

USC Compensatory Habitat Project

The University of the Sunshine Coast (USC) would like to offer its experience of environmental offsets to the Senate Inquiry through the outcomes of the USC Compensatory Habitat project.

The USC Compensatory Habitat is an ambitious and innovative project representing one of the largest and most successful translocation projects undertaken anywhere in the world. The project, a partnership between USC, Stocklands and Sunshine Coast Council (SCC) enabled approximately 15 Ha of coastal heath, home to several rare and threatened plants, frogs, skinks and birds to be preserved. The site represents a major experiment in state of the art translocation methods and is now a valuable resource for research and teaching.

The USC site was chosen because it had closely matching characteristics to Bundilla, the site of the Brightwater residential community, which was only 3 km away, suggesting the locations would have been very similar biologically before the University land was cleared. These factors were considered likely to substantially increase the chances of survival of translocated habitat.

A steering committee was established consisting of the developer, USC and the Sunshine Coast Regional Council to decide on the best method for re-establishing the vegetation, and to oversee all aspects of the project.

In total, the Brightwater Heath Translocation took 14 months to relocate vegetation and was completed in February 2009, months prior to any other development activity. A subsequent in-depth monitoring and maintenance schedule followed relocation and has also now been completed, with the translocation partners achieving an outstanding 95 per cent survival rate for the re-established vegetation.

Planning

Many years of detailed planning and ecological studies preceded the Brightwater Heathland Translocation. The initial compensatory habitat project plan was finalised in December 2004, almost four years before the first turf of rare and threatened vegetation was excavated from the site.

Specific examples of planning enhancing the success of the project and meeting wider community objectives include:

- The initial commitment to protecting or translocating the most valuable habitat at Brightwater facilitated both the repair of significantly degraded land at the University and the release for development of a large parcel of central Sunshine Coast land deemed suitable for much needed new housing solutions.
- The translocation achieved an increase in the yield of an existing land bank without the attendant loss of biodiversity, thereby creating greater efficiencies that allowed Stockland to provide more affordable product and a wider range of blocks to meet the community's needs.
- Heathland translocation on a much smaller scale using traditional construction techniques had already been successfully undertaken at Stockland's Bellvista community in Caloundra. The lessons learned from this award-winning program were incorporated in the planning for Brightwater.

- Three different groups of ecologists worked together in the early planning stages to effectively create a “handbook” on how to conduct a translocation of this magnitude. Stockland contractors then engaged their own ecologists to put the plan into practice.
- The cost of the translocation project was partially offset by a research and development tax concession gained because of its contribution to new learning. These cost savings were then applied to the wider project and passed on to land buyers.

Methodology

The tools which were used to relocate the high value heathland were reasonably simple, however, the construction methodology, planning and collaboration leading to the successful implementation of this ambitious project were its most defining characteristics.

Non-standard features that significantly enhanced the project included:

- Unique first-time collaboration between Stockland, the University of the Sunshine Coast, and the Sunshine Coast Regional Council. Each party contributed to both the overall project and its individual components. Without the foresight shown by council, the University’s willingness to provide the compensatory location, and Stockland’s commitment to implementing the project, it would not have been possible.
- A project steering committee made up of ecologists representing each partner guided the translocation from start to finish. All committee members had equal voting rights on key issues, ensuring it was a true collaborative effort from the start.
- The steering committee chose the best method for conducting the translocation, set performance objectives, performance criteria and work methodology for each stage, and directed specific flora and fauna management plans.
- Each individual plant involved in the translocation was GPS tracked with an accuracy of up to 10mm, given a unique ID number and a colour-coded tag. Data on each plant’s basic health and maturity was also recorded. Once translocated, a new GPS position was recorded for each plant and new data taken to assess and monitor its condition.
- New purpose designed “tray” buckets were fabricated and fitted to the excavation machinery in order to cut “turfs” of land to the size and depth deemed most appropriate for the project. This ensured the plant canopy, stems, roots and soil associated with identified vegetation would be left relatively undisturbed during the process. Each turf was dug to approximately 300mm and retained the top 500mm of vegetation to re-sprout at the new location. Finally, each turf was transported to the University site on specially framed semi-trailers.
- Once excavated, the heathland was then reconstructed like a jigsaw puzzle by placing each turf in the same order, and in pre-prepared locations that best matched the hydrology and topography for the area.
- Initially, small gaps between the translocated turfs were filled in but the monitoring process revealed the gaps created natural pockets, which provided habitats for frogs and very fertile ground with more water and extra protection from the elements for juvenile plants.

Community Engagement

The Brightwater Heathland Translocation was the first stage in the creation of the Brightwater community, already home to hundreds of new families. The project therefore had the opportunity to strengthen the local community and into the wider area in the following ways:

- As a collaborative process between the developer, USC and SCC (representing the local community), the project was instrumental in strengthening relationships between key community members, which are ongoing today and continue to benefit the wider region.
- The initial ecological studies were complimented by more detailed surveys conducted by University post-graduate students and funded by Stockland. These surveys and the post-translocation monitoring have made a major contribution to the local knowledge and understanding of rare and threatened species in and around the project area.
- The previously weeded and degraded USC land now consists of attractive and valuable coastal heathland. It is adjacent to existing sports fields and adds amenity to the general area. Consideration is being given to creating a publicly accessible boardwalk and an on-site information kiosk that would provide a more direct community link to the rehabilitated land.
- The rehabilitated land also provides a new source of study and research for both staff and students of the University to further strengthen the community's knowledge of coastal wallum.
- Current and future residents of Brightwater and surrounding areas can also enjoy the visual amenity of having their own large tracts of protected coastal heathland on their doorstep, together with the existing natural bushland to the south and the adjacent Mooloolah River.
- Many residents and other local community members are aware of the massive translocation project that occurred before Brightwater was established and share a strong sense of pride that comes from living in a sustainable and environmentally friendly community.
- A sustainability brochure available at the Brightwater Sales and Information Centre and on the Stockland website outlines the conservation and vegetation relocation process that protected key elements of the environment, including five rare and endangered native species.

Evaluation

The success of the translocation was assessed by LAMR Pty Ltd, who was engaged by Stocklands at the direction of the Bundilla Translocation Steering Group to provide an objective scientific analysis.

The full LAMR report is included in *Schedule 1* of this submission.

Ongoing preservation

The major recommendation out of the scientific analysis was the formalisation and execution of a fire management plan for the translocation site.

The Ecological Fire Management Plan was signed off on December 14, 2011. The Plan was written in order to meet the objectives of ensuring regeneration of the in-situ flora species, weed management, and ensuring the safety of people and property. As the Compensatory Habitat Area is divided into eight areas as a way of identifying, planning and implementing a variety of flora management plans, this same mosaic was used for the Fire Management Plan (Figure 1). Burns were scheduled to occur at pre-determined times to each of these areas.



Figure 1

Following the formal handover of the translocation to USC on 24 May 2013, the University of the Sunshine Coast set up a Compensatory Habitat Advisory Sub-Committee to manage the ongoing maintenance of the site. This Committee now reports to the USC Sustainability Management Committee chaired by the Deputy Vice-Chancellor.

Latest update – 25 March 2014

Areas 7, 7a and 8 were burnt according to schedule in August 2013. Initial reports states that the fire seems to have stimulated plants to either re-sprout from root stocks on site and/or for soil stored seed to germinate. The plants have grown well in this time and the majority seem to be in flower.



Figure 2 Acacia Baueri with flowers



Figure 3 Post-fire survey

Conclusion

In conclusion, the USC Compensatory Habitat has been a success as an environmental offset; allowing development to occur to stimulate growth in the Sunshine Coast region, whilst preserving and regenerating the native landscape. By locating the offset in an educational precinct, the ongoing monitoring and evaluation of the landscape can be conducted to the benefit of the flora and fauna, and

the research goals of the institution. The collaborative approach and subsequent attainment of a valuable piece of land, has meant that USC, as a recipient of the offset, would welcome the opportunity to have further offsets located on its site.

Schedule 1

2012 REVIEW OF TRANSLOCATION PROJECT OF HEATHLAND FROM BUNDILLA TO THE UNIVERSITY OF THE SUNSHINE COAST



Frontispiece: Translocated heathland at the University of the Sunshine Coast. Some individuals of *Acacia attenuata* have reached the end of their life span as can be seen in this photograph, but seedlings and saplings of this wattle are apparent in abundance (such is the nature of *Acacia* spp.) across the site. The proposed fire regime will ensure the continued survival of this and the other EVR species on the site. The first areas to be burnt are scheduled for burning this year.

Introduction

LAMR Pty Ltd was engaged by Stocklands at the direction of the Bundilla Translocation Steering Group (being representatives of USC, Stocklands and Council) to provide an objective scientific analysis of the success of the project. It is noted that Stocklands have taken this project over from the original signatory to the agreement, Lensworth Buddina Pty Ltd. This is the final report and recommendations of an assessment of the Bundilla Translocation Project.

It is difficult to comprehend in many ways that the area that was formerly dominated by dense infestations of weeds, particularly the rank environmental weed *Setaria sphacelata*, is today a species rich functional heathland (See Frontispiece). This project is, without doubt, one of the most successful examples of best practice environmental management in Australia.

One aspect of the Condition of Approval of the Bundilla Development Application for a Material Change of Use (Condition 39 of MCU00/0222) required that 15 hectares of compensatory habitat be provided as per a legal agreement between Lensworth Buddina Pty Ltd and the University of the Sunshine Coast (USC). Condition 39 also required that a Rehabilitation/Revegetation Code for Compensatory Habitat as approved by Council be assessed over time. This report details an assessment of the Code and its manifestation in the heathlands and associated vegetation at the translocation site at the USC. There are 4 Elements of the Code:

1. Transplant Area;
2. Compensatory Habitat – Fauna;
3. Compensatory Habitat – Flora; and,
4. Reporting and Monitoring.

The last mentioned Element of the Code (Reporting and Monitoring) was assessed against material prepared by Australian Farm Forestry (AFF) viz. The Annual Report (04/11/2011) along with individual species management plans prepared by AFF for the EVR species within the translocation site at the USC (*Acacia attenuata*, *Acacia baueri* ssp. *baueri*, *Blandfordia grandiflora*, *Boronia rivularis* and *Schoenus scabripes*). In addition, the fire management plan by North Coast Environmental Services (2012) was also reviewed and references herein to the fire management plan relate to the North Coast Environmental Services (2012) report.

Each Element of the Code is assessed and reviewed in the following report.

ELEMENT 1 – TRANSPLANT AREA

The translocation for compensatory habitat

The AFF reports clearly illustrate that all performance criteria have been met, and exceeded in most instances. By any measure, the translocation project has been an outstanding success. There is viable self-sustaining heathland habitat on a site that was previously a weed infested wasteland. Plate 1 below illustrates the nature of the pre-translocation habitat on the site. This is starkly different to the site today (See Frontispiece). Two very wet seasons on 2011 and 2012 have certainly assisted in the efficacy of the translocation.



Plate 1 – *Setaria sphacelata* dominated former sugar cane cultivation lands prior to the translocation of heathland from Bundilla to the University of the Sunshine Coast.

The AFF reports details transect data that confirm the observations made during the recent site inspection with Mr Martin Storey (Sunshine Coast Regional Council) and Mr Robert Blake (Stockland). This site inspection (5th September 2012) revealed the density of the vegetation across the site. It was virtually impenetrable in some areas such as the density of the translocated vegetation. The turf outlines are difficult to discern and it was only with prior knowledge of the origins of the heathland mosaic would it be possible to realise that the species rich heathland at the University of the Sunshine Coast was in fact translocated there from the Bundilla development site.

There are a number of management issues that are discussed later in this report, but active intervention is only considered necessary now with respect to the implementation of the fire management plan. There was widespread evidence of reproduction, germination and establishment of most of the translocated native species and very few instances where individuals of non-native flora were observed in the translocated heathland at the University of the Sunshine Coast (USC) site.

ELEMENT 1 SUMMARY

With respect to Performance Objective P1 of Element 1, the number of Schedule 1 co-dominant species, foliage projective cover and stem density (including target taxa) has stabilised (based on transect based monitoring data) ensuring compliance with Prescribed Measures PM1.3 and PM1.4. It is apparent that fire is required to ensure the species richness of the translocated heathland does not decline as occurs in these communities in the absence of fire. Contemporaneous inspection of the remnant heathlands at Bundilla indicates that these areas also require urgent attention with respect to fire management as species richness declines are evident in the retained heathland areas at that site. The implementation of the Fire Management Plan at the USC site should ensure the maintenance of species richness at that site.

With respect to Prescribed Measure PM1.5, few weeds were evident in the translocated area, although some were noted along the access tracks within the site. These are in decline in the wetter areas with native taxa regaining dominance (particularly after the last 2 “wet” seasons). Across the site, however, weed dominance is restricted to areas easily accessible for weed management purposes and natural regeneration will aid in this process as mentioned. Vigilance will be required in the post-fire period as there will be weed propagules dispersed onto the site from surrounding weed dominated vegetation as well as via the eutrophied waterway that traverses the site. If taken literally, Prescribed Measure PM1.5 has not been complied with, but on-going weed management was always going to be required and the translocation site at USC is in a much better condition than analogous reserve lands in

the local area. It should be noted that it is impractical to have any site “weed free” as expressed in Prescribed Measure PM1.5 as this is a practical impossibility, but that is a regrettable flaw in Prescribed Measure PM1.5 that should be countered by practical demonstrations of success as are apparent at the USC translocation site in abundance.

As with Performance Objective P1, Performance Objective P2 of Element 1 has been complied with for PM2.1 to 2.3, but PM 2.5 has not been complied with as discussed above for PM1.5. Again, vigilance in the post fire period is required as is on-going weed management of edges and access tracks.

Overall, Element 1 has been complied with in real ecological terms and the implementation of the on-going fire and weed management plans by the University of the Sunshine Coast will provide for the on-going ecological health of the translocation area at USC.

ELEMENT 2 – COMPENSATORY HABITAT – FAUNA

It would appear that this element was the least well considered with respect to the whole project. Whilst compliance with Prescribed Measures has been achieved with the same issue with respect to weeds discussed above, these are only surrogates for actual fauna presence. There is anecdotal discussion of the presence of *Pezoporus wallicus* (Ground Parrot), *Rallus pectoralis* (Lewin’s Rail) and *Crinia tinnula*, *Litoria freycineti* and *Litoria longburensis* (the Acid Frogs), only *Crinia tinnula* has been positively identified (by call recognition) by LAMR Pty Ltd from the USC translocation site. It was expected that *Crinia tinnula*, *Litoria freycineti* and *Litoria longburensis* would be translocated with the turfs from Bundilla to the USC translocation site as they had done elsewhere.

It is certain that habitat for all of the target taxa exists at the USC translocation site as determined by compliance with all of the relevant Prescribed Measures. The fencing surrounding the USC translocation site would limit the ability of *Pezoporus wallicus* (Ground Parrot), *Rallus pectoralis* (Lewin’s Rail) to escape the fires that are essential for their habitat management on the USC translocation site or for them to colonise the site from the adjoining conservation estate to the east. Fencing of the latter area also poses a similar impediment to fauna movement. The latter issue is a vexed problem as the negative synergies between providing free fauna movement, avoiding road kill and preventing unauthorised and harmful human access and impacts all interact when it come to the issue of fauna movement and management. This issue is considered further in the Conclusions and Recommendations section of this report.

ELEMENT 3 – COMPENSATORY HABITAT FLORA

EVR Taxa in the translocated heathland at the University of the Sunshine Coast

In all, there were five (5) species of EVR flora that were present at the original Bundilla site that were the specific target for the species based translocation component of the project - *Acacia attenuata*, *Acacia baueri* ssp. *baueri*, *Blandfordia grandiflora*, *Boronia rivularis* and *Schoenus scabripes*. Figure 1 is a plan of the locations of these species in 2009.

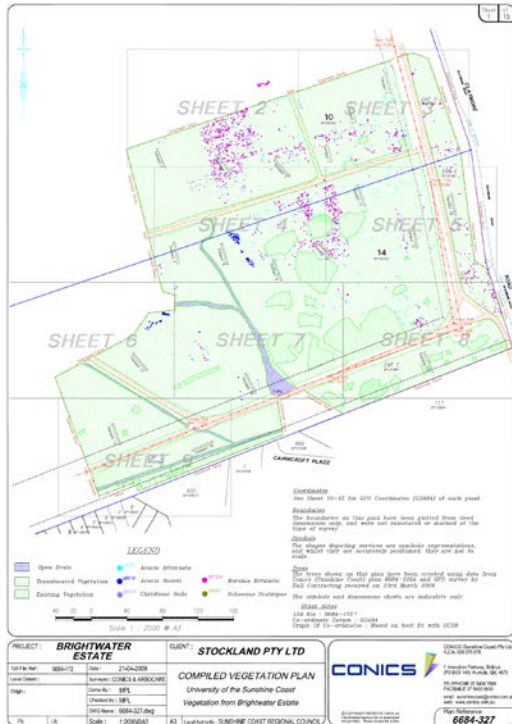


Figure 1 – Plan of EVR individuals in 2009. These populations will remain stable with the implementation of the fire management plan.

Each of these species is considered below with respect to the present and future within the translocated heathland on the USC site and the Relevant Performance Objectives (P1 – *Acacia attenuata*; P2 – *Boronia rivularis*; P3 – *Blandfordia grandiflora*; P4 – *Acacia baueri*; and, P5 – *Schoenus scabripes*).

Performance Objective P1 - *Acacia attenuata*

There were a number of moribund (or nearly moribund) individuals of *Acacia attenuata* observed across the site during the recent site inspection (See Frontispiece). Equally, there were many recently germinated and/or established seedlings and saplings observed across the site. The older (mature) individuals continue to supply seed to the soil seed bank (Plate 2).



Plate 2 – Seed pods on mature *Acacia attenuata* within the translocated heathland at the University of the Sunshine Coast.

Being an *Acacia* sp., the implementation of the fire management plan will ensure the long-term survival of *Acacia attenuata* within the translocated heathland at the USC site. Unsurprisingly, given the autecology of *Acacia* spp. (and *Acacia attenuata* in particular), the numbers of *Acacia attenuata* as extant plants and the numerous seeds added to the soil bank ensure the long term survival of this species and its genetic diversity on the USC translocation site. It is imperative that the fire management plan be implemented to ensure the success of this species on the USC translocation site into the future.

Performance Objective P2 - *Acacia baueri* ssp. *baueri*

The common name of Tiny Wattle accurately portrays the diminutive size of *Acacia baueri* ssp. *baueri* as depicted in Plate 3 below. The whorls of phyllodes are diagnostic for this small *Acacia* sp., but it does share some ecophysiological similarities with *Acacia attenuata*.



Plate 3 – Flowers of *Acacia baueri* ssp. *baueri* with the characteristic whorled phyllodes.

As with *Acacia attenuata*, the implementation of the fire management plan will ensure the long-term survival of *Acacia baueri* ssp. *baueri* within the translocated heathland at the USC site as the soil seed bank will replace any individuals who fail to coppice with the passage of fire. Again, given the autecology of *Acacia* spp., the numbers of *Acacia baueri* as extant plants and the numerous seeds added to the soil bank ensure the long term survival of this species and its genetic diversity on the USC translocation site. It is imperative that the fire management plan be implemented to ensure the success of this species on the USC translocation site into the future.

Performance Objective P3 - *Blandfordia grandiflora*

Whilst *Blandfordia grandiflora* has differing requirements regarding fire than the aforementioned *Acacia* spp., it does require fire to assist in the flowering process (and thence seed setting). The best flowering of this species occurs 2 years after the passage of a fire. The lack of fire not only inhibits flower

production but also synergistically impacts a number of heathland dependent fauna such as *Pezopourus wallicus* (Ground Parrot).

The lack of fire in the Girraween Estate (Plate 4 below) has meant a dearth of *Blandfordia grandiflora* flowers and the possible loss of *Pezopourus wallicus* (Ground Parrot) from that area. Fire is required in that area to ensure the maintenance of the heathland biodiversity that is assured within the translocated heathland at the USC site given the implementation of the fire management plan.



Plate 4 – Flowers of *Blandfordia grandiflora* in the Girraween Estate 2 years after fire. Such displays of *Blandfordia grandiflora* in the Girraween Estate have not been observed in recent years, nor has the recent presence of *Pezopourus wallicus* (Ground Parrot) been confirmed from that area.

As with the *Acacia* spp., the implementation of the fire management plan will ensure the long-term survival of *Blandfordia grandiflora* within the translocated heathland at the USC site. Again, given the autecology of *Blandfordia grandiflora*, the numbers of *Blandfordia grandiflora* as extant plants and the numerous seeds added to the soil bank ensure the long term survival of this species and its genetic diversity on the USC translocation site. It is imperative that the fire management plan be implemented to ensure the success of this species on the USC translocation site into the future.

Performance Objective P4 - *Boronia rivularis*

Boronia rivularis continues to thrive within the translocated heathland at the USC site. Its autecology has also been catered for and its long term survival will be ensured with the implementation of the fire management plan. It was observed across the site during the recent site inspection in full bloom (Plate 5) and present as numerous seedlings.



Plate 5 – Flowers of *Boronia rivularis* observed during the recent site inspection.

Performance Objective P5 - *Schoenus scabripes*

As with *Blandfordia grandiflora*, *Schoenus scabripes* is diminishing in the Girraween Estate due to the lack of a recent fire (Plate 6). The implementation of the fire management plan will ensure the long term survival and viability of this species in the translocated heathland at the USC site.



Plate 6 – Colony of *Schoenus scabripes* with an emergent flower of *Blandfordia grandiflora* in the Girraween Estate.

It is hoped that the same science applied to the translocated heathland at the USC site can be applied to the Girraween Estate so that the species rich heathlands in that area do not suffer a permanent decline in biodiversity.

ELEMENT 3 SUMMARY

It is clear that all Performance Criteria (P1-P5) have been met for all EVR species of flora (*Acacia attenuata*, *Acacia baueri* ssp. *baueri*, *Blandfordia grandiflora*, *Boronia rivularis* and *Schoenus scabripes*). It is equally apparent that the implementation of the fire management plan is critical to the ongoing viability of these EVR species on the USC translocation site as it is in the retained vegetation on the Bundilla development site.

ELEMENT 4 – REPORTING AND MONITORING

Review of the provided materials and this report ensure compliance with Element 4 as all of the Prescribed Measures have been met within the caveats contained within this report.

CONCLUSIONS AND RECOMMENDATIONS

The heathland translocation as the primary component of the Compensatory Habitat requirements of the Bundilla development has been an outstanding success and provides a best practice model for other such projects. Review of the reports by AFF and the various plans and the fire management plan confirm the observations made on the recent site inspection. The project has been successful in translocating species-rich heathland from the Bundilla development site to the Sunshine Coast University. A suite of EVR flora was also a target for those translocation works. Each of these species has a management plan and, taken in conjunction with the fire management plan, the future viability of both the species-rich heathland and its component flora and fauna is ensured at the USC site.

The fire management plan is fully endorsed and the first burn (as scheduled in the fire management plan) should be conducted as soon as practicable this year. The recent wet seasons have allowed a number of *Melaleuca quinquenervia* individuals to become established at a population density that could threaten the viability and integrity of the species rich heathlands in places in the future. It is recommended that these individuals (not the old growth trees that were pre-existing on the site) be felled at the earliest possible opportunity and certainly prior to any planned burn on the site.

The 2012 fire will also require some planning to remove some of the materials that are no longer needed on the site. Specifically, this is the perimeter fence and associated shade cloth and the irrigation pipe. These are now hazardous materials in the event of a fire and should be removed prior to the 2012 burn. The plastic quadrats and marker pegs that were used for the monitoring program will similarly have to be removed before the 2012 burn.

It is considered that, despite the weed infestations on the periphery of the site, the translocation has been so successful that the dense sward of species rich heathland can sustain any future weed seed loads from adjoining lands. The majority of the species rich heathland will coppice prolifically following the passage of fire as well as the fire triggering substantial germination of many species, including the EVR species such as *Acacia attenuata* and *Acacia baueri* ssp. *baueri*.

Given the proximity to a body of tertiary students and the potential for public access to some parts of the site, there is an opportunity to highlight the species rich wonders of the translocated heathland to a wide community. A trail could be established with marked species and other notable features that could be accompanied by supporting information. Such a system is to be trialled on the weekend of the 15th and 16th September and may be commercially available soon thereafter. This site would be an ideal candidate for such a trail. The only time when access would have to be limited would be during the times around the planned burns of various parts of the site. This would only be a short time during the year and the mosaic created would also be an important part of the message attached to the trail.

It is unfortunate that Area 7 is not scheduled for burning this year as recent survey damage by Energex to the EVR species in that area could have, in part, been compensated for by the germination of seed of the same species and coppice of the damaged individuals in that area. Given the protection afforded the EVR species under legislation such as the Queensland Nature Conservation Act 1992 and the Commonwealth Environment Protection and Biodiversity Conservation Act 1998, it is unclear why Energex did not follow best practice survey methods and use a DGPS and walk through the species rich heathlands as opposed to slashing a track to place their survey pegs (Plate 7 below). It is hoped this is the last instance of this environmentally harmful work associated with the Energex managed power line easement on the site.



Plate 7 – Trail of slashed vegetation created by surveyors placing pegs associated with the Energex power line easement. Both *Acacia attenuata* and *Boronia rivularis* were damaged by these recent destructive works.

RECOMMENDATIONS

1. Implement the Fire Management Plan as per the fire management plan by North Coast Environmental Services (2012), but ensure that perimeter fencing is removed along with all other materials such as plastic quadrats prior to the burn and monitor the burnt area for any potential nodes of weed infestation until the native vegetation again assumes dominance and “site capture”;
2. Continue to monitor the weed populations along access tracks and manage as required and commence monitoring of burnt areas for any potential weed incursions and manage accordingly as noted in the previous recommendation;
3. Devise and implement a fauna monitoring program (possibly as a student/research project through USC) for the target fauna. Investigations should also be commenced as to the mechanisms most suited to ensuring adequate fauna movement corridors are established between the USC translocation site and the conservation estate to the east; and,
4. Develop and instate a resource such as a plant trail to encourage students and others to know and understand the diverse and unique attributes of the USC translocation site and its dynamic equilibrium over time.