

**Background Information Document**  
**For the Northern Aqueduct Augmentation Phase 4, KwaZulu-Natal:**

On Behalf Of (Applicant):	By (Environmental Consultants):
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## 1. WHAT IS THIS ABOUT?

This Background Information Document (BID) serves to inform all authorities, stakeholders, and interested and affected parties of the applicant's (EtheKwini Municipality Water and Sanitation) intention to carry out an additional augmentation of the Northern Aqueduct (NAX) in KwaZulu-Natal. The Northern Aqueduct Augmentation (NAA) is a recently authorised 50km long water pipeline which is planned to service the areas from Emachobeni in the Umgeni Valley to Umhlanga, in the North. This new proposal consists of 5km of 1200mm diameter pipeline linking the existing NAX to the newly authorised NAA, in order to bypass a potential bottleneck in water provision to the northern suburbs of Durban in the next five years.

This newly proposed project constitutes a listed activity in terms of the National Environmental Management Act (No. 107 of 1998, revised June 2010) – Regulation No. R 544 (Listing Notice 1, Activities 9, 11, 18 and 37) and Regulation No R 545 (Listing Notice 2, Activity 10), and will therefore have to undergo environmental assessment. Knight Piésold Consulting have been appointed as the independent environmental consultants to apply for the necessary environmental approvals, commencing with a basic assessment report with the potential for conversion into a full Environmental Impact Assessment (EIA) Study. We have been granted authorisation to proceed with a basic assessment, even though a full EIA is triggered (see below\*). The BA report will identify and describe potential issues and impacts the proposed project may have on the surrounding environment. A Basic Assessment and Environmental Management Plan in support of the proposed project will also be submitted to the Department of Agriculture, Environmental Affairs and Rural Development (DAEARD).

The purpose of this BID is to invite you to register your interest in the project, and to provide us with any information regarding specific requirements, guideline documents, legislation or regulations specific to you, your organisation, group, division or department that may need to be considered during our environmental investigations.

## 2. WHAT IS BEING PROPOSED?

ETheKwini Water and Sanitation (EWS) is currently in the process of constructing a new bulk water pipeline from Cato Ridge to Inchanga, Pinetown, Tshelimnyama and Ntuzuma (and surrounds) with gravity-fed potable water (The Western Aqueduct (WA)). The pipeline ties into Umgeni Water's existing bulk water infrastructure beyond the municipal boundary, which receives potable water from the Midmar Dam system. The pipeline currently under construction consists of a steel pipe of varying diameters (1.6m – 0.6m). Construction of Phase 1 of the WA has been completed, but construction of Ph2 of the WA is on hold.

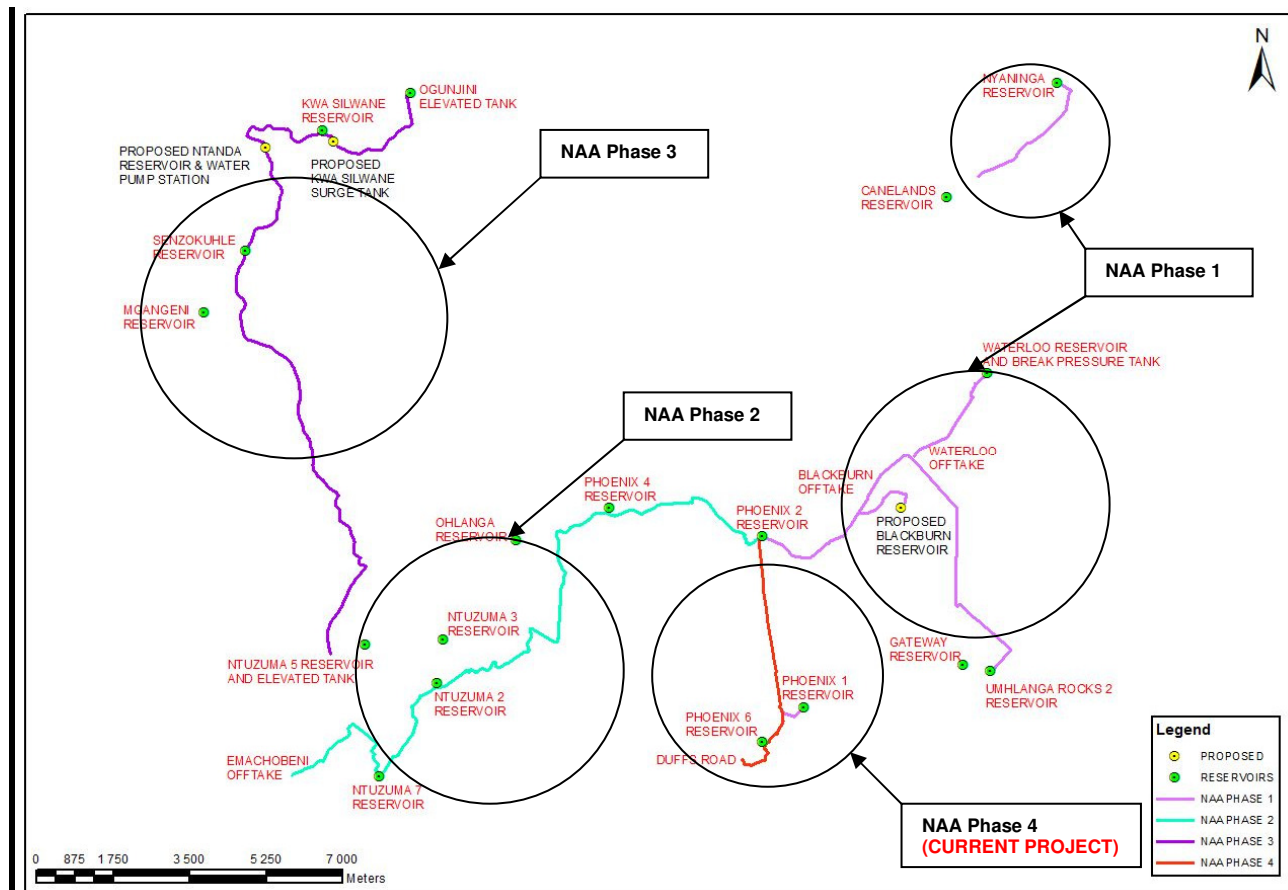
Application was made to the Department of Environmental Affairs, and a positive Record of Decision received, for the NAA which will inject water from the WA into the NAA system via an off-take at KwaDabeka. This will involve the construction of a new bulk water pipeline from Emachobeni to Umhlanga via the proposed Blackburn Reservoir, supplying areas north of the Umgeni River, south of the Ohlanga River and east of Ntuzuma (and surrounds) with gravity-fed potable water. The 50km pipeline recently authorised, will consist of a steel pipe of varying diameters, and will be named the 'Northern Aqueduct Augmentation'.

Phase 4, which is now being proposed, is named NAA Phase 3 by the engineers (for reasons un-necessary to describe here). There is an existing Northern Aqueduct (NAX), which will be augmented by the NAA. Once completed, Phase 1 of the NAA project will provide an important link between the existing NAX and the new developments in the north including Cornubia, Umhlanga, Waterloo and Nyaninga. The NAX however is presently operating very close to its maximum capacity and does not have spare capacity to supply the new developments such as Cornubia. The problem when the new demands are tagged onto the end of the system is the high velocities that will occur in the trunk mains running from Durban Heights to Phoenix 2 Reservoir via Duffs Road. This in turn results in high friction losses and inadequate flow through the system.

The most severe bottleneck in the existing NAX occurs in the section of trunk mains between Duffs Road and Phoenix 2 (linking the NAX to the NAA Phase1). This section of the existing system consists of a 525mm diameter pipe in parallel with a 450mm pipe between Duffs Road and the Phoenix 1 off-take and thereafter, a 450mm pipe in parallel with a 375mm pipe up to Phoenix 2 Reservoir. These pipelines are completely inadequate for the purposes of providing a water supply into the NA Phase 1.

Because the construction of the WA (Phase 2) has been put on hold, an alternative link (NAA Phase 4 (or the Engineers Phase 3) is currently being proposed. This is to provide water from the EXISTING NAX into NAA Phase 1, so that Cornubia and other developments in the north of Durban, can be provided with water within the next 18 months, as the construction of the WA Ph2 will only reach the starting point of the NAA Ph2 (at Emachobeni) in five years time (optimistically).

It is thus proposed that a new 1.2m pipe be laid in parallel with the existing pipelines (to remove the bottleneck in the system) **between Duffs Road and Phoenix 2 Reservoir**. This pipeline forms Phase 4 (See Diagram below) (in the Environmental Report) of the NAA and is required to be commissioned at the same time as NAA Ph 1, i.e. 2014.



**Figure 1: Phases of the Northern Aqueduct Augmentation Project (Phase 4 is in the colour red)**

**\*Reason for Basic Assessment Application:**

The existing two pipes within the NAX servitude will continue to be used (current daily volume approximately 50,000m<sup>3</sup>). The new bigger pipe will merely augment the existing pipelines which are presently a bottleneck in the system. The old pipes are much smaller (450 – 500mm) in diameter, and as such when the new pipe (1,2m diameter) is tied into the system, the water will prefer the path of least resistance, and thus most of it, will 'choose' the bigger pipe. The ultimate 30-year demand in the system will result in a total flow of about 120,000 m<sup>3</sup> per day, of which 100,000 m<sup>3</sup> per day will flow in the new pipe as a result of its lower friction loss.

This large volume of water triggers a full EIA.

Considering the short length of the pipeline (5.5km), the fact that it is within an existing servitude, the few number of directly impacted IAPs and, by all appearances, few areas of extreme environmental (or biodiversity) concern, the environmental assessment would be well served in a basic assessment. The full EIA for the NAA has also recently been conducted in very close proximity to this area, and did not reveal many significant issues or comments from IAPs. Nevertheless the Department of Environmental Affairs may request a full EIA at any interval, should they decide that the project is not being effectively served by the Basis Assessment.

### 3.1 Location

The proposed pipeline augmentation will take place in the eThekweni Municipality, Province of KwaZulu-Natal. The Northern Aqueduct Augmentation (Ph4) is to start on the western bank of the Umhlangane River, between Curnick Ndlovu Highway and the R102, at an off-take from the existing NAX and will terminate on the southern side of Phoenix Highway, opposite Phoenix 2 reservoir. This section of proposed pipeline is virtually straight and continuously moving north, within an existing servitude for most of the way. This portion of pipeline will feed



into the Phoenix 2 Reservoir, in order to bypass NAA Phase 2 and the WA Phase2, which are still some years ‘in the making’. The current land-use in this area is mostly open veld servitude, adjacent to medium to high density formal residential and business areas, with scattered sports fields, and some watercourse, railway and road crossings.

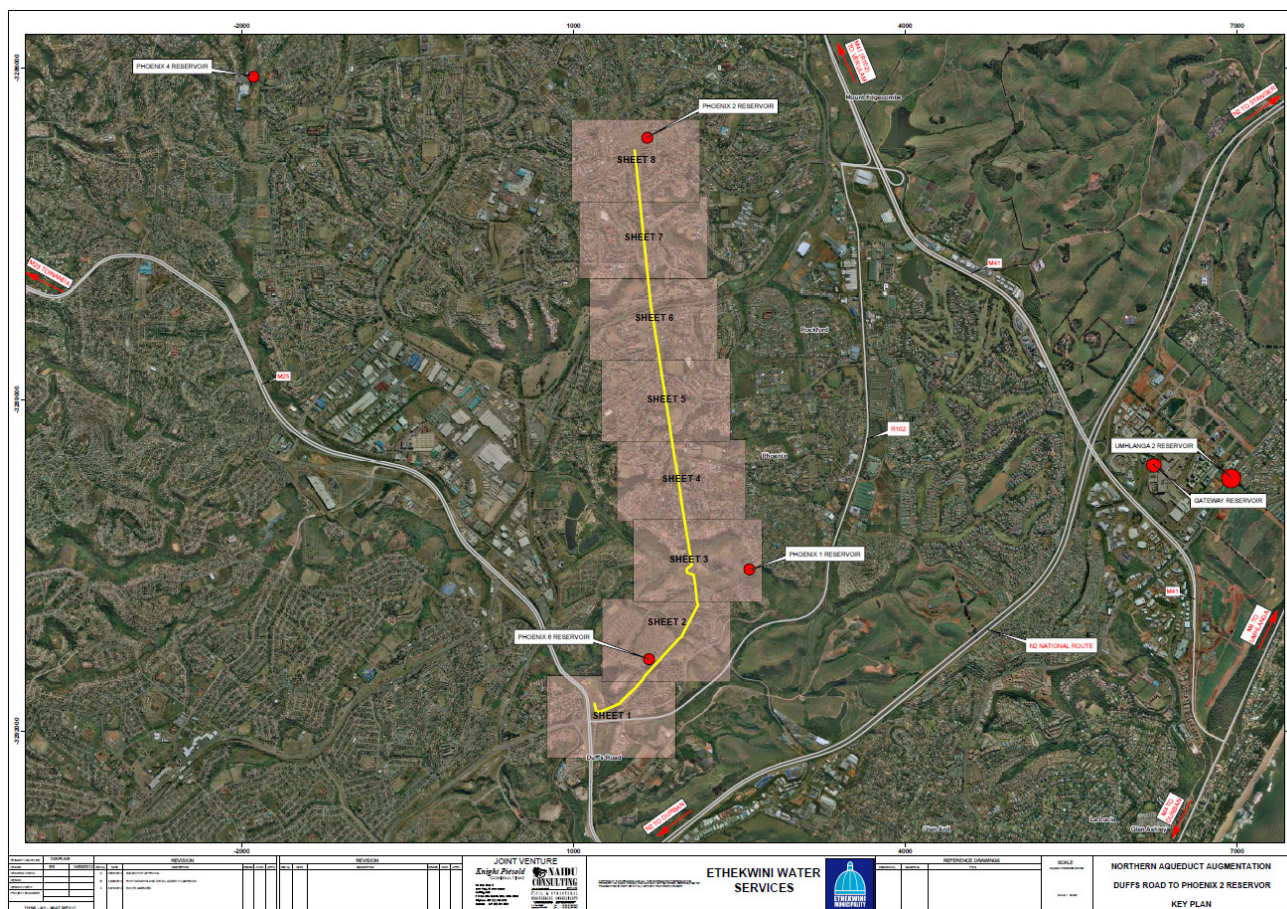


Figure 2: Key Plan of the Northern Aqueduct Augmentation Project (Phase 4)

### 3.2 Biophysical Environment

In biophysical terms the project area is identified as the KwaZulu-Natal Coastal Belt, with its distribution extending from near Mtunzini in the North, via Durban and Margate and just short of Port Edward in the South (Mucina and Rutherford, 2006). The KwaZulu-Natal Coastal Belt possesses highly dissected undulating coastal plains, which in the past was covered to a great extent with various types of subtropical coastal forest.

The KwaZulu-Natal Coastal Belt is endangered, with some primary grassland being dominated by *Themeda triandra*, which still occurs in hilly, high rainfall areas where pressure from natural fire and grazing regimes prevailed. At the present however, the KwaZulu-Natal Coastal Belt is exceedingly affected by an intricate mosaic of extensive sugarcane fields, timber plantations and coastal resorts, with interspersed secondary *Aristida* grasslands, thickets and patches of coastal thornveld. Important taxa most found in KwaZulu-Natal Coastal Belt include: *Aristida junciformis* subsp. *galpinii*, *Digitaria eriantha*, *Panicum maximum*, *Themeda triandra*, *Alloteropsis semialata* subsp. *eckloniana*, *Cymbopogon caesius*, *C. nardus*, *Eragrostis curvula*, *Eulalia villosa*, *Hyparrhenia filipendula*, *Melinis repens*, *Berkheya speciosa* subsp. *Speciosa*, *Cyanotis speciosa*, *Senecio glaberrimus*, *Chamaecrista mimosoides*, *Conostomium natalense*, *Crotalaria lanceolata*, *Dissotis canescens*, *Eriosema squarrosum*, *Gerbera ambigua*, *Hebenstretia comosa*, *Helichrysum cymosum* subsp. *Cymosum*, to name a few.

According to Mucina and Rutherford (2006), the KwaZulu-Natal Coastal Belt's landscape is dominated by the Ordovician Natal Group sandstone, Dwyka tillite, Ecca shale and Mapumulo gneiss (Mokolian). The weathering of old dunes has produced the red sand, called the Berea Red Sand. The soils supported by the above-mentioned rocks are shallow over hard sandstones and deeper over younger, softer rocks.

A detailed biodiversity study will be undertaken in due course to determine the actual species present along the route sections. The KZN Wildlife's Conservation Plan (C- Plan), irreplaceable values will also be determined.

### **3. NEED FOR THE PROJECT**

The Northern Aqueduct (NAX) operated by EWS is a network of bulk supply pipelines that serves the north eastern portion of their area of supply (in general): north of the Umgeni River, to the south of the Ohlanga River and east of Ntuzuma. The existing NA aqueduct conveys potable water from Durban Heights Waterworks to a large number of terminal reservoirs and pressure reducing valves (PRVs) in the system that in turn supply water to residents and businesses in the respective reservoir and PRV supply zones. In recent years, the Northern Aqueduct has reached capacity on various sections of the trunk mains as a result of exponential growth in development and in demand. The Umhlanga region which receives water at the tail end of the aqueduct suffers from low residual pressures as a result of friction losses in the trunk mains. In addition, planned developments in the north east will add a substantial new demand at the tail end of the Northern Aqueduct, exacerbating its capacity problems.

### **4. ROUTE TECHNICAL DETAIL**

The proposed Northern Aqueduct Augmentation Ph3 (Engineers) Ph4 (Environmental Report) is approximately 5.5km in length. The pipeline will be 1.2m in diameter.

Sheet 1: The proposed new section of Northern Aqueduct Augmentation (Phase 4 – Environmental Reporting, Phase 3, according to the Engineering Reports) starts on the western bank of the Umhlangane River, between Curnick Ndlovu Highway and the R102, at an off-take from the existing NAX (which also crosses the Umhlangane River, a few hundred metres to the north of the proposed NAA Ph4 crossing point). The NAX crosses this river up a steep bank along the existing servitude, and between townhouses and adjacent low cost housing in Mount Moriah. The proposed crossing point of the NAA Ph4 is further south, up a shallower bank, and along Mount Moriah Drive. This route has been selected to avoid the steep bank traversed by the NAX. This route option will also allow residents access to their homes during construction via alternative routes, i.e. residents will not be prevented from accessing their homes by vehicle at any stage during construction.

Sheet 2: The proposed route then turns left (north) into Simunye Avenue, and then turns right (north east) at the junction with Eleka Road into the open veld (servitude), crossing an existing watercourse and the Str 121359 ring road (an off-shoot of Mount Moriah Drive), twice. The Phoenix 6 reservoir is located to the west of the proposed route, just prior crossing Str 121359. This servitude is shared with the NAX water trunk main and eThekweni Electricity Overhead lines. A number of watercourses and areas of market gardening are traversed within this servitude. The proposed route then crosses Str 122309 before heading off into a northerly direction.

Sheet 3: The proposed route crosses Str 122323 and then a large open space (designated for housing development), before crossing a steep bank and denser vegetation on the outskirts of Phoenix. The Phoenix 1 reservoir is located to the east of this open space. The proposed route (within the existing servitude) crosses Stonebridge Drive and then runs alongside Bush Road in a northerly direction.

- Offtake to the Phoenix 1 Reservoir: Having crossed Str 122323 the proposed pipeline link to the Phoenix 1 Reservoir will branch off and head east along the boundary of ERF 989, before turning left, in a north eastern direction towards the Phoenix 1 Reservoir.

Sheet 4: The servitude passes alongside (west of) Bush Road, crosses Eastwood Road, and then passes east of Burnhill Close in Phoenix. It then traverses a small open space south of Parkmead Avenue, crosses Parkmead, adjacent to Rainbird Close, crosses Greenbury Drive, into an open space, just before Rainhill Close.

Sheet 5: The route then continues in a northerly direction, passes west of a cricket oval (still within the servitude), and crosses the circular Cardinal Road twice. It passes between Longbridge Walk and Portbridge Place, (through open space) under Phoenix Highway, and east of Roseclay Place (also in open space (servitude)), and west of a sportsfield.

Sheet 6: The route passes Catford Crescent to the east, still within the servitude, crosses Clayfield Drive, in the area of Clayfield. Continuing along the servitude, it passes under the railway line, a petronet servitude, and the under Eastbury Drive, again crossing into open space, and through a watercourse. The proposed pipeline then traverses a fairly steep bank and across Longbury Drive.

Sheet 7: After Longbury Drive, the route continues northerly, within the servitude, passing Uppercliff Road to the east, through some denser vegetation, across Ridgcroft Drive, and across Wynbury Circle (twice).

Sheet 8: The route passes over Northbury Avenue, alongside Cliffbury Place to the west, and Heathbury Place to the east, touches on the terminal points of Edgebury Road and Brigbury Place, before coming to an end on the southern side of Phoenix Highway, opposite Phoenix 2 reservoir.

## 5. LEGISLATION

As mentioned previously, the proposed activity triggers Environmental Impact Assessment (EIA) regulations, promulgated under the National Environmental Management Act (NEMA, No. 107 of 1998), amended in 2010. In this case the following activities have been identified and need to undergo environmental assessment.

<i>EIA Regulation</i>	<i>#</i>	<i>Notice Description</i>	<i>Activity Description</i>
<i>EIA Regulation No R 544 (Listing Notice 1)</i>	<i>9</i>	<i>The construction of facilities or infrastructure exceeding 1000metres in length for the bulk transportation of water, sewage or storm water (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more excluding where: a. such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or b. where such construction will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.</i>	<i>5.5km of 1.2m diameter bulk water pipeline installation, within road servitude in places, through urban area, and in some places within 32m of a watercourse. The throughput of the pipeline will exceed 120litres per second. This includes the pipe-yards, construction yards, reservoirs, pump stations, cathodic protection, access roads, spoil areas, and scour valves and outlets.</i>
	<i>11</i>	<i>The construction of: (xi) infrastructure or structures covering 50</i>	<i>NAA Ph 4 is proposed to be laid across the Umhlangane River. The</i>



		<p>square metres or more</p> <p>Where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.</p>	<p>proposed project will also traverse various smaller watercourses and wetlands en-route.</p>
	18	<p>The infilling or deposition of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock or more than 5 cubic metres from:</p> <p>(i) Watercourse</p>	<p>NAA Ph 4 is proposed to be laid the Umhlangane River. The proposed project will also traverse various smaller watercourses and wetlands en-route. A large trench will be required to bury the 1.2m diameter pipe below water level.</p>
	37	<p>The expansion of facilities or infrastructure for the bulk transportation of water, sewerage or storm water where:</p> <p>a) The facility or infrastructure is expanded by more than 1000m in length; or</p> <p>b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more –</p> <p>excluding where such expansion:</p> <p>i) relates to transportation of water, sewerage or storm water within a road reserve; or</p> <p>ii) where such expansion will occur in urban areas but further than 32m from a watercourse, measured from the edge of the watercourse.</p>	<p>The development could be construed as 'Expansion' OR 'Construction'. There will be a new 1.2m pipe, but this will be augmenting the existing pipeline over the 5.5km, within road servitude in places, through urban areas, and in some places within 32m of a watercourse. The throughput of the pipeline will exceed 120litres per second. This includes the pipe-yards, construction yards, reservoirs, pump stations, cathodic protection, access roads, spoil areas, and scour valves and outlets.</p>
EIA Regulation No R 545 (Listing Notice 2)	10	<p>The construction of facilities or infrastructure for the transfer of 50000 cubic metres or more water per day, from or to any combination below:</p> <ul style="list-style-type: none"> <li>• Water catchments</li> <li>• Water treatment works</li> <li>• Impoundments</li> </ul> <p>Excluding treatment works where water is to be treated for drinking purposes.</p>	<p>The new pipeline will transfer 100,000m<sup>3</sup> of water of water per day between water impoundments. The overall flow will increase by 60,000m<sup>3</sup>, but because water will chose the path of least resistance, the new, bigger pipe, will carry the bulk of this water, which amounts to 100,000m<sup>3</sup> of water between Durban Heights and Phoenix 2 Reservoirs.</p>

## 6. WHAT IS PUBLIC PARTICIPATION?

The Public Participation Process (PPP) forms part of the Environmental Application, and aims to ensure that anyone who has an interest in, or who is affected by the proposal has an opportunity to participate. Every person has the right to be informed of decisions that affect them and to influence these decisions. Opportunities are provided during this process for people to indicate their viewpoints or concerns, identify potential environmental issues, suggest alternatives or mitigation options, and identify or enhance positive benefits of the proposal. The PPP for the proposed project will be detailed in the months to come in the following ways:

<b>Northern Aqueduct Augmentation Phase 4 Advertisements &amp; Articles</b>	<b>Published Dates</b>
Newspapers –The Mercury, The Isolwezwwe, The Phoenix Tabloid	November 2012
Please advise if there are other more suitable newspapers	
<b>Circulation of Background Information Document</b>	
<b>Start Date:</b> October – November 2012	<b>End Date:</b> Ongoing (roughly January 2013)
<b>On Site Notice Installation</b>	November 2012 – January 2013
<b>Public Meeting / Open Day (potential date/s only)</b>	November 2012 – Early February 2013
<b>Circulation of the Draft Basic Assessment Report</b>	<i>End February 2013</i>

## 7. BECOMING INVOLVED

The purpose of this BID is to invite you to register your interest in the project. Your name and details will be entered into a database that will be used to circulate any further project information. As a registered I&AP there will be opportunities for you to contribute towards a comprehensive environmental investigation that offers the environmental authority the most accurate information to make an informed decision:

- **BECOME INVOLVED IN WRITING:** The BID also invites you to provide your input with regards to perceived biophysical or socio-economic impacts or issues by submitting your comments on the form below to the relevant contact person.
- **BECOME INVOLVED IN GUIDANCE:** We would also value any information regarding specific requirements, guideline documents, legislation or regulations specific to your organisation, group, division or department (if applicable) that may need to be considered during our environmental investigations. Kindly submit these in writing on the form below to the relevant contact person.