



October 30th, 2018

RE: Site visit to Dinosaur Interpretive Center, Golden Gate Highlands National Park

To Whom It May Concern:

Background

This letter serves to communicate my findings stemming from a site visit to the Golden Gate Highlands National Park Dinosaur Interpretive Center on October 30th, 2018. The site visit was in response from a call from Esther Howard of SANParks regarding diligence surrounding the potential impacts on palaeoresources during the excavation period of construction. I am involved in this process because during the initial planning stages of the center, I wrote the desktop PIA for SANParks and I have remained informed about the developments at the site.

In that PIA report in February, 2015, I made two statements regarding best practices for excavation of the site:

“The possibility of uncovering vertebrate fossils or footprints during the sitework is very high, and the threat of damage of these protected heritage items should be mitigated as part of the construction process.”

“The potential threat to these heritage resources posed by the proposed development can be mitigated by having a palaeontologist on site to examine in-situ vertebrate fossils uncovered by earthworks”

These recommendations were made without any knowledge of the depth of excavation or of the building practices to be employed and require amendment. Below I modify these recommendations and provide evidence supporting that modification. In summary, the remaining site work for the main building can be conducted without further monitoring and the palaeontological monitoring for installation of the trail and viewing platform needs to be revisited when the plans are more complete and site layout has been done.

Methods

The following personnel attended the site visit:

Johan Els, General foreman

Dhiraj Nariandas, Environmental Officer

Phenyo Madiba, Site clerk

Zweli Mdunge, Foreman



During my visit, I personally inspected the entire perimeter of the site, including all areas where excavation activities had taken place. I additionally inspected the temporary soil runoff trenches, borrow pits, and bunted mixing platforms that surround the site. I reported my findings verbally to both Dhiraj and Johan, and provided a small amount of verbal instruction for Pheny and Zweli on palaeontological field methods. Pheny, Zweli, Dhiraj and Johan provided verbal guidance on the future construction phasing and its potential impact on the site.

Observations

The majority of the site works have been conducted within the modern soil profile that sits stratigraphically above potentially fossiliferous Elliot Formation outcrop. The soil profile consists in some areas of Pleistocene alluvium, in which infrequent, boulder-sized clasts of Elliot Formation mud- and sandstones are distributed, and in other areas of poorly consolidated silt presumably deposited by the still-active drainage spruit that lies below the site to the North. The silt is in some cases more than 4m deep, and the alluvium varies considerably in thickness, from one meter to several meters. I visually inspected a representative sample of the Elliot Formation clasts from within the alluvium and found no fossils within them.



Fig 1. Site works on October 30, 2018, showing that excavations have been into predominantly alluvium and overbank deposits. View is to the southeast.

The southeastern corner of the site features an angular retaining wall more than 3m high at its tallest extent (see Fig 2 below). Digging (conducted with an excavator and with the use of handheld breakers) for the footing of the tallest portion of this wall removed several cubic meters of reddish, fine-grained sandstone with lithological characteristics indicating it was primary outcrop of upper Elliot Formation. The spoil heap from this excavation was retained in an area immediately north of the retaining wall. An approximately 40cm-thick layer of gunnite covered the excavation face at the time of the site visit, and I could not inspect it for fossils, although I suspect that upper Elliot Formation was exposed on a portion of that face. I found small invertebrate trace fossils on the cut surfaces of several of the larger fragments



in the spoil heap, and typical pedogenic nodules and root casts were also present. I found no vertebrate fossils.



Fig 2: Portion of retaining wall cutting into Elliot Formation outcrop (left) and spoil heap containing Elliot Formation sandstones and mudstones (right). View is to the south.

In the southernmost drainage trench (uphill from the main site), two small outcroppings of in-situ Elliot sandstones are present. Neither of these outcrops show evidence of fossils. None of the other areas of the site (drainage trenches, bunted mixing platforms, etc) show evidence of excavation into potentially fossiliferous strata.

The proposed trail leading to the viewing platform was not marked at the time of my site visit, and an informal review of the plans showed relatively few details. Johan remarked that the architects were completing those plans and that the trail and platform would be among the last site installations to be done.

Recommendations

The site works at the GGHNP Dinosaur Interpretive Center have cut into a small amount of potentially fossiliferous outcrop of the Elliot Formation, but no important vertebrate fossils



were identified during my site visit. As excavations have ceased for the most part in the main building area, it is unlikely that palaeoresources have been, or will be, negatively impacted. It is my opinion that construction may continue in the main site areas within the established footprint at the time of my visit without further site inspections being necessary.

The upcoming stages of construction involve driving pilings to support the main building. It is my understanding that the borings for these pilings are less than 1m in diameter and thus cannot be safely inspected. In addition, it is my understanding that during these borings, concrete is pumped into the holes to form the footing, and at no time exposing subsurface sedimentary rocks of the Elliot Formation. Therefore, there is no practical way to mitigate any negative impacts on the palaeoresources during pile driving and I recommend that the pilings proceed without further inspection of that phase of the project.

The final stages of construction will involve the cutting of a trail and the establishment of a viewing platform across from the Roodraai egg site. This phase of construction has the potential to negatively impact palaeoresources in a way that can be affectively mitigated. I understand that the current plan is to dig much of the trailbase by hand, which is desirable because fossils can be rapidly identified with minimal breakage if a person trained in their identification digs them up. To this end, I recommended to Johan and Dhiraj that I train their crew in the identification of fossils prior to trail work commencement. This training would take about three hours of expert time. I recommend that the plans for the path and the viewing platform be shown to me before work begins, and that at that time we revisit the necessity of palaeontological monitoring during those final phases of the work.

Conclusion

The Golden Gate Dinosaur Interpretive Center site works, as of October 30th, 2018, has not had any negative impact on the palaeontological heritage of the area. I recommend that site work for the main building, including the digging of subsurface drainage and the installation of pilings, be allowed to proceed without the need of monitoring.

The most significant risk remaining will be encountered during the excavation of the trail and viewing platform, and before these begin plans should be reviewed with a consulting palaeontologist and the possibility of palaeontological monitoring during their excavation should be revisited.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jonah Choiniere'.

Professor Jonah Choiniere

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