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Meridian.

Harapaki Windfarm Concrete Batching Plant Management Plan

Document Number: HRP-210-000-PL-04-03

Approved by

Name	Position on Project	Signature	Date
James Bilkey	Civil Construction Manager		29/05/2020

Document History

Version	Details	Author	Reviewer	Approver
1.0	Final for Council approval Council Approved 14/09/2020	Campbell Stewart (CPESC 7630)	Tom Gaddum	James Bilkey
1.1	Stormwater Management Update Update post consent award Council Approved 13.04.2022	Amendments to V1.0 Made by Peter Ralph	Tom Gaddum	James Bilkey

Note: Any additions or alterations to the Plan arising during the course of the Project are to be documented and attached to this Plan. This Plan will be reviewed annually or sooner as required.

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1.0 INTRODUCTION

Construction of the Harapaki Wind Farm will require the establishment of a Concrete Batching Plant (CBP) for the production of concrete associated primarily with the construction of foundations for structures including turbine bases. The CBP will be located in the project main laydown area where it will be shared with laydown zones for wind turbine components and infrastructure – see Appendix A.

This CBP Management Plan outlines operation and maintenance details for the batching plant along with contingency plan to manage spills and/or discharges. This also includes mitigation measures to avoid any adverse effects of dust.

The procedures set out in this plan will be followed for the duration of the operational period of the plant to ensure that any environmental effects are minimised resulting from the operation.

2.0 CONCRETE BATCHING PLANT LOCATION AND LAYOUT

The CBP for the Harapaki Wind Farm is proposed to be located upon the relatively flat area of ground at R1-CH2250. Establishment of the laydown area, including the batching plant site will require initial earthworks activities to recontour the existing land contour to create a large, level platform for establishment of the batching plant platform along with the adjacent laydown area. The total laydown area is approximately 20,000m² in size (this may be enlarged depending on actual turbine component laydown configuration), of which the CBP area will comprise approximately 4,000m².

The location of the plant has been determined taking into account a number of factors including:

- Site topography to minimise earthworks required to establish a level surface for installation of the batching plant;
- Avoidance of any areas of ecological value;
- Avoidance of elevated, exposed ridgelines and maximisation of shelter from prevailing winds to minimise potential dust issues; and
- Proximity to the main site access road to minimise travel distances within the site for delivery vehicles.

A plan showing the layout of the laydown area, including the CBP area, is attached as Appendix A.

The CBP facility will include two batch plant set ups in order to produce the required concrete volumes during the turbine foundation pours.

The structures and facilities required for CBP operation include:

- Prefabricated office and amenities structure;
- Two mobile batching plant units which include hoppers, aggregate storage bins, compressor, cement silos and conveyors;

- Water tanks (4 x 30000 litres);
- Aggregate stockpile area;
- Sand stockpile area; and
- The expected area required for the plant and supporting structures is expected to be in the order of 4000m².

An indicative CBP set up and site layout are shown below in Figure 1 and Figure 2.



Figure 1: Two bin plant set up. Note: project will require two plants.

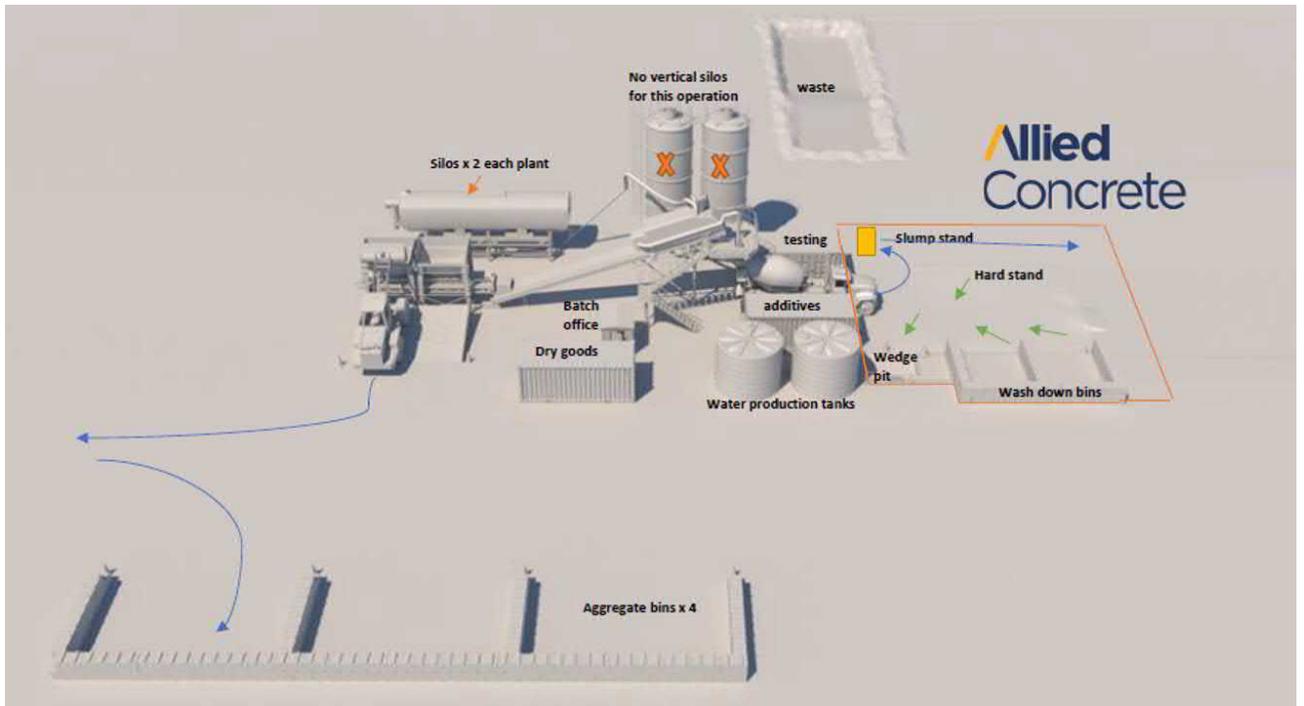


Figure 2: Indicative Concrete Batching Plant Layout (Note: project will require be two plants.) Orange lines indicate bund to separate wash down area and the rest of the CBP area.

A photo of a typical CBP operation from a previous Meridian windfarm project is shown below for information purposes.



Figure 3: Concrete Batching Plant

3.0 CONCRETE BATCHING PLANT OPERATION

The CBP utilises four different raw materials in the production of concrete for site construction activities including aggregate, sand, cement and water.

Crushed aggregate will be transported in trucks from an off-site quarry and stockpiled within the designated areas prior to use within the concrete production process. Aggregate material is inert and of large particle size and thus will not cause any potential runoff or dust problems.

Sand will be imported from off site and again will be stockpiled within designated areas within the CBP. The sand material is also inert and will not cause any runoff issues. During dry, windy conditions fine sand particulates may pose a potential source of wind generated dust. Sprinklers will be utilised to wet down sand if dust from sand becomes an issue.

Cement and fly ash will be imported to site with enclosed tankers and upon reaching the site, the cement will be transferred from the tanker through a closed pneumatic system into the cement storage silos thus eliminating the potential for any cement to be released into the environment.

Chemical additives will be delivered in drums and stored in a bunded area.

Water supply will be required at the site for both concrete production as well as dust management. It is proposed to establish approximately 120,000 litres of water storage within tanks at the site which will be filled with water sourced from on-site authorised water take locations.

During concrete production, aggregate and sand will be loaded directly into the batching plant for blending with the cement, fly ash and admixtures prior to loading into the concrete trucks. Water will be added into the truck with the dry cement mix for blending within the truck bowls as the concrete is despatched around the site.

4.0 ENVIRONMENTAL MANAGEMENT

4.1 Construction

The initial construction activities associated with establishment of the laydown area, including the CBP area, will involve the stripping of topsoil followed by cut to fill earthworks to level the CBP area. Refer to SEMP 1 Drawing HRP-210-000-PL-04-21.

Stripped topsoil may be utilised to form a perimeter diversion bund around the laydown area earthworks area. These perimeter bunds will prevent any upslope runoff from entering the exposed areas of works to ensure that the catchment area that can contribute to erosion during construction of the yard is limited to the site itself, and minimise the catchment of the sediment control device required to treat runoff. The perimeter bunds will be stabilised with grass to ensure that the clean water diversions do not contribute to sediment generation.

Site runoff from within the platform during construction will be managed within the perimeter bunds and swales and directed to the Sediment Retention Pond (SRP) (refer to Refer to SEMP 1 Drawing HRP-210-000-PL-05-21).

SRP-R700-CH4500 will be retained over the course of the laydown area and CBP operation as a secondary retention/treatment device should any unforeseen flooding/overtopping of the washdown interceptor wedge pits (described below) occur as

well as a nearby water supply option for dust control/wash down activities should it be required.

The CBP area will be covered with aggregate and therefore will be considered established from an erosion and sediment control perspective.

4.2 Operation

The CPB area will be isolated from the rest of the laydown area with an internal isolation bund to provide a clear delineation from the CBP and the rest of the yard. This will protect the batch plant from day-to-day laydown area operations and provide an opportunity for the CPB area to be isolated and contained should a spill incident occur within the plant.

Upon completion of the batching plant construction, all runoff from the plant area, excluding the wash down area, will be directed to a culvert in the southeaster corner of the CBP area. Water will flow through the culvert from east to west underneath laydown area access road into an approximately 20m long open channel before entering another culvert that will direct the water from north to south underneath road 700 into an overland flow path where it will join the main valley stormwater flow path. See Appendix A.

The wash down area (shown in Figure 2) will be separated from the rest of the CBP area with another bund. All runoff from this area will be directed to one of two interceptor wedge pits. The interceptor wedge pits will comprise a 3m x 3m x 0.7m concrete lined pit that will provide a watertight area for collection of site drainage and where the concrete trucks will be washed down. The pits will be fitted with a weir. The washdown water will flow over the weir into a secondary pit where the remaining cement contaminants will be allowed to settle out. The resulting water will be recycled for use in the concrete production. This is a closed-loop system.

Should large volumes of water accumulate within the wedge pits requiring de-watering (i.e. following a large rain event), surplus water can be dewatered into SRP-R1-CH2400 (with the T-bars lifted, to ensure no discharge until pH confirmed at an acceptable level of 6.5-8.5). Should reaching an acceptable water quality level be unachievable, the SRP will be pumped out into a tanker for off-site disposal.

Should any significant spillage of concrete occur outside the washdown area but within the CBP area which results in concrete runoff, the internal isolation bund outlet can be blocked to contain all runoff within the CBP area. Aggregate and sand from the onsite stockpile areas would be used to immediately seal the entrance area into to the CBP area by sealing off the internal isolation bund. Depending on the nature of the event, any effected water can then either be directed to SRP-R1-CH2400 (with the T-bars lifted, to ensure no discharge until pH confirmed at an acceptable level of 6.5-8.5) or pumped out into a tanker for off site disposal.

Sludge from the interceptor wedge pits will be removed regularly and stored on site within a separate bunded off area to dry. Once dry the material becomes inert and will be disposed of in one of the overburden disposal areas. Any waste concrete will be poured into forms and made into large blocks.

At each turbine platform location, a washout sump will be excavated to allow for staff tools to be washed at the end of each day and for the concrete trucks to wash out before driving back to the CBP if the drive back to the batching plant is greater than 15 minutes. For the turbines within a 15-minute drive to the CBP the concrete trucks will washout back at the plant in the wash down area.

The location of the washout sumps will be confirmed onsite by the Construction Manager and will be located within the erosion and sediment controls measures for the area. The water volume required to wash out the tools and concrete trucks will be minor. The water will be allowed to soak to ground within the sump.

4.3 Dust Management

Potential dust issues could arise at the plant from dry sand stockpiles or potential cement and fly ash spillages during dry, windy conditions.

To avoid dust from sand stockpiles becoming a nuisance during these conditions they will be wetted down with a sprinkler system, hose or by a water truck and shall be continuously monitored and wetted down until windy conditions subside. Alternatively, stockpiles may be covered with secured geotextile, polythene or similar fabric.

The closed cement and fly ash system (pneumatic transfer from tanker to silo) will minimise the potential for dry cement or fly ash material becoming a dust nuisance. Furthermore, the cement silos will be fitted with an automatic level control alarm to warn contractors of overfilling and reduce the potential for any spillage during transfer from tanker to silo. In the event that any spillages occur, spilt material will be immediately dampened with water to prevent it becoming airborne and scraped off the ground surfaces for disposal in an appropriate contained area i.e. within the interceptor pond or within a covered area.

The CBP area comprises a low speed environment due to the confined area and site configuration including the batching plant machinery, interceptor pond and stockpile areas. At all times vehicles within the CBP area will be required to maintain speeds below 5km/hour. For these reasons, vehicle generated dust effects are not anticipated.

5.0 MONITORING AND MAINTENANCE

The CBP will be closely monitored and maintained over the life of its operation to ensure potential environmental effects are appropriately managed. A monitoring inspection of the plant will be carried out by the site contractor on a weekly basis with specific monitoring items and maintenance requirements as follows:

- Inspect perimeter bund and washdown area bund for any potential failures or damage. If any failures identified immediately reinstate bund;
- Inspect interceptor wedge pits for accumulated concrete sludges. If observations/ measurement of accumulated materials identifies greater than 20% full with sludge, remove material to a contained, bunded area within perimeter bund to allow drying and disposal;
- Inspect ground surface within CBP area for any evidence of concrete spillage/runoff;
- Dust nuisance to be monitored on a daily basis. When dry windy conditions are forecast, sand stockpile areas to be wet down or covered with secured geotextile or similar;

- Inspect all CBP components including silos and hoppers to check for any defects or leakage which could result in loss of cement/concrete during production; and
- Closely observe cement transfer system during delivery of cement to silos to ensure closed system is working and no loss of cement occurs.
- Monitor pH and general condition of SRP-R1-CH2400.

6.0 SITE RECORDS/LOGS

The Project will maintain a monitoring and maintenance log for the CBP which records the findings of all monitoring inspections carried out and details of any maintenance works undertaken. The monitoring and maintenance log shall be kept at the CBP and shall be made available to Hastings District Council (HDC) and Hawke's Bay Regional Council (HBRC) if so requested. An example weekly inspection form is shown in Appendix B.

Records of trucks delivering raw materials to the site will be collected at both the main site entry point as well as at the CBP. Records will include date/time of delivery as well as details of products being delivered. Similarly, records will be kept at the CBP of concrete truck despatches to construction areas on site.

Any incidents, spillages or discharges will be managed and recorded in accordance with Section 3.16.4 of the CEMP, Hazardous Substances Spill Response.

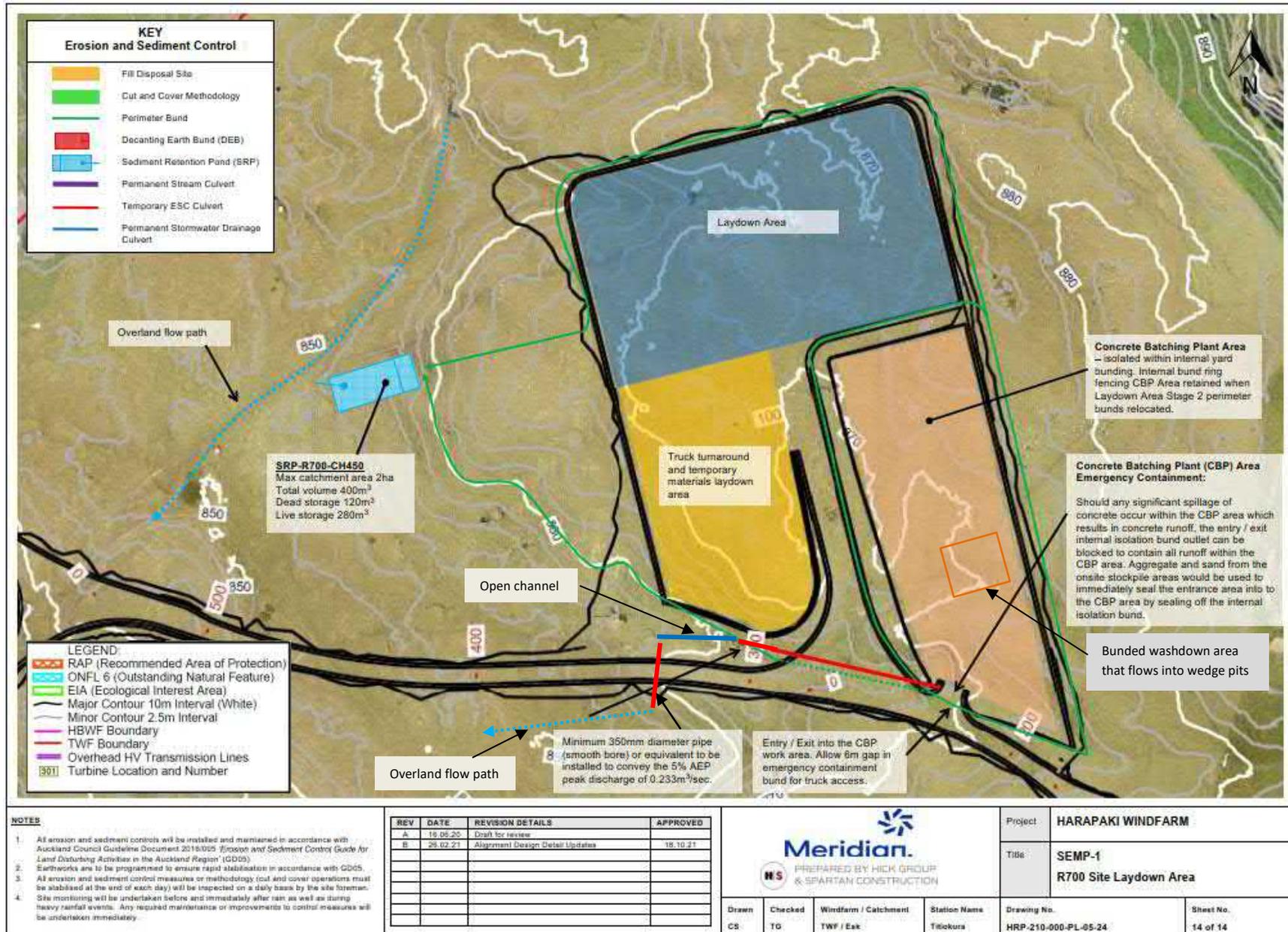
This includes, in the event of a spill the Meridian's Project Environmental and Compliance Advisor or Duty Manger will be notified immediately. The Project Environmental and Compliance Advisor will inform the HDC and HBRC (if enters a water course) as soon as practicable, and as a minimum requirement within 12 hours of becoming aware of the spill.

7.0 DECOMMISSIONING OF BATCHING PLAN

Upon completion of the foundation construction, the CBP will be decommissioned and the site utilised for the storage of turbine components (particularly blades) during the turbine installation phase of the programme. Once the windfarm is complete the site will be rehabilitated and returned to pasture. The interceptor wedge pits will be decommissioned by progressively decanting the water from the pits. The remaining sludge will be dried and disposed of in one of the overburden disposal areas.

The SRP constructed in association with the laydown area and the CBP pad will remain until the area has been contoured, topsoiled and re-vegetated.

APPENDIX A: Site Laydown Area



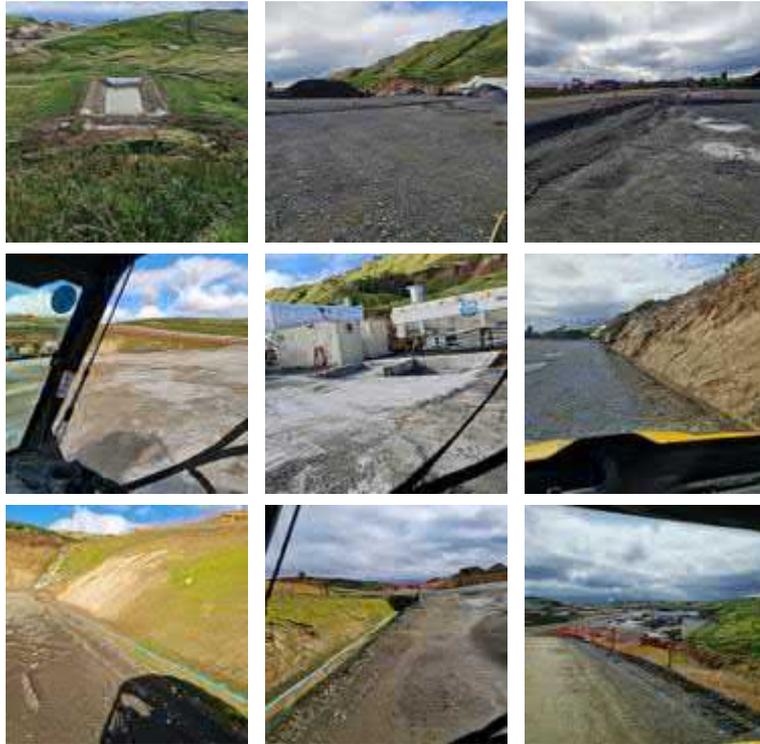
APPENDIX B: Example Weekly Inspection Form

Concrete Batching Plant Weekly In...

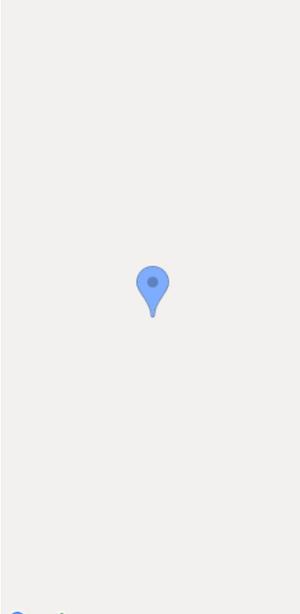
Pete Ralph
Created Tue, 19 Apr 2022, 2:37 PM (UTC+12)

Date	Tue, 19 Apr 2022, 2:37 pm		
Yes/No	Perimeter bund/swale functional/culverts?	Yes	:
Yes/No	Wedpits functional with <20% sludge?	Yes	:
Yes/No	Emergency SRP ready?	Yes	:
Yes/No	Ground surface in good condition with no evidence of concrete runoff?	Yes	:
Yes/No	Concrete batching plant components functional?	Yes	:

Photos



See full page photos attached at end of PDF

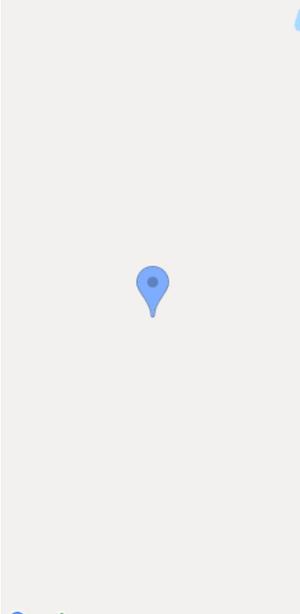


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Apr 19, 2022
2:45 PM UTC +12:00
Hick Bros
Harapaki Windfarm



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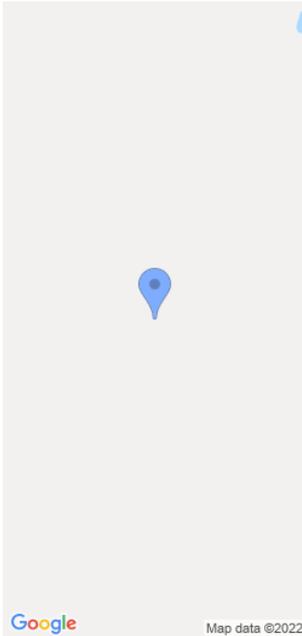
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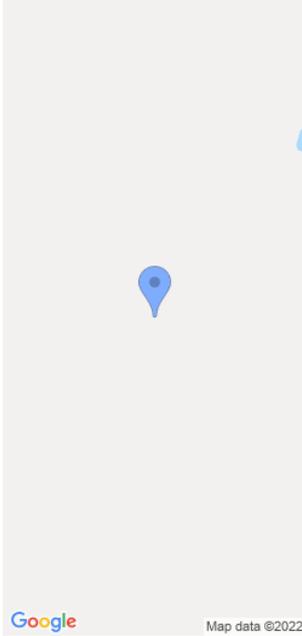
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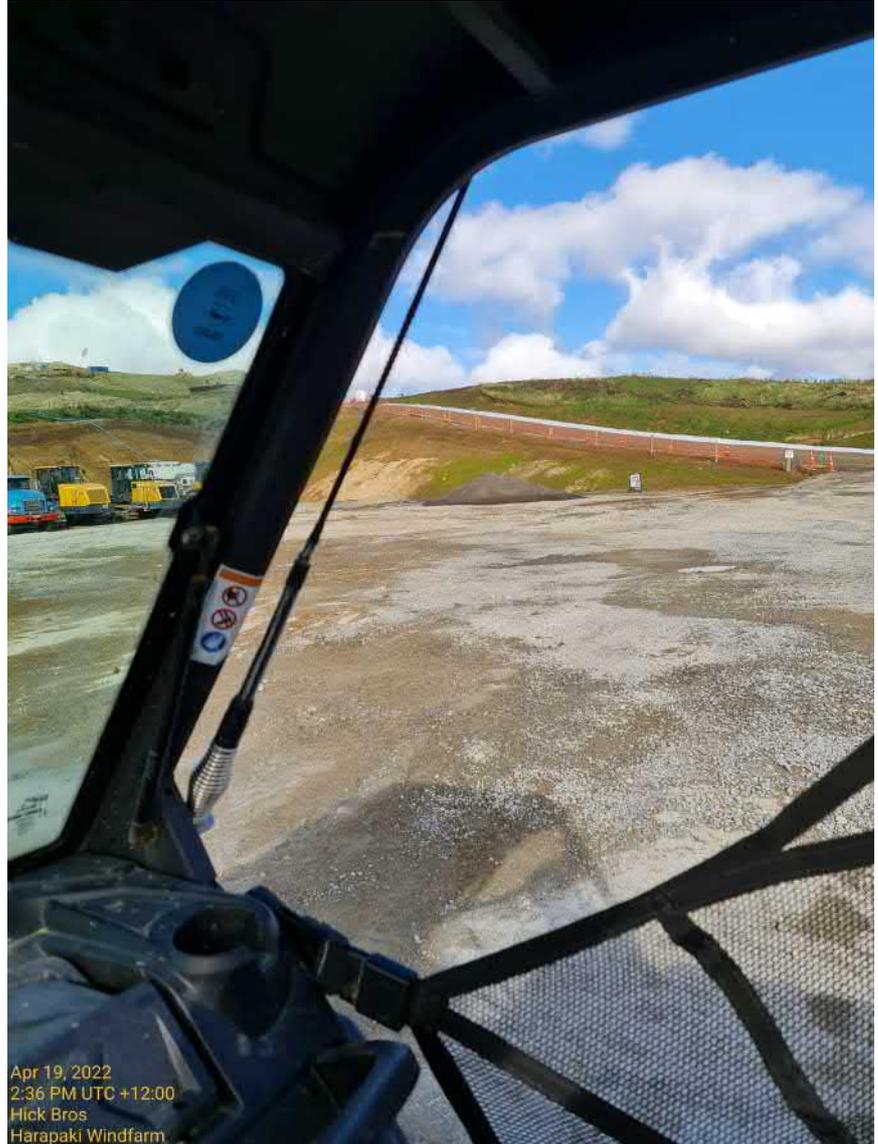
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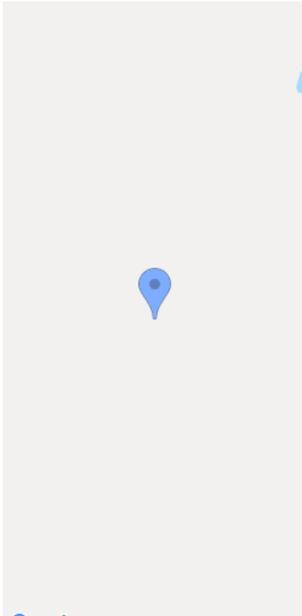
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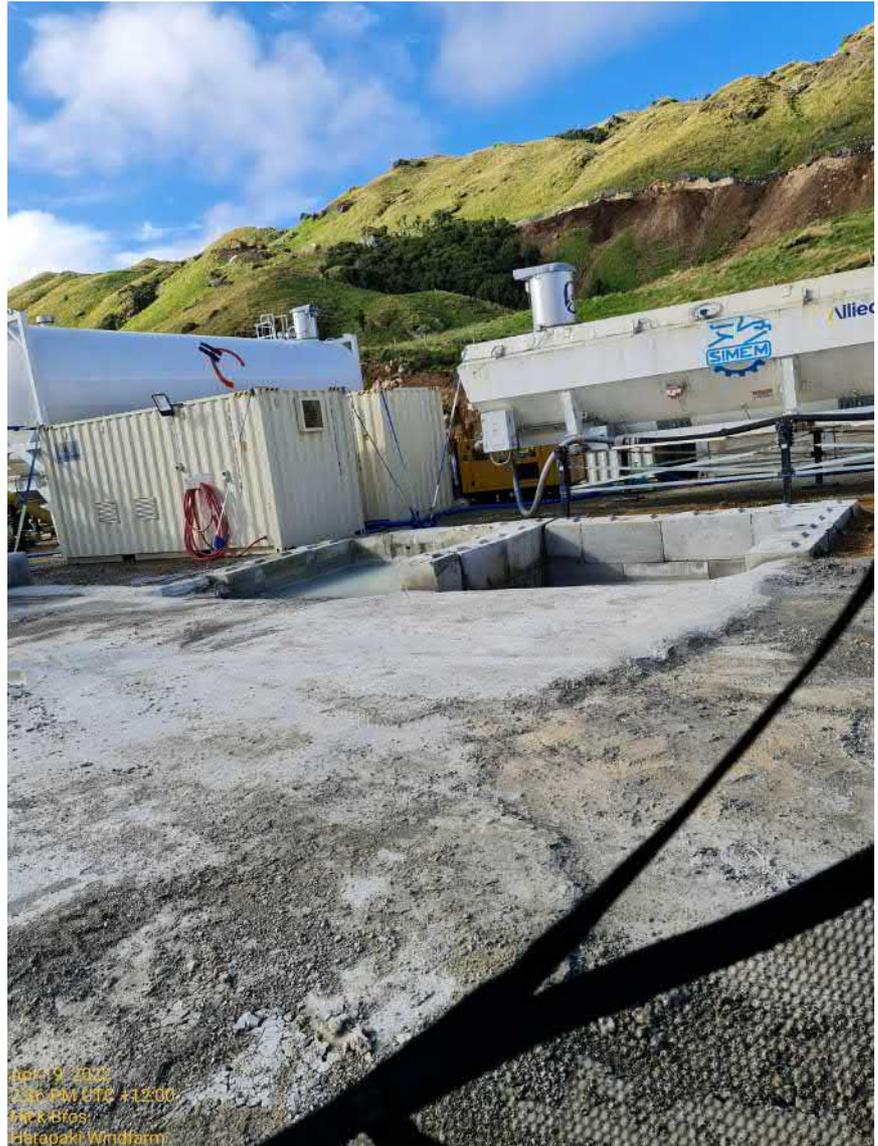
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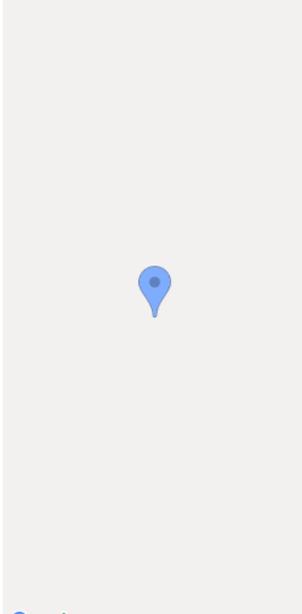
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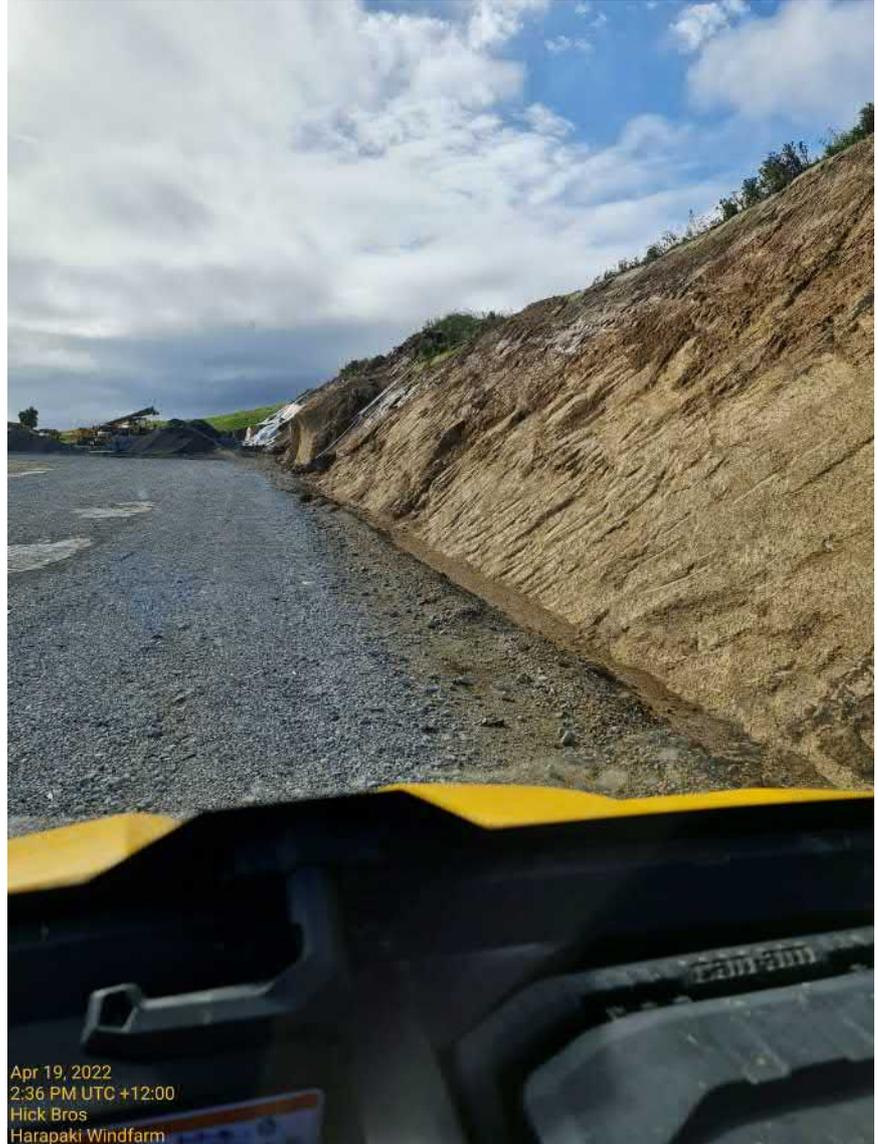
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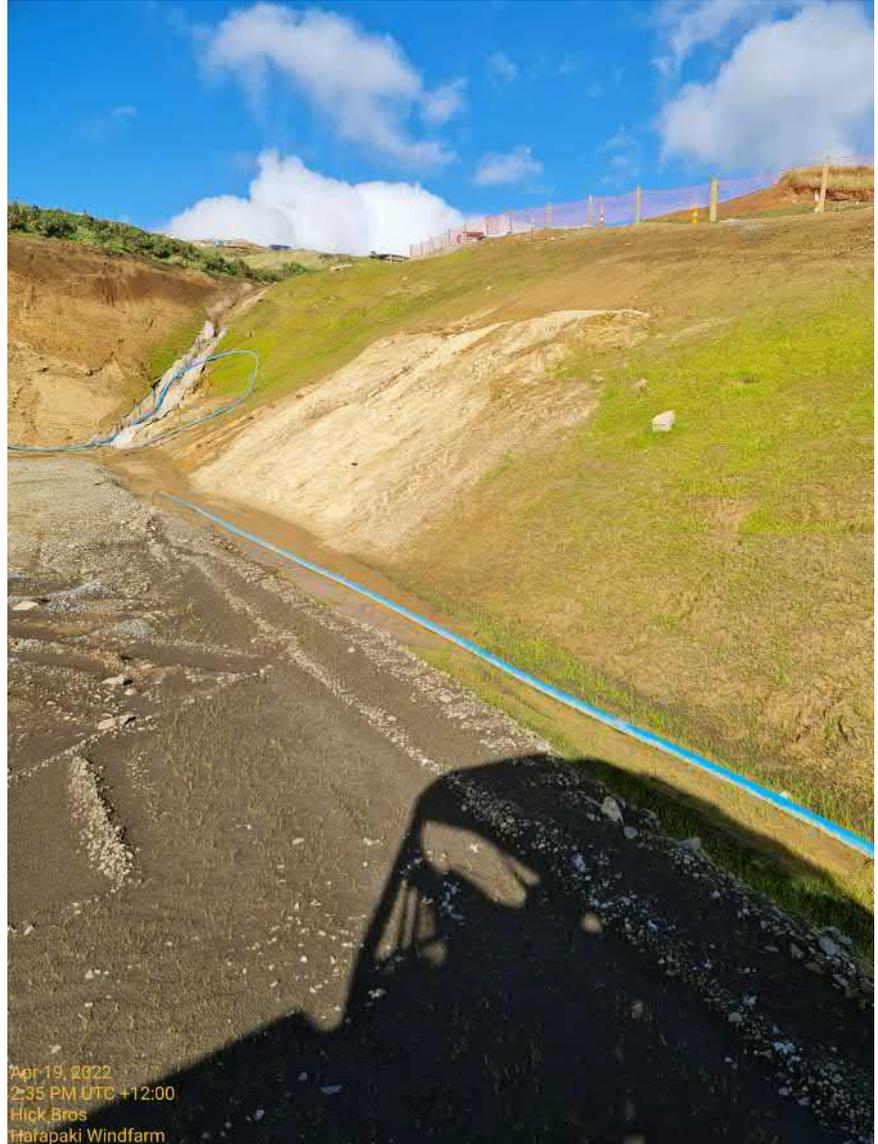


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