

Report to the Standing Committee on Planning and Environment of the ACT Legislative Assembly

for discussion at 10.30am, 11 March 2005

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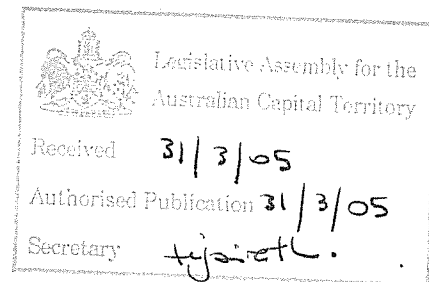
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Draft Variation to the Territory Plan DV 244 Duffy, part Block 2 Section 56, Stromlo Settlement

Thank you for the invitation to comment on this Draft Variation.

1 I have briefly visited the site to gain an initial impression of its possibilities and to see if there are any obvious impediments to future redevelopment.

It must be stressed that the following comments are necessarily of a general nature as there has been no time in which to find out specific information which might be more prescriptive. In particular I have not been able to read the "*Stromlo Forestry Settlement Sustainability Study*" other than what is reported in the Draft Variation. Given that opportunity, I may need to review.

My comments are essentially directed toward the physical and aesthetic achievement of the sentence in para. 1/1 :

The study " **found that the settlement offered the opportunity to establish a world class example of a sustainable community.** " I agree - but If we are to be responsible for continuing life on this planet then there is no such thing as *varying degrees* of sustainability - we are either sustainable or we are not.

Conclusion : We really have no choice but to embrace total sustainability to the best of our ability and the Stromlo redevelopment gives us the opportunity to put this philosophy into practice - to demonstrate that sustainable, integrated design in all relevant areas is practical, economic and functional. Nothing less should be considered.

2 There are two ways of approaching the Stromlo problem :

1 Require existing sewers, stormwater, and water reticulation lines be re-used. This would limit design thinking to the old-fashioned Victorian (era) of centralised (and expensive) treatment of wastes and of

water supply, all of which are contrary to the concept of sustainability.

In any case, these three systems only serviced the original 20 of the envisaged community of ~ 40. Whether the extended services would carry double the load has yet to be ascertained, but it would mean that from the start the whole project would be on an *unsustainable* basis, thus putting into question the integrity of the fundamental aim of the project.

2 Put into practice what the world is coming to accept as essential for sustainability and ultimate survival and what the ACT government is commendably beginning to promulgate in various ways.

Conclusion : A responsible government has no option but to put sustainability concepts into practice and demonstrate that they work Eg -water tanks should be installed to all houses, but public water outlets - fire hydrants, bubblers etc could remain on the existing system .

3 It is now practicable to design houses without any connections to the reticulated services of sewers, stormwater and potable water. These are *semi-autonomous* houses.

Independence from electricity reticulation is a longer term goal, but still not a practical solution in a suburban situation. Electricity supply lines to individual houses are, however, much more flexible (even if underground) and need not be rigid determinants of site layouts as would the other three services.

Similarly, telephone and natural gas connections are very flexible and existing (and new) lines could easily adapt to any new layout of houses.

Conclusion : Continuation of old thinking centralised services of outgoing wastes is incompatible with sustainable development and use has to be made of rapidly developing sustainable technology which has been proven to be realistic .

The three reticulated services (sewers, stormwater and water) have served us through an unsustainable period in history, but we must now change toward sustainable ways of living which can only be met by decentralised autonomy.

4 The recommended maximum of 40 houses may well be achieved, but it seems highly likely that this figure is the result of old thinking based mainly on rectangular blocks of 1200 to 1500m² as depicted in drawing 2.2.(p 8)

This is a misconceived and inappropriate start to the successful development of sustainable housing and is like asking Ian Thorpe to win a race with his hands tied behind his back.

The final number of houses really depends upon many factors, some of which have not even been considered (in traditional, unsustainable developments, but must now be if sustainability is to be taken seriously. These are *(in relation to Stromlo)* : - the needs of the *actual* known occupants, resulting house sizes, proportions and orientation if maximum solar utilisation is to be achieved, block sizes appropriate to such house designs, accurate positioning of large existing trees in relation to certain houses, policies on planting of trees to avoid limiting future solar access to houses etc.

Subdivision layouts to date have been based on factors which are now inimical to *sustainable* housing. Road planning usually has had no regard for effective house orientation and we still slavishly follow the dictates of convenient car access to the fronts of houses with consequent adherence to the mantra that houses must face the street. This has to be re-assessed in the interests of sustainability.

The Outline Plan 2.2 (p 8) would seem to follow this outmoded thinking based on re-use of existing roads (*I have had no time to check this*) and block sizes are determined by conventional housing design based on unsympathetic rectangles, where the house designers will have their hands tied behind their backs. They can't win.

I find little *historical* significance or value in retaining the existing road layout, its configuration being based on unsustainable, old thinking. The *only* significance is that the underground services probably follow the road alignment (*to be checked*), but even this is not valid if even semi-autonomous housing designs do not need to

Block plans *do not have to be rectangular* - this is a draftsman's and surveyor's convenience which has little relevance to sustainable design. It can restrict good planning and diminish the end result of sustainability. Maximising sustainability in my experience, requires a more disciplined and rational approach for assured success.

From recent research into *sustainable* housing design I have come to some interim conclusions:

3	'	'	'	'	'	' 24m	"
4	'	'	'	'	'	' 29m "	

(Since writing the above I have attempted a trial layout of the site to meet the needs as I understand them and up to 40 houses would seem to be possible, subject to certain conditions being met - see dwg. on page 9)

Conclusion : If developers are to be allowed to submit site planning and house designs they should have to

demonstrate to a panel of independent solar specialists that they understand the principles of sustainable solar design and are willing to apply them. Their detailed proposals should be scrutinised by these specialists.'

6 Retaining the three existing houses at Stromlo on the grounds of heritage value is not really valid and would seem to be carrying sentiment too far. They cannot be regarded as good examples of architecture and from what little I have been able to see they are most likely to be thermally inefficient and unsustainable in their running costs; they will almost certainly create social division in future when the current occupants see the advantages of good design around them, giving rise to possible comments such as : *"why couldn't we have had the opportunity?" Why should we be condemned to inefficient, old-fashioned houses, just because we were lucky enough to escape the fire?*

Conclusion : Their retention will severely restrict good planning for the rest of the site and will most likely create social discord in future - the opposite of what is desired.

Retrofitting of these houses *may* be a possibility, but from my initial glimpse of them I would be of the tentative opinion that effective retrofitting may well change their external character to such an extent that their historic significance would be nullified.

They are badly oriented toward north, their construction appears to be lightweight with no internal mass, their roofs do not lend themselves to effective installations of photovoltaic arrays and hot water absorbers.

Their construction, however, does make them suitable for relocation to another site so that the Stromlo site could be effectively redeveloped in the best way possible. This is to be recommended.

7 I recognise that two years have elapsed since the fire and that residents must be impatient to return. However, this is such a one-off opportunity that it should not be thrown away in a rush to achieve early completion. That would be the waste of a wonderful opportunity to "do the right thing".

Conclusion : I believe that the residents should be informed of the opportunity to improve the standard of housing; of the essential need for a sustainable approach; and should be given an opportunity to participate in a world opportunity of showing that housing design should take a new and beneficial direction. They will then, hopefully, be more understanding of the delay and be a bit more enthusiastic about the outcome.

8 For effective solar planning to have any chance of success, there should be an integrated approach with the house designs and their final locations. An appropriate microclimate around the house is essential to the complete thermal functioning of the houses and should not be left to the haphazard and inappropriate gardening so often seen around the suburbs. Tall evergreen trees, such as eucalypts, are *not* usually good suburban trees as they cast large shadows in winter, having no seasonal changes to permit effective solar utilisation. There are some exceptions of species and location.

Conclusion : Before any site planning commences any trees of significance should be marked so that appropriate planning can take place and stormwater surges properly designed for. Once the house positions are determined a solar landscape architect should be commissioned to advise on appropriate macro planting and desirable microclimates, leaving the more detailed, small scale planting to individual expression. This should give greater cohesion and solar effectiveness to the whole subdivision.

9 The need for fencing the sites should be reviewed. Fencing is the epitome of old-thinking where the house faced the street and had a fence to keep other people out of the front garden and children and dogs away from the traffic. Such a situation need not arise in a community such as Stromlo, but could be resolved by planting appropriate shrubs and trees, swales etc. There is no *real* need to accurately delineate boundaries by vertical fences (corner pegs are usually adequate, but once initially accepted by the owners are of little consequence in the following years).

Canberra benefitted greatly from the 'no front fence rule' and this should be extended in the future to all fences around suburban properties. It really just requires a different mindset - a common requirement of all aspects of sustainable living.

Conclusion : The cohesion and visual unity of the whole area can be greatly enhanced by the omission of fencing, particularly street fencing, engendering community spirit and visual unity.

10 Rebuilding a community in this way is a marvellous opportunity to try out a variety of structural techniques in the buildings to enable comparative long term monitoring to take place. Future designers can then have access to some real statistics which prove that one type of construction is an improvement on another.

Architecture has suffered from this lack of thermal monitoring for centuries, as once the occupants move in they cannot see any value in taking measurements.

Conclusion : Any construction contract today should have built into it a requirement for specific ongoing monitoring for at least two years of occupation, including a publishing of results to be lodged with a specified school of architecture as a repository so that future students and professionals can benefit.

11 I have great misgivings about leaving the planning of sustainable housing to developers - they have demonstrated by their track record that they have no understanding of the requirements of sustainability or of having initiated any development of this kind. It should be appreciated that sustainable housing design is much more demanding of careful thought and skill than has been customary in housing design so far.

Conclusion : Any developer seeking to submit a proposal for the redevelopment of Stromlo Settlement should be required to demonstrate a track record of his understanding of sustainability and all design proposals should be scrutinised by competent specialists in the various fields associated with sustainability.

12 Sustainable development requires a combination of some new and unusual technology and in some cases a return to simpler ways of doing things. If the new designs are to be successful they will also require a change of mindset and an added degree of activity by the occupiers *who have become accustomed to an unsustainable way of life.*

To ensure this success it is important that the occupants learn to 'drive' the house, just as they have had to learn to drive a car and understand the road rules which improve safety and convenience for everyone.

Conclusion : Operational Handbooks must be prepared for all houses so that the occupiers can understand how to control all aspects of the functioning of the house, what to do under certain circumstances and who to contact for advice.

13 The eventual success of this development will depend largely on the comfort conditions in the houses during the extremes of weather we experience in this region - **and in the predicted extremes of hotter, drier and windier weather.**

Conclusion : We have an opportunity to try out a variety of new concepts on the Stromlo site. Performances are hard to guarantee, but it is certain that any new designs resulting from a study of building science research will be a vast improvement on the inefficient house designs we have become accustomed to.

To ensure the success of a pioneer project such as this it is essential that a thoroughly researched design brief be prepared to guide and integrate the various design professionals and to serve as a standard against which the final results will be measured. This is essential if future professionals are to learn about what works and what does not. (Having been seduced for a very long time into a comfortable, but unsustainable, lifestyle we are all feeling our way cautiously into a sustainable mindset which will require many changes to be made).

Derek F. Wrigley

The EcoSolar house - a possible answer to Stromlo housing?

A low-energy house has been designed recently by the author of this report, being the result of 47 years of professional experience in the Canberra climate. It is hoped that it will be a positive contribution to the ongoing quest for better sustainable housing at reasonable cost.

It is a simple solar house of varying sizes with the potential to achieve a high degree of sustainable, low-energy running and which could be manufactured locally.

The preferred solution is to use prefabricated concrete panels of standard sizes which would reduce on-site construction time from months to days, reduce weather delay problems and significantly reduce costs. These cost savings would then be more beneficially used to incorporate the solar technologies which contribute so much to the low-energy running of the house and to the cheerfulness and comfort of the occupants.

Its design has several integrated elements which serve double purposes, incorporating most of the desirable constructional techniques and appropriate technologies which make use of naturally available energies rather than energies from fossil fuels.

It aims to achieve a high degree of ongoing sustainability where all liquid wastes are disposed of safely and usefully on site, all solid waste being beneficially used to improve the impoverished Canberra soil.

All domestic water and more than enough electricity can be obtained from the roof, with virtually all space heating and hot water obtained from the sun. Natural gas space heating would be used as back-up and also for cooking. This is not, of course, fully sustainable, but it is our only current option pending the future introduction of a hydrogen economy with fuel cells etc. Unfortunately we have to adopt a pragmatic position at the present time

Sunshine is available in all habitable rooms (*southern and northern*) throughout the day.

Due to effective insulation, appropriately placed mass and an efficient natural ventilation system there would be no need for an airconditioner in summer. Gas heating is provided as a back-up system in case of a run of cloudy days.

The only service connections would be electricity, natural gas and telephone.

It is estimated that large cost savings would be possible if a prefabricated structural system were adopted, enabling a structure to be erected in less than one week. Such a structure could be thermally most effective throughout the year.

The concrete ceiling slabs would ensure that the rooms underneath would be a safe haven for the family and possessions in the event of another bushfire. In addition, no timber is used above ceiling level, thus eliminating the possibility of bushfire embers starting a fire in the roof space (a major combustion point in the Canberra fire).

These claims are justifiable from experience gained in the Canberra climate and can be replicated at reasonable capital outlay providing spatial and fashionable demands are restrained at the design stage.

It does not claim to be the perfect solution, rather a significant advance toward the goal of sustainable housing.

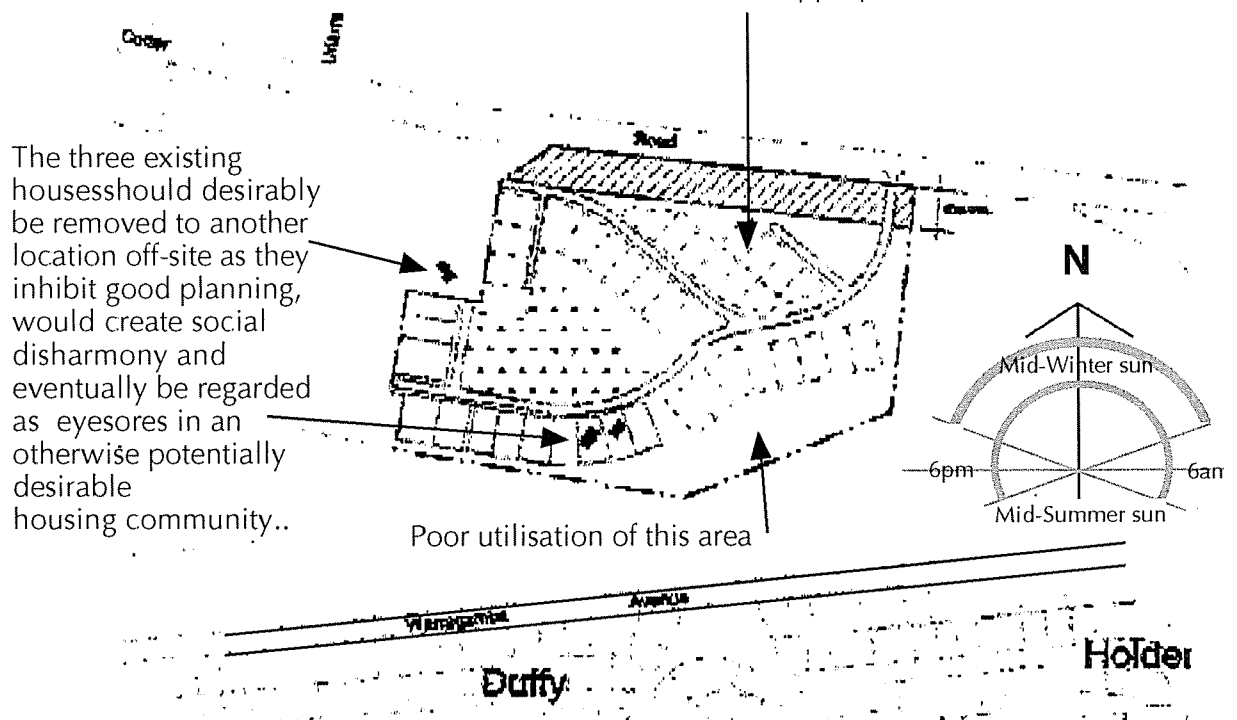
It could make a distinct contribution to the Stromlo Settlement redevelopment.

Derek F. Wrigley

It is possible that some of the existing road surfaces could remain, even though the sewers and stormwater lines may be dispensed with. The existing configuration does not optimise the usefulness of the available area.

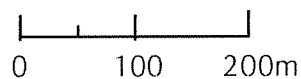
Typical block widths appear to be about 22.5m which are only suitable for small houses, allowing little room for re-orientation to achieve good solar access and utilisation.

It tends to perpetuate the suburban concept of all houses facing the street which is inappropriate to solar houses

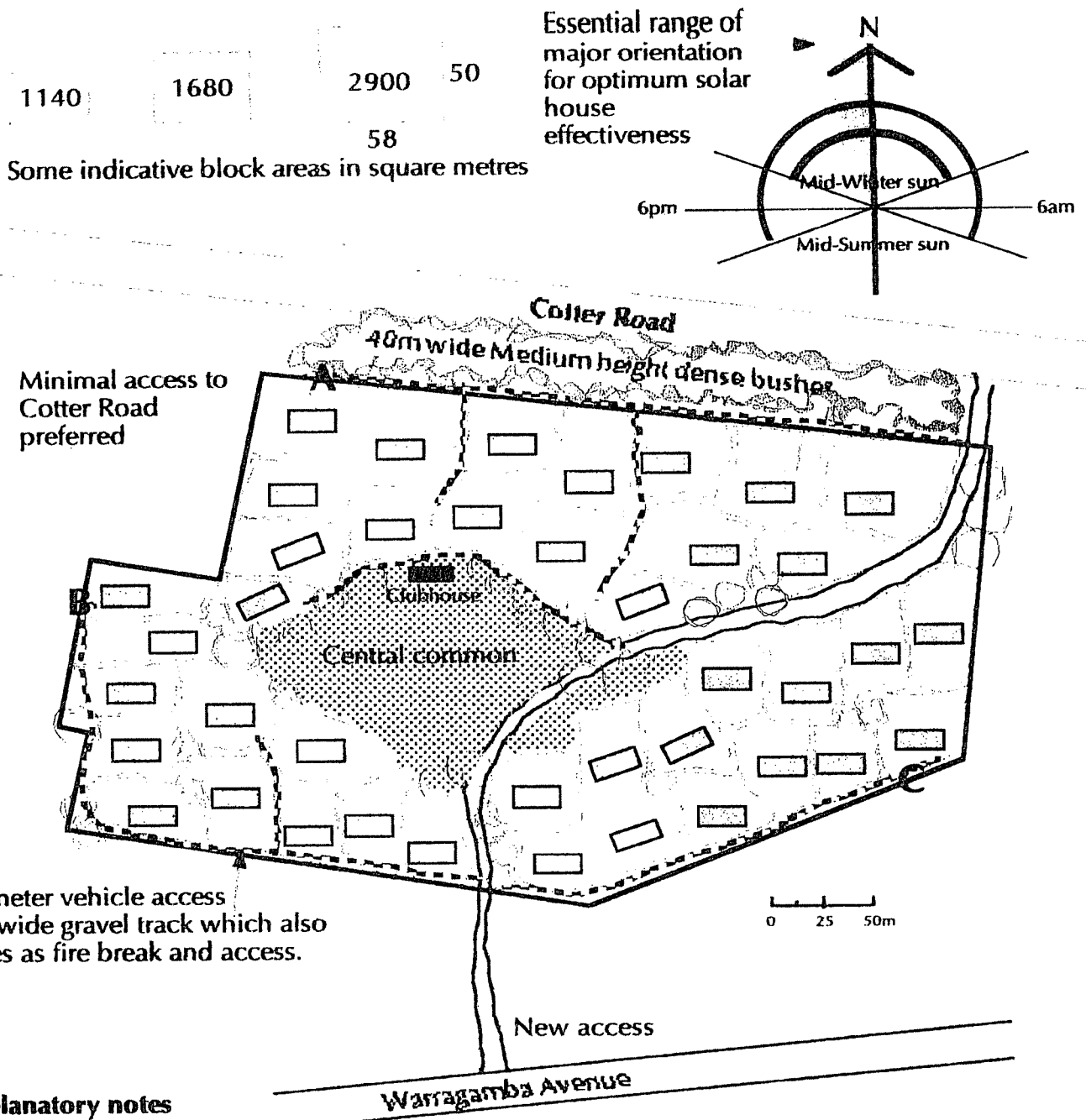


The scale indicated on the published plan is believed to be incorrect. If the 40m Cotter Rd barrier strip is correct then the scale should be more like this :

Interim comments based on limited information and may be subject to change



Stromlo Settlement Outline Plan (2.2 - DV 244)



Explanatory notes

The plan above is a quick indication of a possible layout of 40 houses using a more flexible approach to suburban lifestyle. It has been drawn in the absence of some critical information and obviously needs to be modified to suit the actual topography, existing trees etc.

It shows 3BR sized houses all facing north with more garden space on the north side.

There are no fences anywhere (a great cost saving) - bushes are used instead, giving a softer, more human environment, with no real loss of privacy.

There are no sewerage or stormwater reticulation systems

There are walking/cycling paths between all blocks facilitating easy access between all houses and giving access for electricity, gas and communication cables. There should be no overhead wirescape.

The block sizes vary between 1140 sq.m and 2900 sq.m as drawn, but are very flexible.

The central road gives access from Cotter Rd and Warragamba Ave. and feeder access tracks A, B and C (all gravel) give vehicular access to all blocks without using more valuable internal space - they also serve as fire breaks between the settlement and surrounding areas and give fire truck access to all houses.

A possible New Stromlo Sustainable Settlement

