

Attachment 4: Summary of Adverse Effects

The Project has the potential to give rise to a limited range of adverse effects in this environment. These effects can be managed through design and turbine location to ensure avoidance where practicable, minimisation and remediation. Residual effects are not anticipated to be significant, and no offsetting or compensation is expected to be required based on the survey and assessment work completed. A summary of these effects is set out below.

Landscape and visual effects	The Project Site is situated between the Kaimai Mamaku Conservation Park area and Pyes Pa Road; centrally positioned on the Mamaku Plateau to State Highways 36, 5 and 27 and comprises intensively grazed pastoral farmland and production forestry land with a varied topography and excludes any native forest or conservation land. The surrounding environment is characterised by steep terrain dominated by native scrub, production pine forest and pastoral farmland. A series of plateaus are present in the surrounding area. Multiple waterways divide or intersect these existing landscape features. The Project Site is a highly modified landscape dominated by exotic forestry and farming with a limited viewing audience. The locale is sparsely populated. Due to the remoteness of the Project Site, there is (unlike other parts of the District) a distinct lack of rural residential and lifestyle subdivision in the area. Surrounding roading is used predominately for forestry operations, farming and recreational four-wheel driving. Whilst popular recreational activities are available in the wider area (e.g. TECT All Terrain Park) the nearest rural residential settlement is located approximately 5km north of the Project Site (Ōmanawa Falls) with the nearest urban settlements being Ngongotahā approximately 13km to the southeast, Mamaku approximately 11km to the south, and Pyes Pā approximately 18km to the north. The Project will be undertaken on farm land and avoids native forest and identified Significant Natural Areas. It will utilise existing farms tracks and forestry roads, and transmission easements, within the Project site to minimise the extent of earthworks required. The inclusion of turbines and associated infrastructure, including transmission lines will not compromise the existing landscape values attached to the area. Overall, the landscape effects from the Project are considered to be acceptable and not significant.
Ecology effects	Preliminary ecological assessments, along with additional bat and avian surveys have been undertaken to assess any ecological impacts from the Project. These assessments have taken a conservative approach and identified potential fauna within the radius of the Project Site. Further survey work and targeted monitoring is continuing currently and will further inform proposed avoidance and minimisation measures. Based on the species identified, a range of management options exist for the wind farm to manage potential ecological effects to a level where it is considered the risk is acceptable and not significant. <i>Ecological context</i> The Project Site is located within the Otanewainuku Ecological District and the following terrestrial vegetation and habitats are present: tawa forest, exotic plantation forest, mixed scrub, and exotic grassland, with

	approximately twenty potential wetland areas identified by aerial imagery. Unnamed tributaries of the Omanawa and Mangapapa Rivers occur in most gullies at the Project Site. <i>Fauna</i> Records of avifauna identify 52 indigenous species (of which 9 are classified as threatened and 18 are at risk) and 31 exotic species have been recorded within 20km of the Project Site. These include Kiwi, Kokako, Ruru and New Zealand Falcon (Karearea). <i>Bats</i> Bat records were compiled from DOC BioWeb Database for within 25km of the Project Site and show that long-tailed bats (<i>Chalinolobus tuberculatus</i>) which are threatened - nationally critical within the 25km search area, and one instance of a short-tailed bat (<i>Mystacina tuberculata rhyacobia</i>) in contiguous forest. <i>Herpetofauna</i> Three lizard species have been recorded in the DOC BioWeb Herpetofauna Database within 15 kilometres of the Project Site. These are Forest Gecko (<i>Mokopirirakau granulatus</i>), crenulate skink (<i>Oligosoma robinsoni</i>), and striped skink (<i>O. striatum</i>), all at risk – declining. Copper Skink (<i>Oligosoma aeneum</i>), Raukawa gecko and Hochstetter's Frog are also present in the Otanewainuku Ecological District. <i>Indigenous terrestrial invertebrates</i> A search of the Global Biodiversity Information Facility retrieved 17 terrestrial investigated species – 14 indigenous (mostly endemic; two were introduced, and one was a doubtful identification. Mainly beetles were identified along with Pupurangi/kauri snail (at risk – declining) - which may be present on the Project Site, but it is unlikely there is the habitat to support them. A field survey by a specialist entomologist is being undertaken. <i>Freshwater Fauna</i> Suitable habitat is likely to be present for longfin eel (at risk -declining) shortjaw kokopu (threatened – nationally vulnerable), freshwater crayfish and common bully (both not threatened) are present. No works are proposed within 100m of a stream or within 10m of a wetland.
Acoustic effects	Given the isolated nature of the Project Site, construction noise generated from the Project including any associated works (e.g. roading upgrades) can comply with the construction noise standards under NZS 6803:1999 Acoustics – Construction noise. This will be appropriately managed through a combination of consent conditions and the implementation of a construction noise and vibration management plan. From an operational standpoint, the model of turbine selected will have a tip height of approximately 250m and will be comprised of several components that act to minimise noise emissions generated. The concept design has been progressed on the basis of ensuring a 40 dB noise contour emanating from any turbines do not encompass external residential dwellings, and therefore the Project Site offers a layout that is considered to present an acceptable noise environment.

	The actual noise emitted will vary based on wind speed, however it is anticipated that the operation of the wind turbines will comply with NZS 6808:2010 – Wind farm noise which limits noises levels to LA90 by more than 5 dB, or a level of 40 dB LA90, whichever is greater. This will be achieved through the considered design including final positioning of the turbines, turbine location, and materials. Other operational noise associated with the wind farm such as substation noise, operational and maintenance facilities, and road traffic noise can comply the permitted activity limits under the Western Bay of Plenty District Plan. Overall, these effects are considered to be acceptable and not significant.
Transport effects	Transport generation effects associated with the Project will largely be short-term and confined to the construction period where temporary intensive construction traffic movements will occur. Several options are available to manage construction trip generation increases and network impacts including: • Turbine Component Transport Management Plan and permit obtained through NZ Transport Agency Waka Kotahi; • Undertaking any localised pavement widening, marking and signage improvements to primary and secondary access routes; • Undertaking any required strengthening works to bridges needed to be crossed with components to access the Site; • Upgrading or installing culverts around the existing farm tracks to provide sufficient sizing for conveyance of stormwater to minimise the potential for washout or damage to the Site's internal roading networks; • Temporary closure of public and paper road areas to through traffic. Overall, any impact on the transport network are ultimately limited to a limited period and it is anticipated construction generated impacts acceptable, not significant and appropriately addressed through a Traffic Management Plan.
Earthworks / sedimentation effects	Bulk earthworks (i.e. cut and fill) and deposition, construction of temporary and permanent laydown areas, vegetation disturbance or removal, tracking from the movement of plant equipment, and the batching and discharge of concrete for use in turbine and substation foundations can be managed through appropriate erosion and sediment controls. The earthworks, as currently anticipated, are of a nature and scale that can be appropriately managed by adopting the Bay of Plenty Regional Councils 2010/01 'Erosion and Sediment Control Guideline for Land Disturbing Activities'. This includes the preparation of an earthworks management plan with an appropriate erosion and sediment control plan for the Project. Appropriate buffers and controls around surface waterbodies, wetland and other sensitive environments will ensure that they are delineated and protected from earthworks effects. Overall, these effects are considered to be acceptable and not significant.

Archaeological and cultural effects

There are no known archaeological sites within the Project Site. Initial cultural engagement has occurred which did not identify any impediments for the Project. Please refer to feedback received on the Project in **Attachment 4** to this referral application.

Further consultation with mana whenua upon acceptance of the referral application and prior to the substantive application has been committed to. Overall, these effects are considered to be able to be managed through engagement and conditions.