tariff impact is calculated using the full repayment of capital and operating cost for the project over a twenty year period.

11. Health and Safety issues, Transport

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
11.1	Environmental Health Department. The Health comments made in response to the Background Information Document and the Draft Scoping Report have been included in the present report. The following additional comments are submitted: 7.1 Water quality. Please include the SANS guidelines 241-1 and 2-2011 under the National and International Guidelines heading in Chapter 4 page 4-13.	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	*Noted*. Water quality guidelines have been included in Chapter 2.
11.2	Chemicals need to be stored at the plant. Hazardous to us living in the area. Pollution emitted by the plant.	29/05/2015	Marlene Naidoo, Email	In general, the desalination plant does not use chemicals that are highly volatile and can generate unpleasant odours. The chemicals that will be used are widely used for water treatment in conventional water treatment times and are stored in tanks with containment

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
				around them designed to retain 110 % of the total tank content. Sodium hypochlorite (bleach) in liquid solution could cause odours emissions of chlorine in the case of major spill or delivery accident. Handling and application of this and other chemicals is such that they do not cause odours under normal operational conditions. Therefore there will be no release of emissions/corrosive agents to the atmosphere and hence air quality study has been deemed unnecessary. Refer to Chapter 2, Section 2.4.5.4 for further details on Chemical management.
11.3	Disaster Management – No objection from Disaster management	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	*Noted*.
11.4	Fire safety. This department has no objections to the above proposal provided that building plans are submitted for approval.	17/06/2015	Diane Van Rensburg, eThekwini Municipality, Letter	*Noted*.
11.5	The use of chemicals is not properly studied and should be done in a proper EIA report. Antifoaming agents to reduce foaming in distillation plants, antifoaming agents like polyglycols are added to the feed water, which are poorly biodegradable. In Reverse Osmosis plants, alkaline cleaning solutions (pH 11-12) are used for removal of silt deposits and	09/05/2016	Desmond D'SA, SDCEA, Email	*From CSIR*: Please refer to Chapter 2 Section 2.4.5.4 for details on chemicals use, management and storage. Bulk chemicals will be stored close to the point of use for each chemical in appropriately designed housing with easy truck access. The liquid chemical bulk storage facilities will be enclosed in a suitable chemical resistant bunded structure and protected from direct sunlight. In some instances splash and spray protection shields will be provided with

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	biofilms, whereas acidified solutions (pH 2-3) remove metal oxides and scales. The affordability to ensure standards of high quality not properly done and should be comprehensively studied. We place on record our concerns that the pipeline desalination plant itself will provide numerous hazards to children surrounding community as well as beach goers. These risks include information of pipeline rapture consequently negatively impact on crops, animals, ecosystems and a desalination plant working 24 hour high levels of noise above required decibel impact on ear drums and quality of life. We requested a thorough independent investigation done by the experts of the community choice so we can have facts and evidence to make informed decisions; so we do not allow risk and hazards of desalination plants of this nature development in our residential areas. Health studies done around the world have shown these desalination plants have serious impacts on people. We know there has been a lack of transparency, information, presentations and openness in these processes which EIR demands			safety showers and adequate ventilation and neutralisation facilities. A chemical storage area will be constructed at the proposed desalination plant in order to house all chemical storage tanks and their service facilities (motor control centre, pumps, instrumentation and controls, etc.). All chemical tanks and chemical storage areas would be provided with containment provisions in accordance with the applicable codes and regulations (i.e. at least 110 % of the tank volume). As such, major impacts associated with the storage of these chemicals are not anticipated. In addition, the volume of chemicals that will be kept on site at any given time is not particularly large in terms of the storage of chemicals for industrial purposes. Recommendations for the storage of dangerous goods and chemicals are provided in the EMPr (Part B of this Final EIA Report), including the development and implementation of a procedure to deal with potential chemical spills. All staff will be trained accordingly. No air emissions are anticipated from the proposed desalination plant. Potential noise impacts associated with the proposed development on surrounding communities have been assessed as part of the Noise specialist study (Refer to Chapter 9 for more details). The study concluded that the proposed Tongaat Desalination Plant noise impact on receptors is predicted to be of low and very low significance during the construction and operational phases respectively, provided the recommendations for mitigating noise impacts are applied effectively. This EIA was undertaken by an independent EAP and independent specialists, in a fully transparent manner.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
11.6	In case of an incident, storage of toxic and volatile chemicals on plant site increases hazard risk to adjacent residents.	09/05/2016	Damir Percaic, Private, Email	*From CSIR:* Please refer to response to issue 11.5 above.
11.7	Environmental Health Department - The concerns raised by this Department have been addressed, no further comment. eThekwini Transport Authority - No objection Disaster Management - No concerns from Disaster Management. Fire Safety - This Department has no objections to the above proposal provided that building plans are submitted for approval.	09/05/2016	Diane Van Rensburg, eThekwini Municipality, Letter	*From CSIR:* Noted.
Comments on Final EIA Report				
11.8	**eThekwini Transport Authority** – No objection to the proposed construction, operation and decommissioning of a sea water reverse osmosis plant and infrastructure proposed at Tongaat.	11/08/2016	Claire Norton, eThekwini Municipality, email	Noted
11.9	What we require is the distances from the National road reserve boundary at every bend point in the pipeline where it runs parallel to the National Road Reserve. We still require a wayleave form to be filled in and signed by the service owner unless the pipeline is laid further than 60 metres away from the National road reserve of the N2. 60 metres from road reserve is our building restriction area in terms of	29/7/2016	Regional Manager, Eastern Region, SA National Roads Agency SOC Ltd, email	*From CSIR*: Noted. A wayleave form will be completed and signed by the service owner if and where necessary. Technical details (such as length of the pipeline along National road), drawings and applications will be communicated to the National Road Agency once the detailed engineering design has been finalised.

NO	ISSUES RAISED	DATE	COMMENTATOR	RESPONSE
	Act, Act 7 of 1998. Anything within this area is approved with a removal clause. In other words the service owner has to remove it at their cost if this is ever required in future. We are only interested in where the pipeline crosses the National Road and where it runs parallel to the National Road. Where it runs next to the dirt road (district road), this falls under the jurisdiction of the Provincial Department of Transport. We also require you to indicate the kilometre distance from the start and end point along the National Road where the pipeline runs parallel to our road reserve. This must be indicated on the drawing and recorded on the wayleave form. Two copies of each drawing including a cross-section of where the pipeline will cross the National Road in a sleeve using the pipe jack method. Application must be made to this office for the crossings of the National Road and pipeline running parallel if this is proposed within 60 metres of our road reserve. The depth from the top of the sleeve to the road surface must be at least 2 metres. No access manholes are allowed within the road reserve and isolation vales must be installed to be able to isolate the portion where the pipeline runs under the National Road.			

ANNEX A

"Desalination Desalination An Ocean of Problems"[3]

Food & Water Watch www.foodandwaterwatch.org.

"Desalination of the sea is not the answer to our water problems. It is survival technology, a life support system, an admission of the extent of our failure." – John Archer

Barlow, Maude. *Blue Covenant: The Global Water Crisis and the Coming Battle for the Right to Water.* New York: The New Press, 2007. p.28.

"As local, state and federal governments in the United States increasingly fear drought and water shortages, private corporations are marketing ocean desalination as the solution. They promise that reverse osmosis technology can turn the ocean into a reliable source of drinking water by removing the salt from seawater. While they offer their product for two to four times the cost of other water sources, they fail to advertise the toxic chemicals, marine life damage, carbon emissions and other social and environmental ills that come along with it. Food & Water Watch investigated the current state of desalination technology and concluded that the large financial, social and environmental costs of ocean desalination technology far outweigh the small potential benefits — especially when compared to other alternatives. When evaluating desalination as a water supply option, policymakers should choose cheaper, safer options such as implementing conservation measures. These programs will not return a profit for private corporations, but they will preserve and protect our nation's freshwater and ocean resources for future generations." (pg. iv)
"As one scholar pointed out, "reverse osmosis plants are a good option for affluent coastal communities where people have expensive homes and paying $100 a month for water is not that big a deal."32 Realizing these costs, the town of Seabrook, New Hampshire decided that it could not afford a hike from $2.80 a gallon to $8.00 per gallon for desalinated water.33 *The costs of desalination are still "quite high when compared with the costs of alternatives in most locales." – The National Research Council*

Ocean desalination damages marine life

Ocean desalination plants can wreak havoc on marine life and commercial fisheries. Many proposed coastal plants rely on power plants to pull in ocean water. These power plants use out-dated "once-through cooling water intake structures" that cool the plants by pulling in large quantities of seawater. Desalination plants located next to these facilities take a portion of the outgoing water from these systems for their water supply.

The problem here is that these structures suck in a lot more than seawater — they also bring marine life that dies in the machinery. According to EPA, these intake structures kill at least 3.4 billion fish and other organisms annually. Larger organisms are trapped against the intake screens, and smaller ones, such as fish eggs and larvae, are drawn through the intake screens and destroyed in the cooling system. As a result, fishermen lose at least 165 million pounds of fish today and 717.1 million pounds of potential future catch. This is equivalent to a $212.5 million economic loss to anglers and commercial fishermen.

California's power plant intake structures alone are responsiblefor the destruction of at least 312.9 million organisms each year, resulting in the lost catch of at least 28.9 million pounds of fish and 43.6 million pounds of potential future catch. This amounts to a $13.6 million loss to fishermen.

Ocean desalination pollutes[4]

A large amount of the water that exits desalination plants is concentrated waste rather than drinking water. This is because reverse osmosis cannot separate salt from all the water that enters the plant. Depending on the equipment, reverse osmosis desalination membranes can reclaim 60 percent to 85 percent of brackish water and only 35 percent to 60 percent of ocean water. For example, the proposed plant in Carlsbad, California, will desalinate only half of the water that enters the plant.

The significant portion of remaining water contains the salts and other dissolved solids from source water, but at dangerous concentrations two to 10 times higher than the original waterIn addition, it contains some or all of the scale inhibitors, acids, coagulants, ferric chloride, flocculents, cationic polymer, chlorines, bisulfites and hydrogen peroxides used to treat the feed water and clean the membranes, along with heavy metals from contact with plant machinery. There is simply nowhere to put this liquid waste that does not pose a danger to our water systems. Most coastal plants dump their waste directly into the ocean, increasing the salinity and temperature and decreasing the water quality in the surrounding ecosystem. Proponents argue that by dumping the toxic chemicals into a very large body of water, they will spread out and become less dangerous. While this may be true of some substances, such as salt, others, such as heavy metals, remain just as dangerous after dilution.

Further, when concentrated waste is dumped directly into the ocean, it may have localized impacts, such as killing marine organisms or displacing them from their natural habitat. This raises particular problems when the affected marine life communities are rare or of special interest. The second most common disposal method for desalinated waste is not appropriate for seawater desalination. This method involves transporting the wastes to a nearby sewage treatment plant. However, seawater waste is more concentrated than waste from brackish plants. It can overload the treatment system and prohibit reuse of the wastewater because standard treatments cannot remove contaminants from the seawater waste. Other less common disposal methods include injecting waste into wells, leaving it in open ponds to evaporate or spraying it on crops — all of which run the risk of having it leak into clean groundwater. Only one method — called Zero Liquid Discharge — does not have a liquid byproduct, but it is so expensive and energy intensive that it is not a realistic option for any existing plant.

Ocean Desalination Threatens Coastal Resources

In addition to coastal pollution, desalination can contribute to unwise coastal over-development. One drawback to this is that industrial plants along the coast can impair views and interfere with the recreational use of seawater.

Ocean Desalination Threatens Public Health

Environmental damage is not the only danger from ocean desalination. Desalted water also puts the drinking water supply at risk because both seawater and brackish water can contain chemicals that freshwater does not. These contaminants include chemicals such as endocrine disruptors, pharmaceuticals, personal care products and toxins from marine algae. Some of these contaminants may not be adequately removed in the reverse osmosis process. Boron is a chemical of particular concern because much

higher levels are found in seawater than freshwater. However, membranes can remove only between 50 and 70 percent of this element. The rest is concentrated in the product water, which enters the drinking water systemWhile it is possible to remove more boron with a second process, existing plants don't because it is too costly
This is a major problem for the drinking water system because boron is known to cause reproductive and developmental problems in experimental animals and irritation of the human digestive tract. Moreover, the world's largest ocean desalination plant in Ashkelon, Israel found that the boron in the desalted water acted as an herbicide when applied to crops.89 Current drinking water regulations do not protect the public from boron. Recently, EPA made the preliminary determination that it would not regulate the element as a primary contaminant under the Safe Drinking Water Act because of its low occurrence in traditional sources of drinking water.90However, the studies that EPA used to make this decision did not take into account the hike in boron levels that would occur if desalted water was to be added to the system.

Ocean Desalination Promotes Social and Environmental Injustice

Unfortunately, the costs of desalination get passed down to the consumer. For example, the California American Water Company demanded an up-front rate increase to construct its proposed plant in Monterey, California, before it ever produced a drop of water. Across the country, in Brockton, Massachusetts, ratepayers expected to see an estimated 30 percent hike in their water rates once the city started buying desalinated river water. In 2008, the city council voted for a 60 percent increase in rates before the plant even came online. Such price hikes are not just a problem for individuals, but also for society. **Water is a basic human need that must be available to all citizens, and most communities cannot afford to pay exorbitant prices for the desalted water. This means that ocean desalination contributes to social injustice, because the costs of rate hikes fall disproportionately on low-income communities. To add insult to injury, the people in these communities tend to be the same people who would be most likely to experience the negative effects from the plants. In California, for example, most proposed desalination plants would serve affluent communities in Marin County, the Monterey area, Cambria, southern Orange County and northern San Diego County. However, most of the proposed plants will be built in industrial areas, which tend to house low income. These populations will experience the increased air pollution, noise and traffic that come from the plants. Meanwhile, low-income coastal communities that rely on subsistence fishing may be exposed to high levels of toxins in fish that are exposed to desalination waste products.** (LaMRAG's emphasis)

So What Should We Do Instead?
Alternatives Abound
With all costs considered, ocean desalination is a risky water supply option. This means that while policymakers are dealing with ocean desalination proposals, they are distracted from evaluating and implementing better options. **In fact, emphasis on ocean desalination ignores the fact that the water shortages in our country are not due to a lack of natural water resources, but rather to shortsighted water policy that focuses on finding new water resources instead of managing existing resources wisely.** (LaMRAG's emphasis)

Further, our country loses 6 billion gallons of water per day due to problems such as leaking pipes. Utilities cannot account for this water because many have not implemented comprehensive leak monitoring programs.104 Meanwhile, all of the desalination plants in the United States today operating at their full capacity could only produce a quarter of that unaccounted for water.* **Numerous academic studies show that management alternatives and efficiency programs offer great potential for alleviating water supply problems at a much lower cost and without the dangers associated with large scale reverse osmosis plants. According to the National Research Council report on desalination, simply redistributing water can be much cheaper than desalination and more efficient.** (LaMRAG's emphasis)
The proposed Massachusetts Conservation Standards agree.
They state that "finding new water by investing in efficiency and demand management is almost always more cost-effective than developing a new source." Likewise, a World Bank official told the World Wildlife Fund that "saving water rather than the development of new sources is often the best 'next' source of water both from an economic andfrom an environmental point of view." Peter Gleick and Gary Wolff of the Pacific Institute, a non-profit research group, refer to such methods as the "soft path" for water, which "strives to improve the overall productivity of water use rather than seek endless sources of new supply." These techniques include focusing on water needs rather than supplies, decentralizing water systems, including community groups in decision making and maintaining ecosystem health.
The Pacific Institute has conducted many studies showing that numerous areas considering desalination could use conservation programs to provide their water needs instead. California could save a full third of its current water use, 85 percent of which could be saved at costs lower than new sources of water. Similarly, a thorough review of Atlanta's water conservation plan concluded that the program left "significant untapped potential," while still providing for population growth and economic development.

111 Meanwhile, the EPA provides many case studies of successful efficiency programs in many states considering desalination, including Massachusetts and California.
In fact, a few policymakers who have attempted to implement ocean desalination have found that, after all the expense, other options were more appropriate. For example, in 1991, Santa Barbara and the Montecito and Goleta Water Districts constructed a $34 million plant during a drought. However, the drought ended before it came online, and the city found that conservation measures implemented during the drought were successful in reducing demand. The plant is no longer in operation (LaMRAG emphasis)
In Tampa Bay, where water authorities created the largest ocean desalination plant in the country to avoid shortages, other options were actually more effective. While the desalination plant experienced technical and bureaucratic failures, Tampa Bay Water built a new reservoir and treatment plant, and implemented conservation programs. In this time, groundwater pumping decreased from 192 million to 121 million gallons per day, despite increased population. This meant savings of 71 million gallons a day — almost three times as much as the 25 million gallons a day that the desalination plant was supposed to produce.

Conclusion
Ocean desalination is not a safe or affordable drinking water option. Water from these plants costs far more than other water supply options, which means rate hikes that fall disproportionately on the very citizens who can least afford them. Meanwhile, the associated water pollution, chemical contaminants, marine life destruction, global warming and privatization could cause irreparable damage to our remaining clean water resources and public drinking water systems. While private speculators are trying to push desalination plants across the country, local citizens have made some gains in persuading decision-makers to abandon or reshape proposals to match local priorities. For example, the City of Los Angeles's 20-year water supply plan now relies on water reuse and conservation and does not include ocean desalination. In the Monterey Bay area of California, a stakeholder process put ocean desalination at the bottom of a list of priorities for water supply. Local communities have formed groups like the Residents for Responsible Desal in Huntington Beach, California and the statewide Desal Response Group to collect information on alternatives and weigh in on the regulatory process.

Despite the efforts of corporations like Poseidon which are lobbying hard and spending millions of dollars to get their desalination projects approved, citizens are slowly working to convince decision-makers that ocean desalination is an unwise choice. A lot of work remains, however. No community should consider desalination until all conservation options are fully evaluated and implemented. Meanwhile, federal, state and local governments should implement aggressive water conservation policies. It is imperative that the government takes this step, because private industry will not. For the companies that sell water, conservation is simply not profitable because it reduces revenues. In terms of the public good, however, such programs are extremely profitable because they protect our nation's public water systems and thereby ensure future access to clean water.

Recommendations:

- Citizens should encourage state, local and federal policymakers to abandon ocean desalination as a supply option and should instead implement comprehensive conservation measures. If ocean desalination is the best option, the plants should be publicly owned.
- Federal and state governments should not be subsidizing this technology. As a "growth sector," private companies have more than enough means to support their own research and development.
- New federal and state laws are needed to protect consumers, public health and coastal environments from ocean desalination

37% of our drinkable water is being lost, needlessly[5]

South Africa is losing the equivalent of 4.3 million swimming pools of water a year because of leaky pipes and theft, The Sunday Times reported.

According to the newspaper, a Water Research Commission (WRC) study had indicated that South Africa lost 1.58 billion kilolitres of water a year, or just under 132m k/l a month.

This was enough water to fill a third of the Gariep Dam, the largest in South Africa.

The water loss reportedly cost South Africa around R7.2bn a year.

It is reported that 37% of our clean drinkable water is lost through leaking pipes, dripping taps and infrastructure failures and some analysts say the more realistic figure here is about 50% losses.

A study released by the Department of Water and Sanitation in conjunction with the Water Research Commission estimates that 1.58-billion cubic metres of supplied water is unaccounted for each year. About 36.8% of SA's water is nonrevenue water — which represents the level of water loss from urban supply schemes due to nonpayment of accounts (unbilled metered and unbilled unmetered), illegal offtake and loss and leakage from infrastructure.

Research data from 132 (of 237 municipalities), representing 75% of the total volume of municipal water supply, show that the current level of non-revenue water is estimated at 36.7%, of which 25.4% is considered to be losses through physical leakages.

Gauteng spends between R50m and R100m a year on infrastructure maintenance, but "this is not enough to cover one-third of the cost required for maintenance, let alone refurbishments".

In Etekwini, 237 million litres a day are lost due to illegal water connections, vandalism, and leaks that are not reported on time.

Sewage is a big stink

The decline of water quality due to urban and industrial effluent discharge into river systems, poorly maintained wastewater treatment works, salinity from irrigation return flows, acid mine drainage and inadequate sanitation facilities poses yet another water challenge for our nation.

Currently, South Africa uses 98% of its available water supply, and 40% of all our waste water treatment is in a critical state in terms of infrastructure. Moreover, 60% of the countries water service authorities do not have the right permits to make them compliant for the respective treatment works.

The sources of pollution in fresh water include industrial run-off and acid mine drainage, but human waste is a larger and more immediately dangerous component, ironically because of the large amount of water South Africans use.

"Most waste water treatment facilities are under stress because so much more waste water needs to be treated," said Gunnar Sigge, head of Stellenbosch University's department of food science and one of those involved in a seminal – and alarming – 2012 study for the Water Research Commission.

"Some of the biggest problems [in the water system] are caused by treatment works that aren't functioning."

Jo Barnes, a specialist in community health risks at Stellenbosch, said a chronic lack of investment in treatment plants meant conditions that should not exist, such as diarrhoea, were killing people.

"The whole environment where people live is contaminated. This is a massive, massive problem, but one that people will not talk about. There are just a few angry people trying to raise awareness."

The 2012 study, carried out in all the provinces and over a three-to-four year period, found that the amount of faecal matter in many water systems made it unsafe for irrigation, because eating raw produce watered with it could cause illness.

Institute of Race Relations media release (excerpt from the Liberty report)
South Africa's water shortage is not simply the result of the current drought,3 says water expert Dr Anthony Turton.

"The water shortage is also an 'induced' one," says Turton. "It stems from a lack of strategic planning, a loss of skills to 'transformation', and the fact that poorly functioning waste-water treatment plants are spewing close on 4 billion litres of untreated or partially treated sewage into the country's dams and rivers every day."

These sewage spills are the most serious of the many problems in the water sector. "Just as a small volume of oil destroys the quality of a large volume of water, so a small source of persistent sewage has essentially the same effect."

Sewage discharges are also driving the eutrophication of most major dams. Eutrophic water is characterised by the presence of high levels of nutrients, which in turn promote the growth of cyanobacteria, commonly known as blue-green algae.

One very common species of cyanobacteria produces a potent toxin known as microcystin. This is chemically similar to cobra venom. It is also carcinogenic (cancer-producing) and damages the liver and central nervous system.

Warns Turton: "The microcystin levels found in a number of major dams – including Hartbeespoort, Hazelmere, Midmar and the Vaal Dam – are amongst the highest ever measured in the world.

"Microcystin toxin levels become a concern in developed countries at far below the levels commonly found in South Africa.

"Moreover, nothing is being done here to remove the toxin. There are only two known technologies capable of neutralising microcystin, and neither is in mainstream use in any of the country's bulk potable water treatment plants.

"Worse still, no one knows whether these technologies can in fact neutralise microcystin at the concentrations found in South Africa. In this regard, we are truly flying blind."

Instead of dealing with these difficult issues, the Government is under-reporting the extent of eutrophication. Official reports suggest that only 5% of the national water resource is at risk, but a recent study by the Council for Scientific and Industrial Research (CSIR) has found that at least two thirds of South Africa's largest dams are already eutrophic.

The more eutrophication proceeds, the more the 38 billion cubic metres of water in our dams are likely to become unusable.

"This looming disaster could have been avoided if a rigid concept of transformation had not been allowed to trump the imperative to safeguard public health," says Turton.

5.2 Some people in urban settings get their water from wells.[6]

Delays in issuing water licenses, poor implementation of broader water resource policies, delays in investment in water infrastructure, and erosion of institutional memory in the water sector along with vandalism and theft, and the loss of experienced water engineers and scientists, are some of the contributors to a poor perception of water quality in the country.

"These challenges are like a hole in the bucket one tries to fill up with water, but continues to leak until the tap runs dry," portfolio committee on water and sanitation chairperson Mlungisi Johnson said yesterday.

"Unless the challenges are comprehensively addressed, the improvement of water and sanitation services will remain a pipe dream," he said, speaking in Johannesburg at the release yesterday of the 2015 water services municipal benchmarking report, which surveyed residents of the major metropoles' perceptions of water quality.

The major municipalities did well, with Gauteng, the Western Cape and Limpopo leading the way with perception indexes of "very safe" and "safe", according to research by the Water Research Commission (WRC).

Johannesburg's water quality was voted the best in the country. However, as names move down the list, so does the perception of water quality. Despite above-average findings that people liked the water in their taps, a large proportion of citizens in the Eastern Cape (18%), Mpumalanga (32%) and North West Province (43%) found their water "very unsafe" and "unsafe" to drink.

Overall, the WRC found 42% of respondents thought their water was "very safe", 46% deemed it "safe", 8% regarded it as "unsafe", while 3% felt their drinking water was "very unsafe".

Among respondents nationally, 1% of people living in an urban environment still sourced their water from a river or well.

When taking a closer look at provincial level, 3% of people in Mpumalanga and 8% in KwaZulu-Natal still took water from a river or well. – amandaw@citizen.co.za

[3] Extracted from the work by Maude Barlow *Blue Covenant*: *The Global Water Crisis and the Coming Battle for the Right to Water in the New Press2007* at page 28
[4] Water Research Commission Study by Department of Water and Sanitation South Africa reported in the Sunday Times in March 2016
[5] Report by Amanda Watson in the Citizen on 5 March2015
[6] Report by Amanda Watson in the Citizen on 5 March2015