

NOTES OF MEETING

CLIENT : Foskor (Pty) Ltd (Foskor)
PROJECT : Foskor Rock Phosphate Storage Facility Basic Assessment
PROJECT No : J31280
PURPOSE : Storm Water Designs – Project Discussions with Wetland Specialist
PLACE : Bosch Projects Boiler Room, Umhlanga
DATE & TIME : 04/06/2012, 09:30am
NOTES TAKER : Katherine de Jong assisted by Mr G Mullins
MINUTE REVIEWER : Gisela Fechter

| NAME | REPRESENTING | E-MAIL ADDRESS | DISTRIBUTION |
|-------------------|-----------------------------|-----------------------------|--------------|
| PRESENT | | | |
| Harish Vadlamudi | Foskor | harishv@foskor.co.za | Email |
| Katherine de Jong | Arcus GIBB (Pty) Ltd (GIBB) | kdejong@gibb.co.za | Email |
| Gisela Fechter | GIBB | gfechter@gibb.co.za | Email |
| Treve Taylor | Bosch Projects | taylort@boschprojects.co.za | Email |
| Greg Mullins | SiVest | gregm@sivest.co.za | Email |

APOLOGIES

None.

ADDITIONAL DISTRIBUTION

| | | | |
|--------------------|-------------------------------|------------------------------|-------|
| Urishanie Govender | GIBB | ugovender@gibb.co.za | Email |
| Muhammad Ali | Foskor | muhammada@foskor.co.za | Email |
| Ryno Eksteen | Bosch Projects | eksteenr@boschprojects.co.za | Email |
| Felicity Elliott | Ezemvelo KZN Wildlife (EKZNW) | elliottf@kznwildlife.com | Email |

Attendees at the meeting are required to take their own notes and act on these rather than await the arrival of the minutes. The minutes serve as a record of events at the meeting.

| DISCUSSION | ACTION | DEADLINE |
|---|--------|----------|
| 1. 1. INTRODUCTION 1.1 Prior to this meeting, a meeting was held with Ms Felicity Elliott from EKZNW on 30 th May 2012. In discussions with Ms Elliot regarding the wetlands on Portion (Ptn) 55 and 56 (the proposed site for the Rock Phosphate Storage Facility), her request was that the wetland specialist should work closely with the design team in specifying the design for the storm water infrastructure for the rock phosphate store. This is to ensure effective mitigation of potential wetland impacts. (Find the comments from EKZNW attached). | | |

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|---|--------|----------|
| <p>1.2 The purpose of this meeting was therefore to facilitate a discussion between the wetland specialist (Mr Greg Mullins from Sivist) and the design team (represented by Mr Treve Taylor from Bosch Projects). The objective of the meeting was for these parties to come to an understanding on the requirements for wetland protection and agree on suitable stormwater management design interventions for the rock phosphate store that would effectively limit and/or mitigate the potential impact on the wetlands.</p> <p>Key points of the discussion are in the subsections below.</p> <p>1. 2. STORMWATER MANAGEMENT</p> <p>2.1 According to Mr Mullins, the wetlands located on Ptn 55 and 56 are groundwater fed systems and storm water management should therefore aim to return all runoff to the groundwater system as quickly and effectively as possible. Over land flows and point release should be avoided or at least minimised. Opportunities for infiltration across the site should be made rather than to direct all runoff to large discharge points.</p> <p>2.2 Mr Taylor explained that Foskor had indicated their preference for stormwater to run straight off the roof structure rather than through gutters. Mr Mullins suggested that runoff from the roof of the main structure should ideally be discharged into a stone chipping filled trench alongside the building – with the idea that surface runoff from the roof and elsewhere will infiltrate back into the soil. This will allow for a slower feed of water to enter the wetlands. Mr Mullins noted that the system will thus need to be designed to accommodate 1:5 but ideally 1:10 storm events.</p> <p>2.3 Mr Mullins also noted that storm water runoff from the paved car parking / office area must be collected and directed through a sump/filter prior to release into the natural system.</p> <p>2.4 Mr Mullins noted that roof runoff and treated parking runoff could then enter the ground water system to maintain sub-surface supply to the southern wetland.</p> <p>2.5 Mr Mullins also explained that a stormwater channel outside and alongside the northern boundary of the site directs stormwater from the John Ross Highway around the site into an off-site stream on the western boundary. This stormwater therefore does not enter the site.</p> <p>2.6 Mr Taylor then explained that, in accordance with their current preliminary design a stormwater drainage system in the form of an open channel along the eastern boundary of the site, will direct stormwater to an inlet point at the southern wetland on Ptn 57. The system will redirect stormwater flowing from a north eastern direction around the proposed site. This drainage channel will be provided with a permeable floor and an energy dissipating structure at the inlet to the wetland.</p> | | |

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| <p>2.7 Mr Mullins agreed that an open, permeable drain down the eastern side of the site is suitable. However, he recommended that this system include a notched weir / berm system down the length of the drain. The aim of this is to retard or hold runoff at points higher up the system to allow more opportunity to infiltrate. This will mean the volume of water eventually reaching the dissipation structure (and single point discharge) on the edge of Ptn 57 will be less (i.e. more similar to natural levels.)</p> <p>Mr Mullins further explained that a second function will be the removal of any pollutants from the runoff as there is no control over the water quality entering the site. Therefore the water is 'treated' higher up the system, which increases the residence time in the artificial portion of the system prior to its release into the Ptn 57 system – this will be more ecologically sound.</p> <p>2.8 Mr Mullins also noted that ideally the size of the structure planned on the edge of Ptn 57 wetland should be as small as possible. First prize would be a gabion basket stilling basin into which runoff flows. During small rain events water will enter the system and percolate out through the side walls. In larger events the basin will fill and flows will overtop the chamber and enter the Ptn 57 system as low energy sheet flow.</p> | | |
| <p>1. 3. ACCESS ROAD</p> | | |
| <p>3.1 Mr Taylor indicated that the road crossing structure across the portion of the Southern wetland would be in the form of a twin pipe culvert.</p> | | |
| <p>3.2 Mr Mullins stated that the access road crossing the wetland and wetland buffer should preferably be designed with a dump-rock base or something similar and covered with G material. Mr Mullins stressed that the feasibility of this would need to be confirmed. He noted that the course grade base will allow water to move beneath the road (not just through the culverts).</p> | | |
| <p>1. 4. HAZARDOUS MATERIALS MANAGEMENT</p> | | |
| <p>4.1 Storage of hazardous materials on site during construction and operation must be in appropriately sized and designed bunded storage areas to avoid spill contamination entering the wetlands. Particular reference was made regarding the transformers, it was suggested that both the transformers are kept under cover and efficiently bunded including stone chips and a sump for stormwater to exit.</p> | | |
| <p>Mr Taylor agreed that a covered roof for the transformers could possibly be added to the designs. It was indicated that the quantity of oil on site for the transformers is approximately 600- 1000 litres. The transformers are tested on site and the filters are removed by the external company responsible for maintenance.</p> | | |
| <p>4.2 Regarding the refuelling of vehicles on site, Mr Mullins suggested the area be appropriately bunded and that the contractors could <i>inter alia</i> use a bidden material with stone cover. Once the project is complete the bidden and stone cover can be rolled up and disposed of as hazardous waste.</p> | | |

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| <p>4.3 Ms Fechter also suggested that a small hazardous store be included on site. This store would need to be efficiently banded to store small quantities of paint tins, thinners, gear box oils, sealants etc. that may be required during the operation of the site.</p> <p>4.4 The use of cement on site was also discussed, including piling options. Mr Taylor noted that various piling options were considered but decisions thereon typically depend on costs and contractor preferences. Mr Mullins explained that cement spills into the wetland system must be prevented and suggested that the selected piling option will require specific controls measures (e.g. use of sandbags around piles) during construction to limit impacts to the systems and prevent possible contamination.</p> <p>Ms Fechter indicated that this would be addressed in the Environmental Management Programme (EMP) as a specification for concrete management and spill prevention/containment.</p> <p>Mr Taylor also stated that piles would be in situ round piles as opposed to sheet piles.</p> <p>4.5 Mr Taylor explained that an on-site cement batching plant would unlikely be required as ready mix cement is commercially available in Richards Bay.</p> | | |
| <p>1. 5. FENCING</p> | | |
| <p>5.1 Mr Vadlamudi enquired about fencing across the wetland and buffer. Mr Mullins indicated that once consensus is reached as to the fence alignment specific design and construction input can be provided. He did however state that a chain link may be preferred to a palisade fencing option.</p> | | |
| <p>1. 6. DUST FALL-OUT</p> | | |
| <p>6.1 Mr Taylor indicated that the preliminary design of the rock phosphate store provides for a forced draught ventilation with air filters to effectively contain dust being emitted from the storage facility. This would therefore prevent dust-fallout.</p> <p>Ms Fechter stated that Airshed has been appointed to perform air emission modelling and assess air quality impacts for the project.</p> | | |
| <p>1. 7. PORTION 57</p> | | |
| <p>7.1 Mr Harish Vadlamudi noted that Foskor considers acquiring Ptn 57.</p> | | |
| <p>1. 8. CONCLUDING COMMENTS</p> | | |
| <p>8.1 Mr Taylor undertook to provide a site layout plan with stormwater management structures and features indicated.</p> | Mr Taylor, Bosch | Asap |
| <p>8.2 GIBB will distribute the notes of the meeting to all attendees and provide Ezemvelo with a copy for their records.</p> | Ms de Jong, GIBB | Asap |