NCWABENI: OFF-CHANNEL STORAGE DAM EIA REPORT - FINAL

COMMENTS AND RESPONSE REPORT

1 INTRODUCTION

This Comments and Response Report summarises the salient issues and queries raised, as well as statements made, by Interested and Affected Parties (I&APs) through correspondence received (including completed Reply Forms and Comments Sheets, letters, faxes and emails) and discussions at meetings during the Scoping and Environmental Impact Assessment (EIA) phases. This report also attempts to address the comments through responses and input provided by the project team.

When reviewing the Comments and Response Report, please take cognisance of the following:

- All the responses written in italics were included subsequent to meetings in order to address the comments in greater detail.
- This report does not necessarily provide verbatim comments from meetings, but rather reflects the essence of the discussions held with I&APs.
- The Comments and Response Report is separated into the following main categories for the Scoping and EIA phases (where relevant):
 - Planning and design;
 - Water use;
 - Water service provision;
 - Project infrastructure;
 - Silt management;
 - Access roads and traffic;
 - Environmental assessment:
 - Borrow areas;
 - Heritage resources;

- Socio-economic benefits;
- Water quality;
- o Flow:
- Operation of the dam;
- Estuary;
- Alternative energy;
- Geotechnical conditions;
- Biodiversity and conservation; and
- Environmental Management Programme.

2 SCOPING PHASE

2.1 Planning and Design

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE | |
|---|---------------------------------|--|--|
| Source: Environmental Authorities Meeting (15 September 2011) | | | |
| Asked whether the size of the dam is sufficient to cater for demands. This is to prevent future increase to the dam's capacity | (DEA) | The sizing requirements, which are based on demand scenarios, will be considered in the Feasibility Study. | |
| Asked whether the intention is to only build one dam. | Reggy Nkosi (DEA) | Confirmed that only one dam will be built. Size will be based on the water demand and financial constraints. | |
| Has the Feasibility Study considered water resource management studies? | Jeremy Randall (DAEARD) | The Feasibility Study has taken into consideration the information from the pre-feasibility study and other studies. | |
| Noted that the Mzimkhulu River Catchment Water Resource Study conducted by Aurecon needs to be considered. Requested that copies of | | This document is being reviewed as part of the Feasibility Study. | |
| the report be provided to the authorities. | | The report is available on the project website: www.ncwabeniocsdam.co.za. | |
| Source: Landowner Meeting - Camro Estates (16 November 2011) | | | |
| Asked when the OCS dam would be built. | Robin Peters (Camro Estates) | Construction can only commence once the EIA process has been concluded and if Environmental Authorisation has been issued by the Department of Environmental Affairs (DEA). Based on current EIA programme, a decision will only be obtained in January 2013. However, the programme should be regarded as dynamic and dates may change during the execution of the EIA process. Final design will take about 12 months and the construction of the dam is likely to take 18-30 months. | |
| Source: Correspondence (23 February 2012) | | | |
| There is currently no Eskom infrastructure in the area. Future Eskom network includes the proposed 400kV corridor between Thornville and Harding. | | The spatial information, which is compatible with a Geographic Information System, for the Ncwabeni Off-Channel Storage Dam (OCSD) was provided to Eskom. | |
| | | Eskom to consider the final alignment of the power line within the approved corridor, where the footprints of the dam options encroach on the proposed corridor. | |
| Source: Public Meeting (08 February 2012) | | | |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Enquired whether the new Eskom high voltage power line, which runs in close proximity to the EIA study area, had been considered. | Paddy Norman (WESSA) | Confirmed that the EIA Report for the proposed power line had been reviewed. Eskom is also included on the database of Interested and Affected Parties (I&APs) and were notified of the Ncwabeni Off-channel Storage Dam (OCSD) EIA. The spatial information for the project had also been shared with Eskom to consider for the final alignment of the power line within the approved corridor. |
| The Mzimkhulu River Catchment Study discussed a large dam further upstream than the Ncwabeni OCS. Will such a dam not cause the OCSD to become redundant? | Paddy Norman (WESSA) | The practicality of water distribution in the project area is low due to the extreme topography in the catchment. The source of the water must preferably be close to where the demand exists. Large multipurpose dams are very expensive, which presents economic constraints. The Mzimkhulu River Catchment Water Resource Study was conceptual compared to the more detailed nature of the Feasibility Study. |
| What type of dam is being proposed? | Paddy Norman (WESSA) | The dam type is dependent on the availability of construction material at the site, which will be confirmed. It will probably be a rock-filled dam. The Feasibility Study will recommend a dam type, which may change during the final design. |

2.2 Water Use

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| Noted that existing downstream water users include a quarry and mill. | Paddy Norman (WESSA) | Noted. Will further engage with DWA to confirm if there are any downstream water users. Will also involve the formal agricultural sector in public participation. |
| DEA needs to be notified that a Water Use Licence Application (WULA) will not be compiled in order to avoid the inclusion of conditions in the Environmental Authorisation that relate to the Water Use Authorisation. | Reggy Nkosi (DEA) | No final decision has been made for what sections a Water Use Licence will be required. |
| Source: Landowner Meeting - Camro Estates (16 November 2011) | | |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Asked if the dam would benefit the downstream irrigators. | Eric Naiker (Camro Estates) | Noted that there were no downstream irrigators that will benefit. Temporary and localised water shortages in terms of irrigation water for Camro Estates could be caused by the new impoundment, depending on the water level in the Mzimkhulu River at the time of abstraction into the off-channel storage (OCS) dam. If this abstraction only takes places during peak or high flow periods then this should not adversely impact on downstream water users. |
| Enquired whether downstream water users would need to pay for the water released from the OCS dam. | Eric Naiker (Camro Estates) | Confirmed that existing allocations had already been considered. Additional water would need to be purchased. |
| Source: Correspondence (23 January 2012) | | |
| Idwala Carbonates is a downstream user of water from the Umzimkulu River. We need to be included in the assessment process as we are abstracting water and Idwala Carbonates has to make sure that the volume we abstract is not going to be impacted on negatively. | Rakesh Ramthol (Idwala Carbonates) | Existing downstream water users were considered in the planning of the proposed OCSD. Impacts to water users in terms of water quantity and quality to be considered further during the EIA phase. |
| Source: Public Meeting (08 February 2012) | | |
| The phrase contained in the Scoping Report that reads "will not address Ecological Reserve" needs to receive attention. | Paddy Norman (WESSA) | The proposed OCS dam intends to provide for the water requirements for all users, including the Reserve. The Reserve requirements will ultimately feed into the licensing process of DWA and the operation of the system. The Reserve forms part of the requirements off all water users. The Environmental Authorisation, if granted by DEA, may contain a condition that the Reserve must be satisfied, where the Water Use Authorisation process will consider the Reserve further. The Reserve should benefit from the project, where water will be released during the low flow periods. |

2.3 <u>Water Service Provision</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Landowner Meeting - Nyamande Tribal Authority (16 November 201 | 1) | |
| Will the OCS dam supply water to the local area? | Member of the Cele K Tribal Authority | Water to local area will be supplied from the Mhlabatshane Dam, which is currently under construction. Water will not be supplied by the Ncwabeni OCS Dam as water is abstracted approximately 26 km downstream at the St. Helen's Rock abstraction works, and it is too expensive to pump the water back up to the area in question. Matter to be investigated further. |
| Expressed concern that the tribal area does not currently have water services. | Member of the Cele K Tribal Authority | The Ugu District Municipality, as the Water Services Authority, is responsible to provide water services. |
| Expressed dissatisfaction that water would not be obtained from the Ncwabeni OCS Dam, as someone had previously indicated that the local community would be serviced by this dam. | Member of the Cele K Tribal Authority | Need to seek clarification on this matter with the Ugu District Municipality. |
| Source: Correspondence (02 February 2012) | | |
| Based on your report, this project is fully supported in view of the fact that water supply to various rural settlements will be contributing to a sustainable livelihood. | N. Naidoo (Department of Human Settlements) | - |
| Source: Correspondence (15 February 2012) | | |
| The Department has no objection to the proposed construction. | G. Gumbi- Masilela (Department of Human Settlements) | - |
| Source: Meeting with Cele K Tribal Authority (08 February 2012) | | |
| Will the community be supplied with water services? | Member of the Cele K Tribal Authority | Confirmed that water provision to the local community had been included in the project planning of Ugu DM. |
| There is a contradiction from what was explained to the Tribal Authority at the last meeting with regard to the benefits from the OCSD. | Member of the Cele K Tribal Authority | Subsequent to the last meeting there has been some progress in the project planning. The Ncwabeni OCSD will dovetail with the provision from the Mhlabatshane Dam. |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| | | Explained the role of the Ugu District Municipality, as the Water Services Authority, in supplying water to the local community. The community will initially obtain water from the Mhlabatshane Dam and then from the Ncwabeni OCSD, once it has been completed. |
| How will the water be purified? | Member of the Cele K Tribal Authority | The water will either be purified at St. Helen's Rock or at the OCSD. This preferred option still needs to be investigated by the Ugu District Municipality. |

2.4 **Project Infrastructure**

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Landowner Meeting - Camro Estates (16 November 2011) | | |
| Asked about the height of the abstraction weir. | Robin Peters (Camro Estates) | need to be high enough to flush the silt. |
| | | Silt loads would also be managed through the siltation works. |

2.5 <u>Silt Management</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| What is the dam's life expectancy, with specific reference to siltation? | Reggy Nkosi (DEA) | The dam will be designed for 30 – 50 years, based on socio-economic analysis. Siltation will be managed, where pumping from the Mzimkhulu River will not take place when silt levels are high. Silt management is addressed in Feasibility Study. Pumping regime will be determined by silt level in river. No pumping will take place during major floods when siltation risks are high. It is thus beneficial to have an off-channel storage dam in this regard. DWA uses the VAPS guidelines to determine economic life of infrastructure - for mechanical components it is 30 year and for civil works it is 45 years. The dam should have a longer life expectancy than this. |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| What detailed studies will be conducted on siltation? | Paddy Norman (WESSA) | The abstraction works can be designed to cater for the silt. The Technical Team has engaged with specialists on silt management during the execution of the Feasibility Study, which will be built into the hydraulic model. Two studies have been conducted, namely the silt in the system and the placement of the weir in relation to siltation. Water quality samples have been taken from the river. |
| | | The Ugu District Municipality also has water quality data available. |

2.6 Access Roads and Traffic

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Landowner Meeting - Camro Estates (16 November 2011) | | |
| Asked whether the dam wall could be used for the re-alignment of access road. | the Robin Peters (Camro Estates) | Investigations have shown that it would be cheaper to build a new road rather than use the dam wall as a crossing point. |
| Source: Correspondence (06 February 2012) | | |
| The issues regarding maintenance of the Provincial roads during the construction phase have been identified in the report. As indicated Site D2 (Ncwabeni river) has the least impact on the Provincial road network. Site D3A (Gugamela river) requires a significant length of road construction and will result in an increased maintenance burden on the Department. Any work carried out on our road network will require our wri approval. | KZN: Department of Transport | Selection of preferred option for the dam site will take place during the EIA phase, through technical and environmental considerations. Associated impacts on the D859 to be assessed and impacts to be adequately mitigated. Relevant approval from the KZN: Department of Transport to be obtained. |

2.7 <u>Environmental Assessment</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| Confirmed that the Department of Environmental Affairs (DEA) is the competent authority where the Department of Water Affairs (DWA) is the applicant | Reggy Nkosi (DEA) | Noted. |
| The KZN Department of Agriculture, Environmental Affairs and Rural Development (DAEARD) has developed maps that link Listing Notice 3 activities to sensitive geographical areas. Nemai Consulting to confirm with this Department whether Listing Notice 3 activities will be triggered. Coordinates of the project area to be provided to KZN DAEARD. | Jeremy Randall (DAEARD) | Query submitted to DAEARD on 23 September 2011. Response received on 26 September 2011, confirming the relevant Listing Notice 3 activities. |
| Ensure that DAEARD: Macro-Planning is included as a commentary authority. Contact details: DAEARD: Macro-Planning (Land Use Regulatory) Mr Zibusiso Dlamini Tel: 033 355 9331/9 Fax: 033 355 9330 email: zibusiso.dlamini@kzndae.gov.za Private Bax X9059, Pietermaritzburg, 3200 | Jeremy Randall (DAEARD) | Noted. Authorities' database updated accordingly. |
| The specialist studies should not just focus on the preferred option, but should also investigate the alternatives. | Reggy Nkosi (DEA) | All alternatives will be considered equally. Specialists will assess all alternatives and will recommend a preferred alternative which will be used in an evaluation matrix. |
| DEA to be notified by the EAP which authorities received copies of the EIA reports. The draft of the EIA reports should be provided to DEA prior to public review to allow the relevant departmental units to review the documents. | Reggy Nkosi (DEA) | Noted. DEA's requirements to be satisfied. |
| Process is similar for DAEARD, where the Department needs to be notified of the recipients, in order for follow up on the status of comments. Noted that the EIA review process is aligned with other authorities' requirements | Jeremy Randall (DAEARD) | Noted. DAEARD's requirements to be satisfied. |
| All the parties that participated in the Pre-feasibility Study need to be notified that the project is proceeding, and need to be included in the I&APs database. | Paddy Norman (WESSA) | I&APs database updated with details of parties that participated in the Pre-feasibility Study. |

2.8 Borrow Areas

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| Source: Environmental Authorities Meeting (15 September 2011) | | | |
| Stressed that the visual impact as a result of the borrow areas outside of the basin need to be assessed from a tourism perspective. KZN Tourism Authority to be included in database. | Paddy Nor (WESSA) | | The geotechnical study will advise on the borrow areas. EIA includes Visual Impact Assessment. |
| | | | KwaZulu-Natal Tourism Authority included in database. |
| Suggested that waste rock from Simuma Quarry could possibly be used for the construction of the dam. | Paddy Nor (WESSA) | | Noted. The availability of construction material (both carthfill and rock) in |
| | | | The availability of construction material (both earthfill and rock) in the vicinity of the proposed dams will be confirmed during the EIA phase, as well as the need to acquire filter material and concrete aggregates from a commercial source (e.g. Natal Portland Cement). |
| Source: Public Meeting (08 February 2012) | | | |
| Has the use of the disposed rock at the lime works been considered? | Paddy Nor (WESSA) | | The need to source construction material from an external source will depend on the outcome of the pending materials investigation. |
| | | | Need to consider the transportation costs. Will investigate further. |

2.9 <u>Heritage Resources</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| Noted the following Amafa requirements: All heritage and cultural resources need to be considered; An Amafa Needs and Desirability Application Form will need to be completed; A R600 administration fee will need to be paid; An Amafa Accredited CRM Specialist will need to be used to conduct the Heritage Impact Assessment (HIA); The HIA will need to consider the borrow areas; and The KZN Heritage Act (Act No. 04 of 2008) needs to be complied with | Bernadet Pawandiwa (Amafa/Heritage KZN) | Noted. Amafa's requirements to be satisfied. |

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| and added to the legal framework. | | | |
| Source: Landowner Meeting - Nyamande Tribal Authority (16 November 2011) | | | |
| Asked what will happen to graves that are located within the dam basin. | Member of the Cele K Tribal Authority | An HIA will be conducted as part of the EIA to identify all grave sites. As graves are protected, the appropriate legal protocols would need to be followed prior to any relocation. Recommended that the Tribal Authority assist in the identification of grave sites. | |
| Source: Public Meeting (08 February 2012) | | | |
| Noted that fossils have been recorded at the 'horseshoe' bend where a borrow pit is located. | Paddy Norman (WESSA) | This will be investigated further as part of the Heritage Impact Assessment during the EIA stage. | |

2.10 <u>Socio-Economic Benefits</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE | |
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| Source: Landowner Meeting - Nyamande Tribal Authority (16 November 2011) | | | |
| Enquired about employment opportunities associated with the project. | Member of the Cele K Tribal Authority | The construction of a dam required specialised skills. However, unskilled labour would be sourced from the local community. Skills transfer would also be promoted. | |
| Asked if local goods and services would be used. | Member of the Cele K Tribal Authority | The use of local goods and services would be advocated through the EIA process. | |
| Source: Correspondence (05 March 2012) | | | |
| I am looking to register as an Interested & Affected Party and particularly to expose my services to the Engineers dealing with the project. To assist with some indication of capabilities, I wish to mention that I was appointed to undertake the original Topographical Survey of the Ugu Off Channel Storage Dam near Murchison/Bhoybhoyi that draws from the Umzimkulu River. I have been attached to this project since commencement and currently undertake the monitoring of the wall. I am further involved with survey work up the Umzimkuluwana River (a major tributary to the Umzimkulu River) where I am installing a network of Pillar Beacons for Structural Monitoring of factory components. These surveys warrant high order techniques and would not suit an emerging type of | | Contact details of technical team provided to Mr. Sutton. Use of local skills, goods and services promoted through the EIA. | |

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| operation. Since I am established locally and have the correct level of competency, this would be mutually lucrative. | | |

2.11 Water Quality

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Landowner Meeting - Camro Estates (16 November 2011) | | |
| Enquired whether the water quality would be adversely affected during construction. | Eric Naiker (Camro Estates) | Specific measures to manage water quality will be implemented during the construction phase. An Environmental Monitoring Committee will also be established to monitor compliance against the Environmental Authorisation and Environmental Management Programme. During the operational phase, the quality of the water that is released will be managed. |

2.12 <u>Flow</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| What study is being undertaken on the current river flow? | Paddy Norman (WESSA) | The model that is being developed as part of the Feasibility Study will guide the most suitable location of the weir structure. Amongst others, silt movement and hydrological conditions are being incorporated into the model. |
| In terms of the rainfall pattern in the study area, a detailed study will be required to confirm that the high flows in the river will be frequent enough. | Paddy Norman (WESSA) | This matter will be considered. The substantial Mean Annual Runoff from the Mzimkhulu River allows for sufficient time to pump. Contributions will also be made by the OCS Dam's own catchment. |
| Source: Landowner Meeting - Camro Estates (16 November 2011) | | |
| Enquired whether the portion of the farm behind the weir would be flooded during high flows. | Eric Naiker (Camro Estates) | To be determined as part of backwater calculations. |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Public Meeting (08 February 2012) | | |
| Has consideration been given to erosion on the outside of the river's bend? | Paddy Norman (WESSA) | Solid rock had been encountered on the outside bend. The abstraction works will be a concrete structure. Design considerations include the 1:200 year floodline. The current preferred location for the weir, which will include a measuring structure, is on the straight section of the river. A robust weir structure is being planned. |
| Will the release from the dam be variable during the winter months? | Cliffy Naidoo (NPC - CIMPOR) | The release will depend on the flow in the main stem of the Mzimkhulu River. |
| Mentioned that the Mzimkhulu River Catchment Study distinguished between high and low flow scenarios. | Paddy Norman (WESSA) | Confirmed that the same information is being used in the Feasibility Study. |
| In terms of climate change, how will the OCSD cope with drought periods? | Paddy Norman (WESSA) | Historic climatic data was used to determine variability. The yield model considered data for the last 80 years, and investigated the main stem of the Mzimkhulu River during various flows. Various studies on climate change have also been undertaken by DWA on a national scale. |
| The Illovo Sugar Mill is affected by the weir at St Helen's rock. Will the water overtop this weir? Problems are also being experienced with high levels of salt water. | | The weir will not overtop. Water is only pumped from the river when it is clean. Pumping is only undertaken during off-peak times to save electricity. Spare capacity is required. Water will be released from the OCSD based on user requirements. |

2.13 Operation of the Dam

| COMMENT / QUERY / ISSUE | RAISED BY | | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | | |
| How long will it take to fill the dam? | Reggy Ni (DEA) | osi | Approximately 3 – 4 months. It is based on the number of pumps and the type of structure at the abstraction works. Will definitely be |
| The duration of filling the dam will be considered when including conditions | | | filled within 1 year. It is not a substantial dam in terms of capacity. |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| in the Environmental Authorisation, should approval be issued. Suggested that this be sufficiently discussed in the EIA Report. | | |
| Source: Public Meeting (08 February 2012) | | |
| Will the local community be allowed to use the water from the dam for irrigation purposes? | Paddy Norman (WESSA) | A Resource Management Plan will be developed for the OCSD. |
| Source: Meeting with Cele K Tribal Authority (08 February 2012) | | |
| Clarify how pumping and water releases from the Ncwabeni Off-channel Storage Dam (OCSD) will take place. The community wants to benefit from the OCSD during all seasons. | Member of the Cele K Tribal Authority | Water will be provided throughout the year to the local community by the Water Services Authority. The seasonal aspects relate only to the timing of the pumping from the main stem and the releases from the OCSD. |

2.14 Estuary

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| Suggested that the same specialist that undertook the estuarine specialist study for the Mzimkhulu Estuary be used in the EIA. | Paddy Norman (WESSA) | Noted. Specialist included in EIA team. |
| The level of the estuary has dropped to below what is required. If water is pumped out of the Mzimkhulu River the estuary's level could be jeopardised further. Emphasised the need to manage the project's impacts on the estuary. | (WESSA) | proposed project will assist the levels in the estuary during times of low flow. |
| | | Impacts to be considered further during Estuarine Study. |

2.15 <u>Alternative Energy</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| Need to consider energy conservation measures, such as a hydro-electric scheme. | Paddy Norman (WESSA) | Noted. |
| Source: Landowner Meeting - Camro Estates (16 November 2011) | | |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Suggested that the hydro-power scheme at Camro Estates could supply electricity to the system | Robin Peters (Camro Estates) | Will be investigated further as an alternative energy source. Will also be considered during the cost model. Noted that electricity would not be required on a constant basis, as pumping will only take place for 3 to 6 months of the year. |
| Source: Public Meeting (08 February 2012) | | |
| Has the possibility of generating electricity from the discharge of the dam been considered? | Cliffy Naidoo (NPC - CIMPOR) | The possibility of utilising the existing hydro-power scheme at Camro Estates is being investigated. The release from the proposed dam is not guaranteed and it thus does not pose a reliable source for energy production. |

2.16 **Geotechnical Conditions**

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| According to the Council of Geoscience, a fault line runs in the study area. This needs to be considered in the geotechnical study. | Paddy Norman (WESSA) | taken into account in the design. Sufficient financial resources have been allocated to the |
| Source: Landowner Meeting - Nyamande Tribal Authority (16 November 201 | 1) | geotechnical study to ensure detailed investigations |
| Asked whether the current geotechnical investigations were part of the project. | Member of the Cele K Tribal Authority | Confirmed that this was the case. Geotechnical investigations referred to form part of Feasibility Study. |

2.17 <u>Biodiversity and Conservation</u>

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Environmental Authorities Meeting (15 September 2011) | | |
| Noted the following: | Dominic Wieners | Noted. Ezemvelo KZN Wildlife's requirements to be satisfied. |
| Both sites for the OCS Dam fall within a proposed stewardship site in | (Ezemvelo KZN | · |
| terms of the National Protected Area Expansion Strategy; | Wildlife) | Data requested and received via Information Management at |

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Endangered plants could occur in the study area; The study area is earmarked for conservation in terms of freshwater resources; The study area is significant in terms of the River Disturbance Index; The study area falls within a Critical Biodiversity Area, however no biodiversity sector plan has been developed as yet; The site forms parts of Environmental Atlas Site; and Suggested that the Ezemvelo Handbook should be used to guide the terms of reference for specialist studies. | | Ezemvelo KZN Wildlife. |
| Source: Correspondence (13 April 2012) | | |
| The proposed dam construction will have many implications on the ecosystem, making it less supportive of the wildlife and extinction of some tree species. Though there is a wide existing gravel road and the footpath towards the eastern part of D2, the activity necessitates building of other roads to accommodate various machineries to utilise during the process. These will directly reduce the forest cover and lead to fragmentation of the landscape. The first site (D2) is a sensitive area hence the species richness and no vegetation specialist report have on the scoping report. It is thus crucial to consider the type of vegetation occurring there and estimate the extent to which the damage is expected. However, the site is a no go area based on the information outlined above. The vegetation described on the report (pg. 84), including pictures attached is based on the findings from Gugamela River (D3 and D3A) where the ecosystem has changed due to anthropogenic activities as it is a post settlement site, as opposed to Ncwabeni River. Additionally, the information reference (D2 and D2A) is for 1996 and might be biased hence the area is showing dense mosaic. The latter proposed site (D3 & D3A) is disturbed and thus constitutes less vegetation in terms of trees/forest cover. Therefore, it is recommended for the construction of the dam. However, consultation should be made with affected parties. | S. Modise (Department of Agriculture, Forestry and Fisheries) | Impacts of project to vegetation will be assessed as part of the Terrestrial Ecological Assessment, which will only be conducted during the EIA phase. In the Scoping Report it is noted that according to the KZN C-Plan the irreplaceability indices for the affected planning units are minor and anticipated biodiversity impacts are consequently low. The environmental and technical considerations associated with the various alternatives will be assessed during the EIA phase through a comparative analysis to eventually distil the Best Practicable Environmental Option. |

3 EIA PHASE

3.1 Planning and Design

| COMMENT / QUERY / ISSUE | RAISED BY | RESPONSE |
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| Source: Meeting with Cele K Tribal Authority (22 November 2012) | | |
| What will be the source of water for the Dam? Will groundwater be utilised to fill the dam? There is not enough water in the tributaries of the Mzimkhulu River to fill the proposed dam. | Member of the Cele K Tribal Authority | Water will be pumped from the Mzimkhulu River during high flow periods. The reservoir will be filled from its incremental catchment, supplemented by pumping from the Mzimkhulu River during times of high river flows. During times of low flows, water can be released back into the Mzimkhulu River for abstraction downstream at the existing St. Helen's Rock abstraction works. |
| Source: Correspondence (14 January 2013) | | |
| The Mzimkulu Water Resource Study indicated a minimum capacity requirement for a dam on the Mzimkulu system of 0.17MAR. (It also indicated that MAR is at 1453M m³ implying a minimum storage capacity of 247M m³.) We are aware that there are other possible sites for reservoirs, and it is likely that the Ncwabeni project will not be the whole solution, but how far does a capacity of 16M m³ meet the "future scenarios". The draft report repeatedly states that this has been considered, but we are not satisfied that the data given is adequate to quantify and validate the assertion that the size is sufficient. Furthermore it was implied at the public meeting that the dam would not be sufficient, but cost was a limiting factor. In section 10.6.3 the report affirms that the ecological reserve must be preserved as a legal requirement. This is confirmed in the report tabled by Mr Niel J van Wyk (Pr. Eng.), Chief Engineer, National Water Resource Planning (east) on 6th November 2010, detailing the DWEA requirements: "The Directorate: National Water Resource Planning therefore recommends that further abstraction of water from the river system should only be allowed if appropriate measures are implemented which will ensure that water required for the environmental requirements, downstream of the proposed abstraction points is available at all times." We would draw attention to the phrase "at all times" since in this report it would appear that the assessment was based on "medium winter flows", whereas the critical period for the ecological reserve would be the low flow | Paddy Norman (WESSA) | The off-channel storage dam proposed in the feasibility study is quite different from those dams identified in the <i>Mzimkhulu River catchment Water Resources Study (MRCWRS)</i> . The purpose of the proposed off-channel storage dam is to supply the domestic water requirements in the lower Umzimkhulu (i.e. Port Shepstone and surrounds). The larger on-channel dams identified in the MRCWRS are considered as lower than feasibility concepts for a multi-purpose scheme in the catchment, which aims at stimulating economic growth higher up in the catchment. We are confident that the proposed off-channel storage dam is a better solution to the localised water shortages in coastal area and have adequately sized the off-channel storage dam to meet the expected future demands of this area. |

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| regime. Evidence in the Mzimkulu Resource study indicates that at present abstraction exceeds the legal maximum. We therefore require quantitative data to show that this project will ensure that at no period of the year, even during a drought cycle, will any portion of the ecological reserve be abstracted. | | |

3.2 <u>Heritage Resources</u>

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| Source: Meeting with Cele K Tribal Authority (22 November 2012) | | |
| How will graves be dealt with? | Member of the Cele K Tribal Authority | A Heritage Impact Assessment was conducted as part of the EIA to identify all grave sites. Additional graves may be identified during the construction phase as 'chance finds'. As graves are protected, the appropriate legal protocols would need to be followed prior to any relocation. Relocation can only occur with approval from Amafa/Heritage KZN and after negotiations with the family members of the deceased. |

3.3 <u>Socio-Economic Benefits</u>

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| Source: Meeting with Cele K Tribal Authority (22 November 2012) | | |
| Will the project assist the community in obtaining electricity from Eskom? | Member of the Cele K Tribal Authority | Electricity will be required for the operation of the pump station. The project team has engaged with Eskom in this regard. |
| Will the local community benefit in terms of job creation? | | No direct benefit in terms of electricity provision for the community. The construction of a dam requires specialised skills. However, unskilled labour would be sourced from the local community as far as possible. Skills transfer would also be promoted. |
| River sand could be sourced from local suppliers rather than from Port Shepstone. | | Use of local SMMEs to be promoted, as far as possible. |

3.4 <u>Alternative Energy</u>

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| Source: Public Meeting (22 November 2012) | | |
| Has confirmation been received from Eskom regarding the supply of electricity for the project? Have you considered alternative energy? | Paul Watson (Ugu District Municipality) | Eskom indicated that they currently do not have the infrastructure in the area to supply electricity for the operation of the pump station. This will need to be explored further. The pump will only be operated for approximately 2 months in a |
| Thave you considered alternative energy: | | year. Consideration has been given to utilising the electricity generated by a hydro-power scheme on Camro Estate. |
| Requested that a wind survey be undertaken to determine the possibility of using alternative energy. | Pierre van Niekerk (AC Water) | From an environmental perspective clean energy is promoted. Request to be considered further. |

3.5 <u>Geotechnical Conditions</u>

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| Source: Correspondence (14 January 2013) | | |
| It appears from sections 6.5.1 and 6.5.2 of this report that a detailed geotechnical study supported by geophysical investigations will only be undertaken if the project is approved to proceed. We also noted that there does not appear to be a separate report on the preliminary geotechnical studies, compiled by an independent specialist, attached to the Draft EIA, although we understood that such a document had been compiled. If it exists it should be made available, and if not it is an omission of great concern. | (WEŚSA) | Copy of Geotechnical Report provided to Mr. Norman, in which any possibility of a fault through the dam site was specifically investigated. An extract of this report follows: The pre-feasibility report by the Council for Geoscience reported that one major and several smaller faults appear to intersect the dam centre line on the left flank. Based on that, the first task of this feasibility geotechnical investigation was to determine whether any |
| Such a report must address all those geotechnical issues which might constrain the viability of the project. Specifically we are concerned about | | fatal flaws exist that would render the site unsuitable for the construction of a dam. |
| potential losses due to seepage along the fault line and/or through the bedrock. We are aware that, for example, there was a quite extensive drilling program, but information on the results of this program given in the draft report seems to be confined to the suitability of construction materials and founding depths for the dam wall. Details of the bedrock were sketchy, and the plan showing the borehole sites in Appendix B6 does not indicate | | The main purpose of the seismic refraction survey was to locate zones of low seismic velocity that are usually associated with deep weathering along fault zones. Such a zone was found along the lower half of the left flank (between Ch 200 m and Ch 320 m on the seismic profile). |
| their relationship to the fault-zones. This information is essential in order to | | Boreholes BL3 and BL4 were drilled to investigate the above zone |

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| validate the conclusions of the report. It would appear from the completed drilling program that the valley floor includes a quite deeply weathered horizon, with fissures and open veins. What is not clear is the extent of this zone, and especially its nature along the fault-line. Because of the critical significance of the latter we consider this omission unacceptable. Nor does there appear to be any record of in situ stress measurements. Although these are unlikely to be high near the surface, if there is a horizontal stress component there is also potential for movement, which could be facilitated by the hydraulic pressure of the impounded water. Although the report notes that there is minimal likelihood of a natural earthquake sufficient to damage the type of dam under consideration, the possibility of an artificially induced event does not appear to have been considered. There are a number of records of this scenario occurring, and the report needs to address this issue, given the presence of faulting below the dam wall. As this is a public safety issue, as well as an issue of proper use of public funds, we consider that a full assessment of this issue and the potential cumulative effects of artificially created stresses, is critical prior to approval being given. | | of low velocity material and the inclined BL3 encountered highly weathered material to a vertical depth of about 22 m, and moderately weathered rock extends beyond the maximum vertical depth of the hole (30 m). The presence of moderately weathered rock extending to over 30 m depth over a 40 m wide zone along the fault zone and the average excavation depth of over 16 m along the length of the centre line have major cost implications for the construction of a concrete dam, but cannot be considered a fatal flaw. |

3.6 **Project Infrastructure**

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| Source: Correspondence (14 January 2013) | | |
| This study should also address environmental issues relating to the weir construction both for the OCS Dam and for St Helen's Rock. Excluding the St Helen's rock infrastructure is in direct conflict with the NEMA requirement to consider cumulative impacts. For example, the two weirs together may considerably increase the area of shallow water in the river, leading to additional losses by evaporation. Whilst the volume lost may not be significant in terms of the catchment capacity, it could become significant for the local ecosystem during low flow periods. | (WESSA) | The weir at St Helen's Rock although an integral part of the greater system may or may not be immediately constructed, and the proposed off-channel dam can be operated without the St Helen's Rock weir in the short to medium term. This weir is also different to the weir for off-channel pumping next to the proposed dam, as it is anticipated to increase the flow depth through hydraulic resistance but not impede the flow altogether (by using pilings and not a solid concrete wall). The increase in evaporation will be very small and any additional losses during the critical low |
| There are also other potential impacts such as creating a relatively placid pond which could facilitate the spread of invasive aquatic flora and fauna. | | flow periods would be off-set by releases from the off-channel dam. |

3.7 <u>Environmental Assessment</u>

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| Source: Correspondence (14 January 2013) | | |
| Reference is made in the report to the Mhlabatshane Dam, but no details are given. The draft EIA report must make clear whether there are potential cumulative impacts which need to be considered, and whether the transfer of water between catchments is environmental best practise. As a general principle WESSA does not support inter-catchment transfers, because of the additional negative impacts on both natural hydrological systems. Similarly the report needs to state clearly that no other projects likely to impact on the ecology of the catchment are in the pipeline. If there are such projects then the cumulative impacts must be properly and comprehensively assessed. This includes the possibility of additional OCS or other schemes in the future, since the statement that the two sites are not unique, and therefore one of them can be transformed without excessive impacts is predicated on the alternative ecological assets remaining untransformed. Unless this asset situation is sustainable then this aspect of the motivation is fatally flawed. | (WESSA) | There will be no transfer of water between the proposed off-channel storage dam on the Mzimkhulu and the currently being constructed Mhlabatshane scheme. The reason for mentioning the Mhlabatshane scheme was to highlight the planning of the proposed off-channel storage dam and how the Mhalabtashane scheme had been considered to ensure that the systems were aligned and that planning for the greater area was integrated and made best use of infrastructure and resources. |

3.8 Operation of the Dam

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| Source: Public Meeting (22 November 2012) | | |
| With reference to the current high rainfall experienced in KZN, has climate change been considered? | Paddy Norman (WESSA) | Umgeni Water has conducted various studies on climate change, with varying results. |
| Will evaporation upstream of the weir not cause a substantial loss of water? | | Climate change was considered on a desktop level during the EIA. The dam's full supply capacity will be approximately 16 million m ³ . Evaporation depends on the climate and the surface area. In this case it will be negligible |
| What mitigation measures have been considered for the spillway and the possibility of erosion? | | At this stage, a flip bucket is proposed as the preferred option for energy dissipation. It will be concluded during final design stage |
| Recommended that a plan must be in place to manage the siltation of the dam. | | Releases will be based on DWA operating rules to ensure that optimal water quality is achieved during releases from the OCS |

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| | | dam. |

3.9 <u>Environmental Management Programme</u>

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| Source: Correspondence (14 January 2013) | | |
| We are pleased to see the EMPs included in this report (Appendix F2), as we consider that this is an essential requirement in terms of the NEMA duty of care. Nonetheless we are concerned that the resources and capacity to adequately implement the EMPs for a project like this may not be locally available, and that the local water authority, UGU, especially appears to lack these resources. We note that over the last few weeks there has been widespread criticism of UGU because of their failure to quickly address water supply problems. There also appears to be a chronic shortage of adequately qualified personnel. Given the sensitive nature of ecosystems, and the fact that this project has a direct impact on a river system this lack of capacity is unacceptable. We are aware that during a previous project UGU took care to relocate a number of specimens of flora, but failed dismally to ensure their survival at the new site. In the light of this we would have to question whether UGU has the will and the capacity to successfully implement the "search and rescue aspects recommended in this report. We would also like to see provision for a suitable offset for the lost natural habitat. And again we would have to question whether UGU has either the will and the capacity to implement such a provision, given that they apparently have not yet complied with the provision for this in the RoD issued for the sports complex near Ghamalake. | | As the project proponent, DWA or the implementing agent will be responsible for the implementation of and adherence to the Environmental Management Programmes (EMPrs). DWA may appoint an implementing agent for the project and arrangements for compliance need to be formalised between these parties. The operation of the OCS scheme may be transferred to the Ugu District Municipality or Umgeni Water. The legal requirements of the Environmental Authorisation and Operational EMPr will then also be transferred to one of these legal entities. An independent Environmental Control Officer will be appointed to monitor and audit compliance against the EMPrs and Environmental Authorisation. According to the Terrestrial Ecology Assessment, based on the Terrestrial Systematic Conservation Plan: Minimum Selection Surface (MINSET) from Ezemvelo KZN Wildlife, the Ncwabeni OCS Dam falls within an area that is not of conservation significance. Search, rescue and relocation plan to be developed for sensitive flora species within the construction domain and dam basin. Plan to be implemented in accordance with the project programme to ensure that these sensitive environmental features are rescued prior to potential impact occurrence. Ezemvelo KZN Wildlife to be consulted to ensure that the plan incorporates all these authority' requirements. |

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| | | According to the Aquatic Assessment, in looking at the local catchments associated with the Mzimkhulu River within the region, it was found that the Gugamela and the Ncwabeni River local catchments were not unique and that numerous catchment areas of similar size and state of ecological integrity are associated with the system that could provide alternative habitat opportunities. Considering the above and with the adoption of the mitigations measures that emanated from the EIA, it is believed that the residual impact to flora will not remain significant. Offsets have thus not been recommended. The Resource Management Plan and Operational EMPr could consider this matter further. See above response to capacity of Ugu District Municipality to |
| The draft EMP appears to be quite comprehensive as regards the operations it encompasses, but we are concerned about the provisions for compliance, and the delegation of decision-making for specialist functions | | implement EMPr requirements. The ECO acts as the representative of the Environmental Monitoring Committee (EMC) and is responsible for the monitoring and reporting of compliance. |
| to the project manager. This clearly risks potential conflicts of interest. The project manager is primarily employed to keep the project on track and to minimise costs. This would inevitably conflict with the time and cost of environmental actions, and could prejudice the environmental outcomes. For example, determining the best practise for controlling invasive species is not primarily based on financial criteria, but requires specialist training, and should not be left to the manager's discretion. | | The Project Manager oversees the implementation of the EMPrs and Environmental Authorisation and acts as the interface between the ECO, EMC and the other project role players. |
| We are also concerned that in some areas the EMP is not sufficiently definitive. An EMP has to be written from the basis of ensuring compliance, by looking at the worst-case scenario and assuming that not everyone is both adequately trained and cooperative. For example the phrase "Preserve protected flora species outside of construction areas" sounds good, but implies that if the manager feels like it he can define the construction areas so broadly that destruction of protected species will be excessively widespread. Similarly the requirement to use only indigenous | | During the EIA stage a detailed assessment was conducted to identify all impacts, which were evaluated via contributions from I&APs, the project team and requisite specialist studies, and through the application of the impact assessment methodology contained. Suitable mitigation measures are proposed to manage (i.e. prevent, reduce, rehabilitate and/or compensate) the environmental impacts, and are included in the EMPrs. |
| flora for rehabilitation should be amended to read "locally indigenous". In consequence of the past history of infrastructure projects in this district | | The EMPrs provide a comprehensive list of mitigation measures for specific elements of the project, which extends beyond the impacts evaluated in the body of the EIA Report. Where relevant, |

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| we therefore believe that a more comprehensive and legally enforceable management plan must be compiled and approved prior to the issuing of a permit for this project. | | the EMPrs attempted to be site- and project-specific, and to provide explicit mitigation measures. Due to the extent of the overall project, the following suite of EMPrs was developed to deal with the various key components of the project: • Pre-Construction EMPr; • Construction EMPrs - • OCS Dam; • Re-alignment of D859; and • Abstraction weir, abstraction works, pipeline and access road. The following EMPrs will be developed as further information becomes available during the implementation of the project: • Search, Rescue and Relocation Management Plan for red data, protected and endangered species, medicinal plants, heritage resources and graves; • Ncwabeni OCS Dam Impoundment EMPr; • Rehabilitation Management Plan for disturbed areas outside of the dam inundation area; and • Operational EMPr. |
| We would strongly recommend the appointment of a fully independent ECO, with the authority and mandate to enforce the EMP, if necessary by referring disputes to a higher authority such as the DAEA or SAP environmental crimes unit. The Eco should act as an advisor to the project manager, but report primarily to the permitting authority. | | Term "locally indigenous" employed in EMPrs. The Environmental Control Officer (ECO) is a competent (minimum of 3 years experience) and independent representative, who acts as the EMC monitoring representative for the conducting of independent audits and performing a secretariat function for the EMC. |
| The establishment of a monitoring committee could provide a valuable tool, however it needs to have clearly established functions and authority. It is also essential that its composition gives it credibility and competency, with a predominance of expertise and independence. It should include a limited number of representatives of all the various stakeholder groups, and it may be necessary to provide it with sufficient funding to ensure that the non- | | According to the institutional arrangements and lines of accountability displayed in the EMPrs, the ECO reports directly to the EMC and DEA, which enforces this person's independence. Noted. The EMPr states that appropriate Terms of Reference for the EMC will need to be prepared, which will include roles and responsibilities, membership and functionality (amongst others). |

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| governmental representatives are not excluded due to expenses. | | |
| We would also like to see the inclusion of an EMP for the operational phase of the project, with clear guidelines on the abstraction and release conditions, and a specific requirement for compliance with the legal priorities regarding the ecological reserve. | | The EIA recommended that the Operational EMPr be developed at a later stage, as further information becomes available during the implementation of the project. |
| The operational EMP should also determine what is permissible in terms of additional benefits. It is important to realise that this project could assist in | | Abstractions will be based on DWA operating rules , where abstraction will only take place during peak or high flow periods. Existing water use entitlements are not to be affected. |
| job creation in an area which needs it desperately. For example, the project has potential to support tourism and recreation activities. However, introducing invasive alien species (such as some game fish species) should be prohibited. Similarly there is potential for boating, but power-boats could | | Compliance with the conditions of the Reserve, as determined and administered under the National Water Act (No. 36 of 1998). |
| result in pollution of the resource. | | The future use of the Ncwabeni OCS Dam, as a Government Waterworks, will be detailed in a Resource Management Plan (RMP) which will be compiled by DWA. This plan will take into consideration aspects highlighted to date in the EIA process, such as the access to and utilisation of the OCS Dam by the surrounding rural community (e.g. stock watering) and the possible use of the impoundment for recreational purposes. |
| | | If Ugu District Municipality or Umgeni Water owns the dam it might not be declared a Government Waterworks |
| A separate EIA process for the Eskom power line is not supported, as the two elements are integral. We see no benefit, and considerable extra expense in separating these two parts. Furthermore there are aspects such as visual impact which would constitute cumulative impacts, and these | | Eskom's network to the north of the project site is currently overloaded and at the time when this report was compiled investigations were underway by Eskom to identify possible options and routes to convey power to the project site. |
| must be addressed for the whole project. We are also concerned that if the first part is approved this could lead to a biased consideration and prejudice in favour of the second application. | | For operational purposes of the OCS Dam, a new high voltage power line will supply electricity to the site, for which a separate EIA will be conducted. The most likely route entails bringing power from the south from the Bhobhoyi area near the lime/cement factory. Due process will still need to be followed to receive authorisation for the new power line in terms of the governing legislation. The most suitable alignment will also need to be determined through the requisite environmental assessment and specialist studies. |
| | | An alternative option of utilising hydropower that is already being generated at the Camro Estates farm for pumping purposes has |

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| | | been identified and the feasibility of this option will be evaluated |
| | | further. |