

## **TECHNICAL NOTE**

### **Valley-floor Regeneration on a Drainage Line near Gutha**

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This note describes valley-floor vegetation on the Stephens (VICLOCs 5512 & 5520) and Skipworth (VICLOCs 5521 & 5522) properties near Gutha, along the proposed route of a deep drain. It also addresses the question: what will be the likely impact of clearing a 30 m-wide corridor and of the subsequent drainage? The author had previously visited the site on several occasions between late summer 2005 and autumn 2006. After a preparatory desk-top study, I visited the site again in early November 2006. The present report results directly from that recent visit, but also draws on earlier observations and discussions with relevant landholders & natural resource managers.

The drainage line crossing Gutha East Rd from John Stephens' farm is clearly defined as a break in the cropland, several hundred metres wide. It is apparent from the furrowed surface, the almost total absence of trees, and the network of abandoned fences, that the entire landscape has previously been cleared and cropped. In fact, Mr Stephens recalls that the valley floor was one of the most productive parts of his property before it became saline and had to be abandoned in the mid-1970s. The valley floor is now used occasionally for summer pasture.

While the valley floor is clearly outlined by its chenopod vegetation, the channel itself is rarely well-defined. Rather, surface water spreads out across the entire valley floor (Fig. 1). Like all streams and lake chains in the region, there is no permanent flow; in most years, surface flow is confined to a few occasions in winter, following large rainfall events, when both vapour pressure deficit and evaporation/transpiration rates are low.

The vegetation is coarsely zoned (Fig. 2), with samphire herbland occupying the lowest part of the drainage line, flanked in turn by a mixed samphire - herbaceous saltbush community, grey bindii (*Sclerolaena diacantha*) herbland, bluebush (*Maireana brevifolia*) shrubland, and finally a shrubland of tall saltbush species (*Atriplex nummularia* and/or *A. bunburyana*) over grass. The pattern described here is an idealised, composite picture; it is unlikely that each of the zones will be present in any single cross-section.

The samphire core is a monodominant stand of *Halosarcia pergranulata*, regionally the most common and widely distributed invasive samphire taxon. Individual hummocks appear sickly – in places dead. Scattered amongst the dying *H. pergranulata* plants are yellowish green, robust clumps of *H. indica* ssp. *bidens*. These stand out as being taller, thicker, and more succulent than individuals of the other species.

In places, the samphire herbland includes a minor component of low saltbush – an herbaceous, broad-leafed species that superficially resembles *Atriplex codonocarpa* of the Mongers - Jibberding area. No fertile material was observed, however, and the plant was not positively identified.

Outside the samphire zone, the herbland consists of irregular patches (occasionally regular linear zones) dominated by *Sclerolaena diacantha* and/or *Maireana brevifolia*, both of which show signs of recent heavy grazing.

Shrubland, dominated by the woody saltbush species *Atriplex nummularia* and *A. bunburyana* sometimes occupies the very interface between cropland and the abandoned valley floor (Fig. 3). This saltbush zone, if present at all, typically includes an almost complete cover of groundstorey grasses. It is often a narrow zone, grading imperceptibly into bluebush shrubland or bindii herbland on one side and into cropland/pasture on the other (Fig. 4). The saltbush species here are probably not native to the area. Some (on Skipworth's), have been deliberately planted as saltland graze; others, downstream from saltbush plantations, have probably grown from flood-borne seed.

The structural and floristic simplicity (compared with the relatively pristine saline wetlands of the Yarra Yarra saltlake chain) suggests that the valley-floor vegetation here is a recent one. This conclusion is supported by the almost monospecific nature of the samphire zone and by the under-representation of mature landscape elements, such as channels and playas.

The samphire (and the entire valley-floor vegetation) has colonised the area after major disturbances, e.g. big floods. In the short term, it is unlikely that the comparatively minor disturbance of a 30 m-wide excavation corridor will have a substantial impact on the survival or sustainability of the vegetation. In the longer term, successful completion of the drainage project will lower the water table and dry out the soil profile. Such a hydrological environment would no longer support the samphire and most of the other Chenopodiaceae-dominated vegetation. Eventually, when sodic and saline soils have been rehabilitated, it might be possible to restore parts of the valley floor to cropland and pasture.

The landcare group's plan is to stabilise the drainage line with a 100 m-wide corridor of pre-clearing vegetation (in this case, probably a York gum woodland). This corridor will be protected as an easement and fenced to exclude stock. It should become a valuable biodiversity asset to the landscape.



Fig. 1. Two kinds of the drainage line on VICLOC 5512.

a) relatively well defined channel

b) no clearly defined channel – during flood events, surface water spreads out across the entire flat valley floor.



Fig. 2. Outer margin of samphire zone (I). Foreground: dead and dying *Halosarcia pergranulata* (Ia), scattered *H. indica ssp. bidens* (Ib). Note bare ground between samphire clumps. Near distance: heavily grazed, low herbland dominated by grey bindii (*Sclerolaena diacantha*; II). Middle distance: bluebush (*Maireana brevifolia*) herbland/shrubland with grassy groundstorey (III). Far distance, left: cropland (currently under pasture; IV). Slightly undulating surface visible in foreground is an artifact of earlier cropping.



Fig. 3. Saltbush (mostly *Atriplex bunburyana*) at the cropland-samphire boundary on Stephens' VICLOC 5520. Looking north across the abandoned valley floor. This 'volunteer' vegetation is used for summer grazing.



Fig. 4. Relatively narrow, unfenced drainage line on Skipworth's VICLOC 5521. Note the encroachment of pasture grasses into the shrubland/herbland, and the encroachment of bluebush and bindii into the pasture.