

Sutherland Shire Council's Response to: Heathcote Ridge - Site of State Significance Submission to NSW Department of Planning & Infrastructure Dec 2011

This submission includes the consideration of all issues contained in the Director General's Requirements, as well as of additional issues arising from the assessment of this proposal that are of particular concern. The structure of the following sections of the report is based on the numbering and headings system used in the Director General's Requirements.

Sustainability Criteria for New Land Release

1. Assessment against the 'Sustainability Criteria for New Land Release' in the Metropolitan Strategy and provide justification of listing the site on the Metropolitan Development Program.

When evaluated against the State's 'Measureable Explanation of Criteria', the Gandangara Local Aboriginal Land council (GLALC) Heathcote Ridge proposal fails to substantially satisfy the Sustainability Criteria for New Land Release, for the reasons outlined below:

Infrastructure

The proposed Heathcote Ridge development does not satisfy the requirement that a new land release area must be consistent with "any relevant development strategy, subregional strategy, regional infrastructure strategy and Metropolitan Plan".

This assessment is based on West Menai's exclusion from the draft South Subregional Strategy (2007) as a site for residential development. ("There are no major land release areas planned in the South Subregion and most future dwelling growth will be accommodated with existing urban areas". pg 86). More significantly, the Strategy specifically highlights West Menai's restricted urban development potential and its capabilities as a 'Potential Employment Area to be Investigated'. "...much of [West Menai] has environmental significance and its development could impact significantly on adjoining land and be impacted itself from activity on adjoining land such as bushfire and emissions from the waste deposit. The area therefore has limited potential for urban development but could be considered for industrial activities, provided development reflects the environmental significance and any Native Title implications of the site and its surroundings, and the requirements of the Department of Defence."

Therefore, not only is the proposal not consistent with any broader strategy, it is expressly considered and rejected as a residential release within the relevant guiding documents.

The Submission fails to satisfy the requirement to sufficiently cost the provision of infrastructure for the proposed development.

Currently, the entire 865 ha site, including the area of developable land, is devoid of any roads, public utilities, telecommunication services or other forms of infrastructure associated with residentially or commercially developed lands. As outlined in detail in 'Infrastructure' section, below, the applicant has failed to specify the estimated costs or funding arrangements for:

- The proposed road infrastructure (including the Arterial, Collector and Local road networks, the major four bridges and massive earth embankments, the intersection upgrades, including New Illawarra Road/Bangor Bypass grade separation or the provision of drainage works associated purely with the road network)
- A potable water system
- A new sewerage system or the amplification of the existing trunk mains
- A trunk mains system, and cabling and conduits required to service all of the residential allotments or the employment lands
- Provision of mains telecommunications infrastructure, and
- A supply of natural gas to the site.

Access

The proposal fails to demonstrate potential for cost effective public transport

The remoteness and fragmented residential precincts at West Menai are not conducive to supporting the use of public transport for local and or connecting journeys. Previous experience has shown a very low affinity for the use of buses in similar areas in the shire where a low density catchment, convenience, the road network and distance to key activity centres support travel by private motor vehicle. The West Menai proposal lacks detail and information as to how it intends to fund bus priority measures to improve accessibility and accommodate the increased number of bus services forecast. Concern extends to the performance of key intersections along the Bangor Bypass/ River Rd/ Linden Street route where the competing demands between motor vehicles and buses will need to be accommodated. Further, it is not clear as to how increased bus services from West Menai will be accommodated at Sutherland railway station.

Housing Diversity

The proposal does not address housing diversity criteria in any detailed or meaningful way.

While there is currently no target for aged, disabled or affordable housing, the Draft South Subregional Strategy stresses the importance of considering the provision of these housing forms. Council currently requires, through Sutherland Shire Development Control Plan 2006 (SSDCP2006), a provision of 20% adaptable housing for all residential developments excluding dwelling houses and dual occupancies. The proposal highlights that a need for aged and disabled housing is required, however only states that providing this development **may** be required. No detail is provided in the Submission as to how it will to meet this challenge.

Employment Lands

The proposal fails to demonstrate how the development will make a significant positive contribution to meeting the subregional employment targets, or to improving employment self-containment rates.

It is considered that the applicant's claim that the 71 ha of proposed employment lands at Heathcote Ridge can deliver 10,000 – 15,000 new jobs is highly speculative and unrealistic. According to the applicants own report, achieving either of these figures requires the following to be in place on the site:

- a business park (covering 14 or 26 net developable ha, respectively)
- a university campus, research centre or industries/uses associated with ANSTO
- the substantially improvement of car and public transport access from the site to residential areas and other business centres within Sydney
- market conditions exist that make Heathcote Ridge competitive compared to other South Sydney locations
- no large-scale business parks have developed between Sydney CBD and Sutherland by 2031 that would compete directly with Heathcote Ridge.

The ability to achieve any of these outcomes depends primarily on very favourable market and political conditions. These are factors outside the control of the developer. Therefore, achieving any one of these outcomes will be a significant achievement. Achieving all of them in the proposed timeframe is highly unrealistic. The applicant's claims are therefore undemonstrated. (Further details are provided in section 2b, below.)

Avoidance of risk

The proposal fails to ability demonstrate it can provide a safe bushfire evacuation route

As outlined in section 'Bushfire' section of this submission, a series of three bridges, as well as the main Bangor Bypass link between Heathcote and New Illawarra roads must be provided to achieve this safer means of egress in the event of bushfire. However, the complexity of the economic conditions that must be satisfied to ensure the provision and maintenance of this and other infrastructure required to protect future residents of Heathcote Ridge from bushfire impact are such that the applicant's assurances are considered unsupported. The theoretical ability to provide such access is not sufficient grounds for stating that the development is suitable on bushfire grounds.

The proposal fails to avoid risks associated with land use conflicts originating from existing and future uses at the adjacent Liverpool Military Area (Holsworthy) Heathcote Road and the Lucas Heights Resource Recovery Centre.

The inability to undertake bushfire hazard reduction works on Defence lands directly to the west of the Heathcote Ridge because of the presence of unexploded ordinance greatly increases the intensity of bushfire impacts on the proposed employment lands in particular, as well as on the entire development. Other risks associated with Holsworthy are from high intensity impulse noise and vibration in relation to munitions testing and activities associated with by the resident Black Hawk helicopter squadron. The proposal also fails to mitigate air quality risks associated with the additional volume of traffic the development will generate on

Heathcote Road and the proposed east-west road link, or odour nuisance and risk associated with the Lucas Heights Recovery Park. (See section 5, below).

Environmental Protection

The proposal will have an unacceptable impact on a range of threatened flora and fauna, and ecological communities protected under State and Federal legislation.

As detailed in section 8 of this submission, under this proposal, unacceptable impacts on a range of threatened flora and fauna, and ecological communities protected under State and Federal legislation arise from direct removal of species and habitats and indirect impacts, such as fragmentation, isolation, and edge effects. Overall, it is considered that the balance between loss of threatened species to the development and their conservation on site is not acceptable. It is considered that the proposal will contribute to the loss of these species from the locality and potentially result in their extinction from the region.

The proposal will have an unacceptable impact on groundwater dependent ecosystems.

The proposal will result in impacts to the majority of the endangered Coastal Upland Swamp community ecosystem. The remaining ecosystems are all in close proximity to proposed development (mostly within 40m) and will experience significant edge effects and changes to local hydrology.

The proposal does not demonstrate how it will protect areas of Aboriginal cultural heritage value (as agreed by DEC).

As outlined in detail in the 'Heritage' section of this submission, the proposed development will result in dense residential neighbourhoods sitting very close to significant shelter and art sites. The most likely threat to Aboriginal heritage from future subdivision within the subject lands is related indirect impacts from increased visitation, which is to an extent inevitable from the adjacent residential subdivisions. Yet, the Submission fails to adequately address how proper conservation management of the sites be achieved over the next 100 years and beyond. Given that this land is owned and being developed by the GLALC, Sutherland Shire Council expected that this development concept would set a new standard for the standard of protection and respect given to Aboriginal cultural heritage. However, the submission falls well short of this expectation.

Quality and Equity of Services

Given the area's relative isolation from other urban centres and the difficulties in providing cost effective public transport to the site, it is considered that the development could create a pocket of social disadvantage. As outlined in the 'Infrastructure' section of this report, the applicant has not provided costing for the provision of required infrastructure and essential services. Nor has the applicant provided evidence that it will be able to fund any of the required services for the development.

Land Use and Planning Controls

2. Justification for the location, extent and mix of proposed land uses

On the basis that the land uses and the scale of development proposed at Heathcote Ridge are inconsistent with the known constraints of the site, it is Council's view that the applicant's justification for the location, extent and mix of the proposed uses is fundamentally flawed.

The area's significant constraints are well researched and documented, and have been acknowledged in State strategic planning instruments, as well as in public documents prepared by Sutherland Shire Council.

These constraints are acknowledged in the Draft South Subregional Strategy (2007), which identifies West Menai as a 'Potential Employment Area to be Investigated'. The Strategy states:

"...much of [West Menai] has environmental significance and its development could impact significantly on adjoining land and be impacted itself from activity on adjoining land such as bushfire and emissions from the waste deposit. The area therefore has limited potential for urban development but could be considered for industrial activities, provided development reflects the environmental significance and any Native Title implications of the site and its surroundings, and the requirements of the Department of Defence."

It is Council's view that nothing in the State Significant Site study contradicts this assessment.

Location

Good urban planning requires the analysis of constraints to development in order to inform future development outcomes. This approach allows optimal outcomes to be arrived at because risk areas and areas of environmental significance are known at the outset. Future development patterns are then located to avoid known constraints and minimise impacts.

At face value, the applicant's submission appears to follow this methodology. However, the approach taken is fundamentally flawed. The applicant's analysis fails to recognise the ecological value of ridge top communities, yet Council's ecological analysis shows that ridge tops (i.e., the only area proposed for development) are where the most important species and ecological communities are located within the site. In comparison, the ecological communities that exist in the gullies are well represented in other conservation areas and are relatively common. In essence, the proposal has allocated undevelopable land to conservation, rather than allocating the conservation areas to those parts of the site of greatest ecological value.

The analysis of bushfire risk is also flawed because it is based on the assumption that the site will be used residentially, rather than fitting the future land use to the environmental capacity of the land. In fact, the constraints analysis plan (Section 15 page 15) fails to show the direction of bushfire attack as a constraint. This approach leads to a design that attempts to mitigate risk through asset protection zones. However, the fundamental question avoided through this approach is whether residential neighbourhoods are appropriate at all given the extent of risk to life and property from bushfire.

Planning for Bushfire Protection 2006 specifically states, "no development in a bush fire prone area can be guaranteed to be entirely safe from bush fires". Therefore, the

establishment of asset protection zones does not assure that there will be no loss of life or property from bushfire attack. Even with successfully managed asset protection zones, properties in both the 'enterprise corridor' and the residential neighbourhoods will be subject to ember attack in bushfire events. Therefore, the potential for loss of life and property to bushfire remains a reality. The objective of Direction G20 – *Planning for Bushfire Protection* is to “protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas”. Clearly sensible broad strategic planning would suggest the bushfire risks at West Menai are best avoided.

Forcing residential land use onto the site leads to a discontinuous urban form because the form follows the topography of the ridge tops, leaving the gullies because they are too steep to develop. Essentially the future urban area would be a series of distinct separate communities located on ridge tops and separated by gullies. While this form may allow for the efficient staging of the development and provide attractive bush outlooks for dwellings, it will make the provision of community facilities, public services and public transport inefficient. While the design attempts to create a central place off Heathcote Road, it is highly likely that each of these places will see themselves as distinct neighbourhood; therefore, each neighbourhood will expect local community services.

For the commercial core to work as a central place it must in fact be centrally located so that access to it is convenient. However, in this case, the discontinuous future urban form creates barriers of distance and topography that will undermine the success of any future centre. The early stages of the development will use the schools, retail centre and services of Menai because these are physically closer and residents will be forced to commute by car through the Menai area. The commercial core will serve its immediate neighbourhood and any residents commuting to towards Liverpool to access public transport, schools and jobs. However, if residents commute towards Heathcote, Sutherland or Bankstown they will find existing centres far more convenient. The result of the urban form proposed is that it cannot be assumed that the new population will support the proposed centre and potential future school. Because this will be a car dependent community without a readily accessible central place, future residents will commute to other localities for shopping, schools and jobs. The proposed urban form also undermines the potential to efficiently service the locality with either community services or public transport. In fact the proposed urban form will only serve to exacerbate car usage, because even neighbour trips for local services or schools will require extensive distances to be covered. Surely this approach to urban planning cannot be seen as a good model for new urban development in 2012.

Because the proposed urban form is essentially a reflection of topography coupled with the maximisation of residential lots from the site, the result is a series of communities where the shape of the neighbourhood follows the contours of the ridge. This produces not only a series of smaller communities, but it also results in urban area with a greater portion of lots facing bushland. While this may give attractive outlooks from dwellings, it exacerbates the extent of bushfire protection needed. In fact the proposal creates over 40 km of interface between bush and development. This is an inefficient urban form because it spreads the potential for greater risk to more properties. A consolidated circular form would be the optimal urban form in a bushfire risk area because it would have a far more efficient ratio of edge to core. In fact Direction G20 – *Planning for Bushfire Protection*, 'Planning Principles for Rezoning Land for residential Purposes in Bush Fire Prone Areas', specifically states at point (e) “minimise the perimeter of the area of land interfacing the hazard which may be

developed". The proposed concept does the very opposite of this Direction and therefore unacceptably exacerbates risk to life and property.

Extent

The proponent's studies present a very conservative indication of what could be expected to be developed. If the developer were seeking to maximise returns, which is a reasonable market assumption, the numbers of dwellings and employment floor space could be significantly increased under the proposed zoning plan and development controls.

For example, the proposed zoning plan allows a variety of uses in the B6 Enterprise corridor zone (71 Ha) – business, retail, and industrial. The draft instrument allows this zone to be developed at a FSR of 1:1 with a height of 18m (4-5 storeys). This could potentially generate a maximum of 710,000sq.m. of floor space. Whilst this floor space may never be fully achieved the potential is there. However, the employment study is based on lower floor space ratios (e.g., industrial at 0.4:1, retail at 0.5:1) than the draft instrument. Therefore, the conclusions reached in the employment study, being that the amount of employment floor space generated by the development is supportable, is not substantiated.

Similarly, the retail study focuses on a local centre of approximately 11,789 sqm of floor space, yet the B6 zoning allows substantially more retail floor space along Heathcote Road. Such additional retail floor space will exceed the needs of the local resident and worker population and has the potential to be a major regional retail attractor in its own right.

Likewise, the land use structure planning report states that the area to be zoned for residential purposes (199.16Ha) will yield 2725 dwellings. These calculations are based on minimum lot sizes of 170 sqm, 360 sqm and 700 sqm. However, these yields indicate that only 52% of residentially zoned land will be developable as actual lots. The assumption that the remainder of the residentially zone land is required for roads and other ancillary uses is more than generous, and it is likely that the dwelling yields from the proposal will be significantly higher. The dwelling yields will also be further increased by the reduced minimum lots sizes permitted by the Clause 14(4) of the draft LEP instrument - despite the lot size map, this clause allows lots down to 200sq.m. (detached dwelling) and 125sq.m. (semi-detached dwelling).

The studies presented with the proposal do not use the same parameters, therefore it is difficult to validate their conclusions.

Land use mix

Employment

The use of employment land as a buffer between the residential neighbourhoods and the primary bushfire front results in almost the entire length of Heathcote Road being zoned B6 Enterprise Corridor. This equates to 71.66 hectares of employment land with a floor space ratio of 1:1 - in effect 716,600 square metres of floor space. Should this quantum of floor space be taken up Heathcote road would essentially be a strip shopping/business precinct from end to end. Its role in the retail and employment hierarchy would be so significant that it would undermine existing centres in both Sutherland Shire and Liverpool City Local Government Areas. As this area cannot be linked by a mass transport system, the result of the proposal proceeding would be a disconnected car dominated precinct. This is completely

contrary to the broad strategic planning initiatives upon which the State's 'Metropolitan Plan for Sydney' is built. The Metropolitan Plan focuses on the city being a "city of cities" recognising the efficiency and sustainability of directing growth to major centres on the rail network, accessible to abroad workforce. Specifically two of the aims of the Metropolitan strategy are to strengthen Sydney's city of cities structure by:

- Promoting the regional cities to underpin sustainable growth across Sydney
- Achieving a compact, connected, multi-centered and increasingly networked city structure

It also specifically targets the growth of Liverpool City so that it achieves an employment capacity of 31,000 jobs by 2036. The proposal to provide 71.66 hectares of employment land at Heathcote Ridge, which has an estimated employment potential of 10,000 to 15,000 jobs, is entirely inconsistent with the Metropolitan Plan and would undermine the potential employment capacity of Liverpool City.

The potential employment capacity must be tempered with the fact that this is a bushfire risk area.

Residential

Given the relative isolation of the Heathcote Ridge locality and the environmental significance of the ecology, the density of the residential component is not justified. The 'Metropolitan Strategy' makes it clear that the location of new housing is a valuable opportunity to address issues such as congestion, health, urban renewal, social and economic participation, public amenity and choice. A key action of the Plan is to locate 80% of all new housing within walking distance of centres with good public transport (Action B1.3) The 'Metropolitan Strategy' states that "*this will reduce car dependence and make walking, cycling and public transport more viable to more residents. Compact cities with pedestrian friendly streets, good access to public transport and a wide variety of services and amenities tend to be more accessible, environmentally efficient and cost effective. Areas with high accessibility and amenity are better suited for higher density living*". The Heathcote Ridge concept is the opposite of what the Metropolitan Strategy sets as the goal for new housing. Rather than promoting a compact urban form with good access to public transport, it produces a series of isolated car dependent communities on the city's fringe, which cannot be efficiently serviced.

The need for a mix of housing forms in Sutherland Shire is acknowledged and supported by Council. Sutherland Shire Council has carried out extensive demographic analysis and community consultation to plan for its future housing needs. It has adopted a well received Ageing Strategy to ensure it meets the housing needs of its ageing population, which is the most significant challenge facing the area. Council is responding through changing its planning framework to ensure there is the potential for more variety in housing forms, and in particular more smaller, accessible and adaptable housing types in across the Shire. The intent is to ensure older residents can move to more appropriate housing in within their community as their needs change. Localities that are within walking distance to centres or neighbourhoods where walking is easy and regular bus services are provided are the most appropriate locations for housing to meet the needs of older residents. Sutherland Shire Council is also trying to meet the needs of young couples, people starting and single person

households. These groups favour well designed smaller dwelling with access to entertainment and lifestyle features, coupled with good access to city jobs.

The Heathcote Ridge proposal creates approximately 2705 dwellings of which 997 will be medium density, multi-dwelling housing. This is 36% of total dwellings. In addition, the “traditional housing” has a minimum lot size of 360 m sq, which may be reduce to 200 m sq for a dwelling house and 125 m sq for a semi-detached house by proposed clause 14(4) of the draft instrument. It should be noted that the existing minimum lot size under Sutherland Shire Local Environmental Plan 2006 is 550 sq m. In comparison to existing neighbourhoods, even the “traditional housing lots” will read as medium density lots. “Traditional lots” make up a further 36% of total dwellings.

The question that needs to be answered is whether this quantum of small dwellings is required, and if so what type of future community will it be? Given that 66% of the dwellings will be small by southern Sydney standards and the fact that locality is isolated, without public transport, and subject to risks and amenity impacts associated with bushfire hazard, noise from the Holsworthy Military Base (noise from the explosion of ordinances and regular disturbance from the Black Hawk helicopter base) and odour from the Lucas Height Resource Recovery Park, the future housing will appeal to enter level house buyers. The result may very well be a community of disadvantaged households. The need to address geographic social inequity is given particular importance in the ‘Metropolitan Strategy’. The Strategy states that “*equity, liveability and social inclusion will be integrated into subregional planning to ensure:*

- *social cohesion of communities is enhanced*
- *new communities are integrated with, and connected to, existing local communities and local economic and social opportunities*
- *connections to transport, employment and social opportunities for existing disadvantaged communities are improved.*

The Heathcote Ridge proposal is inconsistent with the objectives of equity, liveability and social inclusion. It will potentially result a community with high needs in an isolated, poorly serviced locality cut off by distance from existing local communities, and local economic and social opportunities.

The sheer density of the Heathcote Ridge proposal is at odds with the environmental and scenic quality of the locality. The density of the urban form proposed coupled with the need to create and maintain asset protection zones, will necessitate the removal of virtually all the existing vegetation from the area to be developed. The proposed urban form would see a stark demarcation between bushland and urban area. The ridge top location of the new communities, the construction of Arterial and Collector Road networks and the wholesale clearing of native vegetation will result in significant visual impacts. A far better solution would be to integrate the urban form with elements of remnant vegetation so that the area retained some of its local landscape context. This could be achieved in ways that create adequate buffers for bushfire with discontinuous canopy cover. However, the sheer density of the planned development does not allow a more sensitive landscape concept to be achieved.

3. Demonstration of sufficient demand for proposed employment land

The proposed zoning of Heathcote Ridge's employment lands for B6 conflicts with the State's definition of and expectations for their use. The proposal also fails to demonstrate sufficient demand for the proposed 71-hectare employment area, or how its employment forecast projections of 10,000 to 15,000 for the site can be achieved.

As defined by the NSW Government, employment lands are those lands "...zoned for industrial or similar purposes in planning instruments. They are generally lower density employment areas containing concentrations of businesses involved in: manufacturing; transforming and warehousing of goods; service and repair trades and industries; integrated enterprises with a mix of administration, production, warehousing, research and development; and urban services and utilities." (ELDP 2010 Overview Report)

Against this definition, the proposed uses of the Heathcote Ridge site do not fit the description of 'employment lands'. Indeed, the GLALC proposal to zone lands intended primarily for industrial uses to allow a broad range of uses, including business, office, retail, seniors housing, and shop-top housing as part of a mixed-use development, in addition to light industrial, conflicts with the State's aim to protect the viability of the manufacturing and associated sectors from competing non-industrial land uses on the urban fringe.

Neither does the proposal sufficiently demonstrate demand for the proposed addition of 71 hectares of new 'employment land' in the subregion. The 'Economic and Social Benefits Study' (Final Report 2009) prepared for the proponent states, "The higher proportion of [employment land] supply relative to the quantity of jobs suggests that the study area [South Sydney] may already have capacity to accommodate more jobs within existing employment lands, before additional employment lands are required" (pg 38). This assessment was omitted from the Urbis 2011 report, which forms part of the applicant's submission, though it is still consistent with the findings of the ELDP 2010 report.

The proposal represents a 17% increase in land zoned for 'employment' in Sutherland Shire at a time when the Shire is experiencing a loss of industrial, warehousing and related jobs as these employment opportunities disappear or move to cheaper and better connected sites in Sydney's West. Currently, there is a 16% vacancy rate for zoned employment land in the Sydney South, South-West, West Central, and Illawarra Subregions (the area included in the proponents' study), with Liverpool LGA having the largest supply of vacant employment i.e., 297 hectares or approximately 30% of its zoned employment land. Unlike the proposed employment lands at Heathcote Ridge, the majority the existing vacant employment lands in the study area are located in far closer proximity to regional and national transport infrastructure.

Within the Sydney South Subregion, there are currently 155 hectares of undeveloped land zoned for employment. This represents 14% of all zoned employment lands with the subregion. (ELDP201 Report 2 South Subregion). Southwest Sydney has 581 hectares of undeveloped Employment Lands, or 26% of subregion's total stocks. According to the ELDP 2010, the next step is to address the constraints to the development of zoned but undeveloped employment lands, rather than add new land.

In addition to an oversupply of developed and undeveloped employment land in Sydney's South/Southwest, there is also a glut of land proposed to be added to the existing employment land stocks. Sites identified as Potential Future Employment Lands in the study

area include 120 hectares at Hoxton Park Aerodrome (Liverpool LGA), strategically located adjacent to the M7, and 1325 hectares (spread between four different locations) within Wollongong.

Demand for large sites is not a compelling argument for the Heathcote Ridge proposal. In the greater Sydney area, there are currently 84 undeveloped employment lands larger than 10 hectares in size, yet they account for 62% of all undeveloped employment land or 2759 hectares. At the LGA level, Sutherland Shire's two key large sites located in the relatively well-connected and well serviced Taren Point employment area – the Johnson & Johnson/Pfizer site (11.3 hectares) and the Terrace Towers site (4.4 hectares) - have lain vacant for the last five years.

The proponent assumes an employment take up rate of 2 – 3.5 ha/year. This is predicated on the unlikely occurrence of the Heathcote Ridge employment lands accounting for 62% of Sydney South's entire take up of industrial land capacity each year. Given the current low take up rates on better-connected brown and greenfield industrial lands in surrounding LGAs, the proponent's prediction is unlikely to eventuate. It is more likely that the premature roll out of such a large bank of additional employment land for which there is no demonstrable demand will simply grow the pool of vacant or underutilised serviced industrial land in the region.

Apart from the questions over the demand for these lands for the proposed employment purposes, Council takes issue with the proponent's claims the site can make a significant positive contribution to meeting the subregion's employment capacity targets of 35,000 (or Sutherland LGA's target of 8,000), as identified in the draft Sydney South Subregional Strategy, or improve regional employment self-containment rates. Council strongly disputes these claims on the basis that the proponent's calculations of the site's ability to deliver 10-15,000 net new jobs do not accurately reflect the site's significant known constraints and risks – as described elsewhere in this submission.

Sutherland Shire Council has had a long-term interest in the urban development potential of West Menai and has undertaken significant study of the subject area as part of its preparation for what ultimately became Sutherland Shire LEP (2006) in which zoning of West Menai was deferred. These investigations identified considerable development constraints (e.g., bushfire risk, endangered ecological communities, poor access), described in detail elsewhere in this submission. Based on these findings, Council concludes that 70% of the West Menai site was undevelopable and where development was possible, the best and highest use of the site is for low density employment uses (e.g., a technology park or industrial uses that require isolation from urban development) in a dispersed in a campus like setting. Council's assessment makes a virtue of the site's relative isolation from residential development, its poor connectivity to urban development and the heightened public safety risk associated with the potential evacuation of thousands of workers in the event of bushfire.

Yet, according to the 2011 Urbis report, which forms part of the SSS Study submission, the 10,000 – 15,000 job creation estimates are based on two 'upside scenarios'. Both of these scenarios rely on the development of a business park 'anchor' (incorporating a net developable area of 14 and 26 hectares, respectively) and the fulfilment of the following key requirements:

- A catalyst use for the site is in place that has attracted other uses (e.g., a university campus, a research centre or other industries with links to ANSTO)
- Accessibility (by both car and public transport) from the site to residential areas within Sutherland Shire and other business centres in Sydney has substantially improved
- Favourable market conditions exist that make Heathcote Ridge competitive compared to other locations in the Southern Sydney region
- No large-scale business parks have been developed between Sydney CBD and Sutherland Shire by 2031 that would compete directly with Heathcote Ridge.

These scenarios reflect optimistic desktop planning rather than the substantial body of evidence that strongly indicate that Heathcote Ridge cannot safely or sustainably deliver anything close to the proponent's high employment yield vision. Council considers the likelihood that any one of these requirements can be satisfied as very low and refutes the proponent's assumption that all these conditions can or will be met in relation to the site. For example, ANSTO is one of the subregion's chief employers and economic catalysts, and has sufficient land within and adjacent to its present facilities to accommodate any expansion to the existing business park or for the creation of an education campus, should it choose to. In addition, the provision of premium office space requires a location with mass transport links appropriate to the projected employee base and other premium amenities that Heathcote Ridge simply cannot deliver in the medium to long term.

According to the Submission's 'Economic Assessment of Appropriate Retail Floorspace Provision' report, the timeframe for realising the full occupancy of the proposed employment space at Heathcote Ridge will be extensive. The experience of areas such as Norwest indicates it can take 15 to 20 years for them to develop to their full capacity even when, like Norwest, they are well located on the metropolitan road network. As the main income source for the on-going management of the entire development's APZs and the conservation area depends on the success of the employment zone, the evidence suggests the applicant's vision is not achievable.

In contrast, the Building Employment Opportunities in Sydney's South (2009) study estimates that under appropriate zoning (as proposed in Sutherland Shire's draft Standard Instrument LEP), approximately 15 hectares of vacant and underutilised industrial lands in the Taren Point/Caringbah could be developed to provide upwards of 10,000 new white collar jobs for Sutherland Shire and the subregion. This would make a substantial contribution towards addressing the shortage of high-skill employment opportunities within the LGA and subregion. In contrast, the 67-hectare ANSTO site – which is similar in size to the proposed employment land in West Menai and subject to many of the same constraints – currently, supports a workforce of approximately 1100. It is Council's view that the ANSTO site provides a more accurate model for the kind of employment density the West Menai site could sustainably and safely support than any of the scenarios put forward by the proponent.

Conclusion

It is Council's view that given the sites' environmental constraints and bushfire risk, the best use of the proposed West Menai 'employment lands' is for a low-density, campus style development to support high tech facility or industrial uses that profit from their distance to urban developments. This is consistent with the State's assessment of the site's capacity, as articulated in the draft South Subregional Strategy and its employment land demand forecasts, and other sources including reports submitted as part of the SSS study.

4. Consistency with Standard Instrument Local Environmental Plan

Section 19 of the SSS submission contains the draft instrument and maps. The draft instrument attempts to reflect the Land Use Structure Plan contained in Section 15, however, there are fundamental flaws in the drafting of the proposed instrument such that the outcomes shown in the Structure Plan and referred to throughout the submission cannot be assured.

B6 Enterprise

The Submission claims that the proposal to provide 71 hectares of employment land will generate 10,000 to 15,000 jobs. The mix on employment types is touted to be characterised by health and education, high technology businesses with a higher component of office space such as laboratories, storage and clean manufacturing. The entire employment area is zoned B6 Enterprise Corridor in the draft instrument. The objectives of this zone are to:

- promote businesses along main roads and to encourage a mix of compatible uses.
- provide a range of employment uses (including business, office, retail and light industrial uses).
- maintain the economic strength of centres by limiting retailing activity.

Permissible in the zone are food and drink premises, markets, recreational premises (indoor), registered clubs, and retail premises. By definition retail premises means *“a building or place used for the purpose of selling items by retail, or hiring or displaying items for the purpose of selling them or hiring them out, whether the items are goods or materials (or whether also sold by wholesale), and includes any of the following: bulky goods premises, cellar door premises, food and drink premises, garden centres, hardware and building supplies, kiosks, landscaping material supplies, markets, plant nurseries, roadside stalls, rural supplies, shops, timber yards, vehicle sales or hire premises, but does not include highway service centres, service stations, industrial retail outlets or restricted premises”*.

Despite the third objective, there is no provision in the draft instrument that even attempts to limit the volume or type of retail activity. With such broad permissibility the future character of the strip of land along Heathcote Road cannot be assured. The Submission’s claims that it will be an office/education/technology precinct are in no way reflected in the draft instrument.

The main source of enquires for large, non-residential development sites in Sutherland Shire comes from American and European large box retailers looking to enter the domestic market. Such retail uses will be attracted to Heathcote Road because they are destination retail attractions in their own right. On Heathcote Road, such retailers would gain high visibility on large sites, and relative proximity to customers travelling by car from southern and south western Sydney, as well as the Illawarra. Fast food and traditional bulky goods retailers would also find the traffic exposure desirable and would be attracted to the destination retailers. The end result could well be an American style, car oriented retail strip typical of many highways across America. This future urban form is inconsistent with the very basis of the Metropolitan Strategy.

While assurances will be made that the zone objectives will stop this occurring, the test imposed by the Land and Environment Court is that land use decisions are made when the zone is applied to the land. In applying the zone, the consent authority must be satisfied that

the land has the capacity to support the permissible uses. The case in favour of such uses will be strengthened once the office/education/technology fails to materialise.

It is also significant that the only form of industry proposed to be permissible in the B6 Zone is light industry. This outcome again seems to be the product of beginning with an assumption that the bulk of the land will be used for residential development. However, it may be that the land is best suited to general industrial use because of its relative isolation.

The B6 zone also allows seniors housing and childcare centres. Both these land uses accommodate vulnerable people who cannot evacuate in a bushfire event. Section 117 Direction G19 and Planning for Bushfire Protection both make it clear that the proposed asset protection zone along Heathcote Road does not eliminate risk to life and property, even if it is well maintained. The vulnerable groups will have to be evacuated in times of extreme risk. Also parents and carers will rush to the fire front to try and assure the safety of family at a time when the best strategy to save life is to exclude people from the area. Given that emergency services are stretched in bushfire events, it is entirely inappropriate to permit seniors housing and childcare centres in the B6 zone.

R1 General Residential

The proposed residential zone also fails to deliver of the structure plan and the assurances made within the submission supporting the proposal. The draft instrument zones the entire residential area R1 General Residential. The R1 zone is a residential zone for broad application. It is proposed to permit childcare centres, food and drink premises, markets, multi-dwelling housing, residential flat buildings, semi-detached housing and shop top housing. The objectives themselves are very broad and applicable to a standard residential suburb. However, the proposed urban area is not a standard suburb. It is a series of communities surrounded by conservation land and subject to high level of bushfire threat. The importance of local ecology and the bushfire risk needs to be reflected in both the objectives of the zone and the types of development permissible.

The Structure Plan identifies “bush front environmental housing” as the asset protection zone to the residential communities. Yet this land is proposed to be zoned R1 and therefore childcare centres, food and drink premises, multi-dwelling housing, residential flat buildings, semi-detached housing are all permissible. In addition seniors housing is also permissible because it is not listed as prohibited use and is therefore permissible as “any other development not referred to in sub-clause (2) or (4)”. Despite the submission claiming that development along the bush front lots will be kept to single dwellings, there is nothing in the draft instrument that assures this outcome. Even the minimum allotment sizes are undermined by Clause 14 (4). It is unacceptable to site dense development at the bushfire interface because it increases the number of people and number of dwellings at greatest risk.

As explained above it is unacceptable to permit vulnerable development, such as child care centres and seniors housing, to be located adjacent to a bushfire risk. Such uses are only appropriate where the site meets the test of being a place where evacuation is not required in the event of bushfire.

While it can be argued that each development application is assessed on merit, and can therefore be refused on the basis of bushfire risk, it is far better to provide clear permissibility up front. Sutherland Shire Council has found that development application processing can

be streamlined, and hostility taken out of the process, if applicants are not misled into thinking a use will be approved because it is permissible. Rather than applying a R1 General Industrial zone, if the Department finds the proposal acceptable, fine grain zoning is needed.

The analysis in the Submission and the Structure Plan concludes that Precinct 8 is unsuitable for residential purposes and is shown as “special uses”, yet the draft instrument zones this as R1 General Residential. It is understood by Council that this zone has been chosen because the Standard Instrument does not contain a dedicated special use zone. However, this limitation within the drafting of the standard instrument does not justify the application of a broad general residential zone permitting the full range of residential densities in addition to vulnerable uses. To apply a zone the authority must be satisfied that the land is suitable for the permissible land uses. In this case the very opposite is true – residential use is found to be unsuitable so it proposed to be zoned R1 General Residential. Given the constraints applying to this land, the extent of bushfire hazard, the isolated position of the land and the difficulty in achieving an adequate asset protection zone, this land is better allocated to the conservation area.

E2 Environmental Conservation

The areas of the Heathcote Ridge site which are identified for conservation have been zoned E2 in the draft instrument that forms part of the Submission. The mandatory objectives of this zone are:

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.

To this the Submission adds the following additional objective:

- To allow recreational uses compatible with the biodiversity values of the area.

This land is most sensibly zoned E2 Environmental Conservation under the Standard Instrument because it best reflects the environmental significance of the land and the constraints to development. However, the Department of Planning and Infrastructure on 30 April 2009 issued LEP Practice Note: Environmental Protection Zones which states:

“The range of uses proposed to be permitted in the E zones is a consideration for council in consultation with the Department of Planning. In determining uses, council should be aware that the range of uses should not be drawn too restrictively as they may, depending on circumstances, invoke the Land Acquisition (Just Terms Compensation) Act 1991 and the need for the Minister to designate a relevant acquiring authority.

Unless a relevant acquisition authority has been nominated and that authority has agreed to the proposed acquisition, council should ensure, wherever possible, that the range of proposed land uses assists in retaining the land in private ownership.”

In the proposed instrument, the permissible uses are indeed restrictive. Kiosks would appear to be the only permissible use with an economic value. Given that the proposed E2 zone has an area of approximately 515 hectares, a kiosk is unlikely to prove an economic use of land.

A broader range of uses are not proposed due to the ecological significance of the conservation area.

Given the limited development potential of the E2 Zone, Council raises strong concern that the application of the proposed zone may ultimately trigger a requirement to purchase the land under the “hardship” provisions of the Land Acquisition (Just Terms Compensation) Act 1991. The trigger for hardship is particularly relevant here because the overall development proposal is ambitious and involves infrastructure construction by way of roads and bridges suggested to cost in the order of \$100M. (Council considers this to be an underestimate.) It also requires the successful development of 71 hectares of employment land to fund the infrastructure and the maintenance of asset protection zones and the management of the conservation area itself. This risk heightens the potential for failure and hence the trigger for hardship.

Sutherland Shire Council has no financial capacity to ultimately acquire the conservation land. As such if the Minister for Planning and Infrastructure ultimately supports the request for the site to be declared of State Significance and accepts an E2 zone, Sutherland Shire Council strongly requests that the Minister be the nominated acquisition authority for the land.

B2 Local Centre

A glaring omission of the draft instrument that forms part of the submission is that it fails to include a land use table for the B2 Local Centre zone, despite this being shown on the land Zoning Map in Section 19. This omission makes it impossible for Sutherland Shire Council to form a position on the appropriateness of the zone. Council cannot gauge the likely future residential population within the centre or whether vulnerable groups are being exposed to bushfire risk. The lack of inclusion of this essential detail is of such importance that any gazettal based upon this exhibition would be considered invalid.

RE1 Public Recreation

While the Structure Plan identifies areas for future open space, the zoning plan forming part of the submission does not include any land zoned RE1 Public Recreation. While open space within communities could be managed on a community title basis, the new community will create a strong demand for more regional playing fields. Sutherland Shire has a very high participation rates in organised sports to the extent that existing facilities are used beyond their capacity, leading to excessive maintenance costs. The addition of a further 2700 dwellings requires a significant increase in sporting capacity. No room is available to provide more playing fields in the established urban areas. As such areas must be set aside for public sporting fields as part of the development.

5. Proposed zoning does not complement surrounding existing land uses

The proposal to zone the majority of the Heathcote Ridge site for residential uses conflicts with known risks associated with existing uses on adjoining lands, e.g., Liverpool Military Area, Lucas Heights Resource Recovery Park and Heathcote Road. It is considered that the proposal does not contain adequately measures to protect future residents and workers from risks against bushfire, odour, noise and vibrations originating on these lands.

Liverpool Military Area

Core operational activities at the Liverpool Military Area (aka LMA or Holsworthy) increase the bushfire risk to the proposed Heathcote Ridge development because, due to the danger of unexploded ordinance, fire fighting cannot take place on these lands. Even with the proposed asset protection zone, life and property throughout the Heathcote Ridge development will still be at risk. From a broad strategic planning perspective, it seems illogical and irresponsible to place 10,000 to 15,000 workers in the direct path of an uncontrollable fire front. Evacuation on this scale in an extreme bushfire event cannot be a desirable planning outcome. (This is addressed in greater detail in the 'Bushfire' section, below.)

In its consultations with the applicant, Defence has raised concerns about noise associated with the operation of the Army Black Hawk helicopter squadron out of the Liverpool Military Area (aka LMA or Holsworthy) as a potential issue for future businesses and residents. This is consistent with Council's written advice from Defence between 2003 and 2006, articulated as part of consultations undertaken for the preparation of what became Sutherland Shire LEP 2006, under which the zoning of the West Menai site was ultimately 'deferred'. In their submissions to Council, Defence counsels that these lands may be impacted by aircraft noise, and impulse noise and vibration from training activities. The Defence submissions state:

"As a result of military activities involving artillery and aircraft, LMA is subject to various levels of noise during the day, night, during weekends and on weekends. This noise is the source of complaint from resident surrounding LMA. Defence has adjusted its operations as best it can to reduce its impact on surrounding land users yet still receives complaint regarding the noise. It is reasonable for Defence to advocate that any increase in urban development in proximity to the source of the noise will result in diminished amenity and a likely increase complaint. It is the opinion of Defence that the Environmental Protection (Bushland) [zone] offers greater protection to future environmental amenity...and is less threatening to the continued operation of Military land use...Defence will maintain opposition to any future rezoning application that proposes increased residential development on lands surrounding Defence land."

The Existing Noise Environment Assessment (submitted as part of the GLALC SSS study) estimates that noise levels from the Black Hawk flights exceed the indoor sound level (laMAX) for sleeping areas by 18dBA, and that the use of conventional building elements and 6mm glass may be sufficient to achieve this reduction. Council questions this assessment. With respect to impulse noise and vibration associated with munitions operation, no criteria exist against which their impacts on local amenity can be assessed. In the absence of standards specific to this activity, The State of New South Wales' Office of Environment and Heritage advocate for using ANZECC guidelines for blasting, which stipulate that blasting should generally only be permitted during the hours of 9:00 am to 5:00 pm Monday to Saturday, and not on Sundays or Public Holidays. As Defence has indicated that operations may take place at all times of day throughout the year, this means that future residents and employees at the Heathcote Ridge site will be subject to unpredictable and potentially unacceptable noise and vibration nuisance from operations originating on the Holsworthy base.

Lucas Heights Resource Recovery Park

An Air Quality Impact Assessment Study by PAE Holmes (2009) for AWT for the construction of an alternative waste technology facility at Lucas Heights shows modelled odour contours from the Lucas Heights landfill site encroaching onto the southern residential areas at West Menai. The air quality modelling incorporated NSW EPA odour performance criteria showing the likely extent of odours occurring 99% of the time for the area. Together with predominant SE and SW winds in the area, the data suggests that it is highly likely that odours from the Lucas Heights land fill site will affect sensitive receptors such as southern residential areas in the West Menai locality, with negative impacts on amenity and increased nuisance. Such land use conflicts should be simply avoided.

Heathcote Road

The proposed B6 Enterprise Corridor will be exposed to noise and air pollution generated from approximately 16,300 vehicles per day, which is forecast to grow between 1.3% and 1.7% annually to 2031. Approximately 9% of this traffic is estimated to comprise heavy vehicles. However, this figure may be a significant underestimate, as it is based on modelling that assumes a 40% mode shift of freight to rail - a target unlikely to be met under recent State Government freight infrastructure plans.

Noise monitoring undertaken for the West Menai proposal adjacent to Heathcote Road showed noise levels ranging from 50dBA to 70dBA, noise levels generally unsuitable for many sensitive land uses. However, the allowed uses in the proposed B6 Enterprise Corridor along Heathcote Road include land uses such as childcare centres, educational establishments, community facilities, seniors housing and shop top housing. The Department of Planning's *Noise Guidelines for Development Near Rail Corridors and Roads* limit noise exposure for these types of land uses to between 35dBA and 45dBA.

Under the proposal, the B6 Enterprise zone permits uses that include light industry, landscaping, garden centres, timber yards, hardware and building supplies and passenger transport facilities. As a potential noise buffer, some of these activities may not be of a bulk or scale that will effectively minimise noise intrusion into the residential area. Further, by their very nature / activity, these types of uses are not compatible with the sensitive land uses proposed within the B6 Enterprise Corridor or adjacent residential zone.

The heavy and light freight traffic accessing businesses within the Enterprise Corridor zone using the internal collector road is also likely to affect adjoining residents. Traffic noise and potential for pedestrian and vehicular conflict is likely to diminish the amenity of the area further.

Sensitive uses such as childcare centres, seniors housing and educational facilities within the proposed development are also particularly vulnerable to air quality impacts. The proposal at West Menai has the potential to site these uses within areas of elevated risk, i.e. adjacent to Heathcote Road, proposed internal collector roads, the East-West road link and light industrial sources. To address these issues, conditional development approval has been commonly used as a means to minimise potential impacts. However, in reality, they have been found to be difficult to enforce and manage effectively.

To minimise the potential noise and air pollution impacts between traffic, employment and residential land uses at West Menai, land use buffers should be considered. Buffers are a more effective means of managing air and noise pollution issues because they can not only

complement existing statutory mechanisms but also identifying the relative risks and sensitivities between various land uses.

It is therefore considered that the proposal to zone Heathcote Ridge for residential and employment uses conflicts with rather than complement surrounding land uses.

6. Appropriate detailed planning controls

The Heathcote Ridge locality is characterised by natural bushland setting, remnant forest and heath lands, expansive sandstone outcrops and gullies and riparian corridors making their way to the Georges River. Within this natural bushland setting are a vast array of vegetation communities, Aboriginal places and objects of cultural significance and native wildlife. To create a community with a strong sense of place it is important that the urban form relates to and reflects the character of the landscape. Yet, in planning a future community at Heathcote Ridge, the submission proposes a very dense urban area that is at odds with the natural and heritage qualities of the land.

Lot Size

The density of future development is best reflected in the proposed lot size map that forms part of the draft instrument. The draft instrument includes a Lot Size Map showing “bush front allotments” with a minimum size of 700 sq m. Given that the submission also shows bush front lots as having a 20m asset protection zone in the front yard (essentially making the front garden the “back” yard), this leaves the useable part of the lot with an area of 420 square metres. The small scale of these lots and the need to retain asset protection zones means that natural elements such as trees and elements of the bush will not be able to be accommodated. Rather than the residential neighbourhood sitting comfortably in its natural setting, with landscape elements that support and reflect the natural bushland, instead the proposed residential area will be devoid of natural elements and instead sit in stark contrast to the natural environment. In comparison, Sutherland Shire Council normally requires a minimum of 850 sq metres in localities adjoining bushland. A larger lot allows some existing trees, rocky outcrops and natural elements to be retained because there is sufficient room to site buildings to avoid site features. This will not be the case in the proposed development.

Concern is also raised that the “traditional” housing lots proposed are only 360 sq metres in area. This is an extremely small lot and is better described as medium density rather than traditional housing. These are considered to be very small lots for an isolated fringe urban area that cannot be serviced with efficient public transport. This is not a sensible location for a consolidated housing form.

A 360 sq metre lot, if 14 metres wide, with front and rear setbacks of 6 metres, only has a 13 metre deep area where a dwelling may be sited. Council’s minimum subdivision standard is 550 sq metres and even at this scale, new dwellings appear very dense and little room exists for onsite landscaping.

The density of the proposed urban area is further exacerbated by prescribing an even smaller lot size in the medium density areas. The Lot Size Map sets a minimum lot size of only 170 sq metres in designated medium density areas. Given that Table 2.3.4 allocates 27.93 hectares to medium density housing, this represents a very significant component of the proposed development. The predicted dwelling yields shown in Table 2.3.4 for medium density estimate a future density of 135 dwellings per hectare. While there appears to be

some error in the Submission's dwelling calculation in relation to medium density in this table, if all dwellings were delivered at the minimum lot size, a far greater dwelling yield would result than that being described in the Submission.

Sutherland Shire Council can see no reason why a smaller allotment size is required for the medium density zone. A more sensible approach would be to set a minimum allotment size for multi-dwelling housing. If single dwelling are pursued, the Lot Size Map should show the traditional lot size as the default standard.

Sutherland Shire Council also strongly objects to the proposed inclusion of draft clause 14(4) 'Minimum subdivision lot size'. Subclause (4) effectively undermines the Lot Size Map entirely. It introduces a "despite the map" clause to permit subdivision for dwelling houses on lots of 200 sq metres, with subdivision for semi-detached dwellings and attached dwellings on lots of 125 sq metres. While the Standard Instrument contains a direction allowing exceptions to the Lot Size Map which is recommended for particular classes of development, the proposed subclause simply negates the entire Lot Size Map. The density of the proposed urban area as reflected in the lot size map is considered excessive. The "despite clause" is totally unacceptable. Clause 4.6 of the Standard Instrument, 'Exceptions to Development Standards', is a compulsory clause of all plans and should be the only avenue to vary the minimum subdivision standards set by the Lot Size Map.

Subdivision Certificates

Clause 15 of the draft instrument introduces a provision allowing an accredited certifier to issue subdivision certificates in Heathcote Ridge. Sutherland Shire Council is opposed to private certification in this instance because of the complexity of the future residential estate. Public safety is proposed to be built upon asset protection zones. Maintaining Council as the authority gives consistency that the planned asset protection zones are realised.

Building Height

Sutherland Shire Council raises objection to the proposed 9.5 metre height limit proposed for the "traditional" housing areas. Given that 3 metres is needed for a residential storey, a 9.5 metre height limit will allow three storey single dwellings. This vertical scale when combined with the very small allotment sizes proposed will read as a very dense urban area. This is simply out of context on an isolated part of the urban fringe. It is Council's position that a maximum height of 8.5 metres should apply if the Minister for Planning and Infrastructure supports the proposal.

The Building Height Plan sets an 18 metre height limits for the Heathcote Road Enterprise Corridor and the Local Centre. This height limit allows 4 commercial floors. Alternatively, it would facilitate a 6 storey residential building with 3 metre per floor level. Given that seniors housing and hotel and motel accommodation are permissible in the Enterprise Corridor, and are expected to be permissible along with residential flats in the Local Centre zone, 6-storey development can be expected. Again, this scale and density is considered to be excessive on an isolated section of the urban fringe that cannot be connected to the urban area and which cannot be serviced efficiently with public transport.

Gross floor area

The Floor Space Ratio map that forms part of the proposed instrument shows a maximum floor space ration of 0.7:1 for medium density development and 1:1 for the Enterprise

Corridor and the Local Centre. These rates are a logical outcome of the zone. However, of great concern to Council is the fact that no floor space ratio has been set for any of the residential lots. This is simply unacceptable. The proposed allotment density is already considered to be excessive and if floor space is uncontrolled on these very small lots the urban area will fail to provide any landscaped elements nor have any natural absorption capacity for infiltration. A maximum floor space ratio of 0.45:1 should be set for all single dwellings in line with the rest of Sutherland Shire.

Protection of Heritage

The Aboriginal Heritage Assessment notes that there are 41 recorded Aboriginal heritage sites and 40 newly recorded sites with proximity to potentially developable areas. In addition, Aboriginal people consulted as part of the process have suggested two areas of potential Aboriginal cultural significance.

Nevertheless, while Gandangara Local Aboriginal Land Council is acting as the driving force behind the proposed development, Aboriginal cultural heritage is ignored in the draft instrument seeking to rezone the land for urban purposes. The draft instrument contains no provisions for the protection of heritage items or places of significance. This is despite the fact that Clause 5.10 Heritage Protection is a compulsory part of a Standard Instrument LEP, with heritage items being described in Schedule 5 of the plan.

This outcome is very disappointing. Council and the Sutherland Shire Aboriginal Advisory Committee would reasonably expect that land developed by an Aboriginal owner would place great emphasis on the protection of Aboriginal cultural heritage. Here is an opportunity to set a new standard in best practice for the protection and management of Aboriginal cultural heritage in an urban context. Rather than meet this challenge, the submission pursues a dense urban form (which will make it extremely difficult to protect sites) and completely disregards the protection of heritage within the draft plan.

Lot widths and setbacks

The perimeter lots, according to figure 6 (page 21 of the bushfire report) contain a 30m building envelope with a 20m front setback which forms part of the APZ. This gives a total lot depth of 50m. The Lot size map allocates a minimum lot size of 700m². On lots that meet the minimum lot size only, the result is a lot width of 14 metres.

Studies and interviews with fire-fighters after the 1997 Menai Bushfires identified side boundary setbacks to be an important issue for fire suppression; in assisting in the prevention of house to house spread of fire, and also in facilitating safer access to the rear of dwellings for fire-fighters. (CSIRO report into 1994 Fires at Warringah).

Acting on this finding, Council's current approach, which is contained in SSDCP 2006, establishes a minimum side boundary setback of 1.5 metres in bushfire affected areas. This provides a 3.0m setback between buildings.

Application of such minimum side boundary setback requirements is recommended in this location as well. However, on a 14m wide lot, side boundary setbacks of 1.5m leave only an 11m wide building envelope, which is unlikely to provide for adequate design flexibility for future dwellings.

SSLEP 2006 requires a minimum lot width of 15m for a lot of land in the environmental housing zone. The recommended minimum lot width of 15m, and the minimum lot depth of 50m as fixed by the APZ requirements, gives a minimum lot size requirement of 750m for the bush front allotments. However, even larger lots would allow greater design flexibility in being able to respond to bush fire considerations.

7. Urban design principles

Because the proposed urban form is essentially a reflection of topography coupled with the maximisation of residential lots from the site, the result is a series of communities where the shape of the neighbourhood follows the contours of the ridge. This produces not only a series of smaller communities, but it also results in urban area with a greater portion of lots facing bushland. While this may give attractive outlooks from dwellings, it exacerbates the extent of bushfire protection needed. In fact, the proposal creates over 40 km of interface between bush and development. This is an inefficient urban form because it spreads the potential for greater risk to more properties. A consolidated circular form would be the optimal urban form in a bushfire risk area because it would have a far more efficient ratio of edge to core. In fact Direction G20 – Planning for Bushfire Protection, ‘Planning Principles for Rezoning Land for Residential Purposes’ in bush fire prone areas, specifically states at point (e) “minimise the perimeter of the area of land interfacing the hazard which may be developed”. The proposed concept does the very opposite of this Direction and therefore unacceptably exacerbates risk to life and property.

Biodiversity

It is noted that the Ecological Assessment prepared by Cumberland Ecology (2011) focuses primarily on threatened species and endangered ecological communities in accordance with the Director General’s requirements. Council considers that a broader consideration of biodiversity values should have been required, addressing regional and local significance of the site, beyond those species and communities listed under the Threatened Species Conservation Act. Council made a submission to this effect to the Director General; however, broader biodiversity issues were not included in the finalised list of requirements. Council considers that this is a major deficiency in the assessment process.

The flora and fauna survey methodology undertaken for the assessment is considered appropriate and well executed. Surveys were conducted at appropriate seasons/times and at appropriate densities/effort. The provision of information such as survey effort data and weather condition data is to be commended. Analysis of data and classification of vegetation utilising Sydney Metropolitan Catchment Management Authority (SMCMA) standards is also appropriate.

Consideration of Impacts - Vegetation Communities

Angophora hispida – Eucalyptus haemastoma Heath-Woodland

This vegetation community contains several locally and regionally significant species including the region’s largest populations of *Eucalyptus squamosa*, *Grevillea diffusa* ssp. *diffusa* and *Allocasuarina diminuta* ssp. *mimica*. The later species *A. diminuta* ssp. *mimica*

has been recently nominated for listing as an endangered species under the Threatened Species Conservation Act, as the population on this site represents the largest known population of this rare species within the Sydney Basin Bioregion.

This community has been extensively cleared for urban development in the region. While the Ecological Assessment notes that the community is represented within the Georges River, Royal and Heathcote National Parks, the conservation within these reserves could not be considered adequate. The DECCW 2009, a document referred to by Cumberland Ecology (2011), notes that only 6ha of this community is conserved within these three parks in total representing 0% of the extant area. The vast majority of this community is present within the Holsworthy Military Area, which is subject to ongoing impacts from military activities and frequent uncontrolled fires.

It is considered that the removal of 211ha (or 88%) of this vegetation type from the site represents an unacceptable, significant and irreversible impact on the biodiversity of the region.

Banksia ericifolia Damp Heath

This community is proposed for listing under the TSC Act. The Ecological Assessment notes that this community is represented in the Royal, Garrigal and Georges River National Parks and Dharawal State Recreation Areas, but again this representation cannot be considered adequate for conservation purposes. Only 53ha in total is conserved in these four reserves representing less than 10% of the extant area of this community. In addition to the direct removal of this community under the current proposal, the majority of the remainder is present within close proximity to the development and will be impacted by edge effects and changes to local hydrology. Therefore, it is likely that the majority of this endangered community (ie., the entire 10.92 ha) will be impacted by the proposal.

Leptospermum polygalifolium Damp Heath

This community did not fit readily within the SMCMA vegetation classification system. It is noted that this community is highly modified from its natural state and has affinities with both *Angophora hispida* – *Eucalyptus haemastoma* Heath Woodland and the endangered *Banksia ericifolia* Damp Heath. The final determination for Coastal Upland Swamp notes that the species composition of a site may vary depending on a variety of factors including land clearing. Given the damp nature of the site and the affinities with other damp heath communities classified on site it is considered prudent that this community also be considered as the proposed Endangered Environmental Community (EEC) Coastal Upland Swamp. On this basis, the loss of 96% of this community on the site to development is not considered acceptable.

Lepidosperma neesii – Shoenus brevifolius Wet Heath

Ninety-seven per cent (97%) of this EEC is proposed for removal as a result of development of the site. Again, the Ecological Assessment notes that the community is represented in the Royal, Garrigal and Georges River National Parks and Dharawal State Recreation Areas; but again, this representation cannot be considered adequate for conservation purposes, as only 53ha in total is conserved in these reserves, representing less than 10% of the extant area of this community.

Overall Impact on EEC Coastal Upland Swamp

The current proposal involves the direct removal of 6.22ha of the total 13.28ha of vegetation consistent with the Coastal Upland Swamp EEC. This represents an unacceptable 47% of this vegetation type on the site. Further to this, the remaining 7.06ha is largely within 40m of the perimeter of the proposed development and as such will be impacted by edge effects and changes to the local hydrology. This means that while 47% of this EEC will be directly removed by the proposal, the entire 100% of this EEC will be adversely impacted to some degree. Council does not consider this acceptable.

***Corymbia gummifera* – *Angophora costata* Woodland**

Similar to the *Angophora hispida* – *Eucalyptus haemastoma* Heath-Woodland, this vegetation community has been extensively cleared from the surrounding areas for urban development. Similarly, this vegetation community will also experience a significant degree of removal as a result of this proposal. One hundred and one (101) hectares of this woodland community will be removed as a result of the proposed development, representing 33.79% of its occurrence on site. While the Ecological Assessment notes that this community is represented in Heathcote and Georges River National Parks and the Dharawal State Recreation Area, this representation cannot be considered adequate conservation with only 194ha or 5% of the extant area of this community within these reserves.

The majority of the species noted within the vegetation community description in the Ecological Assessment are noted as species present within the EEC Southern Sydney Sheltered Forest. The SMCMA description of this community also notes that the corresponding Woronora Sandstone Exposed Bloodwood Woodland grades to the EECs Southern Sydney Sheltered Forest and Shale Sandstone Transition Forest depending on distance to shale soils and the coast. Given the sites proximity to the coast and shale influenced soils, assessment of individual quadrats for consistency with these EECs is appropriate.

***Corymbia gummifera* – *Eucalyptus pilularis* Woodland**

The Ecological Assessment notes that there was difficulty determining the exact nature of this vegetation community, in that it had affinities with several vegetation mapping units from the SMCMA study and several EECs, most notably Southern Sydney Sheltered Forest and Shale Sandstone Transition Forest. Eventually it was classified as Woronora Sandstone Exposed Bloodwood Woodland (WSEBW). An examination of the species data for this community reveals that *Eucalyptus pilularis* is not a species generally recorded in the vegetation community, whereas on this site it is a dominant species.

An examination of the SMCMA species data for the Southern Sydney Sheltered Forest (SSSF) and Hinterland Sandstone Transition Grey Gum Forest (HSTGGF) vegetation classification reveals that *Eucalyptus pilularis* is a positive diagnostic species for these vegetation communities. The vegetation maps produced by the SMCMA also show both these communities present in the Bardens Trig area, where the current study has this area mapped as *Corymbia gummifera* – *Eucalyptus pilularis* Woodland. Given the difficulty in finding an exact match for this vegetation community, along with the fact that *Eucalyptus pilularis* is a characteristic species of SSSF and HSTGGF vegetation (and not WSEBW), and that SMCMA has mapped SSSF and HSTGGF on this site, the vegetation should be

considered as either an example of the EEC Southern Sydney Sheltered Forest on Transitional Sandstone Soils or a Shale Sandstone Transition Forest.

The current proposal will result in the removal of 15.64ha of this community or 28.1% of the site total. Additionally, remaining areas of this community are in close proximity to the edges of development and will be indirectly, adversely impacted by these edge impacts.

The Ecological Assessment notes the difficulty in determining the conservation status of the site, given the difficulty in finding an accurate fit for the vegetation description. However, considering the classification of the vegetation as SSSF, this community is represented in Royal and Garrawarra Reserves. The community on this site is distant from these reserved examples and represents the most northerly occurrence of this community in the SMCMA region. Approximately 243ha of this vegetation community is conserved within these reserves representing 39% of the extant area. Alternatively, considering the vegetation as HSTGGF this community is only represented in the Georges River National Park, within a minor 8ha present, representing less than 1% of the extant area of this EEC.

It is considered that due to the limited occurrence of both these communities within the SMCMA sub-region, the proposal would have an unacceptable impact on these endangered communities at the sub-regional and regional level.

Corymbia gummifera – Eucalyptus punctata Woodland

This community is a subgroup of the EEC Shale Sandstone Transition Forest. The current proposal does not involve the removal of any of the 20ha of this vegetation type that occurs on site. It is considered that while this community may experience some minor edge effects, the development will not have an unacceptable impact on this vegetation type.

Syncarpia glomulifera – Eucalyptus fibrosa Forest

This community is a subgroup of the EEC Sydney Turpentine Ironbark Forest. The current proposal does not involve the removal of any of the 1.7ha of this vegetation type which occurs on site. It is considered that while this community may experience some minor edge effects, the development will not have an unacceptable impact on this vegetation type.

Eucalyptus piperita – Angophora costata Forest

Similar to other areas which have experienced development over the past 50 years, the steeply sloping terrain on which this community occurs, makes it unsuitable for urban development and agriculture; therefore, the current proposal does not involve the removal of significant portions of this vegetation community. Only 1.4ha of the 174ha that occur within the project area are proposed for direct removal.

This vegetation community will comprise the majority of the proposed Conservation Area at 172 ha of the 506ha reserve. This vegetation community is one of the most well represented in both formal and informal conservation reserves in the region. Over 5,000ha are contained in formal and informal reserves encompassing over 57% of the extant area. A further 600ha is contained in the gullies of the Woronora valley managed by Council, immediately to the east of this site. DECCW note that this vegetation community has a large proportion of the extant area of this forest within the SMCMA area protected in Garrigal, Royal, Heathcote and Dharawal reserves.

Eucalyptus pilularis – Angophora costata Forest

Similar to other areas that have experienced development over the past 50 years, the steeply sloping terrain on which this community occurs, makes it unsuitable for urban development and agriculture therefore the current proposal does not involve the removal of significant portions of this vegetation community. Only 1.4ha of the 34ha that occur within the project area are proposed for direct removal.

DECCW note that this vegetation community is considered to be well represented within the SMCMA area in the Georges River National Park and the Dharawal State Recreation Area.

Riparian Forest

As this community occurs in the steeper gully areas remote from the proposed development, it will not be directly impacted by the proposed works.

Melaleuca linarifolia Forest

This vegetation community is the rarest vegetation community in the whole of Sutherland Shire. Its total known distribution is approximately 1 hectare. None is protected in conservation reserves. It has been mapped by SSC (2001 & 2010) and the SMCMA as having a very limited distribution only found on the Gandangara site (actually NSW Planning Land) and adjacent to ANSTO land.

While the species present place this community in the EEC Swamp Sclerophyll Forest on Coastal Floodplains, its location in the landscape make it unique. It is not located on floodplains but high in the landscape (100m above nearby rivers). Despite not being listed on the Threatened Species Conservation Act, (because it hasn't been nominated yet), it is still considered an ecological community considered endangered due to its limited distribution and potential threats.

Any removal of this small vegetation community is considered unacceptable. The footprint for the proposed east-west roadway from the Bangor By Pass passes directly through a distinct island of this vegetation community which covers an area of 0.02 hectares (200 m²).

While the Ecological Assessment notes that this community is represented within a range of reserves within the SMCMA area, this assumption is based on the community being a Swamp Sclerophyll Forest on coastal floodplains which it clearly is not.

Angophora costata Riverflat Forest

This community occurs at the base of the steeper gullies at the extreme north of this site distant from the proposed development. As such, the community will experience little impact from the proposal.

Estuarine Forest Complex

This community occurs at the base of the steeper gullies at the extreme north of this site distant from the proposed development. As such, the community will experience little impact from the proposal.

Overall Impacts to Vegetation Communities

The Ecological Assessment notes that the loss of vegetation and habitats arising from the proposed project has the potential to significantly impact on biodiversity, but concludes that the area supports extensive areas of habitat on both public and private lands for the biodiversity impacted by the proposal. While this is the case for some vegetation and habitat it is not the case for others. In addition to this, as this development demonstrates, conservation on private lands cannot be relied upon. If this development proposes that habitat be required on other private lands in order to ensure adequate conservation, then this development should also play such a role. Unfortunately this is not the case, as several vegetation classes and habitats, are significantly impacted by the proposal and not adequately conserved in the region or in formal reserves.

The proposal involves the removal of the majority of ridgetop and upper slope woodlands and heaths. These communities have experienced significant impacts associated with removal and disturbance for urban development over the past 70 years or more. These vegetation communities, which experience the greatest impact from the proposed development, such the *Angophora hispida* – *Eucalyptus haemastoma* Heath – Woodland, are also the ones that are the least well conserved within the reserve system of the Sydney Metropolitan Catchment Management Area.

Conversely, it is the communities that are best conserved within the region that are proposed for conservation under the current proposal. Communities such as *Eucalyptus piperita* – *Angophora costata* forest which make up the majority of the conservation area are extremely well represented in both formal and informal reserves within the SMCMA area, with over 5,000ha of this community in formal and informal reserves representing 57% of the extant area.

Therefore the proposal will continue the loss of rarer and less well represented and conserved vegetation types while proposing for conservation communities which are mostly common and well represented and conserved within the SMCMA region.

Table 4.2 of the Ecological Assessment has been modified by adding an additional column which indicates the extent of conservation of a particular vegetation community within the formal reserves system within the Sydney Metropolitan Catchment Area.

Project Area Vegetation Community	SMCMA Vegetation Community	Dev. Footprint (ha)	Project Area (ha)	SMCM A (ha)	% Cleared Project Area	% Cleared within the SMCM A	Formal Cons. SMCM A (ha)	% Formal Cons. SMCMA
<i>Angophora hispida</i> – <i>Eucalyptus haemastoma</i> Heath - Woodland	Hinterland Sandstone Dwarf Apple Heath - Woodland	212.6	240.3	3334	88.03	6.35	6	0
<i>Banksia ericifolia</i> Damp Heath	Coastal Upland Damp Heath Swamp	3.94	10.92	585	36.08	0.67	53	3
<i>Leptospermum polygalifolium</i>	Coastal Upland Damp Heath	1.34	1.39	585	96.4	0.17	53	3

Project Area Vegetation Community	SMCMA Vegetation Community	Dev. Footprint (ha)	Project Area (ha)	SMCM A (ha)	% Cleared Project Area	% Cleared within the SMCM A	Formal Cons. SMCM A (ha)	% Formal Cons. SMCMA
Damp Heath	Swamp							
Lepidosperma neesii – Shoenus brevifolius Wet Heath	Coastal Upland Damp Heath Swamp	0.94	0.97	585	96.91	0.16	53	3
Corymbia gummifera – Angophora costata Woodland	Woronora Sandstone Exposed Bloodwood Woodland	100.9	299.5	4037	33.79	2.5	194	5
Corymbia gummifera – Eucalyptus pilularis Woodland	Hinterland Sandstone Transition Grey Gum Forest	15.64	55.68	4159	28.09	0.37	8	0
Corymbia gummifera – Eucalyptus punctata Woodland	Hinterland Sandstone Transition Grey Gum Forest	0	19.96	4159	0	0	8	0
Syncarpia glomulifera – Eucalyptus fibrosa Forest	Sydney Turpentine – Ironbark Forest	0	1.72	567	0	0	34	6
Eucalyptus piperita – Angophora costata Forest	Coastal Sandstone Sheltered Peppermint – Apple Forest	1.43	173.8	12789	0.82	0.02	4760	37
Eucalyptus pilularis – Angophora costata Forest	Hinterland Sandstone Gully Blackbutt – Apple Forest	1.36	34.16	4802	3.98	0.03	75	2
Riparian Forest	Coastal Sandstone Riparian Forest	0	3.12	515	0	0	179	35
Melaleuca linarifolia Forest	Hinterland Riverflat Paperbark Swamp Forest	0.02	0.61	105	3.28	0.02	16	16
Angophora costata Riverflat Forest	-	0	1.27	-	0	-	-	-
Estuarine Forest Complex	Estuarine Swamp Oak Forest	0	1.05	290	0	0	83	31

Note: Numbers and text in bold note additions or changes to the original table

The above table shows that the majority of vegetation that experiences greater than 25% loss on site is generally inadequately conserved in formal reserves within the SMCMA (<5% extant vegetation), whereas those communities that experience the lowest rates of loss, and thus the highest rates of conservation on site, tend to be those communities that are adequately conserved in formal reserves in the SMCMA (>10% extant vegetation).

This balance of clearing of inadequately conserved communities and preserving well represented communities is not considered an acceptable balance.

Consideration of Impacts - Flora

Consideration of impacts to flora concentrates almost exclusively on species listed under the Threatened Species Conservation Act. While there is some minor reference to regionally significant species, impacts to these species is not further assessed. Unfortunately, this is in accordance with the requirements of the Director General's Requirements. Again Council considers that this narrow focus exclusively on threatened species does not give adequate consideration to broader biodiversity impacts across the region.

Acacia bynoeana

This TSC listed species was recorded at two locations in the Angophora hispida – Eucalyptus haemastoma Heath – Woodland community. This community is almost entirely removed under the development proposal. Additionally the 21 individuals present at the two locations are proposed for removal or translocation. Therefore none of the 21 individuals present on the site will be conserved in situ under the proposal. While translocation is proposed for several of the individual specimens, there is no information provided as to the likely success of such translocation, or examples of where it has been successfully been undertaken elsewhere. Of concern is the fact that the majority of the habitat for this species will be removed by the proposal, therefore there will be minimal areas where suitable habitat will be retained in which to undertake these translocations.

The Ecological Assessment indicates “should the translocation be successful, it is not considered that the species will become extinct in the locality”. However there is no statement as to the likely fate of the species should the translocation not be successful. It is considered that given the lack of successful translocations elsewhere and the lack of retained suitable habitat for any translocations, potential for success is low.

This species is not known from any conservation areas within the region. Loss of this population from the site along with the majority of the habitat, therefore has significant impacts at the regional and potentially state level and is likely to lead to a localised extinction.

Melaleuca deanii

Similar to *Acacia bynoeana*, this species also occurs primarily within the *Angophora hispida* – *Eucalyptus haemastoma* Heath – Woodland which is to be extensively cleared for the development proposal. Other individuals of *M. deanii* also occur within the *Corymbia gummifera* – *Angophora costata* Woodland which is the second most impacted community.

Of a total of 91 individuals recorded within the project area, 71 are proposed for removal. This represents 78% of all occurrences of this species on the site. Such an extent of removal is not considered acceptable. Retained individuals will also be in close proximity to

the edges of the development and will be indirectly adversely impacted by edge effects associated with the development.

The Ecological Assessment notes that *M. deanii* is represented within the Royal and Heathcote National Parks. However only 12 individuals have been recorded from these locations, significantly less than the population that occurs on this site. While a further 17 sites also occur within the Holsworthy Military Area, this area is subject to uncontrolled fires and is not primarily managed for conservation, meaning that the security of the individuals on this site cannot be assured. Given that this site represents the most significant population of this species at the regional level and the extremely high level of loss due to the development (more than half of all species at the regional/local scale), there is a high likelihood that the survival of this species at the local level will be compromised by this development.

***Hibbertia* sp. 'Menai'**

This community occurs mainly within the *Corymbia gummifera* – *Angophora costata* Woodland, which will be significantly impacted by the proposal with one third of this vegetation type removed and significant portions of the remainder impacted by edge effects.

The current proposal involves the direct loss of 61 of the approximately 250 individuals located on the site. While this may appear an acceptable loss rate, retained individuals will be within close proximity to proposed development and will be indirectly, adversely impacted by edge effects associated with the development. The removal of the majority of the habitat for this species will limit its ability to colonise other areas of the site and naturally recover in numbers.

The Ecological Assessment notes a study of the conservation status of this species by Mills conducted in 2009. This study concluded that, while the species may be threatened, it is unlikely to go extinct in the immediate future. However the study by Mills did not consider the loss species or their habitat on the scale of this proposal and therefore has little relevance to this proposal.

Allocasuarina diminuta* ssp. *mimica

This species has been nominated under the TSC list as endangered species and is currently being considered by the Scientific Committee. This species occurs exclusively within the *Angophora costata* – *Eucalyptus haemastoma* Heath – Woodland, where it is a dominant characteristic species for this community. This community will be almost entirely removed by this proposal (212ha or 88% of extent on this site). While an accurate assessment of the number of this species has not been possible due to lack of access to the site by Council Officers, it is expected to number in the thousands. This is the biggest known population of this species within the Sydney Basin.

Smaller populations are known to occur within the Southern Highlands and Blue Mountains National Parks, however species do not occur at the same numbers and densities as at these sites.

Locally, the only record of this species within formal conservation reserves is two locations in the northern areas of Heathcote National Park. Other local records exist within the Holsworthy Military Area, the Lucas Heights Conservation Area and the Burnum Burnum Sanctuary, however these records comprise one or two individuals only.

Hibbertia puberula

This plant has not been recorded for 40 years (OEH Threatened species website). It is listed as Endangered on the TSC Act. A plant of this species was located and identified on a field trip in late 2011 on land within the proposed development footprint south of Barden Trig. Robert Miller from Cumberland Flora and Fauna found the specimen which was witnessed by several other recognised botanists including Alan Fairley.

This species has not been recorded in the area previously. Removal of this individual and the majority of the habitat for this species is expected to have a significant impact and lead to the localised extinction of this species.

Prostanthera saxicola

This species is currently being determined by the Scientific Committee after a recent nomination to have it listed as endangered on the TSC Act. It is known and has been seen on Gandangara land within the *Angophora hispida* – *Eucalyptus haemastoma* Heath – Woodland community. This is an extremely rare species.

There are only three records for this species in the Sutherland Shire, two of which are historic records for this site. This species has not been recorded in any conservation reserves in the region. It is expected that the removal of significant areas of habitat for this species has potential to lead to its localised extinction.

Overall Impacts to Threatened Flora

Similar to endangered vegetation communities the majority of threatened flora on the site exists on the ridges and upper slopes of the site, which are the areas most heavily impacted by the proposed development. Areas proposed for conservation have minimal presence of threatened flora and provide marginal habitat for these species at best.

Many of the threatened flora present on the site are not adequately conserved in formal conservation reserves within the locality, placing increased reliance on preservation in-situ on this site for their persistence at the regional level.

Loss of up to 88% of some threatened individuals from the site as a result of the development, and loss of the majority of their habitat cannot be considered acceptable.

Overall it is considered that the balance of loss of threatened species to the development and their conservation on site is not acceptable. It is considered that the proposal will contribute to the loss of these species from the locality and potentially result in their extinction from the region.

Consideration of Impacts – Fauna

Red-crowned Toadlet

This species was recorded at 5 locations within the project area, with all either within the development footprint or within close proximity to development. The Red-crowned Toadlet was located within the *Corymbia gummifera* – *Angophora costata* Woodland, which is extensively impacted by the proposal (over 100ha removed), in particular areas of this vegetation within 100m of the ridgeline, where this species is usually restricted.

The loss of all recorded sites and the majority of habitat for this vulnerable species is not considered acceptable. While the Ecological Assessment notes that this species is conserved within the Georges River, Heathcote and Royal National Parks, DECCW (2011) notes that within the area it has declined notably within the Heathcote NP. Given the fire history of the Holsworthy Military Area, the habitats in HMA while no doubt important for the conservation of this species cannot be relied upon heavily for the conservation of this species (high frequency fires are a noted threat to this species). The Woronora Plateau is a key hot spot for the conservation of this species, and given the noted decline of this species from the area, the loss of all sites where this species was recorded and the loss of the majority of its habitat from the site is not considered acceptable. Taking all these factors into consideration, it is considered that the development may contribute to the localised extinction of this species.

Varied Sitella

This species is an uncommon breeding resident of the region, being widespread but in low numbers (DECCW 2011). Within the bioregion it has experienced a 20% decline in the past 20 years. Due to its low density and widespread status within the region, connectivity of habitats is likely to play a key role in its continued persistence in the region. While the proposal does provide for corridors linking vegetation to the north and south, linkages between suitable habitat for this species (ie. flatter forested environments) to the west in the Holsworthy Military Area are significantly impacted by this proposal. This may have the consequence of isolating the populations on this site, and the Georges River National Park to the north, resulting in the loss of this species from this area. Greater habitat connectivity between this site and Holsworthy is required to prevent these impacts.

Grey-headed Flying Fox

This species is highly mobile and adapted to movement within and through urban environments. A camp of Grey-headed Flying Fox have established within Mill Creek in the Georges River National Park, to the north of the site. Camps within the area have shown a high degree of tolerance for the impacts from adjoining urban environments.

Corymbia gummifera is a key food source for this species, as is *Banksia ericifolia*, both of which will be extensively impacted by the current proposal. While the proposal will result in the removal of some habitat for this species, given the widespread availability of these species within other formal and informal reserves, and the ability of the species to utilise disturbed habitats, impacts are not expected to be significant.

Little Bentwing-bat

There are very few records of this species in the bioregion, and it is not known from any conservation reserves within the region. While much of the preferred habitat for this species will not be impacted by the proposed development, linkages with adjoining areas of habitat and isolated individuals of this species will remain critical to its longer term survival in the area. The loss of east – west linkages with the Holsworthy Military Area will compromise this ability to move from the site to adjoining habitat and may impact on the long term survival of this species in the region.

Eastern Bentwing-bat

While there are a small number of records for this species within conservation reserves in the area, impacts are expected to be similar to those for the Little Bentwing-bat, noted above.

Rosenberg's Goanna

This vulnerable species was recorded within the *Angophora hispida* – *Eucalyptus haemastoma* Heath – Woodland and the *Corymbia gummifera* – *Angophora costata* Woodland within the project area. These two vegetation types are the most heavily impacted within the project area, with 212ha (or 88% of site total) and 101ha (or 33% of site total) directly removed for the proposed development. In addition to this further habitat will be impacted by edge effects from the increased edge to the new development. Within these vegetation types DECCW (2011) notes that it prefers ridgetops and flat ground, which are most heavily impacted by the proposal.

DECCW (2011) notes that the Royal National Park and the Woronora Plateau form one of the most important population centres for the Rosenberg's Goanna in NSW.

Rosenberg's Goanna is also threatened by predation from domestic dogs, which are likely to increase in numbers following the proposal. It is also highly susceptible to road fatality. Again increasing the number of roads and numbers of vehicles on regional roads is likely to increase fatalities amongst this species in the locality.

The loss of almost all suitable habitat (over 300ha) for this species from this site is considered unacceptable. This coupled with the other increased threats to this species from the development will increase the likelihood of localised extinctions for this species.

Powerful Owl and Sooty Owl

These owls are large to medium sized owls which have been recorded both within the site and in close proximity to the site in recent years. While the preferred roosting habitat of these species will be little impacted by the proposed development, there is potential for foraging habitat to be impacted.

Road mortality and injury is known to be a factor for both owls. Both species tend to travel in forested gullies, often travelling up gullies devoid of urban development, then crossing roads from one gully to another. This movement preference is often highlighted by high incidences of bird strike at these locations such as on the Princes Highway at Loftus and Heathcote. While the proposal includes corridor linkages to the north and south, the key linkages utilising the gullies between the site and Holsworthy Military Area to the east and west will be severed by the proposal. This will significantly reduce the access for these species to roosting and foraging habitat on adjoining lands.

Eastern Pygmy-possum

While there are no records of this species at this site, there are considerable records for the locality, with DECCW (2011) noting that the area is a hot spot for the conservation of this species. As the Ecological Assessment notes, this species prefers areas of woodland and heath. These vegetation communities are the most heavily impacted by the proposed development. Also of importance is that species prefers a mosaic of vegetation with differing

times since burn. This highlights the importance of maintaining a variety of these habitats in differing locations to ensure that such a mosaic exists. While considerable habitat for this species exists within the Royal and Heathcote National Parks, and the Holsworthy Military Area, the propensity for these habitats to burn with regularity, particularly Holsworthy, highlights the need for the conservation of heath and woodland habitats on sites such as this.

Koala

While the current survey failed to detect the presence of Koalas on the site, surveys by Drinnan and Andrew in 2004 found extensive evidence of Koala in the Riverflat Forests at the northern end of the Mill Creek valley. There are also numerous records of the Koala from the site.

Koalas mainly enter the site from the Holsworthy Military Area to the west, when moving from the larger colony at Wedderburn to the west, as is evident by the number of individuals hit by vehicles on Heathcote Road, and recording of movement patterns of individual species.

The widening of Heathcote Road necessitated by this proposal, along with the significant barrier represented by the asset protection zones and linear employment lands along Heathcote Road, will represent a significant and impenetrable barrier for this species. It is expected that the Koalas that currently exist within the Georges River National Park would become isolated from other breeding individuals, leading to their localised extinction in this reserve.

The Koala is not a common resident of the Royal National Park, with the multilane Princes Highway, the Illawarra railway line and the newly installed fencing along these transport corridors acting as significant barriers to their movement to this reserve. Similar isolation of the current site is expected post development.

Overall Impacts to Threatened Fauna

Many of the threatened fauna present on the site have specific habitat requirements. For many of these species such as Rosenberg's Goanna, these preferred habitats will be significantly impacted by the proposal, most likely resulting in their loss from the site. Other species rely on linkages with adjoin suitable habitat and links to breeding partners in these habitats, to the west in the Holsworthy Military Area. These linkages will be effectively severed by the proposal resulting in isolation of these individuals and populations on the site.

These two factors, loss of habitat and subsequent fragmentation of habitat are listed as threatening processes under the Threatened Species Conservation Act. As a result of the proposed development, it is expected that these two factors will contribute to the localised and potentially regional extinction of several of these threatened species.

Wildlife Corridors

The Ecological Assessment notes the importance of wildlife corridors in the conservation of biodiversity in the region. In response the proposal has provided for the retention of significant wildlife corridors between this site and the formal reserves to the south, such as Heathcote and Royal National Parks. However important wildlife linkages to the west will be severed by the proposal, resulting from the widening of Heathcote Road, the creation and

maintenance of asset protection zones and the relatively hostile environment of the employment lands strip along Heathcote Road. These will serve to form a largely impermeable barrier for fauna in moving from east to west.

While the Ecological Assessment notes that this east west linkage is to some extent impeded by the presence of a fence along the boundary of the Holsworthy Military Area, it does not present a significant barrier for a number of species. This is evidenced by the number of wildlife that are injured each year along Heathcote Road, including many species such as Koala which have been recorded moving from the colonies to the west of the HMA to the east of Heathcote Road.

While an east west linkage is proposed as part of the development, this link is to the south of the development and adjacent to existing areas of bushland which provide a significant link. Road kill data indicates that the majority of species killed crossing Heathcote Road are generally further to the north of this proposed corridor, associated with the steeper more sheltered gullies to the north of the aero club. The proposed continual strip of employment lands, the duplication of Heathcote Road, and the lack of suitable vegetated links in this area will act as a significant barrier to the movement of fauna through this area.

The disruption of this significant east west link between the site and Holsworthy Military Area is expected to significantly isolate the site from exchange of individuals in habitats to the west and limit access to habitats to the west. This will result in a significant impact to biodiversity on the site and surrounds such as the Georges River National Park to the north.

Other Development Impacts on Ecology

Edge Effects

A major concern arising from the development is the large area of edge associated with the proposed development footprint. The development has an exceptionally high edge to area ratio. This not only creates problems in terms of managing the urban edge for things such as bushfire, and requires a high infrastructure to dwelling ratio to support it, but it is also creates significant additional impact beyond the development footprint into adjoining bushland. These 'edge effects' arising at the edge of the development have been noted in the Ecological Assessment, but there has been no quantification of the degree of edge effect or any substantial assessment of their impact.

Scientific studies have noted a range of edge effects, as noted on page 4.8 of the Ecological Assessment. These effects have been measured over a variety of distances from the edge ranging from around 10 metres to hundreds of metres. Generally however these edge effects tend to be most noticeable within the first 40m. Specific studies of bushland within the Sutherland Shire, looking at species composition, weed invasion, and other biotic factors also confirm a predominantly 40m edge.

While the size of the edge is not quantified in the application documentation, measurement of the edge on Council's GIS indicates that it is in the order of 26.5kms. When considering the edge that will change as a result of the development, i.e. the western edge adjacent to Heathcote Road and Bennets Quarry there is a fivefold increase in urban edge. Currently there exists a 5.5km edge to Heathcote Road and the eastern boundary of Bennets Quarry. The remainder of the edge of the site is either adjoining existing bushland which does not create an edge effect, or adjoins urban development to the east, the boundary of which and

hence edge distance will not change as a result of the development. Post development, due to the high perimeter area ratio of the development and the high number of small isolated pockets of development with individually large edge to area ratios this edge increases to a massive 26.5km. If an estimate of a 40m edge is applied along this new edge post development, this results in an additional 106ha of bushland being impacted by the proposed development.

Council has long had an informal policy when considering the impact of edge effects resulting from a proposed development. This policy considered that if the size of the edge created by the development was greater than half the development footprint (i.e. ratio of edge: area less than 1:2), then the proposal did not represent a sustainable use of that site. While overall the development meets this criteria, with 330ha of development creating a 100ha edge, there are several isolated pockets of development that do not meet this criteria and create an unacceptable edge to area ratio. Approximate edge to area ratios for the various portions of the development are indicated in table 2. below.

Development Area	Edge (km)	Edge Area (ha)	D'ment footprint (ha)	Edge: Area
Along Heathcote Road	13.5	54	210	1:3.9
Special Uses	5	20	23	1:1.2
Bardens Trig	3	12	34	1:2.8
Urban Mill Cr	1.5	6	11	1:1.8
Sthn Urban	3.5	14	21	1:1.5

Table 2. indicates that apart from the main development along Heathcote Road and the development at Bardens Trig, all other areas of development have excessively large perimeter area ratios and will create edge effects and significant additional impacts beyond the development footprint, such that they should not be supported.

The additional of approximately 106ha of impacted bushland to the already directly impacted 330ha of bushland mean that the total impacted area of bushland arising from the development is on the order of 436ha. Considering the total area of the site as 849ha this means that over half of the vegetation on the site will be impacted by some degree. This does not represent a "maintain or improve" situation for biodiversity and indicates that the development: conservation balance for the development is not acceptable.

Management of Proposed Conservation Area

Council has several concerns over the management of the proposed conservation area. While the Ecological Assessment notes a range of appropriate management principles and actions, there is uncertainty as to the mechanism to ensure long term compliance with these actions and principles and uncertainty as to the commitment and aspirations of the land owners in relation to these principles.

The management actions outlined in the Ecological Assessment will require significant and continual allocation of funds in perpetuity. The ability of the land owners to implement these actions over time is questionable given the past history of their management of this land. Similar commitments have been given by the proponent on other developments in the

Sutherland Shire, but the proponents have not delivered on these commitments and the outcomes for biodiversity have been suboptimal.

The principles and actions outlined within the ecological Assessment are also at odds with statements given by members of the GLALC board and other consultants acting on behalf of the GLALC. These comments have indicated a desire to actively utilise this land for a range of activities including 4WD and trail bikes (subject to further investigation), which are contrary to the management actions outlined in the Ecological Assessment which actively seek to limit these activities. As the involvement of the various consultants is likely to cease following the approval of the development, it is the attitudes and actions of the land owners which will ultimately give rise to the success or otherwise of the management of the conservation area. Given recent history and comments, there can be little confidence that the area will be managed strictly in accordance with the intent of the Ecological Assessment.

8. Assessment of the impact of the proposal on threatened flora and fauna species and endangered ecological communities listed under the Environment Protection and Biodiversity Conservation Act 1999 and the Threatened Species Conservation Act 1995.

Council considers that the proposal will have an unacceptable impact on a range of threatened flora and fauna, and ecological communities protected under state and federal legislation. These impacts arise from direct removal of species and habitats and indirect impacts, such as fragmentation, isolation, and edge effects.

Specifically Council considers the following to be at significant risk of localised extinction as a result of the proposal.

- Coastal Upland Swamp – through direct removal of approximately half of this community as a result of development and the unacceptable impact to the remaining half through edge impacts (due to its proximity to development) and changed hydrological regimes. This has implications for the broader sub-region given its inadequate conservation in formal reserves in the SMCMA (3%).
- Shale Sandstone Transition Forest – through direct removal of over a quarter of this community on the site, in particular in the region of Bardens Trig, and edge impacts to the majority of the remaining community. This has implications for the broader sub-region given its inadequate conservation in formal reserves in the SMCMA (8ha or 0%).
- *Melaleuca deanii* – given the direct removal of nearly 80% of the entire population from the site, and the removal of more than 80% of the suitable habitat for this species on the site. This has implications for the broader sub-region given its inadequate conservation in formal reserves in the SMCMA (only 12 other records in formal conservation reserves).
- *Acacia byoneana* – through the direct removal of the 21 individuals from the two locations on site, representing a 100% loss rate for this species. While translocation is proposed there is no certainty of the success of this measure and inadequate habitat for translocation sites given the greater than 80% loss of suitable habitat on the site. This has implications for the broader sub-region given its inadequate conservation in formal reserves in the SMCMA (no records).

- *Hibbertia* spp. Menai – through the direct removal of approximately a quarter of all individuals on the site and the removal of the majority of habitat available for recolonisation. Regional conservation status is not well known.
- *Allocasuarina diminuta* ssp. *mimica* – (not currently listed under TSC Act, but likely future listing) – through direct removal of the majority of the population (numbering in the several hundreds to thousands) and the removal of more than 80% of the habitat for this species. This has implications for the broader sub-region given its inadequate conservation in formal reserves in the SMCMA (only 2 other records).
- *Hibbertia puberula* and *Prostanthera saxicola* – through removal of significant areas of habitat (885) for these species, which are not represented in regional conservation reserves.
- Red-crowned Toadlet – through the direct loss a significant areas of habitat on the ridge edges, and changes to the hydrology of the remaining areas of habitat due to urban development immediately above the habitat areas. This has implications for the broader sub-region given that this area is considered a hot spot for the conservation of this species.
- Varied Sittella – through the fragmentation of the site and isolation from habitats to the west in Holsworthy Military Area.
- Rosenberg’s Goanna – through direct loss of 80% of its preferred habitat, increased threat from road kill, and isolation from suitable habitats to the west in the Holsworthy Military Area. This has implications for the broader sub-region given that this area is considered a hot spot for the conservation of this species.
- Koala – through the isolation of populations to the north of the site in the Georges River national Park from those populations to the south west, due to the loss of links across Heathcote Road.

9. An evaluation of potential impacts on groundwater, groundwater dependent ecosystems, waterways on and off site, aquatic ecosystems, riparian zones and proposed reserves.

The proposal will have an unacceptable impact on groundwater dependent ecosystems. As noted above for the Coastal Upland Swamp endangered community, the majority of this ecosystem will be directly impacted by the proposal. The remaining ecosystems are all in close proximity to proposed development (mostly within 40m) and will experience significant edge effects and changes to local hydrology.

The study as included an assessment of riparian zones within the development area. This study has mapped waterways and recommended appropriate riparian buffers. However there has been no assessment of the proposal against these recommendations and there is no conclusion that the development that will not have an unacceptable impact on riparian systems. It is considered that the assessment of riparian impacts is inadequate and that development will encroach within the recommended riparian buffer widths, resulting in unacceptable impacts to riparian zones and aquatic ecosystems.

10. An evaluation of the potential impacts on and development of ecological corridors.

The proposal provides for corridors linking habitats to the north and south of the site. These corridors exist mainly along the steeper gullies which run north-south on the site. These corridors provide linkages between the Georges River National park to the north and

Heathcote and Royal National Parks to the south. While these corridors will be impacted to some degree by roads lining east-west through the site, many of these roads will have significant elevated portions where they bridge gullies, which will provide opportunities for fauna movement without conflict with roads and vehicles. One gully however is proposed to be completely blocked by an embankment to support the East-West Arterial road link.

However the provision of east – west linkages in the proposed development is inadequate and will reduce permeability for species between areas of habitat on the Holsworthy Military Area and habitats on this site and in the Georges River National Park. While there is some provision for an east west corridor in the southern portion of the site, this exists immediately adjacent to an area which currently serves as a 1.3km wide corridor, and thus is provided in an area already well services by ecological linkages. Fauna surveys and road kills data indicates that the majority of species crossing west to east across Heathcote Road do so further to the north of the proposed corridor as fauna utilise the steeper more sheltered gullies in this location. In this area, post development, there will be a barrier of approximately 2.5km length imposed by the development which will significant restrict fauna movement from east to west. This has the potential to significantly isolate the site and lead to localised extinctions of several species, including species listed under the TSC Act.

11. Identify and evaluate the ecological attributes of any lands proposed as environmental offsets to mitigate the impacts of the development.

The proposal generally involves the removal of species and communities that are not common in the area and not well represented in conservation reserves in the area. In fact all vegetation communities which experience greater than 30% removal under the proposal have less than 5% of their extant vegetation conserved in formal conservation reserves. Conversely, the majority of vegetation communities that experience the lowest levels of removal (i.e. less than 10%) have greater than 10% and upwards to 40% of their extant vegetation conserved in formal conservation reserves. What the proposal essentially does is remove the rarer, poorly conserved vegetation communities within the region and conserve the common well conserved communities. This does not represent an acceptable balance between development and conservation and the conservation of these lands does not represent appropriate or adequate mitigation for the impacts of the development.

The proposal currently involves the removal of 33ha of vegetated land for development and the conservation of 503ha. However as noted above much of the conserved land will be indirectly adversely impacted by edge effects from adjoining development. Given a typical edge distance of 40m and the high perimeter area ration of the development, this results in impacts to a further 100ha of bushland. This then gives a loss, retention ratio of close to 1:1 for this development. This indicates that not only is the type of vegetation provided for off-sets not appropriate but the scale of the off-sets is also not appropriate.

12. Detail of the proposed ownership and management arrangements for the environmental offset lands, open space and riparian corridors.

The proposal provides for the retention of conservation lands by Gandangarra LALC and their management according to a biodiversity management plan. However there is no proposed legislative mechanism to ensure that the lands are managed primarily for conservation in accordance with any management plan.

While the Management Plan outlined in the Ecological Assessment indicates that conservation lands will be managed primarily for the purposes of conservation, this is contradicted by statements from other consultants and the land owner, which indicate that recreation uses such as 4WD and trail bikes are also options to be considered for these lands. Such uses are in conflict with the conservation objectives.

Given this history of land management in this area, and experiences with the management of other sites associated with developments from the proponents, Council also has concerns over the ability of the land owner to comply with biodiversity management requirements in the future. Recent actions from the land owner have also demonstrated a lack of willingness to become involved in regional initiatives to effectively manage these lands for conservation purposes.

Heritage

Assessment of the Aboriginal and European cultural heritage significance of the area and any impacts the proposed development may have upon its significance.

(Council's Aboriginal Advisory Committee strongly opposes the proposed development and has submitted the following comments to form part of Council's submission. The Committee's views were endorsed by Council on 31 August 2011 and are submitted in full as Attachment 1 to this submission.)

The existence of a diverse range of Aboriginal archaeological sites and places of cultural significance in the Heathcote Ridge locality remains as a clear record of its Aboriginal cultural heritage value. The number and range of sites that remain in existence are a direct result of the limited European visitation that has occurred to most of the 865 hectares of bushland. The Aboriginal Heritage Assessment that forms part of the Submission states that there are 41 recorded Aboriginal heritage sites and 40 newly recorded sites with proximity to potentially developable areas. In addition, Aboriginal people consulted as part of the process suggested two areas of potential Aboriginal cultural significance. However, it is Sutherland Shire Council's view that the number and type of recorded Aboriginal heritage sites does not reflect the complete heritage value of the area. The Heathcote Ridge area is part of the biggest cultural heritage library and museum in Southern and South Western Sydney.

Mill Creek has 14 or 15 sites with shell scatters and open camps. Trees and rock formations are very significant. Creeks and ridgelines need to be checked for significant sites. Ridge tops have engravings and carvings, valleys have middens. There are a lot more than the 80 sites identified by the consultants for GLALC, and new sites are discovered with each visit to the area. There needs to be more consultation regarding paintings, engravings, culture, history, secret women's sites, men's caves, burial sites and dreaming tracks. There is a need to validate further sites before the project moves forward.

Dreaming tracks are also important to maintain. Cutting into the landscape can change the contours of the land and therefore change the story of dreaming tracks. Story lines, song lines, how long Aboriginal people have been here, are all depicted in this landscape. Drawings and etchings are not just isolated sites, but they are interconnected with the rivers

and mountains. Any future land use needs to respect this understanding of the land. Major bridge structures will be required for the motorway extension plus several small bridges connecting the commercial/residential hubs. These structures will permanently scar the landscape.

It is Council's view that there needs to be a detailed comparison made between Aboriginal archaeological site lists held by Gandangara and those held by others with local knowledge expertise. This process needs to be exhaustive and must be carried out before a zoning pattern and land use mix is set through the declaration of the site as State Significant.

Recommendation 2 of the consultant's report requires additional field study, a program of archaeological test excavations, recording of art and Aboriginal community research to develop an appropriate strategy for the long term management and protection of Aboriginal heritage within the subject lands in relation to future development. However, to ensure the best outcomes for the archaeological significance of the land, this study should be undertaken before a decision is made to declare the site State Significant.

The study also needs to address the proposed land use mix and make specific recommendations as to what land uses are most compatible with the long term protection and management of the sites. The consultant's report states on page 71 that "the most likely threat to Aboriginal heritage from future subdivision within the subject lands is related indirect impacts from increased visitation which is to an extent inevitable from the adjacent residential subdivisions". Further it concludes "in particular, shelter art sites are highly vulnerable to graffiti and fire blackening which often results from the use of such shelter sites, whether deliberately undertaken to destroy the art or not. Other potential indirect impacts relate to the need to manage the bushland conservation zone which may involve activities such as track construction, maintenance and weed management."

Such analysis suggests that a greater degree of separation between sites of significance, particularly art and shelter sites, and residential uses is a sensible strategy. The consultant's findings also suggest that residential uses are simply incompatible with the proper protection and management of sites because visitation cannot be prevented and therefore protection of heritage sites cannot be assured. The sites remain in existence in good condition because of their relative isolation. If development is to occur, the land use should minimise the risk to the archaeological sites. This suggests that industrial uses may be more compatible with the value of the land because workers are less likely to explore the conservation land than locally resident children and adults. It is noted that mitigation measures to prevent access to a known site can include *Lomandra* (a native grass) to make access difficult. However, it was also noted that some vandals have forced their way through protective steel structures at other sites.

New subdivisions could divert storm water to significant cave sites, which will get overgrown with moss from changed water flow patterns (due to the encroachment of houses). This could erode/damage carvings, etchings and damage ochre paintings.

Sutherland Shire Council is also concerned that the sites will in fact be properly managed over time. It is unacceptable that Sproule Road, Illawong has a traditional Aboriginal grinding / ochre painting site, which is currently only 50 metres from a Gandangara housing estate, yet this site appears to be receiving little protection. Now there is the potential for Mill Creek

and Barden Creek to have housing which may adversely impact on more crucial sites. At least half a dozen groove grinding sites and the "Spearing of Arthur Phillip" carving are contained in this area. Axe grinding grooves indicate valuable historic information such as how many elders were in a tribe, family size, and lifespan. Certainty is needed in relation to the protection of these sites. Once development occurs more sites will be discovered. However, at that late stage there will be little flexibility in land use patterns or the future density of development. Leaving the discovery and management of Aboriginal heritage sites to the development stage for individual precincts will only result in the loss of more Aboriginal heritage.

Elders want to hand a legacy down to Koori Kids. There is a need to get as many Koori Kids together with other young men and women, and educate them on these sites. This is a very important part of the conservation and management of Aboriginal cultural heritage. The submission needs to address how conservation management of the sites be achieved over the next 100 years and beyond.

Given that this land is owned and being developed by the GLALC, Sutherland Shire Council expected that this development concept would set a new standard for the of protection and respect given to Aboriginal cultural heritage. However, the submission falls well short of this expectation. Instead it will result in a dense residential neighbourhoods sitting very close to significant shelter and art sites. Visitation to sites cannot be avoided or properly managed. Whether future residents and children respect the sites or not, the significance of the sites will be eroded over time and ultimately lost as a result.

Roads, Traffic and Transport

Traffic Impacts

The Hyder report, which forms part of the exhibited documents in relation to this proposal, covers a broad study area and focuses predominantly on the impact on the surrounding State Road network for the area, this being Heathcote Road, New Illawarra Road, Bangor Bypass, River Road and Alford's Point Road. The movement of traffic on all of these roads falls under the responsibility of Roads and Maritime Services. The report estimates increased traffic volumes along these routes as well as the impact on all affected intersections along these routes. The report also examines the impact on the local road network of Menai Road between New Illawarra Road and Bangor Bypass which is under the control of Council.

The report examines 3 modelling scenarios as per the Director General Requirements:

- Existing
- Existing with projected background growth to 2031
- 2031 with background growth plus generation from the proposed development

It should be noted that the base data, trip generation and modelling analysis are yet to be audited and vetted by Roads and Maritime Services. However, for the purposes of this report they are accepted as stated in the Hyder Report.

Proposed Infrastructure

In addition to new intersection treatments along Heathcote Road and Old Illawarra Road to allow access and egress to the site, the report also identifies the need for the applicant to undertake the following major infrastructure upgrades to the existing road network as part of the proposed development:

- Extension of the Bangor Bypass west of New Illawarra Road to connect with Heathcote Road.
- Upgrading of the Bangor Bypass and New Illawarra Road intersection to a grade separated single point interchange.
- Widening of Heathcote Road to four lanes north of the new Bangor Bypass link.

Existing Road Network

The following table outlines the projected traffic volumes on the State Road network with the inclusion of the Bangor Bypass west extension.

Projected Daily Weekday Traffic Volumes

Road	Location	2010 Counts	2031 Base case	2031 Development case	Comment
Alfords Point Road	West of old Illawarra Road near Menai High School	48,921	59,200	80,300	Additional Lane Capacity Required
River Road	On Woronora Bridge	53,557	63,200	87,400	Additional Lane Capacity Required
Heathcote Road	South of St Georges Cres Road	16,341	20,600	43,300	Road widening Proposed
Bangor Bypass	East of New Illawarra Road	33,163	41,200	65,800	Additional Lane Capacity Required
East-West New Link	West of Bangor Bypass	-	-	60,700	Proposed New Road
New Illawarra Road	South of Recreation Drive	19,853	24,000	23,000	Adequate Capacity
Heathcote Road	South of new access with east west link on Heathcote Rd	16,341	20,600	20,900	Existing Safety Problem

The projected traffic increases are significant in that they indicate that the majority of the existing State Road network has insufficient lane capacity to cater for the 2031 proposed development scenario.

In particular the figures indicate that, additional lane capacity is required in Alfords Point Road, Heathcote Road (north of the proposed new Bangor Bypass east west link), Bangor

Bypass (east of New Illawarra Rd), the Woronora River Bridge (River Road) and Alford's Point Bridge.

Of these roads, the applicant proposes increased lane capacity in the northern section of Heathcote Road only.

Failure to provide additional capacity on the Bangor Bypass River/Road route will add to existing major delays on River Road and potentially divert additional traffic to Heathcote Road between Princes Highway and the development site. Heathcote Road is already identified as having a significant safety problem and accident history.

Failure to provide additional capacity on the Alford's Point Road route will only compound existing major delays to motorists leaving the Alford's Point, Illawong and North Menai areas at the Brushwood Drive on ramp.

Key Intersections

The following table outlines the performance of key intersections in the Sutherland LGA where there is a significant change in the Level of Service (LoS) and/or average delay arising from the 2031 Heathcote Ridge development scenario:

Projected Performance of Key Intersections in Sutherland LGA

Intersection	Control	Existing				2031 with Heathcote Ridge Development			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Avg delay	LoS	Avg delay	LoS	Avg Delay	LoS	Avg Delay	LoS
St Georges Cres/Heathcote Rd	Give-way	67	E	33	C	>300	F	97	F
Alford's Pt Rd/Old Illawarra Rd/New Illawarra Rd	Signals	46	D	67	E	>300	F	>300	F
Old Illawarra Rd/New Illawarra Rd	Signal	31	C	29	C	45	D	39	C
Allison Cres/Menai Rd/Carter Rd	Roundabout	14	A	26	B	19	B	142	F
Menai Rd/Akuna Ave/Menai Rd	Signals	27	B	22	B	43	D	29	C
Bangor Bypass/New Illawarra Rd	Signals	37	C	33	C	>300	F	234	F
Bangor Bypass/Akuna Ave Interchange	Give-Way/Stop	13	A	21	B	16	B	45	D
River Rd/Linden St	Signals	24	B	12	A	>300	F	>300	F

Intersection	Control	Existing				2031 with Heathcote Ridge Development			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Avg delay	LoS	Avg delay	LoS	Avg Delay	LoS	Avg Delay	LoS
Leonay St/Linden St	Signals	185	F	93	F	>300	F	>300	F
The Grand Pde /Linden St	Signals	262	F	95	F	>300	F	>300	F

The table indicates that for the 2031 proposed development scenario will in a significant loss of capacity at 10 intersections within the Sutherland LGA, 7 of which would be operating at Level of Service F (Unsatisfactory with excessive queuing).

Of these intersections, the applicant proposes improvements to the Bangor Bypass/New Illawarra Road intersection only (grade separation).

Failure to provide additional capacity at these intersections will result in major delays within both the State Network and Council's adjoining local road system.

Additional Information

The study area should be expanded to consider the impact beyond the intersection of The Grand Parade and Linden Street, in particular the Princes Highway in the vicinity of the proposed Kirrawee Brick Pit Development and include the projected traffic generation from the Brick Pit site in its analysis. The Kirrawee Brick Pit Development is already designated as a State Significant development site. The study should also consider the impact on traffic flows from Alford's Point, Illawong and north Menai at the Brushwood Drive/Alford's Point Road on ramp. It is anticipated that the impact on these locations will be significant in that they are already experience major delays.

It would appear that intersections have only been modelled in isolation which does not take into consideration other factors such as residual queuing. This is relevant for the Menai Road intersections with Alison Crescent, Old Illawarra Road and New Illawarra Road and River Road/Linden Street route as well as that requested for Princes Highway Kirrawee. Additional analysis should be provided.

With the exception of the proposed widening of Heathcote Road north of the site, Bangor Bypass extension between New Illawarra Road and Heathcote Road and grade separation of the New Illawarra Road/ Bangor Bypass intersection no indication has been given as to how and when the existing road network and key intersections are to be treated and funded so as to provide sufficient capacity and avoid major traffic delays for the future development scenario.

As per the Director General Requirements, the provision and funding of all necessary road and service infrastructure and accessibility to Public Transport needs to be clarified with respect to the proposed staging of the development to avoid any interim impacts and longer term funding shortfalls. In this regard the overall economic viability of the proposal is questionable given the cost of the infrastructure involved.

Additional information should also be provided with regard to localised impacts arising from the proposed staging of the development. These need to be addressed up front prior to consideration of any rezoning, in particular, for Precincts 11, 12 and 13.

Conclusion

- The Hyder Report shows that the existing State and Local road network has insufficient capacity to cater for the proposed development.
- The report shows that the Heathcote Road, New Illawarra Road/Alfords Point Road and Bangor Bypass/River Road/Linden Street corridors require additional lane and intersection capacity as a result of the development.
- The report shows that there will be a significant impact on the performance of some intersections in Council's local road network, in particular, in the vicinity of Menai Market Place.
- Proposed improvements to the road network to be funded by the applicant only address part of the impacts arising from the development.
- No indication has been given as to how and when the majority of the affected road network and key intersections are to be treated and funded so as to provide sufficient capacity and avoid major traffic delays for the future development scenario.

Proposed Internal Road Network

Impact on Council

The reports prepared to support this application relative to traffic matters relate, in the main, to the existing road network and the effects of the proposed development on that network. Limited information is provided in relation to the overall proposed internal road network. However, the proposed internal road network and associated infrastructure has a potential, far reaching impact on Council with respect to what assets Council will be expected to take ownership of and maintain in perpetuity.

At this stage, it is understood that it is the applicant's intention that the proposed internal road network and associated infrastructure, including bridges, retaining structures, stormwater drainage, footpaths, shared paths, street lighting etc shall progressively become Council assets on completion of each stage of the development.

In this regard, and from the limited information available, it is considered that this will impose an unbalanced and unfair maintenance burden on Council for the following reasons:

- The topography of the site dictates scattered ridge top developments requiring excessive length of fire protection perimeter roads and collector link roads between each precinct.
- Major road bridge infrastructure is required across deep valleys between Precincts 7, 8 and 9.
- Proposed small lot sizes requiring additional length of local roads.

- The proposed use of permeable road pavements to satisfy waste sensitive urban design requirements.

Length of Roads

Although a series of proposed Collector Roads have been shown on the planning documents, virtually nothing has been shown relative to the location and nature of the proposed internal network. One of the few plan references to this network is shown at Appendix 'B' of the Stormwater Management Strategy report.

It is estimated from the above that the entire local road network will comprise approximately 30 kilometres of new roads.

The Collector Road system which forms part of this local road network includes approximately 12 kilometres of roadway linking East/West and North/South Arterial roads traversing and abutting the development site with the internal Employment and Residential Precincts.

It is noted that the Collector Road system includes some 1.32 kilometers of road carriageway and stormwater drainage infrastructure that has no abutting rateable development. Compounding this maintenance funding problem, these particular sections of the Collector Road network contain three substantial bridges that traverse deep creek valleys.

From an examination of the details available of the proposed zonings and the proposed densities of development across the site it is possible to estimate the extent of the local road network additional to the collector roads outlined above. It is estimated that approximately 18 kilometres of local access roads shall be required to service the Bushland Housing, Local Housing and Medium Density precincts across the development.

It is noted that the proposed dwelling house lots sizes shown within the report are some 35% less than the minimum permissible lot area detailed within the Sutherland Shire Local Environmental Plan 2006. Further, the applicant's documents at Section 19, Clause 14 indicate that an even smaller lot size, 200m², could be introduced which is 45% smaller than the applicant's original proposed lot size and 64% smaller than the minimum lot size shown in SSLEP 2006. Should the lower lot size be adopted as suggested it could, this would certainly result in an increase in the number and length of access roads required to service the increased number of lots thereby incurring further maintenance costs to Council.

Bridges

From an examination of the topography, the three substantial bridges will have a combined length of approximately 754m with maximum deck heights varying from 20m to 34m above the valley floor. The ongoing, long term maintenance of structures of this nature is problematic to Local Government bodies as such structures are normally associated with Arterial roadways administered, funded and maintained by State Governments.

Permeable Road Pavements

Contained within the Water Sensitive Urban Design Initiatives Report, it is suggested that permeable pavements could be employed within the road reserves to assist with infiltration,

“.. given the expected low infiltration capacity of much of the development area”. The extent and nature of the permeable pavements within the Local Road network is not discussed in any detail in any report prepared to support the development proposal. The only particular reference to the positioning of permeable pavements within the documentation is contained within Section 6 of the WSUDI report and suggests permeable pavements, **“particularly for the light traffic areas of the development such as perimeter roads”**. The perimeter roadways of this development would act as part of the bushfire Asset Protection Zone and as such would have minimum pavement widths between kerbs of 9m to comply with the requirements of NSW RFS document “Planning for Bushfire Protection”. These perimeter roadways would, as history has shown throughout Sutherland Shire, act at a road hierarchy level immediately below that of Collector Roads and therefore would not be light traffic areas. Often these roadways are utilised by bus service operators as they encompass greater catchment areas than roads located more centrally with any particular residential precinct. For this reason such roads are unsuitable for the installation of permeable pavements.

The maintenance and replacement costs for permeable pavements are considerably higher than that of impervious traditional road pavements. Their longevity also does not match that of traditional, impervious road pavements.

Other Impacts

Smaller bridges than those outlined above are proposed by the applicant. However, the smaller bridges would require both substantial cut and fill at the associated escarpments and valley floors to provide the abutment approaches to those bridges. This will result in considerable scarring of the landscape, reduction of visual amenity of the Conservation Areas proposed to be retained and reduction of the conservation land area with a subsequent affect on the nature of those lands as Greenweb, arboreal and terrestrial migration paths etc. The applicant's approach in this regard can best be illustrated by its proposed Arterial Road traversing bushland areas within the creek valley currently owned by The State of NSW between Bangor Bypass and Heathcote Road (shown at section 21 of the Submission). Here the applicant proposes to completely fill the valley with an embankment some 15m high and 115m long to support the road thereby completely severing the bushland valley from its upper reaches, cutting the Greenweb and providing a substantial reduction in visual amenity for the residential lands to the north.

The requirement for these bridges on the Collector Road system arises from the nature of the lands encompassed by the development proposal wherein scattered ridge top residential lands and ‘Special Uses’ land are proposed to be linked by the Collector system. Such a proposal is not the normal pattern of development lands throughout the Sutherland Local Government Area although one large isolated development area exists at Woronora Heights. There appears in the applicant's submission no correlation between the competing needs of access to the developable lands and the nature, needs, use and preservation of the Conservation Lands.

Conclusion

- The proposed internal road network and associated infrastructure, including bridges, retaining structures, stormwater drainage, footpaths, shared paths, street lighting etc. will impose an unbalanced and unfair maintenance burden on Council.

- Ongoing maintenance costs for this infrastructure will not be adequately covered by the rate income generated by the development proposal and will require considerable subsidy from other income sources. In particular, the long term maintenance of the proposed major bridge structures is problematic to Local Government bodies as such structures are normally associated with Arterial roadways administered, funded and maintained by State Governments.
- The topography of the site dictates scattered ridge top developments requiring connectivity via excessive internal road and bridge infrastructure which in turn impacts on the nature, needs, use and preservation of the proposed conservation lands.

Transport

Travel Demand Intervention

The potential trip generation rates for the site, where no Transport Demand Management (TDM) interventions are made, is consistent with other comparable Travel Zones in the shire that include the greater Menai area, Taren Point, Caringbah and Kirrawee, based on Bureau of Transport Statistics data.

However, where TDM intervention is included as a means of reducing car use at West Menai, combined mode share growth to public and active transport of between 8 and 9.5% (pg83) is considered overly ambitious. Due to the very low affinity by residents to any travel behaviour change measures across the greater Menai area it is more likely that mode share growth of 1 to 2% for public transport and 1% for walking (3% in total) will be achieved. This is based on travel behaviour change initiatives / studies undertaken in the Sutherland Shire by Council and the NSW EPA i.e. Bus Niche Marketing (2004), Oyster Bay Travel Blending (2003) and Sustainability Mobility Initiatives for Local Environments "SMILE" demographic transport data from the NSW EPA (2010).

The travel behaviour change measures proposed for West Menai rely strongly on community and work place (Travel Plan) participation. It is a concern that without additional incentives, measures and management to maintain a long term commitment to travel change behaviour any initial uptake of high frequency bus services, travel plans and infrastructure is unlikely to be sustained. It is unclear how any of these measures will be managed and funded. With this high degree of uncertainty, the measures proposed are considered unlikely to be sufficiently robust to achieve the results sought.

Information in the literature regarding the medium to long term sustainability of travel behaviour change measures is also limited. Council's Bus Niche Marketing project where free bus travel was provided to non public transport users in the Menai area (uptake of 1 to 2 %), showed that around 10 to 25% of bus users reverted back to car use 4 weeks after travel behaviour intervention ceased.

In the case of Menai West, it is considered that adopting a mode share outcome consistent with Council's would be prudent based on local constraints and experiences.

Implications for Sutherland bus /rail interchange

If public transport mode share targets proposed are to be met, consideration also needs to be given to infrastructure capacity at Sutherland and Holsworthy railway stations to accommodate the number of passengers and frequency of bus services modelled. It is of

note that increased demand for public transport will arise from not only residential but also employment generators at West Menai. The likely number of passengers and public transport trips to and from West Menai is uncertain and has not been adequately quantified.

Past experience also indicates that the inefficient servicing of the proposed scattered ridge top residential precincts will remain problematic and is not conducive to usage of public transport for local and connecting journeys. The ability of local bus service providers to provide adequate or even minimal service to the isolated residential precincts remains questionable.

The increased number of passengers and services will have implications on current plans by the NSW Government to increase bus capacity and upgrade the bus / rail interchange at Sutherland. An increase in rail commuters together with limited accessibility measures and passenger capacity raises concerns about the potential for increased traffic and pedestrian conflicts around the station precinct. Growth in passenger numbers and need for improved access increases the justification for an alternative new larger concourse to be constructed at the southern end of Sutherland railway station in the short to medium term.

Further impacts associated with increased bus services include the proposed provision of bus priority measures combined with limited road capacity. The applicant's report shows that additional lane and intersection capacity is required along the Bangor Bypass/River Road/Linden Street route to Sutherland yet fails to provide any detail on how this is to be achieved and funded. The applicants report also proposes that bus priority measures will be required along this route to support the public transport mode share targets. Given existing constraints, the manner in which these competing demands can be accommodated is unclear. Not addressing this issue will have major adverse impacts on the performance of the road network and public transport reliability and uptake.

If public transport mode share targets are not met, greater reliance on car use is likely to increase pressure for the provision of an additional multi storey commuter car park at Sutherland. Not only would this require significant funding but with the high investment in public transport facilities made at the interchange, any new multistorey car park will need to be accommodated so that it does not adversely compromise the investment and strong public transport interchange function of the station.

Implications for Active Transport

Mode choice in remote areas such as West Menai hinges on external factors such as economic conditions, peak oil costs and changing transport opportunities. To address this it is important that off road walking and cycling access be provided that serves the local community, linking employment, retail / services, education facilities and connects to regional networks.

The active transport measures proposed for the development is generally supported, however, if car mode share is to be reduced the cycling and walking network will need to have priority in the staging of the development as well as being supported by planning measures that include good lighting, safe direct connectivity and the provision of facilities e.g., showers, bike storage, at workplaces and parking provisions at key destinations.

Conclusion

The remoteness and fragmented residential precincts at West Menai are not conducive to supporting the use of public transport for local and or connecting journeys. Previous experience has shown a very low affinity for the use of buses in similar areas in the Shire where a low density catchment, convenience, the road network and distance to key activity centres support travel by private motor vehicle. The West Menai proposal lacks detail and information as to how it intends to fund bus priority measures to improve accessibility and accommodate the increased number of bus services forecast. Concern extends to the performance of key intersections along the Bangor Bypass/ River Rd/ Linden Street route where the competing demands between motor vehicles and buses will need to be accommodated. Further, it is not clear as to how increased bus services from West Menai will be accommodated at Sutherland railway station.

Bushfire

13. /14. Assessment of the Bush Fire Risk Assessment of the proposal against the Rural Fire Services Planning for Bush Fire Protection 2006.

The Submission assesses the proposed development concept against the development provisions in Chapter 4 of *Planning for Bushfire Protection 2006*, and as a result focuses on the design of a bushfire protection scheme. The bushfire protection scheme that is derived from this approach would, if it could actually be implemented as intended in the report, provide for compliance of the future residential development with the performance based controls for residential subdivision in Chapter 4 of *Planning for Bushfire Protection 2006*. However, this approach assumes that the site is suitable for the proposed development and that the recommended scheme for protection of life and property from bushfires is economically, environmentally or socially feasible; without adequately examining these issues. However, this approach ignores the role of good strategic land use planning in protecting life and property for bushfire risk. It is at this early stage of the planning process where the suitability of the site for the proposed residential development is being considered that these questions must be answered. If the bushfire protection measures necessary to provide an acceptable level of risk to life, property and the environment cannot be implemented in a way that results in acceptable economic, environmental and social implications, then the land should not be rezoned to allow for such development.

A similar principle must apply to the assessment of the other bushfire issues specified in the Director General's requirements, namely:

- how access and egress to the proposed area will be achieved during a bushfire impacting from Heathcote Road ; and
- how the proposed land use pattern will avoid the need to evacuate vulnerable development during bushfire?

If the achievement of these measures is not feasible, then the land should not be rezoned to allow for such development. It is not sufficient for the proponent to identify a theoretical land use zoning scheme to avoid evacuation (as the bushfire report does), which does not provide for economically viable development, and which is not adequately adopted in the proposed planning instrument. Given that bushfire risk considerations protect life and

property, there must be certainty that the strategies put in place can be assured. The current concept does not give any such assurance.

Risk Assessment Against Planning for Bushfire Protection 2006

While the bushfire report identifies a conceptual scheme for achieving compliance with the subdivision requirements of *Planning for Bushfire Protection 2006*, given that it provides the opportunity for access to the east, away from Heathcote Road, and recommends land use controls for management of vulnerable development to avoid the need for evacuation; the feasibility of these arrangements has not been demonstrated.

Having regard to the overarching principles for rezoning of land for residential development contained in Chapter 2 of *Planning for Bushfire Protection 2006*, the proposed planning scheme fails outright to satisfy two of the principles and when the feasibility of the proposal is taken into account, fails to satisfy the remaining heads of consideration.

The planning principles for rezoning to residential development (page 4 of *Planning for Bushfire Protection 2006*) are:

- a. *Provision of a perimeter road with two way access which delineates the extent of the intended development;*
- b. *Provision, at the urban bushland interface, for the establishment of adequate asset protection zones for future housing;*
- c. *Specifying minimum residential lot depths to accommodate asset protection zones for lots on perimeter roads;*
- d. *Minimising the perimeter of the area of land, interfacing the hazard, which may be developed;*
- e. *Introduction of controls which avoid placing inappropriate developments in hazardous areas; and*
- f. *Introduction of controls on the placement of combustible materials in asset protection zones.*

The two principles in which the proposed planning scheme fails outright to satisfy are:

- d. *Minimising the perimeter of the area of land, interfacing the hazard, which may be developed*
- e. *Introduction of controls which avoid placing inappropriate developments in hazardous areas.*

Minimising the perimeter of the area of land, interfacing the hazard, which may be developed

The site constraints of the subject land result in a pattern of isolated pockets of development, each with a substantial perimeter to the surrounding bushfire hazard. Council's estimate is that some 40 kilometres of interface with the adjoining bushfire hazard will remain. This is in addition to the 11.5km of interface between the Gandangara land and existing residential developments at Menai.

Such a development pattern is clearly contrary to planning principle (d), which seeks to minimise the extent of development directly exposed to the bushfire hazard. Failure to minimise the interface with the hazard has the following significant implications:

- Multiple sections of the development are exposed to the bushfire risk.
- As a result of the greater level of exposure, there is a higher proportion of life and property exposed to a high level of bushfire risk, because more properties are located close to the hazard. Proximity to the bushfire hazard is a key factor in the loss of life and property in bushfires.
- There is a requirement for an extensive system of Asset Protection Zones around large sections of the development, all of which require ongoing maintenance over the life of the development to retain the desired level of protection. This creates a substantial ongoing maintenance burden for the community. It affects not only those directly responsible for managing hazard levels, but also for those with the legislative responsibility for educating residents about the need for ongoing maintenance and for enforcing compliance with requirements for management of the asset protection zones. While the design of the asset protection zone attempts to minimise ongoing maintenance through the design, questions remain over the practicality of the design and details regarding the ownership. Therefore, the ongoing liability for managing parts of the asset protection zone has not been adequately resolved. No consideration has been given to the costs involved in ongoing maintenance and enforcement.
- In addition to asset protection zone management, there will also be an ongoing requirement for management of bushfire fuels along roadways linking the development precincts, so that access/egress is retained during bushfires.
- The extensive interface requires an extensive perimeter road network. While from a bushfire point of view, a perimeter road network is considered essential, the isolated pockets of development result in far greater need for perimeter roads than necessary for development patterns which minimise their interface with the hazard. The extent of perimeter road proposed therefore creates a greater than usual burden for Council when in public ownership, all while eliminating ratable properties capable of contributing to cost of maintenance from one side of the road.
- The multiple hazard interface places significant limitations on those parts of the proposed development where it is safe to allow vulnerable developments such as schools, childcare centres, aged care facilities and the like. These developments need to be located at a sufficient distance from the hazard interface, that the need for evacuation during bushfires can be avoided. While the fire assessment recommends the establishment of land use controls to achieve this, the proposed R1 zone does not implement the recommendations of the report. There is no provision in the proposed instrument that attempts to regulate the location of vulnerable development.
- Similarly, the concept of Neighbourhood Safer Places, introduced after the 2009 Victorian Bushfires, requires the development pattern to make sufficient provision for neighbourhood safer places within each isolated development area. Neighbourhood safer places allow residents to avoid the need to travel through bushland to evacuate because residents can shelter away from the edge of the bushland when a fire impacts. These places need to be publicly accessible and of sufficient capacity to cater for the expected population of each precinct. Development densities need to be carefully regulated to ensure that there is adequate capacity within the neighbourhood safer places. The proposed planning instrument does seek to set the density of development. However, the minimum lot size in traditional housing areas is 360m² which is akin to medium density development. In the proposed medium density areas the density is even greater with a minimum lot size of 170m². Of particular concern is Precinct 10, which contains a mix of densities yet is surrounded on all sides by bushland vegetation. There has been no analysis as to whether residents can shelter, and how the safe shelter of the intended populations can be achieved, within each precinct.

- On a broader scale, the need for such limitations on density and forms of development within the various precincts also has the potential affect the economic and social sustainability of the project. The need to construct and service numerous isolated development precincts in itself has a significant cost, which due to the land use and density constraints, cannot be readily compensated for in the form of higher density settlement patterns. Similarly, the limitation on the number of locations where necessary ancillary forms of vulnerable development such as schools, child care centres and aged care facilities can be located in such a dispersed settlement pattern also raises significant questions about the social sustainability of the proposal. As outlined below, the employment lands which themselves serve as a buffer between extreme fire risk posed by Holsworthy Army Range and the residential development, are not an appropriate location for these necessary, but highly vulnerable facilities.
- A dispersed settlement pattern with multiple bushfire interfaces also results in additional pressures for fire fighting and emergency management. Fire fighting resources will potentially be spread more thinly, protecting multiple interface areas, as well as those existing interface areas at Menai. While the proposed development will break up the current fire path to Menai across the site, sufficient areas of bushland remain to pose a significant threat to this area.

Introduction of controls which avoid placing inappropriate developments in hazardous areas

In the context of the proposed development scheme, introduction of controls which avoid placing inappropriate developments in hazardous areas has two key implications:

1. Controls for managing the extreme bushfire risk posed by fires originating in the Holsworthy Army Range, where the presence of unexploded ordinance results in the likelihood of uncontrolled bushfires impacting on the site.
2. Controls for managing the population density of development and location of vulnerable land uses within the residential precincts adjoined on their peripheries by bushfire prone vegetation.

The bushfire report contains provisions that seek to address both these issues. However, there is insufficient certainty about the staging and overall viability of the proposed employment lands to be satisfied that they will perform as intended to provide a buffer zone from extreme fires originating in the army range; and, the planning instrument, which needs to give effect to these recommendations, does not introduce adequate controls to achieve the recommendations.

i. Employment Lands Buffer Zone

Initial Establishment and Ongoing Maintenance of the Employment Lands Buffer Zone

The development of employment lands is to be staged both within and between each precinct. It will therefore be many years before the entire protective employment zone, to provide a buffer zone between residential development and fires impacting from the army range, is fully established. Then the critical unanswered question is, will a buffer zone be funded, established and maintained between Heathcote Road and new residential areas until the employment lands are fully developed?

Further, even the long term establishment of the employment zone is also questionable on economic grounds, given the oversupply of employment lands in more accessible locations within both the Sutherland and Liverpool local government areas. If the demand for employment zone land does not meet that anticipated, how will the intended bushfire buffer intended to be provided by the employment lands be otherwise funded, established and maintained?

Provision of an asset protection zone along the entire 3.3km Heathcote Road interface occupied by the employment zone, prior to its establishment as part of the proposed staging of the development, is an expensive exercise, as is its ongoing maintenance. Council has obtained an indicative cost estimate from the Sutherland District Rural Fire Service for the establishment and initial ongoing maintenance of an asset protection zone along the 3.3km length of the employment zone, and extending for a width of 180m (being the 150m of employment lands and 30m proposed collector road reserve. The cost estimate is as follows:

APZ Establishment Costs

\$575,325.69

Costs include use of machine (tritter) and operator, removal and tipping fees, tyre replacement on machine.

APZ Maintenance Cost (1st Year)

Treated twice a year

\$259,548.19

APZ Maintenance Cost (2nd Year)

Treated twice a year

\$196,130.28

Maintenance costs to reduce progressively as material becomes finer and requires less intensive treatment.

Management of Occupants and Visitors to the Employment Lands (if established) During a Major Bushfire

If the employment lands precinct is ultimately developed as planned, it is estimated that upwards of 15,000 people could work in the locality. Many will not live in the immediate area and may travel to work via Heathcote Road.

The bushfire report relies on the provision of an asset protection zone to mitigate actual flame contact on buildings, and the general higher level of construction in class 5-8 buildings to mitigate the bushfire risk. This is not an ordinary industrial development in a bushfire prone area. It is located in close proximity to an extreme bushfire risk which cannot otherwise be mitigated through hazard reduction or fire suppression operations.

It is therefore considered that insufficient consideration has been given as to how these people will be managed during times of extreme bushfire risk. This approach appears to rely solely on the assumption that occupants will shelter in the buildings and that the buildings will remain unaffected by the bushfire. It does not provide a 'Plan B' for managing the occupants of the building in the event that they choose to or need to evacuate. For example, where would occupants evacuate to? What additional pressures would this place on the road network to the east? Would those fleeing automatically choose to go towards their home which may be towards Heathcote or Liverpool, potentially into the source of the flame? And what allowance has been made to evacuate large retail outlets which are permissible in the Enterprise Corridor, particularly if an extreme bushfire event coincided with the Christmas shopping peak?

ii. Controls for Managing Vulnerable Developments and Population Density

B6 Enterprise Zone

The proposed B6 Enterprise Corridor zone permits a range of vulnerable uses within the employment area which is established to provide a buffer between the Holsworthy Army Range and the residential development. Uses of concern include childcare centres, educational establishments (schools are specifically of concern because, rather than a TAFE or university where students are older and more capable of helping themselves in an emergency, local junior and high school students shall require substantial management in an emergency evacuation scenario), accommodation and seniors housing.

The location of such developments in the 'buffer' area provided to minimise the impact of bushfires from the Holsworthy army base is inappropriate. These uses are not mandated uses in the B6 zone under the standard template instrument and should not be permitted in this locality.

Further, as the With Development Consent portion of the land use table enables other developments not specified as permissible without consent or prohibited, hospitals would also be permissible in this area.

The zone also allows for uses which potentially contribute combustible material, namely landscaping supplies and timber yards, which is contrary to planning principle (f) in *Planning for Bushfire Protection 2006*.

R1 General Residential Zone

The Land Zoning Plan zones all residential land R1 General Residential. Density maps and minimum lot sizes aim to restrict density of development on bushfire interfaces; however, Clause 14(4) sets aside the lot size map and allows minimum lot sizes to be approved. This is illogical and unacceptable. The land use table also specifically enables a range of vulnerable landuses across the zone. These include boarding houses, child care centres, group homes, hostels (explicitly permitted with consent); and (as not specified as prohibited or permissible without consent) educational facilities, seniors housing.

As with the Seniors housing discussion above, other forms of special protection assets need to be excluded from areas where it is identified that shelter in the open

or within buildings is not recommended during a major bushfire, using the Neighbourhood Safer Places Criteria of the Rural Fire Service. However, this approach is not supported by the Standard Template Instrument. The approach taken with the STI prevents prohibition of uses in part of a land use zone which is contrary to good risk management for bushfires.

Special Uses zone

Of similar concern is the undefined nature of the Special Uses Zones in the south, which provide for a 30m APZ. Insufficient information is provided to determine whether any intended land use in this proposed zone is suitable, having regard to bushfire protection.

Impact of Rezoning for Urban Purposes on Operation of Other State Environmental Planning Policies

Also of concern is that the rezoning of land for urban purposes also opens up the potential for development under SEPP (Housing for Seniors or People With a Disability) 2004, even where such uses were prohibited by the applicable Environmental Planning Instrument. This further increases the potential to expose vulnerable people to risk from bushfire.

Remaining Planning Principles in *Planning for Bushfire Protection 2006*

In relation to the remaining planning principles in chapter 2 of *Planning for Bushfire Protection 2006*:

(a) Provision of a Perimeter Road

As outlined in discussion of planning principle (d), while the development provides a perimeter road for all interface areas, the extent of perimeter road required because of the large interface, is in Council's view economically unsustainable.

(b) Provision of an Adequate Asset Protection Zone at the Urban Interface

As outlined in discussions of planning principles (d) and (e), while the development shows an asset protection zone around the interface of the development, the capacity for ongoing maintenance has not been demonstrated.

The APZ around the residential areas is comprised of:

- 20m front setback within private property;
- 22m bioswale
- 18m road reserve.

Bioswales

The ownership of the bioswales area and hence the liability for ongoing maintenance for asset protection purposes is unclear. The size of the bioswales greatly exceeds that required for drainage or ecological purposes. Its enlarged size appears to be a design feature to try and facilitate ongoing maintenance of the asset protection zone. However maintenance of 22m x 36.20km of bioswale represents a significant ongoing maintenance responsibility. The

responsibility and funding for its ongoing maintenance has not been adequately resolved. It must be resolved before the full implications of the proposal can be assessed.

It is most appropriate that this responsibility rests with Gandangara. However, if this is the case, details are required as to how its ongoing maintenance will be funded, given that it adds further to their responsibilities for other asset protection zones currently on their land around estates in the Menai area, their potential ongoing responsibility for maintenance of an extended asset protection zone along Heathcote Road until such time as the employment lands are fully developed, and their wider hazard reduction responsibilities under s63 of the Rural Fires Act to manage the hazard on their remaining bushland areas.

Road Reserve

The road reserve, at 18 metres wide, if in public ownership also represents a maintenance liability for Council. Paved areas (road and footpath) take up only 10.5m of the 18m wide road reserve. With dwellings on one side only, and a bioswales potentially located between the property boundary and the road reserve, it is likely that ongoing maintenance will rest with the Council rather than the traditional arrangement where residents look after the nature strip outside of their properties. The ongoing vegetation maintenance of 36.2km of perimeter road reserve for fire protection purposes places an unreasonable burden on Council.

Residential Lots

Parts of the asset protection zone located within some residential lots are also likely to be located on steeply sloping land, as indicated on page 13 of the bushfire report. While *Planning for Bushfire Protection 2006* may allow Asset Protection Zones on slopes of up to 18 degrees, Council's experience is that where the land is that steep, and cannot be readily managed by those responsible, vegetation is not managed to the level required to maintain an asset protection zone. This creates an enforcement problem.

Council is not satisfied that Asset Protection Zones proposed can be effectively managed to the standard required over the life of the development. Hence principle (b) is not satisfied.

(c) Minimum Lot Depths

The perimeter lots, according to figure 6 (page 21) contain a 30m building envelope with a 20m front setback which forms part of the APZ. This gives a total lot depth of 50m.

The Lot size map allocates a minimum lot size of 700m².

On lots which meet the minimum lot size only, this results in a lot width of 14 metres.

Studies and interviews with firefighters after the 1997 Menai Bushfires identified side boundary setbacks to be an important issue for fire suppression; in assisting in the prevention of house to house spread of fire, and also in facilitating safer access to the rear of dwellings for firefighters. (CSIRO report into 1994 fires at Warringah).

SSDCP2006 establishes a minimum side boundary setback of 1.5 metres in bushfire affected areas, which provides a 3.0m setback between buildings.

Application of such minimum side boundary setback requirements is recommended in this location as well. However, on a 14m wide lot, side boundary setbacks of 1.5m leave only an 11m wide building envelope, which is unlikely to provide for adequate design flexibility for

future dwellings . SSLEP 2006 requires a minimum lot width of 15m for a lot of land in the environmental housing zone.

The recommended minimum lot width of 15m and the minimum lot depth of 50m is fixed by the APZ requirements gives a minimum lot size requirement of 750m for the bush front allotments.

(f) This principle is probably the least relevant at the scale of the current proposal. However, as outlined in discssuion of planning principle (e), it is not achieved in the B6 zone. May have an APZ between the zone and the combustible use, but still has the capacity to spread the fire.

Access and Egress During Fires Impacting from Heathcote Road

Page 26 of the Bushfire Assessment report acknowledges that use of Heathcote Road is unsafe during bushfires due to the risk posed by bushfires from the Holsworthy Army Range, and that establishment of an eastern road link is critical to the provision of a safe means of access/egress in the event of bushfire.

In assessing the suitability of the site for the intended land use, need to take into account that the access to the east is necessary because of bushfire. Areas which are topograhically suited to development are located on the western side of the site, adjacent to the extreme bushfire hazard.

As series of four (in Council's view five) bridges, including the main Bangor Bypass link must be provided to achieve this safer means of egress.

Further, it will still be necessary travel is through vegetated areas to utilise this escape route. No details have been provided in relation to management of vegetation on an ongoing basis so that the access way will be kept open.

The economic viability of this, plus provision of other infrastructure is questionable. As discussed in the introduction, the theoretical ability to provide such access is not sufficient grounds for stating that the development is suitable on bushfire grounds. It is also necessary to look at the social, environmental and economic costs of the necessary bushfire protection measures.

In these terms, the proposed level of development which generates the need for such costly transport routes, is unsupportable.

Vulnerable Landuses

As outlined in discussion of planning principle (e), the proposed land use pattern has not avoided the need to evacuate vulnerable development during bushfires. It still allows for the location of such developments in high risk areas where evacuation is likely to be required.

Contamination and Subsidence

15. Contamination and geotechnical issues associated with the proposal should be identified and addressed in accordance with SEP55 and other relevant legislation and guidance, particularly with regard to illegal tipping residue and the former landfill site adjacent to the site.

Contamination

A Stage 1 Preliminary Site Assessment (December 2011) was prepared by JBS Environmental Pty Ltd. It included a desk top study of the proposed development area and limited sampling of waste stockpiles and surface soils. The investigation has detected levels of contamination including asbestos cement (AC) fragments, heavy metals and hydrocarbons amongst other materials. The preliminary investigation did not investigate the contamination potential of all stockpiles, nor did it address the entire land affected by the proposal and therefore there is a level of contamination and degree of risk that is unknown.

The applicant was required to identify and address all contamination issues, particularly in regards to illegal tipping residue and the former landfill site adjacent to the site. The report has identified several potential off-site sources of contamination, including the former landfill site, which may impact on the proposed development site. These potential off-site sources have not been investigated as part of the preliminary report and it has been recommended by JBS Environmental that further investigation is required to assess the potential impact.

Migration of contaminants from off-site sources can occur through a number of mediums, groundwater being one of the most common. Risks from vapour intrusion resulting from soil and groundwater contamination are a significant risk to human health that should be identified and addressed prior to development. The consultant has not indicated this as a risk, although it has identified that there are potential health risks associated with levels of contaminants in some of the stockpiles. Soil vapour testing should be undertaken in proposed residential areas should additional investigations detect contamination of a significant level either from an on-site or off-site source.

The preliminary report has not complied with the Director General's requirements in that it has not addressed contamination issues across the entire proposed site, nor potential impacts from off-site sources such as the adjacent former landfill. There is still a degree of uncertainty with regard to the level of contamination and associated risk. The report has not proposed a method of treatment to address existing contamination. The recommendation from the author (JBS) is to undertake further assessment and produce a Remediation Action Plan to address remediation and validation of the site.

Geotechnical issues

The Geotechnical report prepared by Jeffery and Katauskas Pty Ltd has indicated that there are no major geotechnical limitations to the proposed development. The report has indicated that there is localised erosion evident within the site, particularly along tracks and that effective control of stormwater runoff will be required as part of the development. The report indicates that the site is underlain by soil groupings comprising the Lucas Heights Group and Hawkesbury Group, with the Lucas Heights Group dominating the development area.

The Soil Conservation Service of NSW, Soil Landscapes of the Wollongong-Port Hacking 1:100 000 sheet lists the following limitations to development on Lucas Heights Soil Groups:

- Stoniness
- High permeability
- Low available water-holding capacity
- Low fertility
- Moderately to highly erodible when unconsolidated

Clearing of the land will increase the erodibility of the soils, particularly the effects of sheet erosion. As the soil have a low water holding capacity, the proposed infiltration method for managing stormwater is unlikely to be successful and will most likely result in an increase in erosion and sedimentation.

The Geotechnical report claims that there is no known occurrence of Acid Sulfate Soils, however land within the vicinity of Mill Creek has been classified in the Acid Sulfate Soils Planning Maps as Class 1, 2 and 3 Acid Sulfate Soils which may be impacted upon if a bridge is required to be constructed over Mill Creek (section 2 of report).

Jeffery and Katauskas Pty Ltd have concluded that the site is suitable for the proposed rezoning and redevelopment from a geotechnical point of view. Council recommends that any works be staged and appropriate measures put in place to control surface water and stormwater and to reduce any erosion and sedimentation of the land. Also further assessment of acid sulphate soils are required if development is likely to impact on acid sulphate soils

16. Identify any remediation works required to rehabilitate proposed conservation lands.

The preliminary investigation report recommends removal of AC fragments, stockpiled / tipped material, isolated areas of impacted soil and removal of fly tipped material. It recommends that a Remediation Action Plan be prepared for the appropriate remediation and validation of impacted areas of the site. The report has not differentiated between development and conservation areas and has not investigated the entire land affected by the proposal, and as such has not met the requirements of the Director General.

Water Quality

The proposed Gandangarra development falls within the Mill Creek catchment, which is largely undeveloped. Currently, erosion of the land resulting from illegal use of motorised recreational vehicles and dumping of rubbish is the major contributor to downstream water pollution and environmental degradation, in general.

A residential development on the scale proposed by Gandangarra will introduce urban stormwater to the Mill Creek catchment and with it the significant risks of water pollution and degradation of the receiving environment. Gandangarra have prepared two reports relating to stormwater management and Water Sensitive Urban Design. Council has examined the reports and offers comments for consideration with respect to stormwater management. Note that the comments are very preliminary, owing to the general lack of detailed

information in the applicant's submission. Further studies and site-specific designs are required to determine the feasibility/costs of the stormwater management concepts being contemplated and ability to address the potential long-term impacts of the development on Mill Creek catchment.

Riparian Corridor Assessment

The Riparian Corridor Assessment carried out for the proposal maps the majority of the waterways on the site then uses the Strahler method to classify each identified stream. Riparian zone corridors are then assigned based on stream order. This is an appropriate broad scale approach. Issues arise with the methodology as surveys were undertaken during dry periods where stream flow was minimal/absent. The accuracy of the identification of headwater locations may suffer due to these suboptimal conditions and are likely to represent an under estimation of the extent and location of the drainage lines on the site.

The Riparian Corridor Assessment does not include the entirety of the development site. Sites in the SE portion of the site, including the area proposed for multiple dwelling are not surveyed or mapped, and hence no classification or recommendation for CRZ and VBZ provided.

In 2011 Sutherland Shire Council undertook an assessment of all waterways within the Sutherland Shire. The purpose of this assessment was to gain an understanding of all waterways, identify their location, condition, riparian and ecosystem health, and identify priority areas for action. As the Gandangarra lands fall within the Sutherland Shire, permission was requested to enter their lands to include all their waterways within this study. Unfortunately, Gandangarra declined to participate in this study and an opportunity was lost to gain a direct comparison of the waterways on this site with those throughout the rest of the Shire.

While the Riparian Corridor Assessment focuses on waterways, riparian buffers are equally important in the conservation of wetlands. There has been no consideration of the need to provide vegetated buffer zones to the many wetlands which exist on the site. This is a major shortcoming of the assessment.

The Riparian Corridor Assessment focuses on the first order streams in the area of the majority of the development, but has little consideration of the impacts to second and third order streams. There is potential for many of these higher order streams to be impacted by infrastructure provision, in particular roads and bridges servicing the isolated developments. It is noted that the proposed access over Bardens Creek is predominantly via a filled embankment, rather than a suspended bridge. Such construction has significant potential to encroach within the recommended riparian buffers. These impacts have not been addressed in the Riparian Corridors Assessment.

The Riparian Corridor Assessment recommends a range of riparian corridor widths as a result of the study, however there is no assessment as to whether the proposed development complies with these recommended corridor widths. No maps or diagrams are provided which overlay the proposed riparian zones against the proposed development footprint to assist in assessment of compliance of the recommendations with the proposal. This is a major shortcoming with the assessment.

The SEE notes that while the riparian assessment recommends a 20m vegetated buffer on each side of the Core Riparian Zone (CRZ) a 10 metre buffer may be justifiable in some cases. There is no indication of where a 10m VBZ is proposed or assessment to show how these reduced VBZ are appropriate in those instances. This is a major shortcoming in the assessment process.

Without such an assessment and conclusion that the proposal complies with the recommended CRZ and VBZ there can be no certainty that the development will not have an unacceptable impact on riparian zones and aquatic ecology.

Water Sensitive Urban Design Initiatives Report (WSUD)

This report contains a catalogue of WSUD initiatives and an assessment of their relative performance at a range of sites. Many of the sites considered in the report differ considerably from this site in terms of landform and geology and hence comparative performance of WSUD initiatives. For example the report considers the use of permeable pavement as an option at this site. Performance of this system, referred to in this report, is for deeper sandy soils in the Manly area. This is considerably different from the shallow, silty soils of this site. Performance of such a system under these site conditions will be significantly different.

The report also relies on several WSUD techniques that have limited applicability to such a large scale site as this, which will be under a variety of individual management regimes. Examples include:

- Green Roofs – no indication as to how such systems will be required and adopted as there is no provision in the planning instrument to require such systems. There is no detail of the mechanism which will be employed to ensure large scale take up of green roofs within the commercial development.
- Wastewater reuse – the Newington system managed by SOPA is noted as an example of such a system, but for this site there is no indication of how such a centralised system will be implemented and who would be responsible for its ongoing operation and management.

Overall the report provides a general catalogue of WSUD initiatives with limited general applicability to this site.

Stormwater Management Strategy

The Stormwater Management Strategy draws heavily on the measures outlined in the Water Sensitive Urban Design Initiatives Report. As noted above there are several shortcomings in the WSUD report as it does not give adequate consideration to specific site conditions, the scale of development and methods of implementation. A lack of understanding of specific site conditions is indicated by the comments such as those on page 5 “where significant sediment depositing is understood to be occurring”. A simple inspection of the lower gullies, along with some water quality monitoring, would confirm whether this is actually the case, rather than an assumption based on limited data.

Heavy reliance is placed on infiltration strategies and technologies as part of the overall stormwater management strategy for the site. However the soils of the area have a higher clay content than many of the sandstone soils of the Sutherland Shire. This creates a much lower permeability soil than typical sandstone. The high clay content is evident by the

shale and transition forests of the area. Soils on the ridges are also very shallow limiting infiltration capacity. The low permeability of the soils is also reflected in operations in the nearby Lucas Heights landfill. Extensive studies of this area have indicated the lack of need for a landfill liner to capture and retain leachate except for the deepest of excavations, due to the low permeability nature of the soils at this site. Council therefore has concern over the heavy reliance on infiltrative measures in the overall stormwater management strategy given this significant site constraint.

Water Quality Objectives

The water quality objectives for the development are appropriate and consistent with Council objectives and legislative requirements.

MUSIC Modelling and Stormwater Quality

A range of assumptions have been used to run the MUSIC modelling. Some of these appear to be different from actual or anticipated post development site conditions. For example, the percentage of impervious surface appears to be significantly lower than that anticipated by development. The percentage of impervious surface for all types of development used in the modelling is 50%, where within the Shire typical rates of impervious surface for various forms of development tend to be:

- Residential: 60-70%
- Commercial: 80-90%
- Schools: 40-50%

Residential densities proposed by this development are significantly higher than elsewhere in the Shire, where minimum lot sizes of 550sqm exist for general housing and 850sqm for housing in environmentally sensitive areas. The current proposal includes traditional residential lots of 360sqm (reduced to 200sqm), which will result in significantly denser development than elsewhere in the Shire and make these residential areas more impervious than the Shire average.

These different rates of input data will give significantly different results when modelling the performance of various stormwater management strategies. This in turn raises doubt over the outcomes and success of the overall stormwater management strategy.

No water quality monitoring has been undertaken for this site in order to establish baseline water quality conditions on the site. Many assumptions are made relating to erosion and sediment loads, but no data is provided. Such data is an important input to any modelling, and again raises doubts as to the accuracy of the modelling results.

Stormwater Quantity Management

The achievement of the relevant goals for stormwater quality management draws on a variety of WSUD measures outlined in the earlier WSUD Initiatives report. As noted earlier there is concern over the performance of such systems on this site and mechanisms to ensure their adoption and uptake. This is again the case with stormwater quantity management. For example within the commercial zones it is noted that "it will be necessary to adopt either rainwater reuse or rainwater infiltration (bio-retention and green rooves) techniques if permeable pavements are found to be impractical due to pavement load concerns". Concerns also exist over the ability to require green rooves at the development

stage, and the success of any infiltration techniques in this area given the shallow soils (0.5 to 1m deep) and low permeability of the silty/clayey soils in this location. A figure of 40% impervious pavement is also noted within the report in order to meet stormwater quantity goals. This places heavy reliance on technology that Council has significant concerns over given the low permeability nature of the soils on the site.

No field tests relating to soil type or permeability have been undertaken on the site to demonstrate that there is sufficient infiltrative capacity in the soils for any of the proposed WSUD measures. Such data is essential to adequately inform any MUSIC modelling and development of stormwater management methodology.

Stormwater quantity management relies on a wide range of WSUD measures installed largely within the road reserve. As such it is assumed that these control devices will pass to the management of Council with the dedication of the road system. This is not acceptable to Council. Council has concern over the expected performance of many of the WSUD measures such as permeable pavements. Along with this anticipated lack of performance come higher maintenance costs. For example regular cleaning, including vacuuming of permeable pavements, regular replacement of filter mediums, and pavement failure due to high degree of water logging, will result. This places an increased and unfair maintenance burden on Council. This is particularly relevant as, unlike the rest of the Shire where stormwater measures are installed largely to protect public assets, downstream, in this instance such measures will be maintained to protect the private assets of the Gandangara Local Aboriginal Land Council which exist downstream from the urban development. Council considers it is unreasonable for the developer to cause the impacts and gain the financial benefits of the development causing these impacts and then expect Council to maintain the assets necessary to manage these impacts in order to preserve their land and assets below the development.

The achievement of the relevant goals for stormwater quality management relies heavily on infiltration of storm flows. As noted earlier, the low permeability of site soils raises concerns over the success of such a strategy.

Overall Stormwater Management

Council has concerns over the stormwater management strategy in that it places heavy reliance on measures that are not suitable for the site, other innovative measures that have no mechanism to ensure their uptake and adoption, and reliance on centralised systems such as wastewater reuse that have no mechanism for ongoing operation. No detail has been provided for the ongoing management of any of the proposed WSUD and stormwater measures. It is assumed that in the absence of such detail, and the fact that the majority of WSUD measures are located wholly within the road reserve that the intention is to pass the management responsibility for these structures to Council when roads are dedicated. Such a strategy is not acceptable to Council.

Council has significant concerns over the burden of additional costs of maintenance associated with the proposed stormwater management measures, particularly in light of the fact that they will be protecting the developer's private assets rather than public assets downstream of the development.

Summary of Comments and Response to Director General's Requirements

Identify all watercourses, riparian land and wetlands that could be potentially affected

The Riparian Corridors Assessment failed to identify all riparian lands and water courses likely to be affected by the proposal. No wetlands were mapped or identified as part of this process and no recommendations were made in relation to adequate buffer zones for protection of the wetlands on the site. Additionally, watercourses and riparian lands were not identified in the south eastern portion of the proposed development. Watercourse assessment and identification was also undertaken during a prolonged dry spell which is not conducive to accurate mapping of watercourses. Therefore it is considered that the proposal has **not** identified all watercourses, riparian lands and wetlands that could be affected by the proposal.

Assess the potential impacts of the development on water quality and quantity of receiving waterways, riparian land, wetlands and downslope vegetation.

No data is provided as to the status of existing water quality in receiving waters and waterways. Many broad assumptions are made, but are not backed up by sampling data or even detailed site observations in downstream receiving waters. Without such baseline data is difficult if not impossible to accurately assess impacts to these environments.

Despite this, the proponent has undertaken modelling to determine if appropriate water quality goals can be met in downstream environments. Council has significant concerns over the accuracy and validity of this modelling given the lack of input data, including assumed degree of imperviousness of the various catchments, and the assumed performance of many of the WSUD measures on this site. Council is concerned that the WSUD measures proposed to treat and manage site stormwater are not appropriate for the shallow and clayey soils of this site and will result in suboptimal performance and excessive maintenance.

There has no identification or assessment of impacts to wetlands on this site.

Overall Council considers that the proposal has **not** assessed the potential impacts to receiving waterways, riparian lands, wetlands and downslope vegetation.

Establish minimum riparian widths required to maintain channel stability and significant ecological values.

The Riparian Corridors Assessment (RCA) identifies appropriate riparian corridor widths for much of the development to west of the site along Heathcote Road. There has been little or no assessment of such riparian corridors to the south east of the site, nor has there been any assessment of the need for riparian buffers to the wetlands present on the site.

The RCA notes that the recommended riparian corridor widths may be varied on a case by case basis, but no case specific justification is provided for any such variations.

While riparian corridor widths are recommended for large areas of the site there is no assessment of compliance of the development with these recommended riparian widths.

Council considers that while appropriate recommendations have been made for riparian widths, they have not been adequately applied to the whole of the development. Also, no provision has been made for application of riparian buffers to wetlands on the site.

Accordingly while appropriate riparian widths may have been established they have **not** been applied to the development to ensure that channel stability and significant ecological values are maintained.

Assess constraints and strategies for stormwater management

The Water Sensitive Urban Design Initiatives Report and the Stormwater Management Strategy, provide a catalogue of potential measures to manage stormwater. However there is limited to no assessment of their direct applicability to this site. In fact, much of the strategy ignores the constraints of the site, such as shallow soils and low infiltration capacity, making the majority of the proposed measures unsuitable for this site. Other strategies proposed rely on significant ongoing management from a centralised body, such the greywater reuse system, without providing any indication of what such a management system would be, how it would be managed and who would be responsible. Ongoing management of the stormwater system represents a significant constraint, posing a substantial financial and resource burden. There has been no consideration of how these matters will be addressed in the long term and no overall management proposal put forward.

Overall Council considers that there has **not** been adequate assessment of any of the constraints of the site in relation to the proposed strategies for stormwater management.

Infrastructure Provision

Assess the capacity of exiting utilities and infrastructure and identify required infrastructure to service the site

According to the applicant's projections, this proposed development shall have a permanent population of between 7050 and 8,100 and a transient (worker) population of approximately 10,000 and 15,000. It should be noted that the applicant's projections for the permanent population are considered to be highly conservative with a potential of these figures doubling due to smaller lot sizes proposed, (200m²), and final road and lot layouts being prepared.

At the present time, the entire 865 ha site, including the area of developable land, is totally devoid of any roads, public utilities, telecommunication services or other forms of infrastructure associated with residentially or commercially developed lands.

The landform of the site proposed for development is characterised by two main steep bushland creek valleys with numerous contributing and intersecting transverse ephemeral and permanent watercourse valleys. These valleys are themselves steep containing numerous rock escarpments. The resultant development areas are therefore fragmented, widespread and limited to ridge top type development on the spurs between the transverse creek valleys and on isolated hilltops.

As a result of this fragmentation, the provision of infrastructure to the disparate development areas shall be at a considerably greater cost per lot than would normally be expected in the development of lands not so severely impacted by topography.

The basic structural foundations for the applicant's proposed development, ie, public utility services such as roads, bridges, water, sewer, telecommunications, electrical supply and the like required to service this development must be drawn from locations remote to the site.

Roads

The fragmented and remote locations for the residential and employment zones require considerable infrastructure in the form of roads even to enable consideration of their development. For example, the development of all of the employment and residential lands, community centres and shopping centres proposed for the lands abutting Heathcote Road could not be considered or approved on the grounds of bushfire safety without the provision of an East/West road link from Heathcote Road to the already developed lands abutting New Illawarra Road. A direct nexus therefore exists between the development of these lands and the construction of the East/West link road.

This proposed East/West road link, to be constructed by the Gandangara Local Aboriginal Land Council, incorporates a four lane bridge approximately 314m long with a maximum deck height of 62m above the valley floor. A previous proposal for an Arterial Link Road along approximately the same alignment proposed by the applicant was abandoned by the NSW State Government on the grounds of the cost of this bridge. The current four lane East/West link road proposal also incorporates a substantial stacked rock embankment, some 115m long and 15m high at its maximum to traverse another creek valley prior to its intersection with the western end of the Bangor Bypass. This latter intersection itself is also proposed to be reconstructed in future as a grade separated interchange to carry traffic across New Illawarra Road.

In addition to the Arterial East/West link between Heathcote Road and New Illawarra Road, the fragmented and widespread locations of the developable lands requires the construction of a series of Collector Roads incorporating three substantial bridges to link the areas of developable land with the East/West arterial to provide everyday access to and bushfire emergency egress to the east. The cost of these Collector Roads and their associated bridges, cuttings and retaining structures shall again be at the full cost of the developer as shall be the full cost of the construction of the entire 18km of the lower order local road network.

In addition to the site specific needs of the development, a direct nexus exists between the development of the lands proposed and works required external to the site that are generated solely by the development. This is acknowledged by the applicant in its submission prepared by Hyder Consulting Pty Ltd at "Traffic and Transport" Volume 2, Appendices, Section 5.2 (Funding and Apportionment). The applicant states at 5.2.2, "Nexus is the relationship between the expected types of development in the area and the demand for additional infrastructure or facilities created by those developments". Further, to Apportionment, the applicant states that it is the process whereby the demands of those who may benefit from the provision of infrastructure services is defined to ensure that the contributing population pays for its share of total demand. In this regard the proponents of this development are required to mitigate the transport related impacts external to the site and will be "required to meet some of the costs" of providing development generated infrastructure to mitigate the identified impacts.

Despite acknowledging the requirement to mitigate against the development's external impacts, the applicant fails to acknowledge the nature and extent of its responsibilities with regard to the external road network and at Section 5.2 only acknowledges its responsibility to meet at least some of the cost of off-site transport and services required to achieve sustainable transport to and from the site.

The Hyder report, "Traffic and Transport", Volume 1, Table 6-8 details the projected increase in traffic volumes on the surrounding Arterial Road system, Base Case 2031 volumes with and without the inclusion of the development at Heathcote Ridge. When fully developed the Heathcote Ridge site is forecast to increase traffic volumes on these key roads within the Shire between 36% and 60% above that if the proposed development were not to take

place. It should be noted here that the 2031 volumes with the fully developed Heathcote Ridge development include volumes of traffic drawn to the East/West Arterial link by its very existence. Further it should again be noted that the East/West link is only necessary to develop the lands abutting Heathcote Road to provide Heathcote Ridge with a bushfire emergency evacuation route and for no other purpose. The increase in traffic volumes generated principally by the development's existence give rise to a requirement for the construction of two additional traffic lanes on Alford's Point Road, Alford's Point bridge, Bangor Bypass, Woronora River bridge and River Road/Linden Street together with the widening of Heathcote Road to four lanes north of the East/West Arterial.

There is a direct nexus between the Heathcote Ridge development and the necessity to provide the additional traffic lanes on these surrounding arterial roads and major bridges and therefore, on the applicant's own submission, the applicant should also be responsible for the majority of the funding of these additional roadworks on that surrounding arterial road system. No such acknowledgement is made within the applicant's submission.

There are no details provided by the applicant as to how the road infrastructure is to be funded, there are no costings for any of the proposed development area Arterial, Collector and Local road networks, the four major bridges and massive earth embankments, the intersection upgrades, including New Illawarra Road/Bangor Bypass grade separation or the provision of drainage works associated purely with the road network. In addition, there is no acknowledgement of the responsibility of the developer to upgrade and amplify the surrounding Arterial road network due solely to the effect of the development on its surroundings.

The proposal shall result in considerable long term maintenance costs for Council due to the necessity to link the fragmented ridge spur and hilltop development areas with substantial bridge structures together with the additional costs to maintain the local and Collector Road infrastructure, it shall have a detrimental effect on the surrounding road network, the total effects of which have not been adequately canvassed and there are no projected costs for the works.

Potable Water

No potable water supply reservoirs exist within the area of the lands proposed to be developed.

Sydney Water have indicated that the proposed development can be serviced with potable water from the two existing reservoirs located on New Illawarra Road, Lucas Heights and Menai Reservoir located at Bishop Road. The potable water supply system includes a provision for structural fire fighting purposes.

Servicing the development shall require the construction of 14,650m, (14.65km), of trunk potable water supply pipelines from the Menai and Lucas Heights reservoirs together with the connection of these pipelines to the existing potable water supply system. It should be noted that these are trunk pipelines only and do not include any water supply pipelines that are required to be laid within the road network to service individual lots. Water supply pipelines and their fittings up to and including 200mm diameter pipelines are not considered by Sydney Water to be "trunk" pipelines and are the total responsibility of the developer to fund. The developer is required to enter into a Commercial Agreement with Sydney Water for the planning and installation of the potable water supply pipelines with the full cost of the planning to be met by the developer.

An estimate of the trunk water supply mains is as follows:-

14,650m (14.65km) trunk mains

No details have even been estimated of the quantity of water supply mains 200mm diameter or less has been provided by the applicant

No details of the estimated costs or funding of any of the potable water supply system for the development have been supplied by the applicant.

No details have been provided as to how the staging of the water reticulation system is to be accomplished.

Sewerage

Apart from a single Sydney Water sewerage main located within the development's proposed conservation areas that currently services existing subdivisions west of New Illawarra Road and Alford's Point Road, no sewerage system is located anywhere within the residential or employment zones of the development site.

Sydney Water has indicated that the development site lays within the catchment area of and can be serviced by the existing Cronulla Waste Water Treatment Plant. However, while it may have the capacity to treat sewage from the site, the existing network delivery pipelines to the treatment plant may not have sufficient capacity to cater for the proposed development.

The applicant has proposed a network of pumping stations rising mains and gravity mains for the development to provide a better environmental outcome within the proposed Conservation Areas.

Sydney Water has also indicated that the provision of a local recycled water scheme incorporating sewer mining would significantly reduce the impact of, and presumably reduce the cost of, any proposed sewerage system. The disadvantage of such a scheme would be that Sydney Water proposes no recycled water scheme for the development and therefore funding for its construction, maintenance and operation would be the sole responsibility of the developer in perpetuity. The applicant may reject such a proposal principally on the grounds of funding and the lack of an industrial zone within the development that would have a significant demand for recycled water.

On that basis, preliminary estimates for the sewage system indicate a requirement for:-

- 4,650m (4.65km) of gravity sewerage mains and associated fittings and pits.
- 8,800m (8.8km) of sewerage rising main pipelines and fittings.
- 800m upgrade of Sydney Water's existing Mill Creek trunk sewerage main
- 17 sewerage pumping stations.

The applicant has made an assumption that the upgrade of the sewerage trunk main is limited to 800m and wholly within the boundaries of its development site. There is no detail within Sydney Water's correspondence to indicate the extent of trunk main amplification required. Therefore, the amplification could be far greater than anticipated and extending outside the development lands.

No details of the estimated costs of the funding of the sewerage system or the amplification of the existing trunk mains have been provided by the applicant.

No details have been provided as to how the staging of the sewage system construction is to be implemented.

Recycled Water

In its discussions with Sydney Water, the applicant has canvassed the potential provision of a recycled water supply within the development.

Sydney Water has indicated that the recycled water network will, in all likelihood, never be extended to the Heathcote Ridge site. Further, it has indicated that if such a scheme is to be contemplated the total funding of the construction and ongoing maintenance and operation of such a scheme together with all associated infrastructure shall be the responsibility of the developer.

The applicant's consultants have estimated that for a sewer mining scheme based recycled water supply scheme the following estimated infrastructure would be required:-

- 9,100m (9.1km) of recycled water supply pipelines and associated fittings.
- 1,300m (1.3km) of rising main pipework and fittings to the treatment plant.
- 1 sewer mining pump station and connection to the Mill creek trunk main.
- 1 waste water treatment plant with recycled water capacity.

No details have been provided as to the extent of works required to provide recycled water to all the residential allotments or the Employment lands.

No details of the estimated costs or the funding of a recycled water supply system have been provided by the applicant neither has there been an estimate provided for the yearly maintenance or operating costs for such a scheme nor who would be responsible for its operation and maintenance..

No details have been provided as to the staging of the provision of any proposed recycled water system.

Electrical Supply

There is no connection currently available to the Ausgrid system.

The applicant has indicated that Ausgrid has two options for the installation of the trunk power supply to the development lands. The first, Option A, involves the connection of the site to the existing Menai Zone Sub-Station providing 11kV to the various residential and employment zoned areas. The second, Option B, involves the construction of a new Sub-Zone Station within the development lands with an associated connection to the existing grid. It has been indicated that the costs of the upgrade of the existing or the provision of a new sub-station would be Ausgrid's responsibility. However, the provision of the trunk main system would be at the total cost of the developer. Further, the installation of pad-mounted sub-stations to convert the 11kV supply to 240v would be borne jointly by the developer and Ausgrid. The number of these sub-stations is unknown. The provision of the Low Voltage 240v house supply including kiosk substations and the reticulation system is at the total cost of the developer and no costings are available for this nor have any quantities been provided for this work.

It is estimated that 13.350m (13.35km) alone of 11kV trunk cabling and conduits shall be required to provide power to the site.

Ausgrid's correspondence indicated preliminary costing for the two options as follows:-

Option A \$24.9mil

Option B \$15.45mil

No details have been provided by the applicant as to the staging of the electrical supply.

No details have been provided as to the extent or costing of the cabling and conduits required to service all of the residential allotments or the Employment lands.

Telecommunications

Currently there are no telecommunications networks connected to the development site.

NBN Co has indicated that the development proposal lies within its fibre optic supply footprint and satisfies its statutory requirements to provide that servicing.

It is unclear if NBN Co shall supply the trunk cabling to the closest point of the development lands in accordance with its current policy i.e., only to Precinct 10, or if it shall provide the trunk cabling to the isolated development lands through the site. In the event that NBN Co provides the supply only to Precinct 10 at its cost, the developer would be responsible for the remainder of the costs for the trunk system throughout the site.

13,200m (13.2km) of trunk telecommunications infrastructure is required to service the entire development site. Should NBN Co decide to provide supply of the trunk system only to Precinct 10, the majority of the 13.2km of trunk infrastructure would be at the cost of the developer.

The developer is also responsible for the full cost to provide telecommunications conduits and pits throughout the development lands to each lot. This involves the total cost of the provision of conduits and pits to the 2725 proposed residential lots together with each lot within the 716,660m² of Employment lands.

No estimate of costs for the provision of mains telecommunications infrastructure have been provided by the applicant.

No details have been required of the extent of the telecommunications infrastructure required to provide access to all residential allotments or the Employment Lands.

Gas

Currently there are no gas mains in the vicinity of the development lands.

The applicant has indicated that the nearest gas mains supply exists at Blaxland Drive, Alford's Point, some 3.2km from the Bangor Bypass entry to the site but 4.47km from the boundary of Precinct 10 and some 3.7km to the north of Precinct 1 at Voyager Point along Heathcote Road.

There are no preliminary costings for the supply of gas to the site as Jemena, the company that supplies gas to the region, indicated in correspondence to the applicant's consultants that due to the lack of suitable detail, all that they could indicate is that natural gas was in the vicinity and it can be made available to the site.

The applicant has indicated that 12,250m (12.25km) of gas mains piping may be required but it is unclear if this includes the possible 4,470m (4.47km) of piping required to reach Precinct 10 from Blaxland Drive or the 3,700m (3.70km) of mains required to reach Precinct 1. The latter being the case, the provision of trunk gas mains could extend to either 15.95km or 16.72km depending on the source.

There is no information available in any form to indicate how much additional infrastructure shall be required to provide the gas reticulation system to the 2725 lots or to the 71.66 ha of employment lands.

Other Infrastructure

The applicant's submission relative to its Master Plan Servicing Strategy has been limited to the provision of Public Utility and Telecommunication services to the development lands.

The development of the site shall require the provision of other services normally associated with the creation of a new suburb, this particularly being the case due to the remote nature of the site and its fragmentation across several development areas.

The site needs to be serviced by the NSW Fire Brigades and therefore shall require the provision of a Station suitable for that purpose. Similarly, due to the site's remote location and the high risk from bushfire, a station shall be required for the Rural Fire Service.

The provision of other non-public utility service infrastructure such as libraries and other community facilities should be the subject of individual s.94 Contributions plans.

Planning Agreement and Developer Contributions

The draft Voluntary Planning Agreement between GLALC and Sutherland Shire Council forms Part 20 of the submission. The following comments are made in relation to the detail contained in the schedules to the draft document. However, Council wants it to be made clear that it has not been a part to the content of the draft VPA. As currently proposed, the level of provision of local community facilities and active playing fields falls short of the level of provision that the new community will demand. Should the Minister for Planning and Infrastructure choose to declare the site State Significant, Council reserves the right to enter into full and proper negotiations with the proponents. However, as an interim measure the following shortfalls have been identified:

The draft VPA makes provision for 2.5 hectares of open space to be used as the northern sports fields. Embellishment cost of this space is shown as \$1,045,000. This space would essentially allow space for two playing fields to be provided, but the allocation for embellishment would only provide one playing field. Council experience constructing playing fields shows that with appropriate surfacing, irrigation, lighting, amenities and car parking, the embellishment costs for a single field are approximately \$1 million.

The disconnected urban form produces a series of distinct and isolated communities. As a result, central playing fields will not serve the future communities needs. In addition, Sutherland Shire has extremely high participation rates on organised sports at all levels. The proposed rate of active open space simply falls far short of minimum requirements. The distribution of playing fields should reflect the pattern and density of development. Given that Precinct 3 – Residential North and Precinct 4 – Residential Core North make provision for over 1500 dwellings, at least three (3) playing fields are required. These playing fields should be located with passive open space to enhance their utility. The residential population of Precinct 5 – Residential Frame West will combine with the higher population density of the local centre to create a significant precinct. As the central place, a further two (2) playing fields should be located with the school and passive open space. The physical separation of Precinct 6 – Residential South West and Precinct 7 – Campus Park South is such that future

residents will not be able to readily access other playing fields. One playing field needs to be located in this precinct adjacent to the passive open space. Similarly, a playing field should also be provided to the community of 806 dwellings in Precinct 10 – Residential “The Bridges”.

In total, Council estimates that at least seven (7) playing fields will be required to serve the planned community’s local sporting needs. To embellish the land to the standard required, an allowance in the order of \$7 million dollars is required. As it currently stands, the draft VPA seriously under funds open space provision.

The draft VPA also makes an allowance of \$5 million for a 50 metre swimming pool. Sutherland Shire does not have the financial capacity to meet the ongoing costs associated with a swimming pool in this location. Instead, a far better use of the allocated funds would be to facilitate the expansion of the Menai Central Library so that it can serve the needs of the new community.

Consultation

Sutherland Shire’s Aboriginal Advisory Committee has provided specific comments about the special consultation needs of Aboriginal Elders. These comments are part of the Committee’s recommendations, located in the Attachment 1 to this submission.

Response Conclusions

It is an underlying principle of good urban planning that development outcomes must be informed by an analysis of the constraints affecting land. It is a fact that the land referred to as Heathcote Ridge is a highly constrained environment. It consists of an exposed ridge and steep gullies, which are subject to significant threat from bushfire. The land is physically isolated from the established urban area and yet is in very close proximity to the Holsworthy Military Base, ANSTO and the Lucas Heights Waste Disposal Centre, each of which raises land conflicts. The topography itself makes the construction of new roads and infrastructure highly difficult and severs the potential to have any meaningful links to established neighbourhoods or efficient public transport. The topography also results in an ambitious construction program of roads and bridges to create links. Overlaying these factors is the ecology of the site, where the most important species and communities are sited along the ridges and existing wildlife corridors assists the movement of species east to west.

It is these fundamental constraints that explain why the land was not developed when the suburb of Menai was released for urban development in the 1970/80s. Council accepts that parts of the site have some development potential. In fact the Urban Perimeters Study (2003) and draft SSLEP2004 showed this potential. However, a land use was not nominated because analysis of constraints showed that it was unsuitable for residential purposes. Instead, the draft LEP recognised the need for in-depth study of these areas so that land uses could sit comfortably with the constraints affecting the land.

This approach is in stark contrast to that employed by the proponent.

The proposed land use mix proposed simply does not reflect the constraints that that exist. Instead it is a largely residential concept essentially because this is the most profitable form of development at present. The remainder of the proposal exists to fund the works that are essential for residential component. However, residential development is the least compatible with the known site constraints. A residential neighbourhood results in the need for an extensive system of Asset Protection Zones. This in turn results in excessive clearing and loss of east west wildlife connections.

Protecting the residential neighbourhood from the western fire front has also resulted in the concept of the broad strip of employment land almost the length of Heathcote Road. The sheer scale of this zone is excessive and introduces more issues in terms of the creation of excessive traffic volumes which cannot be catered for. Protecting the neighbourhood from bushfire also results in a concept that is highly dependent on management of land to protect life and property, yet even the strategies put forward do not meet best practice planning in bushfire areas.

Trying to resolve the constraints of access and managing traffic involves the construction of massive bridges and the need to duplicate Heathcote Road. It also results in an excessive amount of roads for the dwelling numbers proposed. Given the cost estimates involved it is difficult to understand how these costs can be borne without undermining the economics of the development, even if the land has no underlying cost to the developer.

In arriving at a conclusion in relation to the proposal the fundamental questions are:

- Is this a sensible development proposal?
- What are the costs relative to the benefits?
- Do the impacts justify the outcomes?
- Can the concept be delivered as described in the submission?

Fundamental in answering this question is whether this will be a safe community able to be serviced with physical and community services. West Menai is the most exposed part of the Sutherland Shire to extreme bushfire risk, fanned by westerly winds across the plateau, through the military site where active fire fighting cannot be carried out. The proposed neighbourhoods cannot be isolated from the extreme bushfire risk. *Planning for Bushfire Protection 2006* specifically states, “no development in a bush fire prone area can be guaranteed to be entirely safe from bush fires”. If the proposal proceeds the development will dramatically increase the localities where Rural Fire Services, State Emergency Services and volunteers will be required to defend life and property. This cannot be a sensible strategy when resources are stretched, where public safety relies on the good work of volunteers and where we have full knowledge as the fire behaviour. Clearly a more sensible approach is to avoid this known risk.

To reduce potential loss of life bridges are required, at great expense. Yet even this extreme solution requires residents to escape through bush. It is not a route assured to be safe. In an extreme bushfire event, the fire front will not proceed in an orderly fashion from east to west.

Again to reduce fire risk, the buffer employment zone is proposed. Its' scale and form has been arrived at through AZP application, not as a result of any strategic planning. The employment zone represents such an excessive volume of space that it bears no relevance to market demand or the Metropolitan Strategy for Sydney. Yet it is the scale of the

employment zone that results in the predicted traffic impact which is not addressed and the impact on Liverpool's employment potential.

In essence the proposal would result in an isolated community without public transport, where community services will be insufficient or inefficient to provide. Further, future rate income is likely to be out of balance with maintenance of the infrastructure proposed. In addition there is a fundamental weakness arising from urban form that is dependent upon excessive management of asset protection zones. Ultimately the success of the APZ is dependent on the development and income from employment land. Yet the surplus employment land on the Kurnell Peninsula demonstrates that zoning land does not guarantee development. If the development fails to materialise the entire concept fails because proper management of the APZs cannot be funded. Nor will there be funds to carry out the proper management of the conservation area.

Rather than seek to maximise the residential yield from the site, the land owner should reconsider both the scale of development and the land-use mix. Development needs to be confined to those areas of least ecological value, as indicated by SSDLEP2004, and land uses need to work with the bushfire hazard, the local ecology and access constraints. A sensible solution does not have to sterilise the development potential of the entire site, but it does need to minimise the risk to life and property in times of bushfire and protect the ecological significance of the locality.

The costs of serving this development with adequate road capacity also indicate that the residential use of the site is far from optimal. In fact the maintenance of future public infrastructure represents a financial burden which rate income from the development would not meet.

Put simply, costs both financially and environmentally, and the potential for loss of life and property, are such that they overwhelm the potential benefits of the proposed development. While Council supports the GLALC's vision to provide a means for the economic dependence of its people, after careful consideration of the proposal, it is concluded that the planning framework put forward in the State Significant Site Submission will lead to unacceptable outcomes for the subregion's natural, built and social environments.

Attachment 1

MinuteNumber: 300

Council Meeting Date: 10/10/11

26/09/2011 SAF056-12

Minutes of the Meeting of the Aboriginal Advisory Sub-Committee of Sutherland Shire Council, held in the Administration Centre, Eton Street, Sutherland on 31 August 2011 commencing at 6.11pm

File Number: GO/06B/984032

Director: Corporate Services (GT)

Extract from Minutes

8. HEATHCOTE RIDGE DEVELOPMENT PROPOSAL

Stephanie Barker, consultant for the Gandangara Local Aboriginal Land Council (GLALC) "Heathcote Ridge" proposal, provided a presentation on the proposal and discussed the community consultation processes. It was noted that a similar presentation was provided to Councillors as part of a Special Environment & Planning meeting on 18 July 2011.

Gandangara Aboriginal Land Council unveiled a \$1 billion draft plan to establish a major new residential estate at west Menai to be named "Heathcote Ridge". The proposal includes 3,000 new dwellings located in several hubs scattered over 850 hectares. It will be located on land between Heathcote and New Illawarra Roads and Georges River National Park. The site will also house a 70 hectare commercial hub, and a 500 hectare conservation reserve, to be privately managed, to protect known significant Aboriginal archaeological sites. A copy of the GLALC Fact Sheet on Aboriginal Cultural Heritage is attached as Appendix "A".

The east-west extension of Bangor Bypass is to cut through the reserve and provide access to the residential hubs and will include two (2) bridges. There will be a parallel road with Heathcote Road with three (3) access points into the development. The development is to be staged over the next 15 - 20 years.

Project managers and technical advisers have been engaged, and a sustainability reference group set-up to offer advice on environmental, social, and economic sustainability. The goal of GLALC is to have a development footprint that protects known Aboriginal archaeological sites. So far, over 80 known sites have been identified. Consultant Archaeologists, Mary Dallas & Paul Irish are reviewing the archaeological sites and have advertised for people, in particular Aboriginal people, to register their interest in participating in a consultation process regarding significant Aboriginal sites in the subject area. The invitations were sent out on 4 January 2011 with registrations required to be lodged by 28 February 2011. It was noted that Les Bursill has registered as an Aboriginal person with an interest, and he has spoken with Mary Dallas about a number of concerns he has. Mary Dallas has been organising to tour interested parties around the site.

The consent authority is the Department of Planning & Infrastructure, and not Sutherland Shire Council, as the development is regionally significant and falls under Part 3A legislation. GLALC will be lodging their application in September. The Department will formally exhibit the proposal before the end of the year, possibly November/December for a period of 28 days, and they will include a copy of the Aboriginal Heritage Study on their website. The Assessment process by the Department of Planning will take up most of 2012 regarding land uses. More detailed processes will be considered after the land uses have been determined and council will get an opportunity to be involved in these.

In response to the presentation, the following issues were raised by members of the Aboriginal Advisory Committee:

- Concern about the adverse impact of 3,000 homes which could generate up to 12,000 people living in the area with up to 50% of these people being children.
- Unacceptable that Ella Avenue, West Menai (Gandangara Stage 2) has a traditional Aboriginal grinding / ochre painting site which is currently only 50 metres from housing and appears to be receiving little protection. Now there is the potential for Mill Creek and Barden Creek to have housing adversely impact on crucial sites. At least half a dozen groove grinding sites and the "Spearing of Arthur Phillip" carving is contained in this area. Axe grinding grooves indicate valuable historic information such as how many elders were in a tribe, family size, and lifespan. Mill Creek has 14 or 15 sites with shell scatters and open camps. Trees and rock formations are very significant. Creeks and ridgelines need to be checked for significant sites. Ridge tops have engravings and carvings, valleys have middens. There are a lot more than the 80 sites identified by the consultants for GLALC, and new sites are discovered with each visit to the area. There needs to be more consultation regarding paintings, engravings, culture, history, secret women's sites, men's caves, burial sites and dreaming tracks. Les Bursill did a walk through of the area with Mary Dallas but this is not enough. How do additional sites, yet to be identified, get included in the Part 3A development assessment process? There is a need to validate further sites.
- What is Gandangara's plan to preserve the "known" and "unknown- yet to be discovered" sites in the area? Some sites are hidden or covered under moss and foliage. What safeguards are being put in place to protect these areas? The GLALC need to demonstrate that they will take appropriate measures to preserve these areas.
- New subdivisions could divert storm water to significant cave sites which will get overgrown with moss from changed waterflow patterns due to the encroachment of houses. This could erode/damage carvings, etchings and damage ochre paintings.
- Easier access will be allowed to sites by children/people who maybe unappreciative of these sites. This could result in vandalism, graffiti, destruction/loss of sites. It was noted that mitigation measures to prevent access to a known site can include Lomandra (a native grass) to make access difficult, however it was also noted that some vandals have forced their way through protective steel structures at other sites.
- Concerns that other known sites have been covered under the Lucas Heights Tip site by the State Government - there has been a history of disrespectful actions towards significant Aboriginal archaeological sites in the surrounding area. What guarantees are being provided for the protection of remaining sites in the area?
- That Council's Natural Areas Manager (Brendon Graham) and Environmental Assessment Officer (Paul Styman) be consulted / involved in identifying sites as they have extremely good local knowledge of Aboriginal sites. There needs to be a comparison made between Aboriginal archaeological site lists that Gandangara hold and those of other people at Council, and interested persons such as Les Bursill.
- Dreaming tracks are important to maintain - cutting into the landscape can change the contours of the land therefore change the story of dreaming tracks. Story lines, song lines, how long Aboriginal people have been here, is all depicted in this landscape. Drawings and etchings are not just isolated sites, but they are interconnected with the rivers and mountains.
- Elders want to hand a legacy down to Koori Kids. There is a need to get as many Koori Kids together with other young men and women, and educate them on these sites.
- The need to maintain confidentiality as well in order to protect some sites from vandalism.
- It is difficult, if not impossible, for Aboriginal Elders to fill in forms and website pages to put their views across on the development proposal. We need an engagement process that allows Elders to declare their messages verbally on Aboriginal spirituality and

connectivity. A forum needs to be organised and recorded on video to allow verbal input by Aboriginal Elders.

- How will conservation management of the sites be achieved over the next 100 years and beyond ?
- The \$100 million transport package appears insufficient to cover the costs of infrastructure. Major bridge structures will be required for the motorway plus several small bridges connecting the commercial/residential hubs. These structures will permanently scar the landscape.
- ANSTO keen to set-up a cultural centre which needs to be considered.
- The site is part of the biggest cultural heritage library and museum. Once development has occurred, unfortunately only then will more sites be discovered resulting in the loss of bushland and more Aboriginal heritage.

Stephanie Barker stated that she will develop an engagement process for these issues. It was agreed that the GLALC and their Consultants come back to the Aboriginal Advisory Committee with the details and exact nature of the engagement process, and consider organising a forum. A Forum would help achieve cultural sensitivity through a genuine engagement process from Gandangara that seeks the views of Aboriginal people, and highlight the potential impacts of the development on the cultural identity of Aboriginal people. Leon Filewood gave a commitment to go back to the GLALC and convey the issues raised above.

It was noted that anyone can make their own submissions to the Department of Planning & Infrastructure on the proposed development during the public exhibition period to be held later this year (refer to Website: majorprojectsplanning.nsw.gov.au).

Decision:

That the consultant representing the Gandangara Local Aboriginal Land Council be requested to report back to the Aboriginal Advisory Committee with a proposed engagement process that seeks the views of Aboriginal people on this development proposal, recognising the fact that Aboriginal people are unlikely to participate in traditional forms of consultation.

Resolution of Council (10/10/11, Minute No.300)

That the issues raised by the Aboriginal Advisory Committee in relation to the Heathcote Ridge development proposal, as outlined in these Minutes, be considered by Council in any submission that it provides to the Department of Planning & Infrastructure.