1 Summary

Translocation is defined as the deliberate transfer of plants or animals form one place to another, including existing or new sites. Whilst attempts at translocation of threatened species is often risky and can fail, this is usually because the original threats have not been removed, or the biological and ecological requirements for the species is not well understood. *Acacia meiantha* is listed as an endangered species under both Commonwealth and NSW legislation and is currently known from three distinct populations, one of which occurs along Aarons Pass Road (APR). An upgrade to APR has been proposed to facilitate the movement of wind turbines, associated infrastructure and access to the Crudine Ridge Wind Farm (CRWF). The proposed development has identified 59 individual *A. meiantha* plants within the designated impact area that will need to be removed.

Whilst irreversible impacts to these individuals have been considered as part of the Biodiversity Development Assessment Review (BDAR) for the proposed upgrade and offset credits for this species have been calculated, it is recommended that these individuals be salvaged and translocated to increase knowledge of the species. Translocation of the species has been recommended, not as a mitigation measure, but purely as an opportunity to potentially reduce the loss of individuals by increasing knowledge and to directly support the conservation of the species. There is limited information available on the success of translocating *A. meiantha*. The proposed method is to translocate and take cuttings from plants that have been identified within the impact zone during the proposed road upgrade, to a nursery to be grown in pots until they are showing signs of recovery and an appropriate field site has been secured. This will assist in understanding the species and to conserve the wild genetic stock. An increased understanding of these aspects will improve the finer scale approach to the recovery of the species. Translocation procedures should follow the "Guidelines for the translocation of threatened plants in Australia, 3rd Ed" (Commander et al. 2018).

2 Acacia meiantha

Acacia meiantha is a straggling shrub usually 1.5 m high but sometimes up to 2.5 m tall flowering in July to October. It has smooth greenish brown bark with straight to slightly curved phyllodes with an indistinct midvein. It produces fruit from November to December and occasionally in August (Tindale et al 1992). It occurs as three distinct populations all located within the Central Tablelands, at Clarence (near Lithgow), at Mullions Range (near Orange) and along APR. The APR population was discovered in October 2011 and is primarily confined to the road easement. The APR population occurs in old growth low forest in association with *Eucalyptus macrorhyncha* (Red Stringybark) and *E. rossii* (Inland Scribbly Gum).

The species was declared an endangered species under Part 1 of Schedule 1 of the (now repealed) *Threatened Species Conservation Act 1995* in 2015 due to the geographic distribution of the species being highly restricted. The population along APR is estimated to be between 750-1000 individuals. Due to the proposed APR upgrade, it is likely that 59 individual plants will be impacted by the proposed road works. These individuals have been tagged for translocation.

3 Translocation Goals

- To improve the status of *Acacia meiantha.*
- To translocate individuals and establish cuttings firstly from site into pots and then into the wild successfully.
- To increase the population by establishing a self-sustaining population.

- To increase knowledge and understanding of the species.

4 Translocation Procedure

4.1 Identify and manage risks

Consultation with regulatory authorities will be undertaken prior to translocation. This will involve determining any scientific licensing requirements under the *Biodiversity Conservation Act 2016* and to allow an opportunity to discuss and further justify the proposed methods.

All risks and threats associated with the translocation should be identified, controlled or mitigated. Some possible risks are identified in the table below.

RISK	LIKELIHOOD	CONTROL
Species becomes invasive and weedy outside its range	Unlikely	*A. meiantha* is highly restricted in its distribution and is unlikely to become an invasive weed within the same landscape. Care must be taken to ensure the plant doesn't become established outside of its current range.
Lack of ongoing funding and commitment to monitoring and managing the translocation site	Potential	There must be a financial commitment to manage and monitor *A. meiantha*.
Threats to the survivability of the species was incorrectly identified	Potential	Given that little is known about the species in terms of its biological and ecological requirements, attempts at translocation may not be successful. However, these individuals will otherwise be removed by the road upgrade, therefore any attempts of establishing them ex situ are worthwhile.
Introduction of pests and diseases	Unlikely	All equipment used during planting will be maintained under strict disease hygiene.
Unsupportive community attitude	Potential	The proponent will liaise with community about the process.
Lack of Regulatory agency support	Potential	Species is part of Saving Our Species (SOS) program and *A. meiantha* has been identified as a species to be managed in situ. However, given that these individuals will be impacted under the proposed road upgrade this provides an opportunity to study the species ex situ.
Lack of long-term security over translocation site	Potential	Secure site. Conservation covenant or agreement.

4.2 Site Procedure

It is Eco Logical Australia's experience that translocations have an increased success rate if plants on site are removed, nurtured in a nursery and monitored. To remove plants from site, the following process should be followed:

- Plants identified for removal should be watered and allowed to drain.
- Soil should be wet but not sloppy.
- An area around the plant, as wide as the canopy and as deep as possible should be cut out from around the plant.
- As much soil and root material should be retained as possible around individuals that are identified as suitable for translocation. Those individuals where translocation may be deemed unlikely to be successful can be used for cutting material. The decision to use material for translocation or cutting should be made in the field by a suitably qualified botanist.
- Plants should be potted on site into Grow Bags and watered.
- Plants and plant material should be transported to the nursery in a closed vehicle to avoid damage by wind. It may be necessary to remove some vegetation which can be used as cutting material to reduce the transpiration rate.
- Once at the nursery the trees should be monitored and watered regularly.
- In the mean-time, a translocation field site can be secured and prepared.

Acacia meiantha is known to be sucker forming in both dense and diffuse clumps of stems arising from the roots of a single plant (Eldridge 2015). Whilst this may make it difficult to identify individual plants, it is possible that any root material left behind may regenerate. Additionally, collecting the top soil from around the plants and the soil seed bank into trays may also increase the likelihood of establishing plants in ex situ. Cuttings could also be established from those individuals salvaged off site to further increase the number of plants ex-situ.

4.3 Selecting release sites

A release site should meet all the practical need of the species:

- Meet all biotic and abiotic requirements, same soil type and vegetation.
- Be appropriate for all life stages.
- Be adequate for all seasonal requirements.

Successful translocations are more likely if the plants are nurtured offsite in a nursery and regularly tended to until they are deemed healthy to translocate into the field. Survival rate is critical in the first year, mortality rate can be up to 50% of individuals due to hot dry summers or frosts (Commander et al 2018). In the nursery, cuttings can also be taken to increase the number of propagules further increasing the likelihood of success.

4.4 Monitor and evaluate

Monitoring is a cyclical process of implementation, monitoring, feedback and adjustment for both biological and non-biological aspects until goals are met or the translocation / cuttings are deemed unsuccessful. Monitoring of the translocated individuals and those derived from cuttings should include:

- counting surviving plants
- measuring height
- width of crown
- general health
- presence or absence of flowers, pods and other fertile material
- identification of any new threats.

Monitoring data may be made available to regulatory agencies as required and potentially included in annual reporting requirements under the Project Approval.

5 References

Commander, LE, Coates, DJ, Broadhurst, Offord, CA, Makinson, RO and Mattes, M. (2018) Guidelines for the translocation of threatened plants in Australia, 3rd Ed. http://www.nespthreatenedspecies.edu.au/Translocation%20Guidelines_FINAL%20WEB2.pdf

Eldridge, M. (2015) NSW Scientific Advisory Committee Final Determination *Acacia meiantha*, https://www.environment.nsw.gov.au/resources/threatenedspecies/determinations/FDAcaciameiaES.pdf. Accessed 12/12/18

Royal Botanic Gardens and Domain Trust (2013) PlantNET – The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney, Australia (version 2.0). http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Acacia~meiantha(accessed 12/12/2018)

Tindale MD, Kodela PG, Herscovich C (1992) *Acacia meiantha* (Fabaceae, Mimosoideae), a new species from the Central Tablelands of New South Wales. *Australian Systematic Botany* **51**, 761–765.