

# **Construction Audit Report 1: Banana City Housing Project**

**Report Prepared for**

**eThekweni Municipality – Department of  
Human Settlements**

**c/o Nelson Allopi and Associates**

**Report Number 574766/CA1**

**Report Prepared by**



**June 2021**

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## **eThekweni Municipality – Department of Human Settlements c/o Nelson Allopi and Associates**

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**SRK Project Number 574766**

**June 2021**

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## List of Abbreviations

DEWATS	Decentralized Wastewater Treatment Systems
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EDTEA	Department of Economic Development, Tourism and Environmental Affairs
EMPr	Environmental Management Programme
FBAR	Final Basic Assessment Report
NEMA	National Environmental Management Act No. 107 of 1998
NEM:WA	National Environmental Management Waste Act No. 59 of 2008
RAP	Relocation Action Plan
SACNASP	South African Council for Natural Scientific Professions

# 1 Introduction and Scope of Report

The eThekweni Municipality Human Settlements Department are undertaking the *in situ* formalisation of 417 low-income residential housing sites, which involves the construction of new houses on a site approximately 8ha in extent at Banana City, Westville, KwaZulu-Natal. Infrastructure such as sewage reticulation, storm water control, roads, electricity supply and potable water connections form part of the *in situ* upgrade.

The sanitation system proposed for the development is based in a two-phased approach. The first phase is the construction and operation of two (2) temporary Decentralised Wastewater Treatment Solutions (DEWATS). The second phase is the decommissioning of the DEWATS and the linking into the existing bulk sewer network. When the Northern Treatment Works has been upgraded and these plants are no longer required, the wastewater can bypass the DEWATS and enter the existing sewer network. At that time, the DEWATS plants are to be removed and additional housing can be constructed in the areas where these plants were located. The relevant environmental approvals for this will need to be obtained in advance, prior to work commencing.

On 4 July 2019, the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) issued an Environmental Authorisation (EA) to the eThekweni Municipality Human Settlements and Infrastructure Unit (Housing) for the Banana City Housing Project (ref: DM/0030/2018). The EA (condition 3.3.1) included approval of the *Draft Environmental Management Programme: Proposed Banana City in situ upgrade Housing Project, eThekweni Municipality, KwaZulu-Natal* (SRK, August 2018) (herein after referred to as 'approved EMPr') that was submitted with the Final Basic Assessment Report (FBAR).

The project is currently in the construction phase. Condition 3.4.5 of the EA requires monthly construction audits to be undertaken by an independent Environmental Control Officer (ECO). SRK Consulting (South Africa) (Pty) Ltd. (SRK) has been appointed by the resident engineer, Nelson Allopi and Associates, on 17 May 2021 to fulfil the role of the independent ECO. This report constitutes the first construction compliance audit report.

## 2 Audit Team

The role of the external auditor / ECO is to provide independent, objective and professional advice regarding compliance of the audited activities in terms of the conditions stipulated in the applicable environmental management document/s issued by, or approved by, the regulating authority.

SRK's independence is ensured by the fact that it is strictly a consultancy organisation, not holding equity in any project and with ownership primarily by staff. This permits its consultants to provide clients with conflict-free and objective support on crucial issues.

This report has been compiled by SRK as the appointed independent consultant and we hereby state that:

- SRK has no financial interest in the undertaking of the activities, other than remuneration for the work performed in terms of the National Environmental Management Act No. 107 of 1998 (NEMA).
- SRK undertakes to disclose to EDTEA, as the regulating authority, any material information that has or may have the potential to influence the decision of the regulating authority or the objectivity of any report, plan or document required in terms of NEMA.
- Based on information obtained during the site inspection and a review of the information provided to us by the client, this report correctly reflects the findings made at the time of the audit and the results and conclusion are presented to the best of our professional judgement.

The members of the SRK audit team are listed below, along with an outline of their expertise. Curriculum vitae for the team are available on request.

### **Environmental Scientists/Environmental Control Officers**

The role of lead auditor / Environmental Control Officer was fulfilled by Mrs. Tamaryn Hale, who was responsible for undertaking the site inspection, data review and compilation of this report. Tamaryn has an Honours Degree in Environmental Science (2007). She also has an International Environmental Management accreditation for Environmental Auditing (2012). Her expertise includes: construction and operation environmental audits for Waste Water Treatment Works, industrial site development, in situ housing upgrades and waste storage facilities; Water Use Authorisation application processes; and Environmental Authorisation application processes. With over 13 years of experience in the field of environmental management, she has a thorough understanding of the evolution and trends of environmental legislation and policy in South Africa. Tamaryn is a Senior Environmental Scientist at SRK, is a certified Environmental Assessment Practitioner (EAP) with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and is a registered natural scientist with the South African Council for Natural Scientific Professions (SACNASP).

The role of assistant auditor / ECO was fulfilled by Siphelele Mkhize. Siphelele has been involved in the field of Environmental Management and Land Rehabilitation for redevelopment for the past 5 years. His expertise includes: Environmental compliance auditing, groundwater and air quality monitoring; Contractor management; public participation and report writing. Siphelele is an Environmental Scientist at SRK and is a certified Candidate EAP with the EAPASA.

### **Partner and Quality Control**

The role of Partner review and quality control for the project was fulfilled by Wouter Jordaan. Wouter is a registered natural scientist with the SACNASP. His expertise includes: environmental compliance, sustainability auditing and environmental and social due diligence and review, with specialisation in industrial facilities; mines; electrification projects (power lines and substations); agricultural and agrochemical industries; renewable energy; and downstream retail petroleum facilities. Wouter has 20 years of experience in the fields of environmental science and GIS analysis. Wouter holds the position of Partner and Principal Environmental Scientist at SRK.

### **Technical Review**

The role of technical review was fulfilled by Kirsten King. Kirsten has 24 years' experience in environmental management and has worked largely in the waste management, mining and industrial sectors for the past 12 years, managing several large EIAs in Southern and Central Africa. Her expertise includes Environmental Impact Assessment, Environmental Management Programmes and Environmental Auditing. Kirsten is a Principal Environmental Scientist at SRK and is a registered EAP with EAPASA.

## **3 Legal Requirements for Audit Reporting**

This audit report meets the requirements for the content of an environmental audit report, as specified in Appendix 7 of the 2014 Environmental Impact Assessment (EIA) Regulations promulgated in Government Notice (GN) 326 on 07 April 2017 (as amended).

Table 3-1 provides a reference in this report for each requirement specified in GN 326.

**Table 3-1: Legal Requirements for the Content of Environmental Audit Reports**

Required content for an environmental audit report as per Section 3(1) of Appendix 7 of the 2014 EIA Regulations (GN 326, 7 April 2017) as amended	Reference in this Report
“(a) details of the - (i) independent person who prepared the environmental audit report; and (ii) expertise of the independent person that compiled the environmental audit report;	Chapter 2: Audit Team
(b) a declaration that the independent auditor is independent in a form as may be specified by the competent authority;	Chapter 2: Audit Team
(c) an indication of the scope of, and the purpose for which, the environmental audit report was prepared;	Chapter 4: Audit Methodology
(d) a description of the methodology adopted in preparing the environmental audit report;	Chapter 4: Audit Methodology
(e) an indication of the ability of the EMPr, and where applicable, the closure plan to- (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan;	Section 6.4: Effectiveness of the Environmental Management Documents
(f) a description of any assumptions made, and any uncertainties or gaps in knowledge;	Section 4.6: Assumptions and Limitations
(g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;	Section 6.5: Consultation
h) a summary and copies of any comments that were received during any consultation process; and	Section 6.5: Consultation
i) any other information requested by the competent authority.”	N/A

## 4 Audit Methodology

The key objectives for the audit were as follows:

- Assess regulatory compliance of the construction activities in terms of the conditions stipulated in the EA issued by EDTEA and the approved *Environmental Management Programme: Proposed Banana City in situ upgrade Housing Project, eThekweni Municipality, KwaZulu-Natal* (SRK, August 2018).
- The responsibilities of the external auditor / ECO are to carry out a physical inspection of the facilities and relevant site records and to prepare and submit a full report to eThekweni Municipality – Department of Human Settlements c/o Nelson Allopi and Associates.

To achieve the audit objectives, the audit activities detailed in the sub-sections below were undertaken.

### 4.1 Preparation

Prior to the audit, a checklist was prepared for the Banana City Housing Project. The checklist was based on the conditions of the EA and the approved EMPr.

### 4.2 Site Inspection

- (1) The site inspection was undertaken on 24 May 2021.

- (2) Prior to visiting the construction areas, a general introductory meeting was held with Mr. Nelson Allopi and Mr. Ruveer Persad of Nelson Allopi and Associates, and Mr. Pranesh Singh and Mr. Pradeep Ramdeo of Gralio Precast.
- (3) The physical inspection of the construction activities was undertaken by Mrs. Tamaryn Hale and Mr. Siphelele Mkhize of SRK.
- (4) Selected photographs, taken during the inspection, are included in **Appendix A**.

### 4.3 Data Review

The relevant documentation required in terms of the audit was reviewed including:

- EA and associated reports;
- The approved EMP; and
- Site records.

As there was no environment file on site, copies of supporting documents were provided by Nelson Allopi, via email, to SRK after the audit.

### 4.4 Compliance Assessment

The audit checklist was utilised to document the observations / findings made for each condition of the EA and EMP during the data review and site inspection. Each condition was assessed in terms of the colour-coding and associated descriptors detailed in Table 4-1.

**Table 4-1: Colour-coding and descriptors used for the respective audit observations**

Non-compliant	Obligations and requirements that were not in place or implemented according to the requirements of the condition at the time of the audit. For non-compliances recommendation(s) and a timeframe of rectification are provided. These will be auditable at the next internal and external compliance audits.
Compliant	Compliant: The licence holder was able to provide evidence of compliance with the condition and / or relevant actions were implemented.
N/A	Conditions that are irrelevant to the phase or activities conducted at the time of the audit or have no auditable measures.

### 4.5 Reporting

This audit report has been prepared in accordance with the following report format requirements:

- (1) Specifically state whether conditions of the relevant EA are adhered to (refer to **Appendix B**).
- (2) Contain recommendations regarding non-compliance or potential non-compliance (refer to **Chapter 6** for detailed information and **Appendix B**).
- (3) Specify target dates for the implementation of the recommendations by the Licence Holder to achieve compliance (refer to **Section 6**, Table 6-1 and Table 6-2).
- (4) Specify whether corrective action taken for the previous audit non-conformances was adequate (not applicable to this first construction audit).
- (5) Include photographic records from the site visit (refer to **Appendix A**).

### 4.6 Assumptions and limitations

The opinions expressed in this report are based on the site conditions observed during the site inspection on 24 May 2021 and a review of the information supplied to SRK by Nelson Allopi and Associates and the Contractor, Gralio Precast. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy



of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

## 5 Audit Observations / Findings

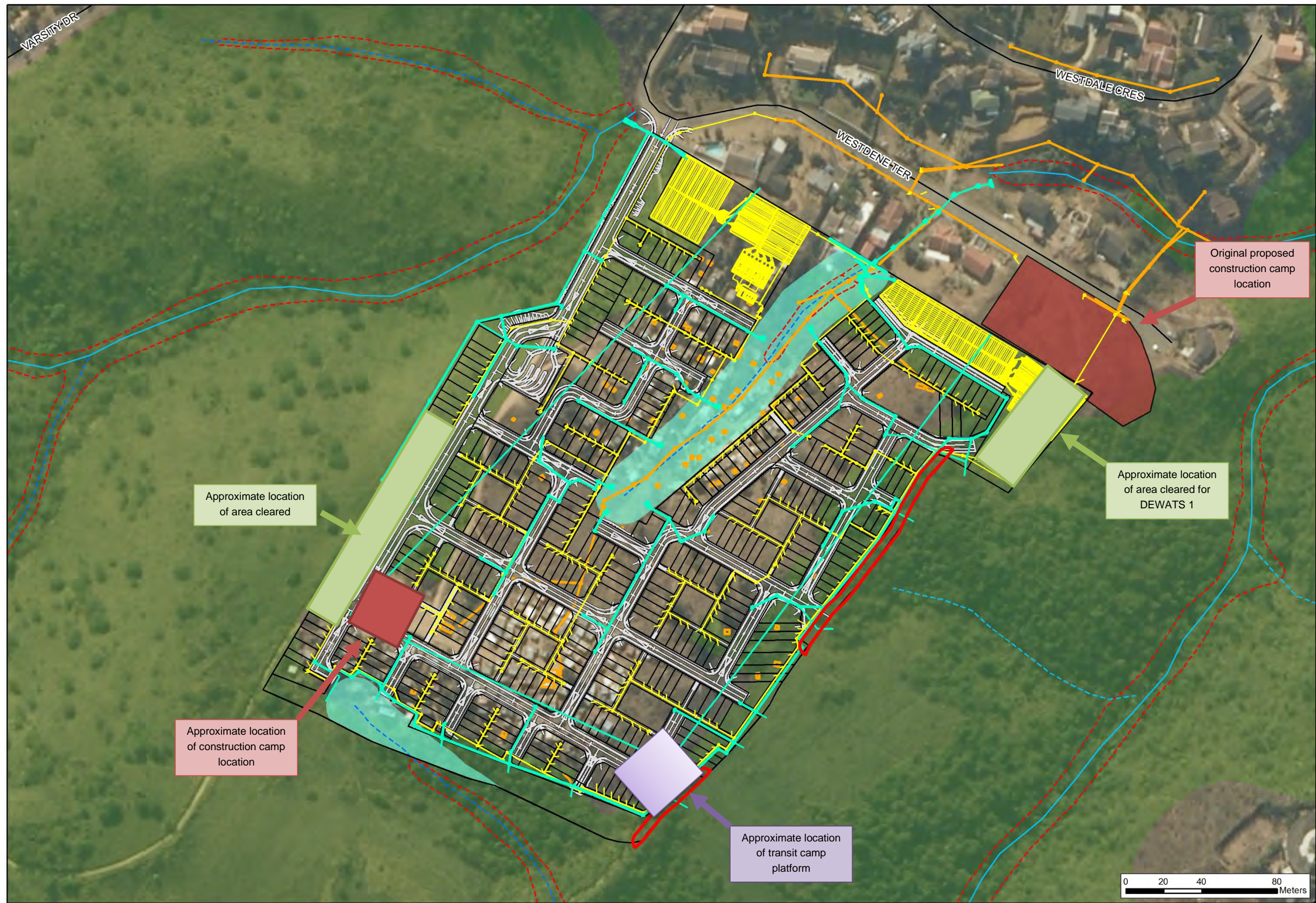
Observations / findings are recorded for each condition of the EA and approved EMPr and are included in **Appendix B**. A summary of the key observations / findings is provided below, with a detailed assessment of compliance provided in Chapter 6:

- The Contractor confirmed that the construction handover occurred in August 2020 and clearing on site commenced in October 2020 (refer to Figure 5-1 for the approximate areas cleared to date). The ECO was only appointed in May 2021. [NOTE: SRK informed EDTEA via email on 21 May 2021 of the appointment of SRK as the ECO].
- No environmental file was available on site.
- Environmental induction training had not been undertaken to date.
- The Contractor noted that a generic EMPr was included in the tender documents and therefore the Contractor has utilised the generic EMPr rather than the approved EMPr.
- No demarcation of sensitive areas (i.e. the water courses and associated 15m buffer and the 5m forest buffer) had been undertaken. The Contractor did, however, note that there are residents living within the watercourse and associated 15m buffer and therefore demarcation of such cannot be undertaken until work within the sensitive area is required.
- Construction of the platform for the transit camp occurred within the 5m forest buffer, which is classified as a no-go area (refer to Figure 5-1 for the approximate location of the transit camp platform). The resident engineer noted, and provided some photographic proof (**Appendix D**), that the area within the 5m forest buffer had been highly disturbed and had been used by the Banana City residents to dispose of waste (this non-compliance is addressed in Table 6-1).
- The Contractor explained that the conditions on site are quite volatile with the community on site and change daily. As such, areas in which the Contractors will work and the space available is not clearly understood.
- The Relocation Action Plan (RAP) in the FBAR noted that a privately owned area of land adjacent to the site would be rented by the Municipality for the duration of the construction phase (refer to Figure 5-1). This piece of land would be the site for the construction camp and would be used as a transit camp to temporarily house residents of Banana City during construction. The Contractor explained that the privately owned land could not be used and therefore an alternative arrangement was required for the construction camp and the transit camp. The construction camp was therefore not established offsite but rather within the development footprint (refer to Figure 5-1). The Contractor further explained that an existing transit camp was identified in New Germany Road, Reservoir Hills. However, upon discussions with the existing residents at the camp and the Rate Payers Association, this site was not suitable for the temporary relocations required. The only viable alternative was to identify an area on site to relocate the Phase 1 residents. The area in the south-eastern corner of the site was identified as a suitable area (refer to Figure 5-1). Whilst the amended approach to the RAP has not been documented and formally approved by the Municipality, the Municipality was involved with the negotiations with the owner of the adjacent land and the stakeholders at the transit camp. The final decision to house residents on site was the decision of the Municipality.
- The construction camp was established without input from the ECO. The location of the camp within the development footprint in the south-western corner of the site is, however, highly constrained due to several factors. The camp has been located away from adjacent properties and has been kept outside of sensitive areas. As such, SRK is satisfied with the location of the camp. It is noted that the construction camp is situated within the development footprint and as such will need to be relocated at some point during the course of the construction phase.

- A construction phase Stormwater Management Plan (SWMP) has not been compiled.
- Clearance of the site is being undertaken in a phased approach. This is particularly appropriate as it is an in situ upgrade and clearance of vast areas of land without infrastructure is not possible.
- The Contractor explained that the site contains vast swaths of rubble and rubbish. During the site clearance the rubble and rubbish was loaded directly onto Durban Solid Waste trucks, reportedly for disposal at an appropriately licensed waste disposal facility. No waste disposal certificates were available at the time of the audit.
- No waste storage areas for construction waste have been designated to date. Black bags for general waste have been provided within the construction camp, however, these are not in bins equipped with closing mechanisms.
- An incident/complaints procedure has been established, however, a register was not available at the time of the audit.
- The Contractor explained that once an area has been cleared and levelled there is regular disposal of general waste (not construction related waste) onto the cleared area by the Banana City community. Evidence of this was noted on site.
- The Contractor noted that he was not aware of the requirement for an approved Rehabilitation Plan to be in place prior to commencement of construction. This matter is the responsibility of the EA holder, eThekweni Municipality.
- At the time of the audit, construction activities within the riparian areas had not yet commenced. A General Authorisation in terms of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) was obtained for the DEWATS. It is noted that a Water Use Authorisation in terms of the NWA for the rehabilitation of the wetland areas will be required prior to commencement of rehabilitation in the wetland areas, as such authorisation is not currently in place
- The Contractor explained that there will be no storage of dangerous goods (e.g. diesel or petrol bowsers) on site, the vehicles delivering fuel have spill kits and all maintenance of vehicles occurs off site. There is a container within the construction camp that is locked and can be utilised for storage of dangerous goods (e.g. paint, oils or lubricants), should the need arise.
- The Contractor had no incidents to report at the time of the audit.
- There is only one existing access road to the site and this is being utilised as the only access point.
- The Contractor noted that blasting has not occurred, however, it will be required in certain areas of the site. SRK noted that the surrounding landowners must be informed prior to commencement of the disruptive activity.
- No wastewater had been generated on site at the time of the audit.
- The Contractor noted that dust is an issue on site and when dust becomes a problem a water tanker is used to suppress dust.
- Whilst the platform for the DEWATS has been cleared (refer to Figure 5-1), construction of the facilities is yet to commence.
- The Contractor noted that local sub-Contractors have been employed to undertake work on site where possible.
- The Contractor explained that an external safety officer has been appointed for the duration of the construction phase. The safety officer is permanently based on site.
- The construction camp was kept clean and tidy.
- The entire site is fenced, however, there are missing panels from at least two sections of the fence in proximity to the working areas. There is no evidence that the construction activities have caused the break in the fence line. It is, however, noted that next to the one section of missing panels along the western boundary of the site, excavations have exposed the foundations of several fence panels and it is only a matter of time before these collapse.
- There were no soil stockpiles, waste stockpiles or topsoil stockpiles on site at the time of the audit.
- A copy of the final approved layout plan is included in the audit report (**Appendix E**).
- Interested and Affected Parties were notified of the EA decision by SRK within the stipulated timeframe. Proof of such is included in **Appendix C**.
- The Contractor explained that two Community Liaison Officers (CLO) have been appointed for the construction phase (one representing Banana City residents and one Umgudulu residents). The CLOs are permanently based on site.

- The Contractor explained that there are several formalised ablution facilities across the site for the Banana City residents. These facilities have and will be used by the construction staff for the duration of the construction phase. Two chemical toilets have been provided in the demarcated construction camp. Proof of regular cleaning was provided to SRK.
- Where possible the working area has been cordoned off. The construction area is, however, within an existing informal development and as such cannot be completely cordoned off from the public. The construction camp has been completely enclosed with access control and signage has been erected around the site informing Banana City residents of the construction activities.
- Signage has been placed at the only entrance to the site informing persons entering the site that construction is in progress.





- Legend**
- Preferred Layout
  - Existing Sewer
  - Proposed Sewer Layout
  - Proposed Road layout
  - Proposed Stormwater Layout
- Drainage Lines**
- River (perennial)
  - Stream (perennial)
  - Stream (seasonal)
  - Stream (ephemeral)
  - Main Roads
- Forest Buffer (5m)
  - Riparian Areas
  - Construction Camp Site
  - Aquatic Buffers (15m)
  - DMOSS (2016)

Data Source:	
Scale:	
1:2,000	
Projection:	Datum:
TM	HH94
Central Meridian/Zone:	
Lo31	
Date:	Compiled by:
13/09/2018	GOVN
Project No:	Fig No:
574766	5-1



## 6 Assessment of Compliance

This Section provides an overview of the audit findings for Construction Audit 1.

### 6.1 Non-compliances and Action Items

A summary of the action items to rectify the non-compliances with the EA and EMPr are provided in Table 6-1 (refer to **Appendix B** for the detailed assessment). The timeframes in which to achieve such compliance are further noted in Table 6-1.

**Table 6-1: Summary of action items and associated timeframes for non-compliances**

EA Condition	EMPr Condition	Action Items	Timeframes
3.3.2	N/A	An environmental file must be compiled and maintained with relevant documentation for the duration of the construction phase.	Prior to the next audit.
3.3.4 3.3.5.2 3.37	5.1.5.1 5.1.5.3 5.1.5.4 5.1.11.1	1) Environmental induction training of all Contractors and staff working on site must be undertaken. 2) A training register must be maintained in the environmental file. 3) For the remainder of the construction phase, new sub-Contractors or staff must undergo training prior to commencing work on site.	Prior to the next audit.
3.4.2	N/A	No recommendations are required as the ECO has now been appointed.	
3.5.1	N/A	A letter informing EDTEA of the commencement of construction must be submitted.	Prior to the next audit.
3.8 3.9	N/A	Proof of approval of the final layout plan by the municipality must be provided to the ECO and included in the environmental file.	Prior to the next audit.
3.10 3.40 3.42	5.2.7.8 5.2.8.1	1) The transit camp platform must be brought back, out of the 5m forest buffer and the area rehabilitated with indigenous vegetation. An ecologist must provide guidance on the rehabilitation and vegetation used. 2) The 5m forest buffer must be demarcated with a physical barrier and designated a No-go area.	Prior to the next audit.
3.11	5.1.1.1	1) The RAP must be updated with the current plan and submitted to eThekweni for formal approval. 2) Proof of approval must be kept on file.	Prior to the next audit.
3.14	N/A	When relocation of the construction camp is required, the new location must be discussed and agreed to with the ECO prior to relocation.	Prior to commencement of relocation of the camp.
3.15 3.41		1) Temporary suitable fencing should be placed over the missing panels in proximity to the working area. 2) The exposed foundations of the fence panels must be reinstated to avoid potential collapse of the fence line. 3) The University must be contacted to permanently fix the missing fence panels. 4) The CLO must inform the community that the use of the adjacent land is illegal trespassing.	Prior to the next audit.
3.52	N/A	As soon as residents are removed from the sensitive buffer areas in preparation for construction activities, the sensitive areas must be cordoned off with a physical barrier.	Prior to construction activities in sensitive areas.
N/A	5.1.3.1	A draft Environmental Site Management Plan (ESMP) should be compiled based on the current proposed work	Prior to the next audit.

EA Condition	EMPr Condition	Action Items	Timeframes
		plan. Any changes to the draft plan should be communicated with the ECO.	
N/A	5.1.3.2	The new location of the construction camp must be discussed with the ECO prior to relocation.	Prior to relocation of the construction camp
N/A	5.1.5.2	Environmental matters requiring attention must be minuted in the monthly progress meetings and minutes kept in the file.	Throughout the construction phase.
3.27 3.28	5.1.6.3 5.1.7.1 5.1.7.3 5.2.5.10 5.2.5.11 5.2.5.12 5.2.5.15 5.2.7.15	1) A Stormwater Management Plan for the construction phase must be compiled and implemented before the next audit. 2) A copy of the construction SWMPs must be on file. 3) A copy of the approval from eThekweni must be on file. 4) The conditions of the approval in principle received from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.	The construction SWMP must be compiled and approved prior to the next audit.
N/A	5.1.8.2 5.2.7.6 5.2.7.7	The water resource and associated 15m buffer areas must be demarcated once the residents had been removed from these sensitive areas.	Prior to commencement of construction activities within the sensitive areas.
N/A	5.1.9.1 5.1.9.2 5.1.9.3 5.1.9.4	1) Designated waste areas must be established. 2) Bins with a closing mechanism must be provided. 3) A record of disposal to Durban Solid Waste (DSW) must be kept in the environmental file on site. 4) Waste storage areas must be identified within the construction camp.	Prior to the next audit.
N/A	5.1.9.6	Department of Water and Sanitation (DWS) must be informed of the use of DSW to dispose of waste and the facility to which the waste is being disposed. This must be undertaken prior to the next audit.	Prior to the next audit.
N/A	5.1.10.4 5.1.10.5 5.2.11.6 5.2.14.1	1) The residents must be informed by the CLO of the complaints procedure. 2) An incident / complaints register must be kept in the file on site. All queries and complaints must be handled in accordance with condition 5.1.10.6 of the EMPr.	Prior to the next audit.
N/A	5.1.10.11 5.2.2.4 5.2.10.1.4 5.2.10.1.6	1) The CLO should inform the Banana City community that should illegal disposal of waste continue within the construction area, this will delay construction activities. 2) The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. 3) The Contractor must provide litter bins within the construction camp for general waste for the construction staff.	Prior to the next audit.
N/A	5.1.14.1 5.1.14.2	1) The municipality must, as a priority, appoint a terrestrial ecological specialist to compile a rehabilitation plan and obtain approval thereof. 2) A copy of the approved plan, and proof of approval must be kept on file.	Appointment of a specialist must be undertaken by the next audit. Timeframes for approval of the plan must be provided by the third construction audit.

## 6.2 General Action Items

The action items detailed in are provided to ensure continued compliance with conditions of the EA and EMPr and prevent non-compliances occurring for the remainder of the project.

**Table 6-2: Summary of general action items and associated timeframes**

No.	Action Items	Timeframes
1	A copy of this report, and future audit reports, must be maintained in the environmental file on site.	For the duration of the construction phase
2	A Water Use Authorisation, and any other associated authorisations for the wetland rehabilitation must be obtained from the Department of Water and Sanitation, and other relevant authorities prior to commencement of rehabilitation.	Prior to commencement of rehabilitation activities within the wetland
3	The adjacent landowners must be informed of the disturbance and the anticipated duration thereof.	Prior to commencement of blasting, or other such disruptive activities
4	It is recommended that a copy of the contact details for the key role players be kept in the environmental file.	Prior to the next audit
5	A geotechnical investigation must be undertaken prior to commencement of construction of the DEWATS.	Prior to the construction of the DEWATS
6	It is recommended that designated areas for storage of construction waste (e.g. cement bags, paint tins etc.) be established.	Prior to the next audit

## 6.3 Effectiveness of Environmental Management Documents

The effectiveness of the Environmental Management documents could not be ascertained in this first construction audit. This is due to the Contractor not being aware of the approved EMPr and the absence of environmental induction training. The next construction audit will be better placed to make this assessment.

## 6.4 Consultation

The results of this audit report are to be presented by the Contractor and discussed in the next project progress meeting scheduled for 8 June 2021, 10.00am on site.

## 7 Conclusion

Based on the findings of the Construction Audit 1 undertaken on 24 May 2021, and subsequent correspondence with the Contractor and Resident Engineer, several major and minor-non-compliances were recorded. The remedial action taken to rectify these non-compliances will be assessed at the next construction audit.

The next construction compliance audit will be undertaken on 21 June 2021.

Prepared by

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Ms. K. King *EAP*

Principal Environmental Scientist

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.



## Appendices

## **Appendix A: Photographic Record of Site Inspection**



Plate 1: Fire extinguisher located within the construction camp



Plate 2: Chemical toilets located within the construction camp





Plate 3: Machinery stored in construction camp



Plate 4: Water provided within the construction camp





Plate 5: Black bag made available for general construction waste, however, it should be in a bin with a lid that can close



Plate 6: Construction camp is access controlled with signage informing the community that this is the site office



Plate 7: Platform cleared along south-western boundary of the site

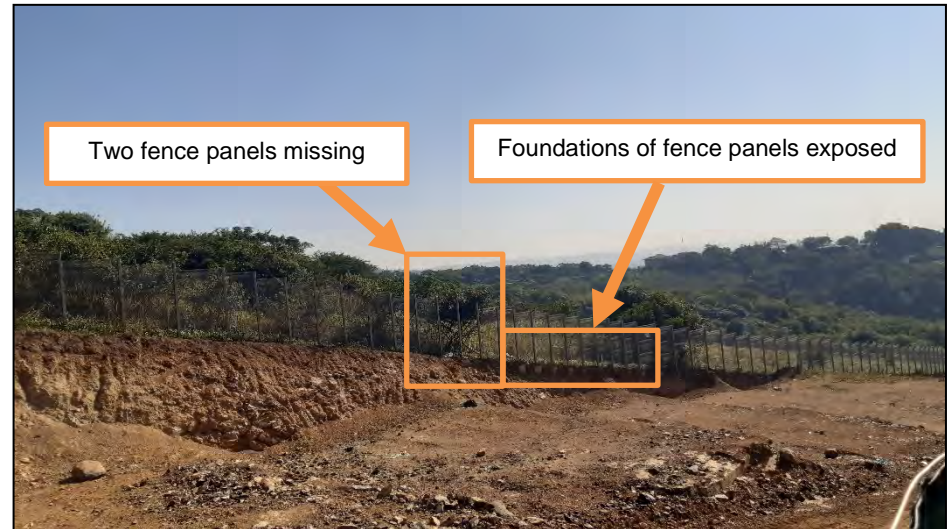


Plate 8: Fenceline along the western boundary of the site indicating missing fence panels and excavation of fence panel foundations compromising integrity of fenceline





Plate 9: General domestic waste disposed of adjacent to working area and construction camp



Plate 10: One of the Containerised Ablution Blocks located across the site for residents and utilised by construction staff



Plate 11: Head of the water course running through the centre of the site showing infrastructure and residents within the water course and associated 15m buffer



Plate 12: Platform cleared for transit camp





Plate 13: Toe of the transit camp platform touching the boundary fence and within the 5m forest buffer



Plate 14: Poorly maintained chemical toilets (not provided by the contractor) established at a break in the fenceline along the south-western boundary showing disposal of general domestic waste into the adjacent sensitive forest area by residents



Plate 15: Edge of the transit camp platform with the embankment potentially partially encroaching on the DMOSS land



Plate 16: Informal infrastructure located within the head of the watercourse along the southern boundary of the site





Plate 17: Platform cleared for the DEWATS 1

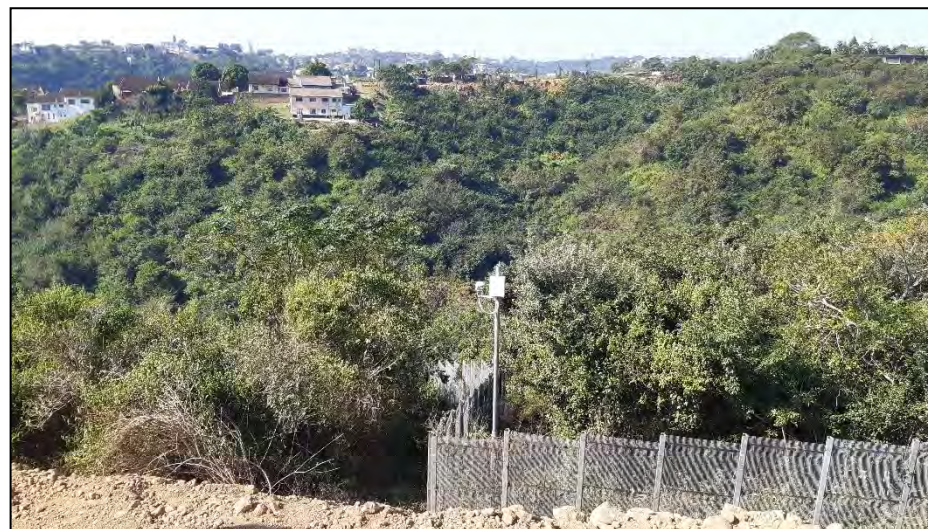


Plate 18: Edge of the DEWATS 1 platform



## **Appendix B: Detailed Compliance Assessment**

**Table 1: Record of compliance with conditions of the Environmental Authorisation, proposed remedial action and associated timeframes**

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
<b>2. General</b>				
2.1	<b>Compliance with the conditions of this environmental authorisation (EA):</b> In terms of section 24F of the National Environmental Management Act, 1998 (Act No. 107 of 1998), no person may commence with an activity listed in terms of section 24(2) (a) or (b) of the Act, unless the competent authority has granted an EA.	Partially Non-compliant	Not all conditions of the EA and EMPr have been complied with. Refer to the sections below for the non-compliances recorded.	Not applicable
2.2	<b>Understanding the conditions of this authorisation:</b> It is the responsibility of the holder of the EA to understand the conditions of this authorisation. Any queries regarding this EA must be submitted in writing to the Department as per contact details specified in condition 2.4 herewith.	Partially compliant	It is noted that induction training was undertaken with the Contractor, Resident Engineer and CLO on Tuesday, 8 June 2021. The holder of the authorisation will need to undergo the training.	Not applicable
2.3	<b>Amendments to the project and update of the Environmental Management Programme (EMPr)</b>			
2.3.1	Any changes to, or deviations from, the project description set out in this EA must be approved, in writing, by the Department before such changes or deviations may be effected.	N/A	None	Not applicable
2.3.2	Any subsequent amendments to the approved EMPr must also be submitted to the Department for review. The amendments must only be implemented after being approved by the Department.	N/A	None	Not applicable
2.3.3	This EA does not negate the EA holder's responsibility to comply with any other statutory requirement that may be applicable to the carrying on of the activities.	Compliant	A General Authorisation for the DEWATS plants was obtained.	Not applicable
2.3.4	The Department retains the right to inspect the project area at any time during all phases of the development in accordance with relevant legislation.	N/A	None	Not applicable
2.3.5	It is the responsibility of the EA holder to ensure that the Department is made aware of any change of ownership or contact details within thirty (30) days of such changes. Where applicable, an amendment application must be submitted.	N/A	None	Not applicable
2.3.6	The holder of the EA must ensure that all workers be supplied with appropriate personal protective equipment/clothing (PPE/C) and management must ensure that all staff wear the necessary PPE/C during the construction phase.	Compliant	The contractor explained that an external safety officer has been appointed for the duration of the construction phase. The safety officer is permanently based on site.	Not applicable
2.3.7	Please note that it is the responsibility of the EA holder to ensure the details are correct at the time of submitting any documentation and that the documentation reaches the relevant official.	Compliant	None	Not applicable

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
2.4	Contact details of the Department	Compliant	None	Not applicable
3. Conditions of the Environmental Authorisation				
3.1	<b>Period of validity:</b> The listed activities authorised must commence within ten (10) years from the date of issue. If commencement of the authorised activity/ any of the authorised activities does not occur within that period, this EA lapses.	Compliant	The EA was issued in July 2019 and the Contractor confirmed that the construction phase commenced in October 2020.	Not applicable
3.2	<b>Notification to interested and affected parties</b>			
3.2.1	The holder of the EA must notify all registered interested and affected parties, in writing and within fourteen 14 calendar days from date of the Department's decision to authorise the activity.	Compliant	Proof of notification via email is included in the audit report.	Not applicable
3.2.1.1	The notification referred to must:	Compliant		
3.2.1.1.1	Specify the date on which the authorisation was issued;			
3.2.1.1.2	Inform the interested and affected party of the appeal procedure provided for in the National Appeal Regulations, 2014 as amended on 07 April 2017; and,			
3.2.1.1.3	Advise the interested and affected party that a copy of the authorisation will be furnished on request.			
3.3	<b>Environmental Management Programme (EMPr)</b>			
3.3.1	The Environmental Management Programme (EMPr) prepared by Messrs SRK Consulting (South Africa) (Pty) Ltd and submitted as part of the Final BAR received by the Department on 19 March 2019, for the construction and operational phases of this project as submitted for the EA of this project which complies with section 24N of NEMA and Appendix 4 of the EIA Regulations, 2014, as amended on 07 April 2017. This EMPr is hereby approved and must be implemented throughout the above-mentioned phases of the project.	Compliant	None	Not applicable
3.3.2	The EMPr must be kept on site throughout the construction and rehabilitation phases of the development.	Non-compliant	No environmental file was available on site.	An environmental file must be compiled and maintained with relevant documentation for the duration of the construction phase.
3.3.3	Non-compliance with the approved EMPr will constitute non-compliance with the conditions of this EA.	Non-compliant	None	Not applicable
3.3.4	EMPr is considered as an extension of the EA. Each official and/or worker operating on site must be educated about the EMPr and made aware of his/her responsibilities. Proof of this must be attached to the first audit report submitted to the	Non-compliant	Environmental induction training had not been undertaken.	Environmental induction training of all contractors and staff working on site must be undertaken. The current staff must undergo training before the next audit. For the remainder of the

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	Department as per contact details specified in condition 2.4 herewith.			construction phase, new contractors or staff must undergo training prior to commencement with work on site.
3.3.5	The approved EMPr must be:			
3.3.5.1	Made binding on all parties operating on the site during all phases of the project and;	Non-compliant		
3.3.5.2	Included in all contractual documentation for the construction and operational phase of the development.	Non-compliant	The contractor noted that a generic EMPr was included in the tender documents and therefore the contractor has utilised the generic EMPr rather than the approved EMPr.	Environmental induction training of all contractors and staff working on site must be undertaken. A register must be maintained in the environmental file. For the remainder of the construction phase, new sub-contractors or staff must undergo training prior to commencing work on site.
3.3.6	A copy of the approved EMPr together with any documents that need to be attached to the EMPr must be forwarded to the CME component - eThekweni District with contact details as specified in condition 2.4 herewith	Compliant	All required documents have been appended to the audit report.	
3.4	<b>Monitoring and Reporting to the Department</b>			
3.4.1	All requirements for the management, monitoring and reporting of impacts for all phases of the project must be as specified in the EMPr or environmental audit report.	Compliant		
3.4.2	An independent Environmental Control Officer (ECO) must be appointed prior to the commencement of the construction phase to monitor the implementation of the approved EMPr and EA.	Non-compliant	The contractor confirmed that construction handover occurred in August 2020 and clearing on site commenced in October 2020. The ECO was only appointed in May 2021. The EDTEA was informed via email on 21 May 2021 of the appointment of SRK as the ECO .	No recommendations required.
3.4.3	Should the ECO for the approved development change at any time, this must be communicated, in writing, to the CME component - eThekweni District with contact details as specified in condition 2.4 herewith within fourteen (14) calendar days of appointing the new ECO.	N/A		
3.4.4	The notification in terms of condition 3.4.3 above must include contact details for the ECO, details pertaining to the ECO's relevant experience, and reasons for the change in ECO.	N/A		
3.4.5	The ECO must conduct one (01) site visit per month during the construction phase and one (01) post construction site visit.	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
3.4.6	The holder of the EA must conduct on-going monitoring as a commitment within the buffer areas	Compliant		
3.4.7	The responsibilities of the ECO must include inter alia:	Compliant		
3.4.7.1	Performing all tasks assigned to the ECO in the approved EMPr;			
3.4.7.2	Keeping record of all activities on site, problems identified and transgressions noted;			
3.4.7.3	Assisting the EA holder in ensuring/enforcing implementation of the EA and EMPr; and,			
3.4.7.4	Providing guidance/advice that ensures implementation of appropriate environmental management measures and adherence with environmental legislation/regulations.			
3.4.8	Records relating to monitoring and auditing must be kept on site by the ECO and made available for inspection to this Department and other relevant authorities.	Compliant	This report provides a record.	A copy of this report, and future audit reports, must be maintained in the environmental file on site.
3.4.9	The activity authorised must only be carried out at the location/s as described in Section 1 above.	Compliant		
3.5	<b>Written notice of the commencement of the construction and operational phases</b>			
3.5.1	Not less than seven (07) days written notice must be given to the Department that the construction phase will commence. Commencement for the purposes of this condition includes site preparation. The notice must include the EIA reference number DM/0030/2018, a date on which it is anticipated that construction will commence and a copy of the signed EA together with any other subsequent amendment if applicable	Non-compliant	A letter had not been submitted to EDTEA at the time of the audit.	A letter informing EDTEA of the commencement of construction must be submitted before the next audit.
3.6	<b>Availability of this EA</b>			
3.6.1	A copy of this EA must be kept by the EA holder and made available to any authorised official of the Department on request.	Compliant		
3.6.2	The Department shall not be held responsible for any damages or losses suffered by the holder or successor in title in any instance where construction/commissioning may be temporarily or permanently stopped for reasons of non-compliance by the holder of the EA with the conditions of the EA as set out in this document or any other subsequent document emanating from these conditions of the EA	Compliant		
<b>Commissioning of the activity</b>				
3.7	The development must comply substantially with the Development Layout Plan prepared by Nelson Allopi and Associates cc, with Project Number 369-001-001, dated 08/02/2018 submitted as part of the final BAR dated March	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	2019, depicted as Annexure 3: Development Layout Plan attached herewith. Should there be any changes to the approved layout plan; the Department must be informed in writing prior to the implementation of the change and the Department will provide a written response to confirm whether such changes are of a substantive nature or not			
3.8	The final layout plans must be submitted for approval to the eThekweni Municipality prior to the commencement of construction.	Non-compliant	No proof of approval could be provided.	Proof of approval of the final layout plan by the municipality must be provided to the ECO and included in the environmental file. A copy of the final approved layout plan is included in the audit report.
3.9	The final approved layout plans must be submitted to this Department: CME section as per condition 2.4 herewith prior to the commencement of construction.	Non-compliant	No proof of submission could be provided.	Proof of approval of the final layout plan by the municipality must be provided to the ECO and included in the environmental file. A copy of the final approved layout plan is included in the audit report.
3.10	All sensitive areas must be demarcated with a physical barrier that cannot be destroyed or removed so as to clearly indicate "no-go" areas to the contractor, except for rehabilitation purposes.	Non-compliant	No demarcation of sensitive areas had been undertaken. The contractor did, however, note that there are residents living within the sensitive areas and therefore demarcation of such cannot be undertaken until work in a sensitive area is required. Having said this, the 5m forest buffer had not been demarcated and construction has occurred within this buffer.	The platform must be brought back, out of the 5m forest buffer and the area rehabilitated with indigenous vegetation. 3) The platform must be brought back, out of the 5m forest buffer and the area rehabilitated with indigenous vegetation. An ecologist must provide guidance on the rehabilitation and vegetation used. The 5m forest buffer must be demarcated with orange bags or other such physical barrier and designated a No-go area.
3.11	The Relocation Action Plan (RAP) as contained in the final BAR, dated March 2019 must be approved by the eThekweni Municipality prior to the commencement of construction. Once approved; this plan must be complied with and implemented on site.	Non-compliant	The Relocation Action Plan (RAP) in the FBAR noted that a privately owned area of land adjacent to the site would be rented by the municipality for the duration of the construction phase. This piece of land would be the site for the construction camp and would be used as a transit camp to temporarily house residents of Banana City during construction. The contractor explained that the privately owned land could not be used and therefore an alternative	The RAP must be updated with the current plan and submitted to eThekweni for formal approval. Proof of approval must be kept on file.

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
			arrangement was required for the construction camp and the transit camp. The construction camp was established within development footprint. The contractor further explained that an existing transit camp was identified in New Germany. However, upon discussions with the existing residents at the camp and the Rate Payers Association, this site was not suitable for the temporary relocations required. The only viable alternative was to identify an area on site to relocate the Phase 1 residents. The area in the north-western corner of the site was identified as a suitable area. Whilst the amended RAP has not been formally approved by the Municipality, the Municipality was involved with the negotiations with the owner of the adjacent land and the stakeholders at the transit camp. The final decision to house residents on site was the decision of the Municipality.	
3.12	Chemical ablution facilities used during the construction phase must:	Compliant	The contractor explained that there are several formalised ablution facilities across the site for the Banana City residents. These facilities have and will be used by the construction staff for the duration of the construction phase. Two chemical toilets have been provided in the demarcated construction camp. Proof of regular cleaning was provided to SRK.	
3.12.1	Not cause any pollution to the receiving environment neither should it be a health hazard to the general public.			
3.12.2	Be cleaned regularly and disposed of at a registered wastewater treatment facility; and,			
3.12.3	Be removed from site when the construction and rehabilitation phases have been completed and a safe disposal certificate must be obtained as proof and attached to the audit report.			
3.13	The construction camp/s must be situated away from adjacent properties and outside of any sensitive areas and must be easily accessible to all workers.	Compliant		
3.14	The location of the construction camp/s must be negotiated and agreed upon by the holder of the EA, the contractor and ECO for the project.	Non-compliant	The construction camp was established without input from the ECO. The location of the camp is, however, highly constrained due to several factors. The	When relocation of the construction camp is required, the new location must be discussed with the ECO prior to relocation.

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
			camp has been located away from adjacent properties and has been kept outside of sensitive areas. As such, SRK is satisfied with the location of the camp. It is noted that the construction camp is situated within the development footprint and as such will need to be relocated at some point during the course of the construction phase.	
3.15	Prior to the commencement of the construction phase, a shade cloth screen must be erected around the working area to prevent the unnecessary spread of any material into neighbouring properties.	Non-compliant	<p>The entire site is site is fenced, however, there are missing panels from at least two sections of the the fence in proximity to the working area. There is no evidence that the constuction has caused the break in the fenceline. It is, however, noted that next to the one section of missing panels along the western boundary of the site excavations have exposed the foundations of several fence panels and it is only a matter of time before these collapse.</p> <p>A shade cloth screen has been erected around the construction camp, which should contain the spread of material stored within the camp.</p>	<p>Temporary bonnox fencing should be placed over the missing panels in proximity to the working area.</p> <p>The exposed foundations of the fence panels must be reinstated to avoid potential collapse of the fenceline.</p> <p>The University must be contacted to permanently fix these missing fence panels.</p> <p>The CLO must inform the community that the use of the adjacent land is illegal trespassing.</p>
<b>Construction Phase</b>				
3.16	During the construction phase, the working area must be cordoned off from the public	Compliant	Where possible the working area has been cordoned off. The construction area is, however, within an existing informal development and as such cannot be completely cordoned off from the public. The construction camp has been completely enclosed and signage has been erected around the site informing Banana City residents of the construction activities.	
3.17	Adequate and proper signage must be erected on the site to warn workers, the community and motorists that construction is in progress.	Compliant	Signage has been placed at the only entrance to the site informing persons entering the site that construction is in progress.	
3.18	No fires are permitted on site. Fire extinguishers must be made available on site during the construction phase of the development	Compliant	Fire extinguishers were observed in the construction camp.	



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
3.19	Cement mixing must be carried out on a hard surface or on cement mixing trays. Cement mixing must not be permitted to occur on bare ground or areas prone to erosion.	Compliant	Mixing of cement had not commenced at the time of the audit. The Contactor was informed of the need to comply with the requirements of the EA and EMPr at the time of mixing of cement.	
3.20	The following conditions apply to the development areas which falls within sensitive areas i.e. watercourses:			
3.20.1	The extent of the environmental degradation damage must be minimal;	Compliant	At the time of the audit, construction activities within the riparian areas had not yet commenced.	
3.20.2	The riparian areas must be rehabilitated immediately after the disturbances caused due to construction related activities;	Compliant	At the time of the audit, construction activities within the riparian areas had not yet commenced.  It is, however, noted that a Water Use Authorisation in terms of the National Water Act, 1998 (Act No. 36 of 1998) for the rehabilitation of the wetland areas is required prior to commencement of rehabilitation in the wetland areas.	A Water Use Authorisation for the wetland rehabilitation must be obtained from the Department of Water and Sanitation prior to commencement of rehabilitation.
3.20.3	If there are any banks adjacent to the construction site, the bank must be stabilised;	Compliant	There are currently no banks requiring stabilisation.	
3.20.4	All areas to be utilised by construction machinery must be clearly demarcated and rehabilitated accordingly; and	Compliant		
3.20.5	The invasive alien vegetation must be removed and re-planted with locally indigenous vegetation.	Compliant	All vegetation has been removed from the construction area. Rehabilitation will occur once construction in the area has been completed.	
3.21	The following conditions apply to the storage of dangerous substances on site during the construction phase:			
3.21.1	Dangerous substances must be stored in the construction camp under lock and key;	Compliant	There is a container within the construction camp that is locked and can be utilised for storage of dangerous goods (e.g. paint, oils or lubricants), should the need arise.	
3.21.2	The site Engineer or ECO must ensure that the storage and utilisation of any potentially dangerous materials such as, but not limited to, diesel, petrol, oils and/or lubricants do not result in any form of soil and water pollution; and,	Compliant	The contractor explained that there will be no storage of dangerous goods (e.g. diesel or petrol bowsers) on site, the vehicles delivering fuel have spill kits and all maintenance of vehicles occurs off site.	
3.21.3	Any soil/groundwater polluted during construction must be removed, stored in a sealed container and disposed thereof at a licensed disposal facility. Safe disposal certificates must be obtained and made available to the Department upon request.	Compliant	The contractor had no incidents to report at the time of the audit.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
<b>Traffic Management</b>				
3.22	Construction vehicles must be parked in a designated area which must not disrupt vehicle traffic from surrounding areas. All vehicles to remain in the parking area designated within the construction site when not in use	Compliant	Vehicles were parked in the construction camp area during the audit.	
3.23	Construction vehicles and machinery must make use of existing access routes. Should this not be possible, an alternative route must be agreed upon with the ECO and the CME component of the Department.	Compliant	There is only one existing access to the site and this is being utilised as the only access point.	
3.24	Traffic control measures must be implemented should the access roads be affected by the ingress and egress of construction vehicles and equipment.	Compliant		
<b>Air Quality and Noise</b>				
3.25	Machinery and equipment must always be used in accordance with the approved EMPr.	Compliant	Refer to the EMPr section for more details.	
3.26	Surrounding land owners must be notified in writing prior to commencement of disruptive activities during the construction phase. Proof of this must be submitted to the Department: CME section as per contact details specified in condition 2.4 herewith.	Compliant	The contractor noted that blasting has not occurred, however, it will be required in certain areas of the site. SRK noted that the surrounding landowners must be informed prior to commencement of the disruptive activity.	Prior to commencement of blasting, or other such disruptive activities, the adjacent landowners must be informed of the disturbance and the anticipated duration thereof.
<b>Stormwater Management</b>				
3.27	A Stormwater Management Plan (SWMP) must be compiled for the construction and operation of the development which must include but not limited to the following:	Non-compliant	A copy of the construction phase Stormwater Management Plan was not available.	A Stormwater Management Plan for the construction phase must be finalised and implemented before the next audit. A copy of the construction and operation SWMPs must be on file. A copy of the approval from eThekweni must on file. The conditions of the approval in principle received from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.
3.27.1	To reduce erosion on site, stormwater must be attenuated and the cause of erosion must be dealt with within twenty-four (24) hours of detection in accordance with the approved EMPr;			
3.27.2	Stormwater generated on site must be piped and fed through the municipal stormwater system and must be compliant with the municipal stormwater attenuation regulations;			
3.27.3	Any wastewater (i.e. dirty construction water) generated must not be discharged into the natural environment. Measures to contain wastewater and to safely dispose of it must be implemented;			
3.27.4	Stormwater must be suitably managed during and after construction;			
3.27.5	Drainage must be controlled to ensure that runoff from the site does not culminate in off-site pollution downstream of any stormwater discharge; and,			
3.27.6	On completion of construction the site must be contoured to ensure free flow of run-off and to prevent ponding of water.			

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
3.28	The SWMP must be submitted to the eThekweni Municipality for approval. The approved stormwater management plan must be appended to the approved EMPr and submitted to the Department: CME section as per condition 2.4 herewith.	Non-compliant	A copy of the approved construction and operation SWMP was not available at the time of the audit.	A Stormwater Management Plan for the construction phase must be finalised and implemented before the next audit. A copy of the construction and operation SWMPs must be on file. A copy of the approval from eThekweni must be on file. The conditions of the approval in principle received from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.
3.29	Any wastewater (i.e. dirty construction water) generated must not be discharged into the natural environment. Measures to contain wastewater and to safely dispose of it must be implemented.	Compliant	No wastewater had been generated on site at the time of the audit.	
3.30	Drainage must be contoured to ensure that runoff from the site is contained and does not culminate in off-site pollution downstream of any stormwater discharge.	Compliant	The resident engineer confirmed that the site has been contoured as such.	
3.31	Earthworks and drainage measures must be designed in such a way as to prevent ponding of, or high concentrations of, stormwater or groundwater anywhere on the site, both during and after the development has been completed.	Compliant	The resident engineer confirmed that the design of the site has included these factors.	
<b>Dust and Erosion Control</b>				
3.32	Dust must be suppressed during dry periods by the regular application of grey/waste water via a water cart in such quantities that will not result in runoff and erosion or muddied areas	Compliant	The contractor noted that dust is an issue on site and that a water tanker is used regularly to suppress dust.	
3.33	Soil erosion prevention measures and soil erosion control measures outlined in the approved EMPr must be implemented during the construction and rehabilitation phase	Compliant	Refer to the EMPr section for more details.	
3.34	Vehicles transporting sand or finer grained materials must be covered to prevent dangers/nuisance to other road users (dust, falling sand/rocks).	Compliant		
3.35	Soil must be exposed for a minimum time possible once cleared such that the timing of clearance is coordinated with the onset of construction. This will prevent wind and water erosion.	Compliant	Clearance of the site is being undertaken in a phased approach. This is particularly appropriate as it is an in situ upgrade and clearance of vast areas of land without infrastructure is not possible.	
3.36	All stockpiles must be covered by appropriate means if the stockpile is to be exposed for an extended period of time	Compliant	The contractor explained that the site contains vast swaths of rubble and rubbish. During the site clearance the rubble and rubbish was loaded directly	It is recommended that a log of vehicles disposing of waste via DSW be kept in the environmental file.

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
			onto Durban Solid Waste trucks for disposal at an appropriately licensed.	
<b>Spillage</b>				
3.37	The holder of the EA must ensure that all personnel/workers on site are appropriately trained to deal with a spill/leak in accordance with relevant environmental legislative requirements.	Non-compliant	No environmental induction training had been undertaken at the time of the audit.	Environmental induction training of all contractors and staff working on site must be undertaken. A register must be maintained in the environmental file. For the remainder of the construction phase, new sub-contractors or staff must undergo training prior to commencing work on site.
3.38	Should spillage occur, the following steps must be taken and managed in accordance with the approved EMP:	N/A		It is recommended that this procedure be included in the induction training.
3.38.1	Stop the source of the spill;			
3.38.2	Contain the spill;			
3.38.3	All spills must be reported to this Department's Control Environmental Officer: Pollution and Waste (P&W) Component as per contact details specified in condition 2.4 herewith as well as any other mandated authorities such as the Department of Water and Sanitation (DWS); and,			
3.38.4	The incident must be documented.			
3.39	In the event of a spillage which poses a serious threat to the environment, the following Departments must be informed within 48 hours of an incident (i.e. an unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property) and/or emergency situation (i.e. a situation that has arisen suddenly that poses an imminent and serious threat to the environment, human life or property, including a disaster' as defined in section 1 of the Disaster Management Act, 2002 (Act No. 57 of 2002), but does not include an incident referred to in section 30 of this Act):	Compliant	The contractor confirmed that no incidents had occurred to date.	It is recommended that a copy of the contact details for the key roleplayers be kept in the environmental file.
3.39.1	The eThekweni Municipality;			
3.39.2	DWS;			
3.39.3	KZN EDTEA: P&W component as per contact details specified in condition 2.4 herewith;			
3.39.4	The Local Fire Department; and,			
3.39.5	Any other mandated department.			

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
<b>Biodiversity</b>				
3.40	The recommendations contained in the Terrestrial Ecological Assessment compiled by Eco-Pulse Environmental Consulting Services, dated 4 July 2018 must be complied with and adhered to. No development activities must take place within the forest buffer zone of 5m from the edge of the delineated seral forest habitat.	Non-compliant	Construction of the platform for the transit camp occurred within the 5m forest buffer.  The resident engineer noted, and provided some photographic proof, that the area within the 5m forest buffer had been highly disturbed and had been used by the Banana City residents to dispose of waste.	The platform must be brought back, out of the 5m forest buffer and the area rehabilitated with indigenous vegetation. The 5m forest buffer must be demarcated with orange bags or other such physical barrier and designated a No-go area.
3.41	Indigenous vegetation outside the development footprint must be demarcated and protected by preventing access of construction vehicles and personnel into these areas, unless for rehabilitation purposes and maintenance thereof.	Non-compliant	The entire site is fenced, however, there are missing panels from at least two sections of the fence in proximity to the working area. There is no evidence that the construction has caused the break in the fenceline. It is, however, noted that next to the one section of missing panels along the western boundary of the site excavations have exposed the foundations of several fence panels and it is only a matter of time before these collapse.	Temporary bonnox fencing should be placed over the missing panels in proximity to the working area. The exposed foundations of the fence panels must be reinstated to avoid potential collapse of the fenceline. The University must be contacted to permanently fix these missing fence panels. The CLO must inform the community that the use of the adjacent land is illegal trespassing.
3.42	Vegetative areas that occur within the development footprint that have been set aside for conservation purposes must be demarcated and cordoned off during the construction phase. No access must be allowed into these areas unless for rehabilitation purposes.	Non-compliant	The 5m forest buffer has been encroached by the platform for the transit camp.	The platform must be brought back, out of the 5m forest buffer and the area rehabilitated with indigenous vegetation. The 5m forest buffer must be demarcated with orange bags or other such physical barrier and designated a No-go area.
3.43	The following conditions apply to the management of alien invasive species:	Compliant		
3.43.1	All alien invasive species must be removed from within the development footprint in accordance with the approved EMP, and			
3.43.2	Alien invasive species must be removed mechanically and not chemically so as to have minimal ecological and biological impacts.			
3.44	Any pollution to surface or groundwater must be immediately reported to the DWS and the Department as per the contact details in condition 2.4 herewith and appropriate mitigation measures must be employed.	Compliant	The contractor confirmed that no incidents had occurred to date.	It is recommended that a copy of the contact details for the key roleplayers be kept in the environmental file.
3.45	The holder of the EA must ensure that indigenous landscaping with suitable local vegetation is supported throughout the rehabilitation of the site.	Compliant	Rehabilitation is yet to commence.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
3.46	Rehabilitation of all sensitive areas must commence immediately after the completion of construction or at the earliest time prescribed by the ECO, in accordance with the approved EMPr.	Compliant	Rehabilitation is yet to commence.	
<b>Watercourses</b>				
3.47	The recommendations as contained in the Aquatic Assessment compiled by Eco-Pulse Environmental Consulting Services dated 26 June 2018 must be complied with and adhered to.	Compliant	These conditions are contained in the EMPr. Refer to Table 2 that details the compliance with the EMPr conditions.	
3.48	The conceptual Rehabilitation Plan as contained in the Aquatic Assessment compiled by Eco-Pulse Environmental Services dated June 2018 must be complied and adhered to.	Compliant	Rehabilitation is yet to commence.	
3.49	An aquatic buffer zone of 15m from the edge of the delineated riparian area must be implemented on site.	Compliant	It is noted that the construction of the retaining walls and / or stabilising embankment for platforms must not encroach into the 15m buffer.	
3.50	No physical development is permitted within the watercourse except for where there is construction activities permitted to take place.	Compliant	Removal of structures from the watercourses and associated buffers is yet to commence.	
3.51	No construction vehicles are permitted within the watercourse.	Compliant		
3.52	The watercourse and riparian areas must be demarcated as "No Go" areas	Non-compliant	No demarcation of the watercourse and riparian areas had been undertaken. The contractor did, however, note that there are residents living within these areas and therefore demarcation of such cannot be undertaken until work in these areas is required. At which time, the residents would have been relocated.	As soon as residents are removed from the sensitive buffer areas in preparation for construction activities, the sensitive areas must be cordoned off with a physical barrier.
3.53	Any pollution to surface or groundwater must be immediately reported to the DWS and the Department and appropriate mitigation measures must be employed.	Compliant	The contractor confirmed that no incidents had occurred to date.	It is recommended that a copy of the contact details for the key roleplayers be kept in the environmental file.
3.54	No excavated material must be stored within 32 metres of the watercourse.	Compliant		
3.55	Uncontrolled access of vehicles through the watercourse is prohibited so as to prevent significant adverse impact on the hydrology and soil structure of these areas through rutting and soil compaction.	Compliant	Construction activities near the watercourses had not commenced at the time of the audit.	
<b>Sewage Waste Management</b>				
3.56	Prior to the commencement of construction of the waste water disposal system (DEWATS); a suitably qualified geotechnical specialist must be appointed to undertake a detailed soil depth assessment.	Compliant	Whilst the platform for the DEWATS has been cleared, construction of the facilities is yet to commence.	A geotechnical investigation must be undertaken prior to commencement of construction of the DEWATS.

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
3.57	The recommendations as contained in the Final BAR, dated March 2019 in respect of the DEWATS system must be complied with and adhered to.	Compliant		
3.58	A maintenance and management plan for the existing DEWATS system must be compiled and handed over to the eThekweni Municipality: Water and Sanitation prior to the commissioning of the DEWATS plants.	N/A	This is still to be undertaken.	
3.59	Prior to the undertaking of any further activities related to the (i) the decommissioning of the DEWATS plant and (ii) the switching over to waterborne sewage disposal option; the Department: EIA section must be contacted in writing as per condition 2.4 herewith.  The Department will provide a written response to your enquiry. Proof of the response must be kept as record.	N/A		
<b>Solid Waste Management</b>				
3.60	All waste material generated during all phases of the development must be identified and classified. Waste generated must be handled/stored/disposed according to its classification in terms of the National Environmental Management Waste Act (NEMWA).	Compliant	The contractor explained that the site contains vast swaths of rubble and rubbish. During the site clearance the rubble and rubbish was loaded directly onto Durban Solid Waste trucks for disposal at an appropriately licensed.	It is recommended that a log of vehicles disposing of waste via DSW be kept in the environmental file.
3.61	All waste material collected must be stored under cover and within a designated waste collection/storage area which must be on an impermeable surface. Access control to this area must be properly managed.	Compliant	No waste storage areas for construction waste have been designated to date.	It is recommended that designated areas for storage of construction waste (e.g. cement bags, paint tins etc.) be established.
3.62	The holder of the EA is responsible for the removal and disposal of solid waste including surplus of spoil material and rubble. All waste that cannot be reused or recycled must be disposed off accordingly at a landfill site registered in terms of section 20(b) of the National Environmental Management: Waste Act, Act No. 59 of 2008. The contractor responsible for the removal of the waste must supply the applicant with a certificate indicating safe disposal. Within fourteen (14) days of its issue, a copy of the safe disposal certificates must be forwarded to the Control Environmental Officer: CME Component as per contact details specified in condition 2.4 herewith.	Compliant		
3.63	It is the responsibility of the holder of the EA to identify any sources of pollution from the undertaking of the activity and to take appropriate measures to prevent any pollution of the environment.	Compliant		
3.64	The site engineer or ECO must ensure that the storage and utilisation of potentially dangerous materials such as diesel,	Compliant	The contractor explained that there will be no storage of dangerous goods (e.g.	



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	petrol, oils and/or lubricants during the construction phase does not result in any form of soil and underground water pollution.		diesel or petrol bowzers) on site, the vehicles delivering fuel have spill kits and all maintenance of vehicles occurs off site.	
3.65	Chemicals or dangerous substances must not be allowed to pollute the soil or groundwater. In the event of this occurring, the necessary clean up measures must be undertaken immediately. Any soil/groundwater polluted during construction must be removed, stored in a sealed container and disposed off at a licensed disposal facility.	Compliant	The contractor had no incidents to report at the time of the audit.	
<b>Operational phase</b>				
3.66	The holder of the EA must conduct annual inspections to ensure there is no erosion or silting occurring within the wetland/riparian areas. A report outlining the above findings must be forwarded to the Department: CME section as per contact details provided in condition 2.4 herewith.	N/A	N/A	
3.67	Energy and water saving technology must be implemented where possible.	N/A	N/A	
3.68	The holder of the EA is responsible for compliance with the provisions for Duty of Care and remediation of damage in accordance with section 28 of NEMA, Act no. 107 of 1998 (as amended). Determination of damage vests in this Department.	N/A	N/A	
3.69	Should the activity ever cease or become redundant, the EA holder must contact the Department to determine the required actions for the rehabilitation and closure of the site.	N/A	N/A	
3.70	The holder of the EA is responsible for the prevention of invasion of informal housing in the forest area.	N/A	N/A	
3.71	Prior to the undertaking of any further activities related to the (i) the decommissioning of the DEWATS plant and (ii) the switching over to waterborne sewage disposal option; the Department: EIA section must be contacted in writing as per condition 2.4 herewith.	N/A	N/A	



**Table 2: Record of compliance with conditions of the EMP, proposed remedial action and associated timeframes**

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
<b>5.1 Site Establishment and Preliminary Activities</b>				
<b>5.1.1 Resettlement Action Plan</b>				
5.1.1.1	The Resettlement Action Plan (RAP) should be approved by the EDTEA and eThekweni Environmental Planning and Climate Protection Department (EPCP) prior to commencement of construction. Should amendments to the RAP be required during the construction phase, the changes should be submitted to and approved by the EDTEA.	Non-compliant	The RAP in the FBAR noted that a privately owned area of land adjacent to the site would be rented by the municipality for the duration of the construction phase. This piece of land would be the site for the construction camp and would be used as a transit camp to temporarily house residents of Banana City during construction. The contractor explained that the privately owned land could not be used and therefore an alternative arrangement was required for the construction camp and the transit camp. The construction camp was established within development footprint. The contractor further explained that an existing transit camp was identified in New Germany. However, upon discussions with the existing residents at the camp and the Rate Payers Association, this site was not suitable for the temporary relocations required. The only viable alternative was to identify an area on site to relocate the Phase 1 residents. The area in the north-western corner of the site was identified as a suitable area. Whilst the amended RAP has not been formally approved by the Municipality, the Municipality was involved with the negotiations with the owner of the adjacent land and the stakeholders at the transit camp. The final decision to house residents on site was the decision of the Municipality.	The RAP must be updated with the current plan and submitted to eThekweni for formal approval. Proof of approval must be kept on file.
5.1.1.2	The Contractor appointed to construct the top structures should be appointed timeously to avoid exacerbating social concerns.	Compliant		
5.1.1.3	Adequate temporary ablution facilities (for e.g. Containerised Ablution Blocks) should be provided for relocated residents.	N/A	This condition must be audited once the transit camps have been established.	
5.1.1.4	A plan for the incorporation of the Umgudulu community must be compiled prior to commencement of construction.	N/A	This condition is no longer applicable as the Umgudulu community will not be relocated.	
<b>5.1.2 Access to Site</b>				
5.1.2.1	The location of all underground services and servitudes will be identified and confirmed to avoid impacting on these services.	Compliant	The Resident Engineer confirmed that all existing underground services have been identified.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.1.2.2	Choice of access routes for construction vehicles will take into account minimum disturbance to riparian and wetland areas and residents neighbouring the site.	Compliant		
5.1.2.3	Access to sensitive areas on the outskirts of the site the will be restricted	Non-compliant	The entire site is site is fenced, however, there are missing panels from at least two sections of the fence in proximity to the working area. There is no evidence that the constuction has caused the break in the fenceline. It is, however, noted that next to the one section of missing panels along the western boundary of the site excavations have exposed the foundations of several fence panels and it is only a matter of time before these collapse.	Temporary bonnox fencing should be placed over the missing panels in proximity to the working area. The exposed foundations of the fence panels must be reinstated to avoid potential collapse of the fenceline. The University must be contacted to permanently fix these missing fence panels. The CLO must inform the community that the use of the adjacent land is illegal trespassing.
5.1.2.4	Impacts will be minimised by using existing roads where possible and avoiding the creation of new routes.	Compliant	There is only one existing access to the site and this is being utilised as the only access point.	
5.1.2.5	Disturbance to surrounding areas will be minimised by allowing sufficient space for turning areas.	Compliant		
5.1.2.6	Where construction will obstruct existing access, alternative temporary access routes will be allowed for.	Compliant		
5.1.2.7	Safe pedestrian crossings will be provided where necessary.	Compliant		
<b>5.1.3 Setting up Construction Camp and Storage Areas</b>				
5.1.3.1	An environmental site management plan (ESMP) will be compiled in consultation with the ECO after the contract is awarded. This plan will show the final positions and extent of all permanent and temporary site structures and infrastructure, including (where appropriate):	Non-compliant	The contractor explained that the conditions on site are quite volatile and change daily. As such, areas in which the contractors will work and the space available is not clearly understood.	A draft ESMP should be compiled based on the current proposed work plan. Any changes to the draft plan should be communicated with the ECO.
	• Contractors' camp and lay down areas.			
	• Excavations and trenches.			
	• Topsoil and spoil stockpiles.			
	• Waste material storage sites.			
	• Spoil areas.			
	• Solid waste storage and disposal sites.			
	• Construction materials stores and batching sites.			
	• Site toilets and ablutions.			

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	• Equipment stores.			
	• Hazardous waste storage sites.			
	• Fuel stores.			
5.1.3.2	Choice of the site for the Contractor's camp requires the Engineer's, ECO and EPCPD permission and will take into account location of local residents and sensitive environmental areas. Areas of natural vegetation must be avoided where possible.	Non-compliant	The construction camp was established without input from the ECO. The location of the camp is, however, highly constrained due to several factors. The camp has been located away from adjacent properties and has been kept outside of sensitive areas. As such, SRK is satisfied with the location of the camp. It is noted that the construction camp is situated within the development footprint and as such will need to be relocated at some point during the course of the construction phase.	When relocation of the construction camp is required, the new location must be discussed with the ECO prior to relocation.
5.1.3.3	The size of the construction camp will be minimised (especially where it is not possible to avoid natural vegetation or grassland).	Compliant		
5.1.3.4	While not preferred, should the Contractor choose to locate the camp site on private land, prior written permission from the Engineer, EPCPD and the landowner will be required.	N/A	The construction camp has been located within the development footprint.	
5.1.3.5	Open areas and the surrounding bush will not be used as ablutions. Where waterborne sewerage is not available, temporary chemical toilets must be provided by a company that has been approved by the Engineer. Such toilets must be available for all site staff, both at the camp site, and on site in locations that reduce the risk of contamination to the natural environment e.g. not within the 1:100 year floodline of a river. Ablution facilities must be located away from steep slopes and protected from disturbance by natural elements.	Compliant	The contractor explained that Containerised Ablution Blocks are available across the site and therefore, chemical toilets for construction staff are not required.	
5.1.3.6	Choice of location for storage areas must take into account prevailing winds, distance to water bodies and general on-site topography.	Compliant		
5.1.3.7	All construction camps, lay down areas, batching plants and any stores in general will be located outside of delineated riparian areas and the recommended 15m buffer zone from the riparian areas.	Compliant		
5.1.3.8	Storage of potentially hazardous materials (e.g. diesel, oil, cement, bitumen, paint, etc.) will not be located within a horizontal distance of 50m from a watercourse, drainage line or wetland, or as specified by the ECO.	Compliant		
5.1.3.9	Residents living adjacent to the construction site will be notified of the existence of the hazardous storage area.	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.1.3.10	Appropriate fire prevention facilities will be present at all storage facilities.	Compliant		
<b>5.1.4 Hazardous Materials Management</b>				
5.1.4.1	The definition of hazardous substances / materials are those that are potentially: poisonous, flammable, carcinogenic or toxic e.g. diesel, petroleum, oil, bituminous products cement solvent based paints lubricants explosives drilling fluids pesticides, herbicides LPG.	Compliant	The contractor explained that there will be no storage of dangerous goods (e.g. diesel or petrol bowsers) on site, the vehicles delivering fuel have spill kits and all maintenance of vehicles occurs off site.	
5.1.4.2	Hazardous storage and refuelling areas will be bunded with an impermeable liner to protect groundwater quality. Areas will be located away from sensitive areas such as within 1:100 year floodline of any river or riparian buffer areas.	Compliant		
5.1.4.3	Material Safety Data Sheets (MSDSs) will be readily available on site for all chemicals and hazardous substances, to be used on site. Where possible and available, MSDSs will also include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.	Compliant	There are currently no hazardous substances stored on site.	
5.1.4.4	When deciding on storage areas for hazardous substances the proximity of houses, schools etc. will be taken into account.	Compliant	There are currently no hazardous substances stored on site.	
5.1.4.5	Contractors will submit a method statement and plans for the storage of hazardous materials and emergency procedures.	Compliant	There are currently no hazardous substances stored on site.	
5.1.4.6	Staff dealing with hazardous materials / substances will be made aware of their potential impacts and will follow the appropriate safety measures and be provided with suitable Personal Protective Equipment or clothing.	Compliant	There are currently no hazardous substances stored on site.	
5.1.4.7	Fuel tanks will meet relevant specifications and be elevated so that leaks may be easily detected.	Compliant	The contractor explained that there will be no storage of dangerous goods (e.g. diesel or petrol bowsers) on site.	
5.1.4.8	Storage areas containing hazardous substances / materials will be clearly signed.	Compliant	There are currently no hazardous substances stored on site.	
5.1.4.9	Surface water draining off contaminated areas containing oil and petrol will be channelled towards a sump to separate these chemicals and oils.	Compliant		
5.1.4.10	Spillages will be cleaned up immediately and contaminants properly drained and disposed of using appropriate solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil from the construction site will be removed and rehabilitated timeously and appropriately.	Compliant	The contractor had no incidents to report at the time of the audit.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.1.5 Education of Site Staff on General and Environmental Conduct				
5.1.5.1	All construction personnel will be trained on the provisions contained in this EMPr (i.e. construction induction and basic environmental awareness information. Proof the training will be retained in the site environmental file for auditing purposes.	Non-compliant	No environmental induction training had been undertaken at the time of the audit.	Environmental induction training of all contractors and staff working on site must be undertaken. A register must be maintained in the environmental file. For the remainder of the construction phase, new sub-contractors or staff must undergo training prior to commencing work on site.
5.1.5.2	Provision will be made on the Construction Site Meeting Agenda for environmental issues.	Non-compliant	Environmental matters have not been raised at the construction site meetings.	Environmental matters requiring attention must be minuted and minutes kept in the file.
5.1.5.3	The site foreman will receive no less than 1 hour's environmental training and will have sufficient understanding to pass this information onto the construction staff.	Non-compliant	No environmental induction training had been undertaken at the time of the audit.	Environmental induction training of all contractors and staff working on site must be undertaken. The current staff must undergo training before the next audit. For the remainder of the construction phase, new contractors or staff must undergo training prior to commencement of work on site.
5.1.5.4	A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers will be made aware of the following general rules:	Non-compliant		
	a) No alcohol / drugs to be present on site.			
	b) No firearms allowed on site or in vehicles transporting staff to / from site, (unless used by security personnel.			
	c) Prevent excessive noise.			
	d) Prevent unsocial behaviour.			
	e) Bringing pets onto the site is forbidden.			
	f) No harvesting of firewood muthi plants, crops or any other natural material from the site or from the areas adjacent to it.			
	g) The hunting of birds and animals (including the use of snares) on site and in surrounding areas is forbidden.			
	h) Construction staff are to make use of the facilities provided for them, as opposed to ad-hoc alternatives. (e.g.: fires for cooking; the use of surrounding bush as a toilet facility is forbidden.			
	i) Trespassing on private / commercial properties adjoining the site is forbidden.			
	j) Driving under the influence of alcohol is prohibited.			
	k) Access to wetland and riparian areas is restricted.			

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	I) Other than pre-approved security staff, no workers will be permitted to live on site.			
<b>5.1.6 Soil Erosion</b>				
5.1.6.1	Immediately ahead of construction, development areas will be stripped of topsoil (top 300mm of soil). Topsoil will be stockpiled separately from overburden (subsoil and rocky material) for later reuse in the rehabilitation process.	Compliant	The contractor explained that the site contains vast swaths of rubble and rubbish. During the site clearance the rubble and rubbish was loaded directly onto Durban Solid Waste trucks for disposal at an appropriately licensed.	It is recommended that a log of vehicles disposing of waste via DSW be kept in the environmental file.
5.1.6.2	Works will be coordinated to limit unnecessarily prolonged exposure of stripped areas and stockpiles. Vegetation and soil will be retained in position for as long as possible and removed only immediately ahead of construction / earthworks in that area.	Compliant		
5.1.6.3	Wind screening and stormwater control will be undertaken to prevent soil loss from the site.	Non-compliant	The contractor noted that dust is an issue on site and that a water tanker is used regularly to suppress dust. No stormwater control mechanisms are in place.	A Stormwater Management Plan for the construction phase must be finalised and implemented before the next audit. A copy of the construction and operation SWMPs must be on file. A copy of the approval from eThekweni must be on file. The conditions of the approval in principle received from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.
<b>5.1.7 Storm Water</b>				
5.1.7.1	A formal storm water system will be designed and implemented together with storm water and erosion control requirements.	Non-compliant	A copy of the construction phase Stormwater Management Plan was not available.	A Stormwater Management Plan for the construction phase must be finalised and implemented before the next audit. A copy of the construction and operation SWMPs must be on file. A copy of the approval from eThekweni must be on file. The conditions of the approval in principle received

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
				from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.
5.1.7.2	Storm water run-off will not be concentrated to an extent that would result in any damage to down-stream riverine ecology and/or built environment during storms with a recurrence interval exceeding 1: 10 years and would result in only minor, repairable damage during storms with a recurrence interval exceeding 1: 50 years.	Compliant	No evidence of stormwater damage was observed on site.	
5.1.7.3	Storm water will be directed towards the natural drainage lines and valleys of the site. Storm water will be directed along road surfaces to either discharge through energy dissipaters directly into watercourses or collected by side inlets at strategic and critical points and directed into sub-surface spigot and socket pipe systems. These pipe systems will then discharge via headwall outlets with erosion protection in the form of reno-mattresses and gabion baskets into natural watercourses.	Non-compliant	A copy of the construction phase Stormwater Management Plan was not available.	A Stormwater Management Plan for the construction phase must be finalised and implemented before the next audit. A copy of the construction and operation SWMPs must be on file. A copy of the approval from eThekweni must on file. The conditions of the approval in principle received from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.
5.1.7.4	All reasonable efforts will be made to prevent storm water from entering the sewer network at the DEWATS plants, including construction of a separate storm water conveyance network. The bypass line will only be activated during severe storm events.	Compliant	The construction of the DEWATS system infrastructure had not commenced at the time of the audit.	
<b>5.1.8 Conservation of the Natural Environment</b>				
5.1.8.1	Care will be taken to position infrastructure so that indigenous trees are not damaged or affected wherever possible. Sensitive trees will be marked with danger tape. The removal of any indigenous trees may need to be authorised by the Department of Agriculture, Forestry and Fisheries.	Compliant		
5.1.8.2	Natural streams, rivers and 15m aquatic buffers are to be demarcated on the ground using an orange bonox/hazard fence or other suitable demarcation and the area beyond the	Non-compliant	No demarcation of the watercourse and riparian areas had been undertaken. The contractor did, however, note that there are residents living within	The water resource and associated 15m buffer areas must be demarcated once the



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	fence must be considered a 'no-go' area. This demarcation must be maintained for the duration of the construction period.		these areas and therefore demarcation of such cannot be undertaken until work in these areas is required. At which time, the residents would have been relocated.	residents have been removed from these sensitive areas.
<b>5.1.9 Set up of Waste Management Procedures</b>				
5.1.9.1	A fenced waste management area will be set up in accordance with the ESMP in the construction camp to store waste collected from the bins on site.	Non-compliant	No waste storage has been set up on site. The contractor explained that construction has been stop-start due to the issues with the relocation of the Banana City residents and waste cleared from site has been placed directly into DSW trucks for offsite disposal.  Black bags for general waste have been provided within the construction camp, however, these are not in bins equipped with closing mechanisms.	Designated waste areas must be established. Bins with a closing mechanism must be provided. A record of disposal to DSW must be kept in the environmental file on site. Waste storage areas must be identified within the construction camp.
5.1.9.2	Bins and / or skips will be provided at convenient intervals, identified in the ESMP, for disposal of waste within the construction camp.	Non-compliant		
5.1.9.3	Bins will be equipped with a closing mechanism to prevent their contents from blowing out and have liner bags for efficient control and safe disposal of waste.	Non-compliant		
5.1.9.4	Recycling and the provision of separate waste receptacles for different types of waste will be encouraged.	Non-compliant		
5.1.9.5	No hazardous waste may be stored in the open or around the work areas, close to streams or wetlands.	Compliant		
5.1.9.6	The contact details of the contractor and registered landfill site (s) to be used during construction for safe disposal of wastes will be submitted to the DWS prior to commencement of construction.	Non-compliant	The required details have not been submitted to the DWS.	DWS must be informed of the use of the DSW to dispose of waste and the facility to which the waste is being disposed. This must be undertaken prior to the next audit.
5.1.9.7	The tanks for the urine diversion system will be located as far away from the riparian areas as is technically feasible.	N/A		
<b>5.1.10 Social Impacts – Visual &amp; Noise</b>				
5.1.10.1	Contractors will be expected to maximise the employment of individuals with the required skills residing in the Banana City area or adjacent residential areas.	Compliant	The contractor noted that local sub-contractors have been employed to undertake work on site where possible.	
5.1.10.2	eThekweni Municipality will make use of local construction companies as far as possible. Contractors outside of the area will only be used to provide skills not readily available in the area.	Compliant		
5.1.10.3	A CLO will be appointed and will be responsible for ongoing communication with those people that are interested in / affected by the project. This includes explaining the construction process and answering any questions as may be required.	Compliant	The contractor explained that two CLOs have been appointed for the construction phase (one representing Banana City residents and one Umgudulu residents). The CLOs are permanently based on site.	
5.1.10.4	An incident/ complaints register will be housed at the site office and managed by the CLO. This will be in carbon copy format, with numbered pages. Any missing pages will be	Non-compliant	An incident/complaints register was not available at the time of the audit.	The residents must be informed by the CLO of the complaints procedure.



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	accounted for by the Contractor/ CLO. This register will be tabled during monthly site meetings.			An incident / complaints register must be kept in the file on site. All queries and complaints must be handled in accordance with condition 5.1.10f) of the EMPr..
5.1.10.5	The CLO will make I&APs aware of the existence of the complaints book and the methods of communication available to them.	Non-compliant		
5.1.10.6	Queries and complaints will be handled as follows:	N/A		
	<ul style="list-style-type: none"> <li>Document details of such communications.</li> </ul>			
	<ul style="list-style-type: none"> <li>Submit these for inclusion in incident/ complaints register.</li> </ul>			
	<ul style="list-style-type: none"> <li>Bring issues to Contractor/Engineer's attention immediately.</li> </ul>			
	<ul style="list-style-type: none"> <li>Take remedial action as per Engineer's instruction.</li> </ul>			
5.1.10.7	The Contractor/CLO will inform neighbours in writing of disruptive activities at least 24 hours beforehand. This will take place by way of leaflets distributed or notice boards at affected sites giving the Engineer's, Contractor's and CLO's details or other method approved by the ECO.	Compliant	The contractor noted that blasting has not occurred, however, it will be required in certain areas of the site. SRK noted that the surrounding landowners must be informed prior to commencement of the disruptive activity.	Prior to commencement of blasting, or other such disruptive activities, the adjacent landowners must be informed of the disturbance and the anticipated duration thereof.
5.1.10.8	Construction vehicles will be fitted with standard silencers prior to the beginning of construction.	Compliant		
5.1.10.9	Equipment that is fitted with noise reduction facilities (e.g. Side flaps, silencers etc.) will be used as per operating instructions and maintained properly during site operations.	Compliant		
5.1.10.10	Existing private property, fences and gates will be protected and maintained. Trespassing on private properties and into designated no-go areas is forbidden.	Compliant		
5.1.10.11	The site will be kept clean to minimise the visual impact of the site.	Non-compliant	The CLO should inform the Banana City community that should illegal disposal of waste continue within the construction area, this will delay construction activities. The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. The contractor must provide litter bins within the construction camp for general waste for the construction staff.	The CLO should inform the Banana City community that should illegal disposal of waste continue within the construction area, this will delay construction activities. The municipality must provide a skip in a central location for disposal of general waste that should be removed from site weekly.
5.1.10.12	Storage facilities, elevated tanks and other temporary structures on site will be located such that they have as little visual impact on local residents as possible.	Compliant	At the time of the audit all temporary structures were located within the construction camp. The camp is	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
			fenced with shade cloth thereby minimising the visual intrusion.	
5.1.10.13	Lighting will be positioned so that it does not pose a nuisance to residents or a danger to road users while still allowing for maximum security.	Compliant		
<b>5.1.11 Heritage Environment</b>				
5.1.11.1	Prior to the commencement of construction, all staff will be trained on what possible archaeological or historical objects of value may look like, and to notify the Engineer should such an item be uncovered.	Non-compliant	No environmental induction training had been undertaken at the time of the audit.	Environmental induction training of all contractors and staff working on site must be undertaken. The current staff must undergo training before the next audit. For the remainder of the construction phase, new contractors or staff must undergo training prior to commencement of work on site.
5.1.11.2	No traditional burial places may be altered in any way without the permission of the next-of-kin and a permit from the relevant heritage authority. Consultation with the local community during the detailed planning and design phase, will assist to identify grave sites and will ensure that the grave sites or sites of cultural significance are not affected by the proposed development.	Compliant	The contractor confirmed that no burial places had been discovered to date.	
5.1.11.3	No structures older than sixty years or parts thereof will be demolished, altered or extended without a permit from Amafa.	Compliant		
5.1.11.4	No activities within 50m of a site which contains rock art will be undertaken.	Compliant		
<b>5.1.12 Security and Safety</b>				
5.1.12.1	Any storage areas will be appropriately secured to reduce the opportunity for criminal activity in the locality of the construction site.	Compliant	Lockable storage containers are provided in the fenced and access controlled construction camp.	
5.1.12.2	Residents living adjacent to the construction site will be notified of the existence of the hazardous storage area.	Compliant	The contractor explained that there will be no storage of dangerous goods (e.g. diesel or petrol bowsers) on site, the vehicles delivering fuel have spill kits and all maintenance of vehicles occurs off site.	
5.1.12.3	Potentially hazardous areas such as trenches will be demarcated and clearly marked.	Compliant		
5.1.12.4	All relevant Health and Safety legislation as required in South Africa will be strictly adhered to including the OHSA.	Compliant	The contractor explained that an external safety officer has been appointed for the duration of the	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
			construction phase. The safety officer is permanently based on site.	
<b>5.1.13 Landscaping guidelines</b>				
5.1.13.1	A landscaping plan must be developed for large open spaces within the boundary of the development area. Common indigenous lawn species and trees native to the Durban area must be utilised and tall tufted grasses along with forbs and trees must be planted in large open spaces. It is recommended that landscaping promote the use of indigenous species common to the region and that as much natural ground cover is established on the site to help with binding soils and encouraging water infiltration, thus reducing overland flows and the pressure on storm water management infrastructure.	N/A	Rehabilitation or revegetation of areas is yet to be undertaken.	
<b>5.1.14 Ecological Compensation Rehabilitation and Management Plan</b>				
5.1.14.1	A terrestrial ecological specialist will be appointed prior to commencement of construction to compile a rehabilitation plan to compensate the extent of grassland lost to the development. The plan will identify an area within close proximity to the site of a similar extent to the grassland area lost that will be rehabilitated. This plan will be compiled in consultation with the EPCPD, eThekweni Parks and Recreation Department, eThekweni Human Settlements and UKZN (if the area to be rehabilitated is on UKZN land). The final plan will be submitted to EPCPD prior to commencement of construction.	Non-compliant	The contractor was not aware of this condition.	The municipality must, as a priority, appoint a terrestrial ecological specialist to compile a rehabilitation plan and obtain approval thereof.
5.1.14.2	The natural forest (i.e. the Seral and Riparian forest) found in the close proximity to the site must not be disturbed by the development activities as well as the consequences of the activities. In addition, the approved plan must be put in place to ensure that there is no further destruction of these conservation areas/open spaces by the Banana City residents. The residents must be educated about the prohibition of natural forest destruction.	Non-compliant		
5.1.14.3	The condition of the site/non-developed areas must be improved by rehabilitating using 100% indigenous tree species and the removal of alien invasive vegetation.	N/A		
5.1.14.4	All transplantable trees should be transplanted to a suitable location.	N/A	To date no trees have been transplanted.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
<b>5.2 Management of Construction Activities and Workforce</b>				
<b>5.2.1 Access to Site</b>				
5.2.1.1	Existing roads will be used where possible, avoiding the creation of new routes. Any additional routes and turning areas required by the contractor will be approved by the ECO, in writing based on the route map that will be retained as part of the environmental file. Disturbance to surrounding areas will be minimised by allowing sufficient space for turning areas.	Compliant	There is only one existing access to the site and this is being utilised as the only access point.	
5.2.1.2	Speed limits (30 km/hr on dirt roads) will be enforced at all times, and traffic control provided both on public roads and onsite roads.	Compliant		
5.2.1.3	Only authorised roads and access routes will be used. Where construction will obstruct existing access, alternative temporary access routes will be allowed for. Access routes to be designed in order to minimize impact on riparian areas and the general environment.	Compliant		
5.2.1.4	All access routes and roads will be adequately maintained in order to minimise erosion and undue surface damage. Rutting and potholing will be repaired and stormwater control mechanisms will be maintained.	Compliant		
5.2.1.5	Runoff from roads will be managed to avoid erosion and pollution problems.	Compliant		
5.2.1.6	Any gravel or cement spillage on roads will be cleaned up in the same day in which the spill occurred.	Compliant		
5.2.1.7	Any damage to public or private roads caused by the Contractor during the construction phase will be repaired.	N/A		
<b>5.2.2 Maintenance of Construction Camp</b>				
5.2.2.1	Run-off from the camp site will not discharge into neighbours' properties.	Compliant	The camp is currently located in the middle of the developable area and runoff does not discharge into neighbour's properties.	
5.2.2.2	The drainage of the camp site will be monitored and managed to avoid standing water and soil erosion.	Compliant		
5.2.2.3	Ablutions will be maintained in a clean state and moved where appropriate to ensure that they adequately service the work areas. Open areas and the surrounding bush will not be used as ablutions.	Compliant	The contractor explained that there are several formalised ablution facilities across the site for the Banana City residents. These facilities have and will be used by the construction staff for the duration of the construction phase. Two chemical toilets have been provided in the demarcated construction camp. Proof of regular cleaning was provided to SRK.	
5.2.2.4	The construction camp and working areas will be kept clean and tidy at all times.	Non-compliant	The CLO should inform the Banana City community that should illegal disposal of waste continue within	The CLO should inform the Banana City community that

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
			the construction area, this will delay construction activities. The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. The contractor must provide litter bins within the construction camp for general waste for the construction staff.	should illegal disposal of waste continue within the construction area, this will delay construction activities. The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly.
5.2.2.5	Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.	Compliant		
<b>5.2.3 Staff Conduct</b>				
5.2.3.1	Conduct of staff will be monitored to ensure that the induction training they received regarding the EMP and environmental practices are adhered to, including the conduct rules in terms of Section 5.1.4 above.	N/A		
<b>5.2.4 Dust Control</b>				
5.2.4.1	No fires will be permitted for any purposes whatsoever.	Compliant		
5.2.4.2	The production of dust and damage caused by dust will be limited through regular watering of the work areas. Where dust is unavoidable in residential or commercial areas, screening will be required utilising wooden supports and shade cloth.	Compliant	The contractor noted that dust is an issue on site and that a water tanker is used regularly to suppress dust.	
5.2.4.3	Stripping of vegetation and existing material will be limited to necessary working areas.	Compliant		
5.2.4.4	Vehicles and machinery will be kept in good working order and to meet manufacturer's specifications for safety, fuel consumption etc. Should excessive emissions be observed, the Contractor will have the equipment repaired as soon as possible. This will include reducing emissions from the equipment and adjusting any load it may be carrying.	Compliant	The contractor noted that maintenance of vehicles occurs off site.	
5.2.4.5	Lime, concrete and other powders must not be mixed during excessively windy conditions.	N/A		
<b>5.2.5 Storm water, soil erosion and stockpile areas</b>				
5.2.5.1	Construction activities must minimise the duration of exposure to bare soils on site, especially on steep slopes. The unnecessary removal of groundcover from slopes must be prevented, especially on steep slopes.	Compliant		
5.2.5.2	Clearing activities must only be undertaken during agreed working times and permitted weather conditions. If heavy rains are expected, clearing activities should be put on hold.	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	In this regard, the contractor must be aware of the weather forecast.			
5.2.5.3	Where applicable, subsoil and topsoil must be stockpiled separately. Erosion/sediment control measures such as sand/silt fences, low soil berms or bricks must be placed around soil stockpiles to limit sediment runoff from stockpiles.	Compliant		
5.2.5.4	The stockpiles must only be placed within demarcated stockpile areas, which must fall within the demarcated construction area. The contractor will avoid stockpiling materials in vegetated areas that will not be cleared.	N/A	There were no stockpiles on site at the time of the audit.	
5.2.5.5	Wind screening and stormwater control will be undertaken around stockpiles to prevent soil loss from the site.	N/A		
5.2.5.6	Stockpiled soil must be kept free of weeds and will not be compacted.	N/A		
5.2.5.7	The height of soil stockpiles must be limited to 2m to avoid soil compaction, particularly for topsoil.	N/A		
5.2.5.8	Stockpiles of construction materials must be clearly separated from soil stockpiles in order to limit any contamination of the soil.	N/A		
5.2.5.9	Trench dewatering will be done in such a manner that water does not result in concentrated flow that could cause soil erosion.	N/A	No trenching has occurred to date.	
5.2.5.10	All bare slopes and surfaces to be exposed to the weather elements during clearing and earthworks must be protected against erosion using rows of silt fences and/or sandbags to break the energy of surface flows.	Non-compliant	A construction SWMP was not available at the time of the audit.	A Stormwater Management Plan for the construction phase must be finalised and implemented before the next audit. A copy of the construction and operation SWMPs must be on file. A copy of the approval from eThekweni must on file. The conditions of the approval in principle received from the eThekweni Coastal, Stormwater and Catchment Management Unit for the operational phase SWMP must be implemented.
5.2.5.11	Sediment barriers (e.g. silt fences, sandbags, etc.) must be established along the entire downslope section of the development footprint to capture sediment before entering natural watercourses (streams/rivers). Sediment barriers should be regularly maintained and cleaned so as to ensure effective drainage. Breaching of such barriers must be avoided.	Non-compliant		
5.2.5.12	The berms, sandbags and/or silt fences must be monitored for the duration of the construction phase and repaired immediately when damaged. Berms, sandbags and silt fences must only be removed once vegetation cover has successfully re-colonised the embankments.	Non-compliant		
5.2.5.13	No stockpiling will take place within wetland/riparian areas or the recommended buffer zones.	N/A	There were no stockpiles on site at the time of the audit.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.2.5.14	After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately.	N/A		
5.2.5.15	Surface water or storm water will not be allowed to concentrate, or to flow down cut or fill slopes or platforms without erosion protection measures being in place (e.g. sand bags or Hessian sheets).	Non-compliant	A construction SWMP was not available at the time of the audit.	A construction SWMP must be compiled and implemented before the next audit.
5.2.5.16	Topsoiling and revegetation will commence immediately after the completion of an activity and at an agreed distance behind any particular work front.	N/A		
5.2.5.17	All banks will be returned to their natural slope or at an angle which ensures slope stability and safety. Where this is not possible the banks will be stabilised immediately after the completion of activities in that area. If re-vegetation of exposed surfaces cannot be established immediately due to phasing issues, rows of silt fences and sandbags of vegetation must be established along contours at regular intervals to capture eroded sand.	Compliant		
5.2.5.18	Overflow and scour channels will be lined with stone pitching along their length and at their points of discharge to prevent soil erosion. The point of discharge will be at a point where there is dense natural grass cover.	N/A		
5.2.5.19	Channels will not be allowed to discharge straight down the contours. These will be aligned at such an angle to the contours that they have the least possible gradient.	N/A		
5.2.5.20	Overland discharge will only be allowed to occur over areas that have a minimum cover of 90% grass cover at a minimum height of 150mm. This applies to areas down slope of the discharge point as well.	N/A		
<b>5.2.6 Water Quality</b>				
5.2.6.1	Discharge of water containing polluting matter or visible suspended materials directly into drainage lines or riparian areas and associated buffers will be prohibited.	Compliant		
5.2.6.2	Any unpolluted water / runoff will be deflected away from any dirty area (including plants, maintenance areas, workshops and contractors yards).	Compliant		
5.2.6.3	No vehicles will be washed on site.	Compliant		
5.2.6.4	No hydrocarbons (oil or fuel etc.) will be allowed to enter sewers, storm water drains or the natural environment. Any accidental oil or fuel spills or leakages will be immediately cleaned with an approved absorbent material, such as 'Drizit' or 'Spill-sorb'. Sand can also be used. Any contaminated soil	Compliant	The contractor had no incidents to report at the time of the audit.	



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	will be removed to the depth of the contamination. The contaminated material must be disposed of via the hazardous waste disposal stream. Any hydrocarbon spill constitutes an incident that will be captured on the incident/complaints register.			
5.2.6.5	Site staff will not be permitted to use any stream, river, other open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any construction or related activities.	Compliant	The contractor explained that Containerised Ablution Blocks are available across the site and therefore, construction staff have access to formalised bathing facilities .	
5.2.6.6	Municipal water (or another source approved by the Engineer) should instead be used for all activities such as dust suppression, concrete mixing, compacting etc.	Compliant		
5.2.6.7	Ongoing during construction	Compliant		
5.2.6.8	Earthworks will be restricted to outside of riparian areas and applicable 15m aquatic buffer zones.	Compliant		
<b>5.2.7 Conservation of the Natural Environment</b>				
5.2.7.1	No vegetation may be cleared without prior permission from the Engineer.	Compliant		
5.2.7.2	Qualified personnel must monitor the vegetation clearing and re-vegetation process.			
5.2.7.3	Should there be a need to disturb indigenous trees in a natural forest and/ or protected tree species, a licence application form must be submitted to the Department of Agriculture, Forestry and Fisheries (DAFF) office in Pietermaritzburg prior any activity commencement.	N/A	No protected tree species have been identified on site.	
5.2.7.4	Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be paid to imported material.	Compliant		
5.2.7.5	Disturbance to birds, animals and reptiles and their habitats should be minimised wherever possible.	Compliant		
5.2.7.6	A minimum buffer zone (or development setback) width of 15m will be applied from the edge of the delineated riparian. Special care is to be taken to demarcate the buffer zone and to actively prevent encroachment into this zone during construction.	Non-compliant	No demarcation of the watercourse and riparian areas had been undertaken. The contractor did, however, note that there are residents living within these areas and therefore demarcation of such cannot be undertaken until work in these areas is required. At which time, the residents would have been relocated.	It is recommended that the EMP be amended to stipulate that these sensitive areas should be demarcated once the residents had been removed from these sensitive areas.
5.2.7.7	The outer edge of the construction servitude must be demarcated with an orange hazard fence and the area beyond the fence must be considered a no-go area. Where construction is to be contained within the existing perimeter fence at the site, further demarcation work is unnecessary.	Non-compliant		
5.2.7.8	Any contractors found working inside sensitive 'no-go' areas (i.e. all natural grassland/forest/riverine areas outside the	Non-compliant	The platform for the temporary transit camp was established within the 5m forest buffer.	The platform must be brought back, out of the 5m forest



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	development footprint) will be fined as per a fining schedule/system setup for the project.			buffer and the area rehabilitated with indigenous vegetation. The 5m forest buffer must be demarcated with orange bags or other such physical barrier and designated a No-go area.
5.2.7.9	All demarcation work, including soil stockpiles, equipment laydown and storage areas must be signed off by the Environmental Control Officer (ECO).	Compliant		
5.2.7.10	Construction materials must only be brought to the equipment laydown area 3 days prior to use and must not be kept for more than 2 weeks. Timing of delivery is critical.	Compliant		
5.2.7.11	No equipment laydown or storage areas must be located within 15m of any delineated watercourse/buffer and/or within the 1:100 year floodline.	Compliant		
5.2.7.12	Areas to be utilised by heavy machinery, etc. will be clearly demarcated and a responsible person appointed to ensure that there is full compliance with the EMP.	Compliant		
5.2.7.13	The buffer zone rehabilitation recommendations and maintenance/ management guidelines developed by the aquatic specialist and included in the 'Conceptual Rehabilitation Plan' in Section 7.5 of the aquatic specialist report (pg 72-100) must be implemented (refer to Appendix C).	N/A	Rehabilitation or revegetation of areas is yet to be undertaken.	
5.2.7.14	Buffer zones will be established and maintained with indigenous vegetation cover as open space areas with appropriate alien plant control and slashing to maintain grass.	N/A		
5.2.7.15	Recommended sediment retention measures will be implemented to limit exposed surfaces and to control sediment-laden runoff prior to entering water courses during construction.	Non-compliant	A construction SWMP was not available at the time of the audit.	A construction SWMP must be compiled and implemented before the next audit.
5.2.7.16	Areas which are identified by the Engineer or the ECO as being ecologically sensitive and which are adjacent to any construction work are to be suitably demarcated to prevent damage by plant and labour. Temporary bonnox type fencing should be used and should be moved in phases as the construction progresses from one area to the next.	Compliant		
5.2.7.17	Restrict/limit access to delineated /riparian areas and associated buffers, particularly along channel banks and in-stream environments.	Compliant		
5.2.7.18	Where possible trenching should be undertaken by hand.	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.2.7.19	The Contractor will minimise the need for plant /materials to cross the rivers or streams by storing plant/ materials on the side of the river that is under construction.	Compliant		
5.2.7.20	Operation and storage of machinery and construction-related equipment will be done outside of wetland/riparian areas and relevant buffer zones,	Compliant		
5.2.7.21	Mechanical plant and bowzers will not be refuelled or serviced within or directly adjacent to any wetland/riparian areas.	Compliant		
5.2.7.22	Suitable overnight facilities will be provided for vehicles, away from any areas of channelled flow.	Compliant		
5.2.7.23	No natural watercourse (i.e. wetland/rivers/streams) will be used for the cleaning of tools or any other apparatus. This includes for purposes of bathing, washing of clothing, etc.	Compliant		
5.2.7.24	Alien vegetation encroachment onto the site as a result of construction activities will be controlled during construction. Invasive alien plant control will be implemented to ensure that alien plants are actively managed and eradicated from the site, with adequate monitoring and follow-up measures. This will include any disturbed areas created during construction. The dominant invasive species common to the site have been documented in Annexure C of the Aquatic Assessment Report (Appendix C of this EMP).	Compliant		
5.2.7.25	The ECO will assess the need / desirability for further monitoring and control after the first 12 months and include any recommendations for further action to the relevant environmental authority (EDTEA).	N/A		
5.2.7.26	The use of herbicides in invasive alien control will require an investigation into the necessity, type to be used, effectiveness and impacts of the agent on biota. No banned chemicals or preparations will be used/applied.	N/A		
5.2.7.27	Re-vegetation of disturbed areas will use indigenous plants including locally common indigenous grasses and trees/shrubs (no alien species will be used in re-vegetation).	N/A		
5.2.7.28	An opportunity exists to rehabilitate/facilitate the recovery of wetland/riparian areas as well as the recommended aquatic buffer zone areas. These areas will be adequately rehabilitated to ensure that sufficient indigenous ground cover is established to aid in preventing soil erosion and ensuring the stability of river banks. Guidelines for the rehabilitation of wetland/riparian areas are included in Section 5.2.4 of the Aquatic Assessment Report, included in Appendix C.	N/A		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
<b>5.2.8 Terrestrial Buffer Zones / Development Set-backs</b>				
5.2.8.1	Development or construction activities within the 5m forest buffer zone is strictly forbidden. These areas will be cordoned off with a physical barrier and designated as no-go areas.	Non-compliant	Construction of the platform for the transit camp occurred within the 5m forest buffer.  The resident engineer noted, and provided some photographic proof, that the area within the 5m forest buffer had been highly disturbed and had been used by the Banana City residents to dispose of waste.	The platform must be brought back, out of the 5m forest buffer and the area rehabilitated. The 5m forest buffer must be demarcated with orange bags or other such physical barrier prior to the next audit.
<b>5.2.9 Materials Management</b>				
5.2.9.1	All on-site operations that involve the use of cement and concrete will be carefully controlled. All concrete mixing will take place on a designated, impermeable surface and the number of designated sites minimised as far as practically possible. These sites will not be permitted within riparian areas or wetland/ wetland buffer areas.	N/A		
5.2.9.2	Cement batching activities will occur outside of the delineated wetland/riparian areas on an impervious surface.	N/A		
5.2.9.3	Cement products/wash will not to be disposed of, or allowed to discharge into the natural environment.	N/A		
5.2.9.4	Inert building rubble and waste rock will be stored in areas designated for such	Compliant		
5.2.9.5	Mixing / decanting of all chemicals and hazardous substances must take place either on a tray or on an impermeable surface that is contained by temporary or permanent bunds. Mixing / decanting will not be permitted within riparian areas or wetland/ wetland buffer areas. Waste from these should then be disposed of to a suitable waste site.	N/A		
5.2.9.6	Any storage areas will be appropriately secured to reduce the opportunity for criminal activity in the locality of the construction site. Unauthorised access to hazardous materials storage areas will not be permitted.	Compliant		
5.2.9.7	Smoking within 3m of hazardous materials storage areas will not be permitted.	Compliant		
5.2.9.8	Spraying of herbicides / pesticides should not take place under windy conditions and must comply with OHSA specs and other chemical handling laws.	N/A		
<b>5.2.10 Waste Management Procedures</b>				
5.2.10.1	<b>Non-hazardous Solid Waste</b>			
5.2.10.1.1	Dumping of waste of any nature, or any foreign material will not be permitted	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.2.10.1.2	Store rubble and waste rock as indicated on the approved ESMP. Rubble and waste rock will be disposed of at the discretion of, and with the permission of the ECO at the nearest registered solid waste disposal facility. Proof of safe disposal will be retained for inspection during audits.	Compliant		
5.2.10.1.3	All remains of excess cement and concrete will be disposed of in the approved manner after the completion of tasks. Solid waste concrete must be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder will be treated as hazardous waste.	N/A		
5.2.10.1.4	All domestic waste will be collected in adequate numbers of litter bins located as required on the Works Site and within the Contractors camp.	Non-compliant	The CLO should inform the Banana City community that should illegal disposal of waste continue within the construction area, this will delay construction activities. The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. The contractor must provide litter bins within the construction camp for general waste for the construction staff.	The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. The contractor must provide litter bins within the construction camp for general waste for the construction staff.
5.2.10.1.5	Where feasible, collected waste paper, glass and metal will be collected separately and either collected by or delivered to registered recyclers. Proof of safe disposal will be retained for inspection during audits.	Compliant		
5.2.10.1.6	Litter in and around the work area will not be permitted. Litter bins will be equipped with a closing mechanism to prevent their contents from blowing out, will be emptied weekly and staff will be required to use these bins at all times.	Non-compliant	The CLO should inform the Banana City community that should illegal disposal of waste continue within the construction area, this will delay construction activities. The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. The contractor must provide litter bins within the construction camp for general waste for the construction staff.	The municipality should provide a skip in a central location for disposal of general waste that should be removed from site weekly. The contractor must provide litter bins within the construction camp for general waste for the construction staff.
5.2.10.1.7	No solid waste will be burned or buried on site but will be removed from site weekly or fortnightly and disposed of at an appropriately licenced disposal facility. Skips will be emptied prior to over-flowing. The excavation and use of rubbish pits on site is forbidden. Proof of safe disposal at a registered landfill site will be retained for inspection during audits.	Compliant		
5.2.10.1.8	Solid waste will be transported properly whereby waste spills en-route will be avoided. Tarpaulins or similar mechanisms can be used to prevent spillages.	Compliant		



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.2.10.2	<b>Liquid Waste</b>			
5.2.10.2.1	Combine drinking water facilities with hand washing facilities near site toilets.	Compliant		
5.2.10.2.2	Side tipping of spoil and excavated materials will not be permitted – all spoil material will be disposed of as directed by the Engineer.	Compliant		
5.2.10.3	<b>Hazardous waste (includes oils, chemicals, fuels, paints, batteries, lubricants, wet cement and liquid slurry etc.)</b>			
5.2.10.3.1	Hazardous waste will be stored appropriately to ensure that it does not pollute the environment. Designated skips will be provided across the site to store hazardous waste.	Compliant		
5.2.10.3.2	Wherever possible waste oils and batteries will be kept separate and either collected by or delivered to an appropriate recycling facility. Proof of safe disposal will be retained for inspection during audits.	Compliant		
5.2.10.3.3	Hazardous waste not earmarked for reuse, recycling or resale will be disposed of at a registered hazardous waste disposal site. Skips will be emptied prior to over-flowing. Proof of safe disposal will be retained for inspection during audits.	Compliant		
5.2.10.3.4	Contain chemical spills, and arrange for clean-up / control by the supplier, or by professional pollution control personnel.	Compliant		
<b>5.2.11 Social Impacts – Visual &amp; Noise</b>				
5.2.11.1	Lighting on the construction site will be designed to avoid impacting on traffic and nearby houses.	Compliant		
5.2.11.2	Visual impact of the site will be reduced by ensuring the site is neat at all times	Compliant		
5.2.11.3	Noise pollution emanating from the site will comply with SANS STANDARD 10103: 2008 relating to the measurement and rating of environmental noise with respect to annoyance and speech communication.	Compliant		
5.2.11.4	All staff and contractors in site will conduct themselves in an acceptable manner to ensure that the disturbance to surrounding residents is minimised.	Compliant		
5.2.11.5	Noise impacts will be reduced by maintaining normal working hours (07h00 to 17h00, Mondays to Fridays) and should after hours construction work be required adjacent landowners will be notified 24 hours prior to the activity.	Compliant	The contractor confirmed that construction hours are kept to normal working hours.	
5.2.11.6	A complaints register will be housed at the site office and managed by the CLO. This will be in carbon copy format, with numbered pages. Any missing pages will be accounted for by the Contractor/ CLO. This register will be tabled during monthly site meetings.	Non-compliant	An incident/complaints register was not available at the time of the audit.	An incident / complaints register must be kept in the file on site. All queries and complaints must be handled

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
				in accordance with condition 5.1.10f) of the EMPr..
<b>5.2.12 Cultural Environment</b>				
5.2.12.1	Amafa will be contacted if any heritage objects are identified during earthmoving activities and all development should cease until further notice.	Compliant		
5.2.12.2	No rock art and its surrounds (50m) will be impacted on by construction activities.	Compliant		
5.2.12.3	Amafa will be contacted if any graves, not previously identified by the community during the planning phase are identified during construction. The following procedure will be followed:	Compliant		
	1. Stop construction.			
	2. Report findings to the local police station.			
	3. Report to Amafa to investigate (Ms Bernadet Pawandiwa – telephone: 033 3946 543).			
5.2.12.4	No exhumations will be conducted without the prior notification of the eThekweni Municipality, Health Department.	Compliant		
<b>5.2.13 Water Abstraction and use</b>				
5.2.13.1	No water is to be abstracted from any river/stream for use in construction activities without prior approval by the Department of Water and Sanitation (DWS), subject to acquiring a relevant Water Use License in terms of Section 21 (a) of the National Water Act for taking water from a water resource. Alternative water supply to be provided for construction activities and for human consumption.	Compliant		
5.2.13.2	The Contractor will only be allowed to draw water from the source/s licenced points	Compliant		
5.2.13.3	Excavating trenches or pits within streams or rivers for the purpose of intercepting groundwater or diffuse surface flows to facilitate water abstraction is not to be permitted	Compliant		
5.2.13.4	Drinking water is to be provided to all employees and labourers are to be discouraged from drinking directly from streams/rivers on site. Suitable domestic water supply to be sourced for human consumption by workers onsite (to comply with DWS specifications for drinking water). Water for human consumption should be available at the site offices and at other convenient locations on site where work occurs	Compliant		
5.2.13.5	Rivers/natural water bodies are not to be used for swimming/fishing/washing of clothes and equipment or other related recreational activities	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.2.13.6	Any dewatering is to be done so in such a manner that water does not result in concentrated flow down slope that could cause soil erosion.	Compliant		
5.2.13.7	Water for irrigation (i.e. for use in revegetation/plant establishment) must not be abstracted from any local watercourse without prior consent/approval from the Department of Water and Sanitation.	Compliant		
<b>5.2.14 Wildlife Management</b>				
5.2.14.1	Education of workers/employees onsite on not to harm wildlife unnecessarily will assist in mitigating this impact. Contractor induction and staff/labour environmental awareness training needs are to be identified and implemented through staff/contractor environmental induction training. This should include basic environmental training based on the requirements of the EMP, including training on avoiding and conserving local wildlife.	Non-compliant	An incident/complaints register was not available at the time of the audit.	An incident / complaints register must be kept in the file on site. All queries and complaints must be handled in accordance with condition 5.1.10f) of the EMP.
5.2.14.2	No wild animal may under any circumstance be hunted, snared, captured, injured, killed, harmed in any way or removed from the site and surrounding natural habitats. This includes animals perceived to be vermin or poisonous (such as snakes, mice, rats, frogs, etc.).	Compliant		
5.2.14.3	The handling and relocation of any animal perceived to be dangerous/venomous/poisonous must be undertaken only by a suitably trained individual.	Compliant		
5.2.14.4	Any fauna (frogs, snakes, etc.) that are found within the construction area must be moved to the closest point of similar habitat type (i.e. grassland/bush) outside of the areas to be impacted.	Compliant		
5.2.14.5	The extent of the disturbed area must be limited to avoid excessive generation of dust.	Compliant		
<b>5.2.15 Conceptual Rehabilitation Plan</b>				
5.2.15.1	The Conceptual Rehabilitation Plan, as detailed in Section 7.5 of the Aquatic Habitat Impact Assessment Report (refer to Appendix C), is designed to address residual construction-related impacts and disturbances to streams and riparian areas as a result of the development project. The Plan must be implemented within the degraded stream and riparian areas on and adjacent to the existing informal settlement to be upgraded as well as the 15m aquatic buffer zone.	Compliant		
<b>5.2.16 Controlling alien/exotic vegetation and weeds</b>				
5.2.16.1	It is the responsibility of the developer/landowner to eradicate and control invasive alien plants that invade the	Compliant		

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
	property. These species will need to be removed/controlled as per the requirements of the NEM:BA guidelines for alien species management and control:			
	· All alien invasive vegetation that has colonised the construction site must be removed, preferably by uprooting. The contractor should consult the ECO regarding the method of removal.			
	· All bare surfaces across the construction site must be checked for alien invasive plants at the end of every month and alien plants removed by hand pulling/uprooting and adequately disposed.			
	· Herbicides should be utilised where hand pulling/uprooting is not possible. No locally banned chemicals may be used.			
	· Further information on the eradication and control of invasive alien plants is provided in Section 7.5 of the Terrestrial Ecological Report (refer to Appendix .			
5.2.17 Fire management				
5.2.17.1	No open fires to be permitted on construction sites. Fires may only be made within the construction camp and only in areas and for purposes approved by the ECO.	Compliant		
5.2.17.2	Fire prevention facilities must be present at all hazardous storage facilities.	Compliant		
5.2.17.3	Ensure adequate fire-fighting equipment is available and train workers on how to use it.	Compliant		
5.2.17.4	Ensure that all workers on site know the proper procedure in case of a fire occurring on site.	Compliant		
5.2.17.5	Provide local emergency numbers (including fire department) at key locations.	Compliant		
5.2.17.6	Smoking must not be permitted in areas considered to be a fire hazard.	Compliant		
5.2.17.7	Ensure that no refuse wastes are burnt or buried on the construction site or on surrounding areas.	Compliant		
5.2.18 General				
5.2.18.1	In accordance with the geotechnical report, precast concrete retaining blocks must be used to shield exposed rock that will decompose and ravel overtime.	Compliant		
5.2.18.2	Rock faces in excess of 1.5m must be checked for slope stability and fill embankments retained using precast concrete retaining blocks.	Compliant		



No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.2.18.3	As part of the construction phase of this project the existing resurfaced roads on site will need to be stripped and re-aligned.	Compliant		
5.3 Management of Post Construction Activities				
5.3.1 Construction Camp				
5.3.1.1	All leftover building materials must be returned to the depot or removed from the site.	N/A	All post-construction activities are currently not applicable.	
5.3.1.2	All construction plant, equipment, storage containers, temporary fencing, temporary services, temporary storage (including fuel stores and other bunded hazardous material storage area) fixtures and any other temporary works will be cleared and completed removed from the site unless otherwise agreed with community members who will take ownership of these materials/ equipment.	N/A		
5.3.1.3	Any access roads created will be rehabilitated to their condition prior to the start of construction	N/A		
5.3.1.4	Any infrastructure (gates, fences, etc) impacted on by construction activities will be returned to the same or better condition than prior to the start of construction.	N/A		
5.3.1.5	Once construction infrastructure has been removed spills not previously evident may become visible. These spills will be appropriately addressed and any contaminated material removed from the site and disposed of offsite at an appropriately licensed disposal facility.	N/A		
5.3.2 Vegetation				
5.3.2.1	Any invasive alien vegetation within areas disturbed by construction activities must be removed using techniques that will limit the possibility of recolonization by alien species	N/A	All post-construction activities are currently not applicable.	
5.3.2.2	Open areas are to be re-planted as per the revegetation specification.	N/A		
5.3.2.3	All vegetation that has been cleared during construction is to be removed from site and delivered to a garden refuse disposal site or used as much as per the revegetation specification, (except for seeding alien vegetation).	N/A		
5.3.2.4	Replanted areas will be maintained and any new invasive alien vegetation cleared as above	N/A		
5.3.3 Rehabilitation				
5.3.3.1	Any excavations will be backfilled and shaped to blend with the surrounding areas and then covered with topsoil and revegetated as above.	N/A	All post-construction activities are currently not applicable.	

No.	Description	Status	Observation / Finding	Recommendations/ Remedial Action
5.3.3.2	Where necessary storm water management measures will be implemented to ensure that surface water is not concentrated resulting in scouring and erosion.	N/A		
5.3.3.3	Backfilled areas will be monitored for subsidence.	N/A		
	Guidelines for the rehabilitation of wetland and riparian areas and their terrestrial buffer zones as included in the specialist aquatic assessment included at Appendix C will be implemented	N/A		
5.3.4 Waste				
5.3.4.1	All waste including building rubble, litter, domestic waste, spilled concrete, unusable building materials, skips and bins will be removed (unless by prior arrangement with the owner of the property on which the waste is located) from the site and appropriately disposed of. Certificates of safe disposal will be maintained for inclusion in the closure audit report.	N/A	All post-construction activities are currently not applicable.	
5.3.5 General				
5.3.5.1	A closure site audit will be conducted by the ECO after the completion of works and rehabilitation. The contractor will not be permitted to leave the site until the site visit has been conducted and any issues identified remediated.	N/A	All post-construction activities are currently not applicable.	
5.3.5.2	An Operational Phase EMP <sub>r</sub> will be compiled and approved by the EDTEA prior to commencement of operation. The Operational Phase EMP <sub>r</sub> will include, but not be limited to, detail regarding the backup concept for the DEWATS plants.	N/A		
5.3.5.3	A detailed operation and maintenance manual for the DEWATS plants must be provided to the eThekweni Water and Sanitation Department prior to the commissioning of the DEWATS plants.	N/A		

## **Appendix C: Proof of I&AP Notification of EA Decision**

**From:** [Tamaryn Hale](#)  
**To:** [mokoenan@dws.gov.za](mailto:mokoenan@dws.gov.za); [Shoni.Makhwedzha@durban.gov.za](mailto:Shoni.Makhwedzha@durban.gov.za); [wienersd@kznwildlife.com](mailto:wienersd@kznwildlife.com); [nerissa.pillay@kznwildlife.com](mailto:nerissa.pillay@kznwildlife.com); [archaeology@amafapmb.co.za](mailto:archaeology@amafapmb.co.za); [JeffreyMAI@daff.gov.za](mailto:JeffreyMAI@daff.gov.za); [nandiphase@daff.gov.za](mailto:nandiphase@daff.gov.za); [PMBResourceCentre@daff.gov.za](mailto:PMBResourceCentre@daff.gov.za); [Judy.Reddy@Kzntransport.gov.za](mailto:Judy.Reddy@Kzntransport.gov.za); [xolani.nala@durban.gov.za](mailto:xolani.nala@durban.gov.za); [kiran.haripersad@jalch.co.za](mailto:kiran.haripersad@jalch.co.za); [victorcebisa11@gmail.com](mailto:victorcebisa11@gmail.com); [nkosiqumbisa@gmail.com](mailto:nkosiqumbisa@gmail.com); [manqobawesley@gmail.com](mailto:manqobawesley@gmail.com)  
**Cc:** [Marius Van Huyssteen](#); [Bongs Gumede](#); ["THOBEKILE DLAMINI"](#)  
**Subject:** Banana City Project - Environmental Authorisation issued (EDTEA ref: DM/0030/2018)  
**Date:** Friday, 12 July 2019 14:57:00  
**Attachments:** [image001.png](#)  
[503427\\_Banana\\_City\\_IAP\\_EA\\_Notification\\_Final\\_20190712.pdf](#)

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Dear Sir / Madam,

Please find herewith attached a letter for your attention.

Kind regards,

**Tamaryn Hale** *Pr. Sci. Nat. CEAPSA BSc Hons Environmental Science*

Senior Environmental Scientist



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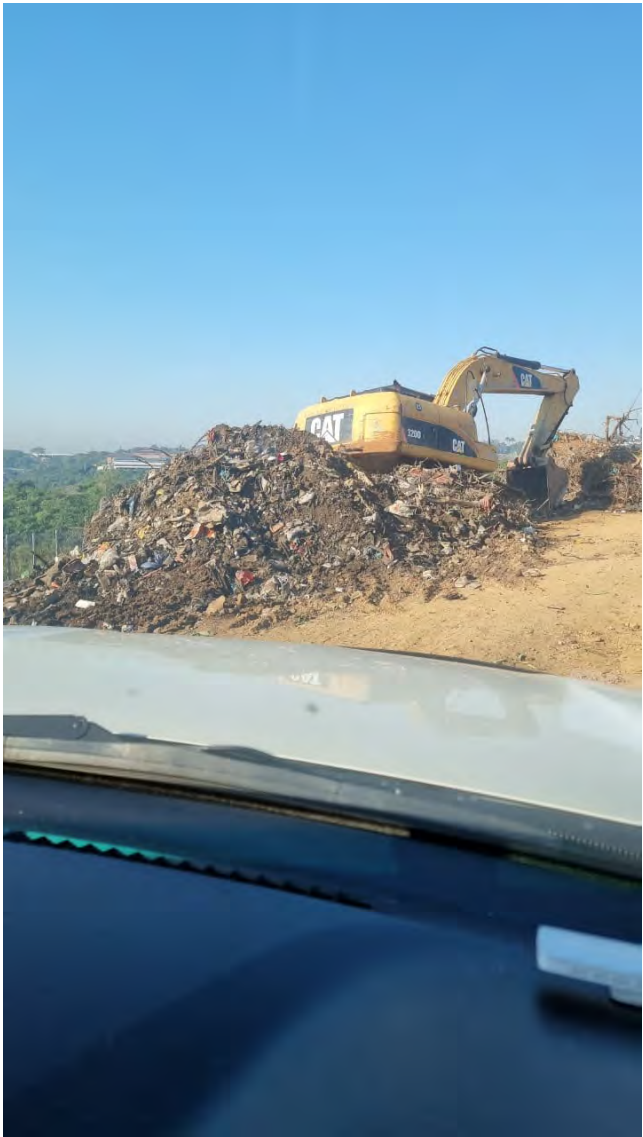
[www.srk.co.za](http://www.srk.co.za)

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**Appendix D: Photographs of Waste Removed from the  
Transit Camp Site  
(supplied by the Resident Engineer)**



## **Appendix E: Approved Layout Plan**


**eTHEKWINI MUNICIPALITY**  
**ROADS PROVISION DEPARTMENT**  
Pavement & Geotechnical Engineering Branch  
Pavement Design Report – Comment Sheet

Ref No.: 2019/044  
W.O. No.: -  
Comment Sheet No.: 4  
Date: 18/07/2019  
To: Kimeshni Reddy  
Nelson Allopi & Assoc.

<b>PROJECT DETAILS:</b>	<b>Banana City Housing Development</b>	
<b>Consulting Engineer:</b>	Nelson Allopi & Associates	
<b>Council Funded: (Yes / No)</b>	No – Funded by Department of Housing, Human Settlements	
<b>Road Details:</b>	Local Taxi Route Roads (Road No. 1 & 2) Residential Access Roads /Cul de Sacs (Road No. 2A-11 & 13-18)	GIS Road ID : To follow
	<b>DESIGN REPORT:</b> Report Ref No.: 2017/369/05 (18/07/2019)	<b>COMMENTS:</b>
<b>Design Method:</b>	TRH 4:1996 – Flexible pavements eThekwini Pavement Design Catalogue – Rigid Pavements	
<b>Design Life:</b>	Category C – 20 years Category D – 40 Years	
<b>Design Traffic Estimation: Heavy Vehicles</b>	Category C – 10 Category D – 4	
<b>Growth Rate :</b>	4% (both category C&D)	
<b>E80's / Heavy Vehicle:</b>	Category C – 1 Category D – 0.75	
<b>E80's over 20yr Design Life</b>	Category C – $0.34 \times 10^6$ E80's Category D – $0.11 \times 10^6$ E80's	
<b>Design Traffic Class:</b>	Category C – ES0.3 Category D – ES0.1	
<b>Road Category:</b>	Category C – Local Taxi Route Roads Category D – Residential Access Roads	
<b>Materials Depth:</b>	Category C – 800mm Category D – 800mm	
<b>Climatic Region:</b>	Wet	
<b>Materials / Geotechnical Investigation :</b>	Geosure (Pty) Ltd, Ref : 131-16.R01, 1st September 2016	
<b>Insitu subgrade materials quality:</b>	Insitu material ranges from G7 to G9 (SG1 to SG2) The quality of in-situ material is to be verified at the time of	

	construction to material depth for all the proposed roads.	
<b>Economic Analysis :</b>	N/A	
<b>Pavement Design Proposed:</b>	<p><b>Granular Base (Grades <math>\leq</math> 16%)</b></p> <p><b>SG1</b></p> <p><u>Class UC</u></p> <p>35mm SaS10 150mm G4 150mm G6 150mm Insitu R&amp;R</p> <p><u>Class UD</u></p> <p>35mm SaS10 125mm G4 125mm G6 150mm Insitu R&amp;R</p> <p><b>SG2</b></p> <p><u>Class UC</u></p> <p>35mm SaS10 150mm G4 150mm G6 150mm G7 150mm Insitu R&amp;R</p> <p><u>Class UD</u></p> <p>35mm SaS10 125mm G4 125mm G6 150mm G7 150mm Insitu R&amp;R</p> <p><b>Concrete (Grades <math>&gt;</math> 16%)</b></p> <p><u>Class UC</u></p> <p>180mm Jointed unreinforced Concrete Pavement (JCP) 150mm G7 150mm Insitu R&amp;R</p> <p><u>Class UD</u></p> <p>150mm Jointed unreinforced Concrete Pavement (JCP) 150mm G7 150mm Insitu R&amp;R</p> <p><b>Sub grade Layer:</b></p> <p>150mm G7 Imported material (G9/SG3) 150mm Rip &amp; Re compact</p>	
<b>Layerwork Materials Specification: (including, layer compaction requirements.)</b>	<ol style="list-style-type: none"> <li>1. SaS10 (Level 1A design) – compacted to 93% - 96% MTRD</li> <li>2. G4 – compacted to 98% Mod.AASHTO</li> <li>3. G6 – compacted to 95% Mod.AASHTO</li> <li>4. G7 – compacted to 95%</li> </ol>	



	Mod.AASHTO 5. Insitu R&R – compacted to 93% Mod.AASHTO 6. Concrete – 40MPa reinforced with Mesh Ref 395	
<b>Specification Detail:</b>	SABS 1200: Section M	
<b>Road Handover:</b>	<p>On completion of construction, the new roadworks are to be handed over in terms of the Roads Provision Department's Handover Policy.</p> <p>Note that the "Materials As Built Report" forms an essential part of the Handover Documentation. The As Built report is effectively a summary record of all testing undertaken proving that the road has been constructed in accordance with the specification and this design document. Should there be insufficient evidence of this in the As Built Report, the handover of the road infrastructure WILL NOT BE EFFECTED. A pro-forma "Materials As Built" spreadsheet is available from the Roads Provision Department.</p>	
<b>General Comment:</b>		
<b>Report Accepted/To be Amended:</b>	<b>Report Accepted</b>	E.P. Lathleiff 

**NOTE: THE GRANTING OF APPROVAL FOR THE PAVEMENT DESIGN REPORT IN NO WAY RELIEVES THE CONSULTING ENGINEER OF THE RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN.**

## SRK Report Distribution Record

Report No.

574766/CA1

Name/Title	Company	Copy	File Type	Date	Authorized by
Mr. Nelson Allopi	Nelson Allopi and Associates	1	Electronic	June 2021	T. Hale
Mr. Siyabonga Sikhakhane	EDTEA: Compliance, Monitoring and Enforcement	2	Electronic	June 2021	T. Hale
File copy	SRK	3	Electronic	June 2021	T. Hale

Approval Signature:



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