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COMMENTS FROM MARK BUTZ ON *CLEAN WATER, HEALTHY LANDSCAPE: LOWER COTTER CATCHMENT DRAFT STRATEGIC MANAGEMENT PLAN*

BACKGROUND

I am an environmental scientist by background and have been engaged full-time in the natural resource management field since 1976. My direct experience with the lower Cotter catchment (LCC) from a resource management perspective extends back continuously to 1979.

Most recently I have been involved in preparing a Conservation Management Plan for the Blundells Flat-Shannons Flat area in the Lower Cotter (on behalf of the Australian Forest History Society under an ACT Heritage Grant). This plan is:

- documenting and assessing the significance of natural and cultural heritage values;
- identifying threats and mitigating practices, measures and priorities to address knowledge gaps, opportunities and themes for interpretation of heritage values; and
- developing information to support new nominations to the ACT Heritage Register.

The area covered by the Conservation Management Plan is most of the part of the LCC north of the Brindabella Road, i.e. the most north-western 5% to 8% of the LCC area.

I am associated with Greening Australia in a governance role. I was a member of the Forest Area Rehabilitation Expert Group (co-convened by Prof Peter Kanowski) and was involved for a time with the reference group on Lower Cotter Rehabilitation and Catchment Management (chaired by Prof Gary Jones).

I am a member of the Steering Group for the Land Keepers Program which has been undertaking landscape rehabilitation works in the Lower Cotter.

These comments are made as a private individual and are not intended to represent the view of any organisation or group.

OVERALL COMMENTS

I support the broad thrust of the document's recommendations.

The LCCSMP has been issued shortly after the draft *ACT Wetlands Policy* and the draft *Aquatic Species and Riparian Zone Conservation Strategy*. Both of those documents failed to address important issues across most of the lower Cotter and these deficiencies have necessarily diminished the quality of inputs to the LCCSMP relating to species and communities of concern.

I am particularly supportive of the document's approach to social values and community engagement, and its expressed desire for partnerships and encouragement of stewardship. To achieve the stated aspirations in this regard will require specific committed investment over a period of some years.

Most of the comments below relate to matters of detail or aspects relating to specific areas.

SUMMARY OF SPECIFIC COMMENTS

Apart from largely editorial suggestions, specific comments centre on the following:

- the need to limit impacts (including impacts from research) in the riparian zone of Wombat Creek at Shannons Flat, the only ACT locality of *Eucalyptus camphora*, with particular attention also to be paid to species and methods in this area
- suggested emphasis on 'soft' measures rather than hard engineering in areas such as Blundells Flat and Shannons Flat to protect natural and cultural heritage values, favouring collaborative projects with a high degree of community engagement in effecting solutions
- strong opposition to retention of a track down the south face of Mount Blundell within Namadgi NP (and part of an area listed on the Register of the National Estate) and the associated link to Pabral Road, opposed for reasons of water quality, safety, amenity and limiting of damage from recreational access
- suggestion that some other tracks to be retained require controlled access for management or emergency vehicles only, particularly the Five Fords track from Blundells Flat which follows Condor Creek to Wombat Creek and Shannons Flat, looping back to the Brindabella Road
- suggested deletion of the track from Curries Road along Condor Creek above the Blundells wetland and forming the boundary of Namadgi NP in its rise to the hairpin bend on the Brindabella Road, in favour of Curries Road as the main access and 'safe edge' for fire protection
- caution about over-reliance on inaccurate vegetation modelling evident in Map 5 for guiding selection of dominant species and structure
- noting the risk inherent in making passing mention of 'rare' and 'unusual' species, while only dealing substantively with 'threatened' species
- foreshadowing recommendations on use and interpretation of the Blundells Flat and Shannons Flat areas, as inputs to a recreation plan and communications plan which includes interpretation
- caution about over-reliance on the CSIRO study as the primary or only indication of scientific knowledge needs for sound decision making in the Lower Cotter, in recognition of its limited attention to some key resource management and land use interactions
- suggesting further consideration of the CSIRO report conclusion about the merits of establishing a 'catchment rehabilitation centre' which could support recommendations of the LCC SMP.

SPECIFIC COMMENTS

2 Planning Considerations

2.1.1 Commonwealth legislation and policy

The section on the EPBC Act gives the impression that two threatened fish species are the only matters in the lower Cotter which are relevant to this Act. Other threatened species, listed migratory species, or for that matter (over time) places on the National Heritage list in the lower Cotter could all be relevant to this Act. If the desire is not to expand the section, then it should be made clear that the potential application of the Act is not confined to two fish species (i.e. they are one example).

This section would certainly benefit from mentioning that the EPBC Act also applies to actions taken in a Commonwealth area or by the Commonwealth where these actions have a significant impact on the environment. This application could be substantial in the lower Cotter.

2.1.2 ACT legislation and policy

The section on the *Heritage Act 2004* could be more expansive, for example mention of the role of the Heritage Council in devices such as Heritage Directions, Heritage Agreements, and Conservation Management Plans, and the requirements placed by Part 16 of the Heritage Act on public authorities responsible for heritage places. Some of this is referred to in 3.9.

3.3 Values

It is welcome to see the emphasis in the document on values. This achieves a perspective which is rare in documents associated with conservation and management frameworks. It includes appropriate recognition of the important role played by matters which lie beyond assumptions made about intrinsic value or conservation as an end in itself.

It is also pleasing to see recognition of ecological and landscape function as a natural heritage value – this too is rare.

It may be useful to add to the natural heritage values the landscape or scenic amenity value which has attracted Canberrans to the area for decades.

The approach taken by this document would be strengthened by reference to the concept of ‘cultural landscape’, possibly best set out in: Lennon, J & Matthews, S 1996. Cultural landscape management: Guidelines for identifying, assessing and managing cultural landscapes in the Australian Alps national parks. Australian Alps Liaison Committee (available as pdf on the Web).

In exploring the importance of values, the document could emphasise that ‘people’ have connections to ‘place’. The 2003 fires led to a dramatic loss of the kind of place that the Lower Cotter was, and the result was disorientation. In the process of clean-up and debris removal the place changed again and the result was disconnection. This was heightened by a sudden shift in perceptions that a relatively benign environment to the north-west of the city had become a source of danger.

The challenge here is to provide an antidote to that fear with opportunities for action in, about, and for, that environment. There are opportunities for reconnecting ‘people’ and ‘place’, with due regard to protection of important community values which may have been obscured or neglected in the past. This means reconnecting people who valued the Lower Cotter as a place before the fires, and connecting new people who will value it as the place it is now becoming.

3.4 Management Principles

It is encouraging to see the principles include ‘an effective partnership between the community and government’. Historically, some government agencies have not demonstrated an understanding of what constitutes an effective partnership model, or a culture of commitment to genuine partnership with community.

It would be appropriate to list conservation of natural and cultural heritage as a management principle. Although this is reflected in 3.5 Major Goals, natural and cultural heritage is the only element of that section which is not directly related to a Management Principle.

3.5 Major Goals

Some more detail would be useful in relation to natural and cultural heritage. Other paras expand on achievement of the goal, and this too could include a brief illustration of the value of having ‘identified, conserved and interpreted’ the area’s natural and cultural heritage.

The inclusion of ‘an involved and supportive community’ as an explicit management goal is welcomed.

3.6 Management issues

The emphasis in 3.6.3 on ecosystem and landscape functionality is welcomed. Once again, this is a rare ingredient in ACT documents associated with conservation and management frameworks (somewhat surprisingly).

This section is not explicit about the role of wetland systems in enhancing water quality, although they play a key role as first barrier in a multiple barrier system, and in sustaining water yield through slow release. To date, the location, nature and value of wetlands in the Lower Cotter have not even been acknowledged, let alone considered in management.

At Blundells Flat almost the entire valley floor comprises diverse wetland types from seeps and soaks through wet tussock grasslands, wet heaths, sedgelands with bog elements, and peatland, each contributing in a particular manner to water quality and yield through ecosystem function. Shannons Flat likewise has a series of wetlands. These systems require careful rehabilitation and management matched to their specific function and condition.

Weed control: 3.6.3 c) acknowledges the expense of blackberry control when plants become large. In many priority areas blackberry plants are still quite small and accessible, and there are definite economies in making a commitment to control them at this early stage.

3.6.3 e) - Special Purpose Reserves and areas adjacent to Namadgi National Park are logical priorities for weed control work. Other areas which have significant conservation values, such as Blundells Flat and Shannons Flat, do not have such formal status. However, enough is known of their values to state that these too should be priority areas for weed control, with some strict guidelines on methods used in sensitive areas.

3.7 Research & Monitoring

In reference to the CRES research project on riparian zone buffer widths, it is noted that Map 6 shows Wombat Creek as one of the research sites. Research activity here needs to take into account the presence in that riparian zone of *Eucalyptus camphora*, in the only ACT locality for that species. This area has already been adversely affected by machinery access and uncontrolled fire during debris removal. No further machinery access, no ‘ecological burning’ (cf.4.1.2) or any other physical reduction in native vegetation should be permitted within this zone and within adjacent wetlands and slopes to the east until the habitat requirements of *E. camphora* there are better understood.

It is not clear whether this section seeks to be comprehensive in outlining the use of the area for research and education. For example, it may be useful to acknowledge the establishment in the 1970's by the ANU of permanent reference points throughout the Cotter to observe ecosystem dynamics. Equally relevant are the vast body of work undertaken here by the earlier Forest Research Institute and foundational collection and taxonomic work done here by predecessors of CSIRO Entomology from the 1940's.

It would be of value to consider preparation of a review of scientific work undertaken in the area to identify places of significance for that heritage theme. This would be a valuable adjunct to previous work of this kind undertaken for the Australian Alps Liaison Committee, which was confined in this area to the Brindabella Range (and even then incompletely). Reference is: Macdonald, P and Haiblen J 2001. Mountains of science: Volume 1: a thematic interpretation strategy for the scientific sites of cultural heritage in the Australian Alps. Report to the Australian Alps Liaison Committee (available as pdf on the Web).

3.9 Cultural heritage

It is welcome that the document recognises the arboreta which were planted through the LCC, and provides for the selective retention or planting of softwoods in some parts of the Blundells Flat arboreta.

A cultural landscape approach strikes a reasonable balance between recognition and interpretation of cultural heritage themes and protection of natural values. The Conservation Management Plan emphasises fostering natural regeneration of exotics within strictly confined areas where no other values are at risk, coupled with removal/control of exotics outside those areas. This regeneration is somewhat symbolic but some varieties may also be of scientific interest. Any supplementary planting of exotics would need to be of non-invasive species and within those defined areas.

Such an approach would assist thematic linking of arboreta at Bendora (the only survivor), Blundells and Blue Range, interpreting the choice of sites at different elevations.

3.10 Education and community involvement

Comments in this section about partnerships and collaborative projects are welcomed and strongly supported.

3.11 Access for recreation and other uses

Proposals are being developed for reinstatement of infrastructure at Blundells Flat to enable it to once again serve as a significant node for passive recreation while protecting both water quality in Condor Creek and a broad range of natural and cultural heritage values. This would include an expansion in facilities for interpretation and education, which could include explanation of the basis of decisions aimed at protecting water quality.

For example, human waste can be a problem at Blundells in areas which flow to the wetland soak there. Although the wetland filters the water it would be preferable to install closed system toilets in association with a relocation of the car park to avoid further damage to cultural heritage sites. These kinds of decisions can be readily interpreted on site.

4.1 Strategy 1: a water resource approach to management

This approach and associated policies are supported.

4.1.2 Management policies for Strategy 1

Comments made under 3.7 are reiterated here in relation to not allowing application of fire, even for 'ecological purposes', to the Shannons Flat area, until such time as the habitat

requirements of *E. camphora* there are better understood. This is consistent with statements made in 4.3.2 regarding exclusion of prescribed fire from significant or sensitive areas.

4.1.3 Management actions for Strategy 1

Key action a) – Some of the soil erodibility shown on Map 3 in the vicinity of Blundells Flat seems odd in that it does not appear to relate to substrate or slope. This is not an issue provided that a conservative approach is taken to solutions, as noted in the following paras.

In areas such as Blundells Flat and Shannons Flat, protection of some natural or cultural heritage values suggests the need for a conservative approach to erosion control measures, with an emphasis on ‘soft’ measures rather than engineering. Collaborative projects with a high degree of community engagement in effecting solutions may be the most appropriate way to deal with such areas.

For example, incision in the wetland soak at Blundells Flat can be addressed as a community wetland restoration project using coir logs which are adaptable as flows change in the soak either seasonally or in response to significant events. The engineering alternative of constructing an earth and rock mound may:

- be destructive of cultural sites and riparian biota
- have an adverse impact (for a time) on suspended solids and nutrients in Condor Creek
- raise the water table in the wetland too high (to detriment of both flora and fauna species)
- raise the head for too long (compromising seasonal wetting); and
- hinder control of trailbike access.

Similarly, in meadow areas, downslope water flow can be slowed and water can be spread laterally by placement of logs and other organic obstacles without risking machinery compaction of waterlogged areas (habitat for species of concern) and associated weed introduction or spreading by machinery. Incision in Condor Creek can likewise be slowed with debris dams supplementing coir logs without compromising other values in the riparian zone and while allowing community involvement.

Key action b) – Comments on the preceding Key action are also relevant here in relation to restoration of riparian buffers. Some areas require careful attention to species and methods in order to protect significant natural and cultural heritage values.

Comments made above in relation to 3.7 about protecting the only ACT locality for *Eucalyptus camphora* in any research activity are relevant also to activity to restore riparian buffers. This is one area requiring very particular attention to species and methods.

Key actions c) and d) – The need to rationalise and progressively remove road access in the interests of water quality is supported. This can also contribute significantly to protection of natural and cultural heritage values which are vulnerable to unconstrained access, as has been the case in the area since the 2003 fires. The sooner this can be undertaken the better. It is unfortunate that it has not happened earlier.

It is unfortunate that the Map 7 base includes within ‘all existing roads’ a large number of small tracks which are suitable only for walking or which are barely visible on the ground. Their inclusion here may encourage some to seek these out and try to gain vehicular access.

There appears to be some inaccuracy in labelling, as part of the Brindabella Road is not marked as required, with the break on the top of the range marked instead. This is either inaccurate or a curious proposition. Similarly, it is not clear that Pabral Road continues to the north into NSW and that this connection would be retained.

In the Blundells Flat-Shannons Flat area, most of the proposed retention of roads is supported. However, comments below oppose retention of some and suggest retention of others without open public access. To clarify these comments, an annotated extract of Map 7 is included.



I am strongly opposed to retention of a track down the south face of Mount Blundell within Namadgi NP (and part of an area listed on the Register of the National Estate).

This track is steep for most of its length, and particularly steep into Coree Creek, representing a risk to both emergency vehicles carrying water and to water quality in that creek from recreational use in a moist shady location with very high erodibility. In its higher parts the track is visually obtrusive and detracts from an area which includes tall *E. fastigata* forest.

Recent renewal of this route (which had largely fallen into disuse and disappeared from maps for those very reasons) has served to create expectation of access from recreational drivers/riders. Images and text have recently been placed on the Web showing four-wheel-drive vehicles negotiating this track with difficulty and having fun in the process. The locality has been named and is now a drawcard for recreational drivers seeking a challenge. Without making assumptions about driver capability, if a recreational vehicle has such difficulty, there seems little merit in retaining such a track for fire vehicles carrying water.

Retention of this track seems superfluous to fire management, given that it falls between the Pabral Road and Blue Range Road. It can only serve to encourage inappropriate vehicle use and unwarranted potential for sediment input into Coree and Condor Creeks.

Similarly, retention of the now renewed link to Pabral Road, although not as steep, is likewise not warranted in terms of dubious contribution to fire management and likely impact on catchment values from inappropriate access. In its eastern parts it too is a shady and moist area, and significant mud wallows and track widening are evident and expanding. This track too is now featured on the Web with images of four-wheel-drivers wallowing.

It may be quite justifiable to reopen these routes in the event of an emergency (after which they could be closed and rehabilitated). However, in the interests of water quality they should not be retained and maintained on a continuing basis.

The roads openly accessible to vehicles should be confined to Curries Road and Pabral Road.

Others might be retained but closed to traffic, with controlled access for management or emergency vehicles only. This restriction should apply particularly to:

- the track from Blundells which follows Condor Creek to Wombat Creek and Shannons Flat, looping back to the Brindabella Road in several places; and
- the track from Curries Road along Condor Creek above the Blundells wetland and forming the boundary of Namadgi NP in its rise to the pronounced hairpin bend on the Brindabella Road.

The track from Blundells which follows Condor Creek to Wombat Creek and Shannons Flat, looping back to the Brindabella Road (Five Fords or Five Creeks Road) includes several fords through Condor Creek and one through Wombat Creek as well as several commonly wet areas with turbid puddles along the track itself. These contribute sediment load to streams with each passage of a vehicle, and would require regular maintenance to mitigate impact. This track too is beginning to feature on the Web as a four-wheel-drive destination.

This track would be best left closed to vehicles, with the majority of it used as a key part of a walking track (along Condor Creek) from Thompsons Corner (and in the longer term from Uriarra) to Blundells and Coree, which would interpret the many phases of use of that route by Aboriginal people, early settlers, miners and others. This is a recommendation of the Conservation Management Plan.

Closure could be made in the west near the top of Curries Road and in the east just below the Brindabella Road (while still allowing access to the 'lookout' over Shannons Flat).

This also requires a decision to remove the route down the face of Mount Blundell and the link to Pabral Road, as their retention would compromise closure of the Five Fords route.

The track from Curries Road along Condor Creek above the Blundells wetland and forming the boundary of Namadgi NP in its rise to the pronounced hairpin bend on the Brindabella Road traverses an area which is steep, and is modelled as having very high soil erodibility.

Retention as an open route in the face of closure and rehabilitation of other tracks is likely to encourage exploration and use of the track for hill climbing, as happens now regardless of weather and track condition.

The associated sediment input would be highly undesirable just upstream from the Blundells wetland soak (and a previously recorded location for Corroboree Frog).

At its northern (lower) end, the proximity of the route to Condor Creek compromises effective buffering of the riparian zone and wetland. This is an area of low relief which is commonly wet (with turbid puddling on the track), and would be best revegetated as an enlarged riparian zone leading back to the Namadgi boundary.

Retention as a route closed to traffic would pose physical challenges for closure at the northern (lower) end, with significant potential for damage as users attempt to get around the closure in a commonly wet area.

This route should not be retained as a track to be maintained on a continuing basis.

Rehabilitation of the Camages Block (between this track and Curries Road) as a buffer for Namadgi, with a lower density native vegetation structure adjacent to Curries Road, would allow that road to serve as the access route and 'safe edge' for fire protection purposes, without attendant issues for water quality and safety.

Key actions e) and f) – In areas such as Blundells Flat and Shannons Flat, protection of some natural or cultural heritage values suggests the need for a conservative approach to erosion control measures (in-stream and otherwise), with an emphasis on 'soft' measures over engineering. Collaborative projects with a high degree of community engagement in effecting solutions may be the most appropriate way to deal with such areas.

Key action g) – A coordinated program of environmental monitoring is strongly supported. Every opportunity should be taken to engage the community in elements of this effort.

Key action h) – Rezoning to Mountains and Bushlands is strongly supported. Expansion of the area under Special Purpose Reserve is also warranted to take in parts of Shannons Flat and Blundells Flat and associated corridors to Namadgi National Park.

4.2 Strategy 2: A landscape and ecosystem approach to management

The thrust, management goals and policies of this approach are supported. The link between controlling weeds and having opportunities to survey (and keep accessible) cultural heritage is significant in some places.

A cautionary note is that over-reliance on Map 5 to guide selection of dominant species and structure may be problematic in some places where the modelling is not borne out by field inspection. It is unclear why gradient models and maps from the 1973 ANU survey were not used, as these are more detailed, accurate and useful than the ‘pre-1750’ modelling used here.

For example:

- the *E. fastigata* Montane Forest type which is of considerable interest for biodiversity, is both more widespread and more complex than the modelling suggests, within a zone restricted by substrate and elevation. In other places its omission is quite anomalous, e.g the wet lower gully of Fastigata Creek.
- the modelled extent of Tableland types *E. macrorhyncha* and *E. bridgesiana-E. dives* and the dry Montane type *E. dives-E. rubida* at Blundells Flat and associated slopes (including the Mount Uriarra area) does not conform with field observations. This may be a product of the montane setting and local edaphic factors not being accounted for in the model.
- the modelling of Montane Forest type *E. dalrympleana* in the Thompsons Block, but not elsewhere, seems quite anomalous
- particularly strange is the failure to model the Snow Gum on Mount Coree above about 1400m – this is modelled as Montane Moist forest *E. robertsonii-E. viminalis*.

These anomalies are not a problem provided caution is taken in use of this modelling for selection of species and form for revegetation. However, this appears to be the only purpose of having both the modelling and Map 5. It may be best to abandon this modelling in favour of the ANU 1973 mapping and associated models.

4.2.3 Management actions for Strategy 2

All key actions are supported.

Key action c) regarding restoration of native vegetation and landscape function could also recognise that in some targeted areas it would be preferable for community engagement events to physically remove young pine wildings rather than applying fire which would set back native regeneration and may have an adverse impact on species of concern, especially dual habitat species.

It needs to be acknowledged that the massive native seedling regeneration in the area is likely to represent an exhaustion of the latent genetic stock in the landscape until such time as regenerating individuals are sufficiently mature to set seed. This will not be aided by burning young native regeneration.

Key action e) regarding habitat enhancement for rare, threatened or unusual species is particularly welcomed in relation to Blundells Flat and Shannons Flat and this kind of effort is specifically addressed in the forthcoming Conservation Management Plan.

It is noted that although the document makes passing mention of ‘rare’ and ‘unusual’ species, most substantive sections relate to ‘threatened’ species. This has been the case in conservation management documents released in recent times, posing a risk that the ‘rare’ and ‘unusual’ will continue to ‘fall through the cracks’, at least until we pay them enough attention to realise that they have joined the ranks of the ‘threatened’. The tenor of this document suggests that there may be opportunities to do better in the Lower Cotter, and this would be most welcome.

Key action f) regarding conduct of heritage surveys need not be confined to Aboriginal elements of cultural heritage.

4.3 Strategy 3: A risk management approach

The thrust, goal and policies for this are supported.

In particular, the policy to control access to, and use of, roads that are substandard and on highly erodible soils is welcomed in regard to decisions on reopening and retaining roads, in view of comments made under 4.1.3 Key actions c) and d).

Comments made under 3.7 are reiterated here in relation to not allowing application of fire, even for ‘ecological purposes’, to the Shannons Flat area, until such time as the habitat requirements of *E. camphora* there are better understood.

It is welcome to see protection of heritage values and places given appropriate recognition in this Strategy.

4.3.3 Management actions for Strategy 3

All key actions are supported.

In relation to Key action f) regarding a recreation plan, the forthcoming Conservation Management Plan for Blundells Flat and Shannons Flat will make specific recommendations on use and interpretation of these areas. These will provide input to any recreation plan, and are likely to include proposals to:

- relocate the car park and construct closed system toilets at Blundells (also enhancing protection of water quality and natural and cultural heritage elements)
- enhance access, safety and interpretation at some key lookouts over Blundells and Shannons; and
- develop walking tracks for interpretation and education, including a significant track linking Thompsons Corner, Shannons, Blundells and Coree (by closure to vehicles, also enhancing protection of water quality and natural and cultural heritage elements).

4.4 Strategy 4: An adaptive and collaborative management approach

This strategy, goals and policies are strongly supported.

4.4.3 Management actions for Strategy 4

It is particularly pleasing to see the intent to:

- engage the community in restoration, research and monitoring in a structured and supported way and on a continuing basis
- have a communication plan which addresses interpretation of natural and cultural heritage, catchment condition and restoration progress; and
- maintain a community engagement plan and a prospectus of opportunities to participate.

The community engagement plan will need to be innovative to go beyond the limited imagination and patterns of the past where the emphasis was on forming groups. It will also

need to recognise that the demographics and patterns of volunteering have fundamentally shifted, and the prospectus will need to ensure a balance between opportunities for on-going and episodic volunteering.

It will also need to devise ways to inspire engagement, such as use of landmark anniversaries with aspirational timelines (e.g. centenary of Canberra in 2013, and of the Cotter Dam 2015). Once again this requires a committed investment for the duration.

The value of community engagement in elements of environmental monitoring is all too commonly dismissed. Greening Australia is one potential community partner with a solid track record of environmental monitoring (in association with CSIRO).

Key action e) - the holistic approach to a communication plan is refreshing, and rare in management frameworks. The forthcoming Conservation Management Plan for Blundells Flat and Shannons Flat will make specific recommendations on interpretation of these areas.

Key action f) - preparation and active use of a community engagement plan and associated prospectus is warmly welcomed. The emphasis here needs to be on 'value added' rather than 'dollars saved' by engaging the community, although this emphasis appears to be consistent with the tenor of the document.

Key action g) – recognition and legitimisation of current community interest in protection and restoration of Blundells Flat and Shannons Flat is welcomed. It seems logical that ACTEW would also be seen as a partner, since this is not something separate from the community engagement plan and prospectus referred to in f) above, and since water quality through ecosystem services is a major focus of that community interest.

Key action h) could be extended beyond staff, to acknowledge training needs for community volunteers engaged in restoration, research and monitoring. It could also recognise that Greening Australia are already involved in training of this sort and have produced a revegetation manual for the Lower Cotter for ACT Forests.

Key action i) – the proposal for research permits in this area is supported in the interests of tracking and ensuring a return of information to management and the community. This should not impose a practical or financial burden sufficient to discourage research or to encourage clandestine research without return of information.

Appendix A: Summary of findings of the CSIRO Study

The CSIRO study has been a major source for the document. It needs to be recognised that the study did not include review of some areas of research which might be seen as crucial to sound decision making in the Lower Cotter.

The study brief included interactions between all the natural resource and land management factors specified, such as ‘bushfire management implications’, ‘fire sensitivity and regenerative capacity after fire’ and ‘biodiversity’. However, this appears to have been interpreted narrowly, with the result that comments on use of fire to rejuvenate some native communities do not seem to be matched by comments on the interaction between fire frequency or seasonal timing and conservation of habitat requirements for species or communities of concern. Nor was this an area flagged for further enquiry.

This suggests a need for caution about over-reliance on the CSIRO study as the primary or only indication of scientific knowledge inputs and needs for sound decision making in the Lower Cotter.

It is noted that the document does not address the CSIRO report conclusion about the merits of establishing a ‘catchment rehabilitation centre’ which could serve as:

- a base for community groups involved in special replanting projects, monitoring of wildlife recovery and recreation groups
- a visitors centre for public education about the process of recovery and the associated eco-hydrological cycles; and
- a base for field research concerning fire, water, vegetation and wildlife

This is an idea warranting further discussion for its potential to support related recommendations of the LCC SMP.

Appendix E: Indicative vegetation and some revegetation opportunities

It has been noted above (4.2) that over-reliance on Map 5 to guide selection of dominant species and structure may be problematic in some places where the modelling is not borne out by field inspection.

The table in this Appendix appears to be closer to reality than Map 5.

In the Blundells Flat and Shannons Flat areas, care will be required in selection of species, form and location for revegetation to avoid adverse impact on natural heritage values, including some threatened and some uncommon or unusual species.

Both areas are in elevation slightly below the 800-900m level set for tall montane forest here, although their location in settings enclosed by hills and mountains certainly lends montane elements to their vegetation composition, as acknowledged in the ‘montane moist forest’ type.

Both areas, but Blundells in particular, have areas which are naturally open (not forested) and the ecotones between these and riparian forest are important for dual habitat species as well as retention of historic landscape elements. These ecotones must not be compromised.

The *E. viminalis* forest at Blundells is of particular interest and natural regeneration is still moving towards a stable state in relation to its interaction with water tables. This will be an interesting research and monitoring project over the decades it may take to resolve itself, and in the meantime care needs to be taken not to confound understanding of the processes by ill-advised revegetation interventions.

It should be noted that *E. fastigata* would only be a naturally occurring element on soils derived from the Mountain Creek Volcanics (on which it replaces *E. delegatensis*) above

about 800m but particularly above about 1,000m. Below this narrow zone, emphasis should be on species from the 'montane moist forest'.

Particular care should be taken not to introduce unwanted vegetation elements into wet gullies with 'rainforest elements' (tree ferns, blanket leaf, native mulberry etc) such as those on Fastigata Creek, Musk Creek and Wombat Creek, and parts of Condor Creek. These are crucial habitat for biota ranging from arboreal mammals to fungi. Field inspection suggests that these environments are regenerating appropriately and no intervention may be warranted.

Care is also required with eucalypts in the discrete catchment of the *E. camphora* area at Shannons Flat. East of Wombat Creek, this species must remain the dominant eucalypt in the riparian buffer, wetland areas and lower slopes, although upper slopes may appropriately be supplemented with drier elements of the 'montane moist forest' type. This area is an ideal subject for community planting of tubestock.

Appendix F: Economic considerations

It is noted that costings are made for only some of the physical works. The community engagement aspirations of the plan will require dedicated funding over some years to achieve. Presumably this may be sourced largely from NHT/NAP funds. However, it would be useful if the document overtly recognised the need for funds to be allocated for this specific purpose.

Similarly, erosion control and road rehabilitation are not overtly addressed here. It would be useful guidance for the reader to be able to see the total costing/funding commitment (in estimates at least) which will be required to restore the Lower Cotter.

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Thank you for the opportunity to comment on this document.



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