Appendix D – Threatened Ecological Communities Significant Impact Criteria Assessments

Weeping Myall Woodlands

Assessment against the MNES Significant Impact Guidelines (DoE, 2013) for the Endangered Ecological Community (EEC) is outlined below –

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Reduce the extent of an ecological community	The proposal has the potential to reduce the extent of this ecological community by a maximum of 5.94 hectares. Considering the information available from Queensland (Accad et al. 2006) and New South Wales (Benson 2006), the current national extent of the Weeping Myall Woodlands ecological community lies within the range 220,000 ha to 361,000 hectares (listing advice for Weeping Myall Woodlands 2009).Using the lower estimates for the national extent of Weeping Myall Woodlands, the removal of 5.94 hectares equates to an approximate reduction of <0.003 percent of the total extent of this EEC. The current disturbance footprint, for which impacts to this threatened ecological community has been calculated, is based on a general development corridor and represents the maximum potential impact to the community from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS, and as the project design is developed further.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The Weeping Myall Woodland already appears in isolated and scattered stands throughout the Project area with patches present in the northern and southern extents. Along the northern boundary, the proposal may remove the edge of a larger patch of Weeping Myall Woodland which extends beyond the Project area into the adjoining property. In the southern portion of the Project site all patches of community may be removed. Therefore, the Proposal is unlikely to fragment a patch into two smaller patches. Removal of patches of this community will increase the distances between patches of Weeping Myall Woodland in the locality. However, this community is already highly fragmented, occurring as scattered patches, and is unlikely to be adversely impacted by increased fragmentation caused by the proposal.
Adversely affect habitat critical to the survival of an ecological community	No habitat has been described on the register of critical habitat for this EEC. However, for the long-term maintenance of the ecological community important factors to consider include preserving genetic diversity. *Acacia pendula* is scattered throughout the Project area in isolated patches, which decreases the likelihood of gene flow between patches. However, considering the prevalence of regrowth in the patches present in the Project area, and the extension of the community n the north into the adjoining property, the viability of the present population infers that population present is resilient and that some of the community could be retained. The Project is likely to affect habitat critical to the survival of this ecological communities as the majority of patches of this community have potential to be impacted.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Modify or destroy abiotic (non-living) factors (such as water, nutrients or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The proposal will not destroy abiotic factors necessary for the ecological community's survival, including but not limited to reduction of groundwater levels, or substantial alteration of surface water drainage patterns.
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	Weeping Myall Woodlands are dominated by monotypic stands of *Acacia pendula* (Weeping Myall). The proposal may remove up to 5.94 hectares of Weeing Myall Woodland. As such the functional composition would be changed. However, Weeping Myall goes through regular cycles of senescence (aging and death) and regeneration. There is evidence of regeneration of *Acacia pendula* on site which infers that the patches are resilient.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including but not limited to: *Assisting invasive species, that are harmful to the listed ecological community, to become established, or* *Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community*	Invasive species detected on site include Red Fox, Feral Cat, and European Rabbit. These three invasive fauna species are listed as key threatening processes: • *Competition and land degradation by rabbits (EPBC Act); Competition and grazing by the feral European Rabbit, Oryctolagus cuniculus (NSW TSC Act);* • *Predation by European Red Fox (EPBC Act); Predation by the European red fox (Vulpes vulpes) (NSW TSC Act);* • *Predation by feral cats (EPBC Act); Predation by the feral cat (Felis catus) (NSW TSC Act).* • These are in addition to *the loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants (EPBC Act); Invasion of native plant communities by exotic perennial grasses (NSW TSC Act)* which are also listed as a Key Threatened Process (TSSC, 2006). No use of pesticides is proposed in the Project area and the works are unlikely to assist in invasive species proliferation, considering their presence is already existing on the site. Appropriate mitigation measures will be implemented during construction and operation to further reduce direct impacts from invasive species.
Interfere with the recovery of an ecological community	There is evidence of recovery with regenerating Weeping Myall present in the Project area. The proposed works are likely to disrupt the recovery of this community by removing up to 5.94 hectares.

Conclusion: While this impact area will decrease with the final footprint, an initial estimate of 5.94 hectares of EEC is proposed to be removed. This will reduce the majority presence of the Weeping Myall Woodlands in the Project area (5.94 of 6.02 hectares) and is estimated to reduce the total extent the nationally listed community by <0.003%. Significant impacts to this community cannot be ruled out.

The current disturbance footprint, for which impacts to this threatened ecological community has been calculated, is based on a general development corridor and represents the maximum potential impact to this community from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS, and as the project design is developed further. At which point the potential impact to this threatened ecological community will be better understood and the likelihood of a significant impact to this species can be reevaluated.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria

References:

Benson, J.S. (2006). *New South Wales Vegetation Classification and Assessment: Introduction – the classification, database, assessment of protected areas and threat status of plant communities*. Cunninghamia 9(3): 331-381, Sydney.

Threatened Species Scientific Committee (TSSC), (2006). *Advice to the Minister for the Environment, Water, Heritage and the Arts from the TSSC on Amendments to the List of Ecological Communities under the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Natural Grasslands of the Murray Valley Plains

Assessment against the MNES Significant Impact Guidelines (DoE, 2013) for the Critically Endangered Ecological Community (CEEC) is outlined below –

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
Reduce the extent of an ecological community	The proposal has the potential to reduce the extent of this CEEC by 1201.23 hectares. The commonwealth listing advice (2012) for Natural Grasslands of the Murray Valley Plains estimated a national extent of between 153,000 and 168,000 hectares distributed across New South Wales and Victoria. Using the lower estimate, removal of 1201.23 hectares equates to approximately 0.79 per cent of the total extent of the nationally listed community. The current disturbance footprint, for which impacts to this threatened ecological community has been calculated, is based on a general development corridor and represents the maximum potential impact to this species from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS, and as the project design is developed further.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The proposal has the potential to fragment a large patch of this community into several smaller fragments as a result of developing roads, turbines and battery storage systems. Although fragmentation will occur, the proposal is considered unlikely to fragment the community such that genetic flow (pollination) of plants will no longer occur. It is however possible that the movement of animals that form part of this community may be restricted. The retention of this community in areas beyond the disturbance footprint will act to maintain connectivity across the landscape. Although the proposal could fragment the community into smaller patches, it is considered unlikely the retained areas will become unviable and at risk of disappearing. .
Adversely affect habitat critical to the survival of an ecological community	No critical habitat has been described on the register of critical habitat for this CEEC. However, for the long-term maintenance of the ecological community important factors include preserving genetic diversity and the functional role of small mammals that maintain the structure and function of the topsoil through digging (Martin, 2003). Genetic diversity is maintained through connectivity. Considering the CEEC is dominant within a mosaic of adjacent grasslands and that the species diversity is relatively high (approx. 15 native spp. in a 20x20m plot), the proposal is unlikely to significant impact the long-term viability of this CEECs genetic diversity. Given the extent of disturbance, the proposed works may impact ecosystem engineers such as the Common Dunnart, which are essential to this community, maintaining the structure and function of the topsoil through their diggings (Hadden, 2002).
Modify or destroy abiotic (non-living) factors (such as water, nutrients or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or	The proposed development will not destroy abiotic factors necessary for the ecological community's survival, including but not limited to reduction of groundwater levels, or substantial alteration of surface water drainage patterns.

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria
substantial alteration of surface water drainage patterns	
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	The proposed removal of up to 1201.23 hectares of this CEEC could cause a substantial change to the occurrence of the community in the Project area and locality. The functional roles of much of the grassland fauna remains largely unknown. The exception is the significant functional role played by small, ground-dwelling mammals, that maintain the structure and function of the topsoil through their diggings (Martin, 2003). The digging activities of these small mammals influenced the biological and physical attributes of the topsoil (e.g. by enhancing microbial activity, aeration, water infiltration, nutrient cycling) and, in turn, had concomitant effects on biodiversity. A Common Dunnart was identified in the Project area, consistent with '*A survey of the mammal fauna of remnant grasslands in Victoria'* by Hadden (2003). Other fauna associated with the CEEC includes the CE Plains Wanderer (*Pedionomus torquatus*). The invasion of exotic grasses into the existing Natural Grasslands has filled the inter-tussock spaces. As the Plains Wanderer prefer coverage of 50% bare ground, this change in the communities composition over time, is likely to negatively affect this CE species, if present.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including but not limited to: *Assisting invasive species, that are harmful to the listed ecological community, to become established, or* *Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community*	Invasive species detected on site include Red Fox, Feral Cat, and European Rabbit. These three invasive fauna species are listed as key threatening processes, these are included as: • *Competition and land degradation by rabbits (EPBC Act); Competition and grazing by the feral European Rabbit, (Oryctolagus cuniculus). (NSW TSC Act);* • *Predation by European Red Fox (EPBC Act); Predation by the European red fox (Vulpes vulpes) (NSW TSC Act);* • *Predation by feral cats (EPBC Act); Predation by the feral cat (Felis catus) (NSW TSC Act).* • Furthermore, *loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants (EPBC Act); Invasion of native plant communities by exotic perennial grasses (NSW TSC Act)* are also listed as a Key Threatened Process (TSSC, 2012). No use of pesticides is proposed on site and the works are unlikely to assist in invasive species proliferation, considering their presence is already existing on the site. Appropriate mitigation measures will be implemented during construction and operation to further reduce direct impacts from invasive species.
Interfere with the recovery of an ecological community	Removal of up to 1201.23 hectares of the 1849.40 hectares of this CEEC present in the Project area may interfere with the recovery of this community. Although, the land has been subject to long-term grazing pressures (minimum 25+ years), which would impede the natural recovery of the grasslands, the proposed development would further exacerbate degradation through clearing (listed as a Key Threatening Process) (TSSC, 2012).

Criteria if there is a real chance or possibility that the action (the proposed works) will:	Response criteria

Conclusion: The proposal may remove up to 1201.23 hectares of this CEEC and fragment large patches of the community into smaller fragments. The area of CEEC that could be removed equates to 0.79 per cent of the total extent of the community which is considered to constitute a significant area of the community. Therefore, impacts from the proposal are considered likely to have a significant impact on the nationally listed Natural Grasslands of the Murray Valley Plains.

The current disturbance footprint, for which impacts to this threatened ecological community has been calculated, is based on a general development corridor and represents the maximum potential impact to this community from the project. The area of impact is likely to be reduced following detailed surveys of the Project area during preparation of the EIS, and as the project design is developed further. At which point the potential impact to this threatened ecological community will be better understood and the likelihood of a significant impact to this species can be reevaluated.

References:

Hadden S. 2002. *The mammal fauna of remnant native grasslands of the Western Basalt Plains and Northern Plains of Victoria.* The Victorian Naturalist 119: 14-20.

Martin, G. 2003. *The role of small ground-foraging mammals in topsoil health and biodiversity: implications to management and restoration.* Ecological Management and Restoration 4: 114-119.

Roff A, Sivertsen D, and Denholm B (2010). *The native vegetation of the Murray Catchment Management Authority area*, NSW Department of Environment, Climate Change and Water, Sydney.

Threatened Species Scientific Committee (TSSC), (2012). *Advice to the Minister for Sustainability, Environment, Water, Population and Communities from the TSSC on an Amendment to the List of Threatened Ecological Communities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).*