MT RIDLEY

LOCAL STRUCTURE

PLAN

FOR

INTER URBAN BREAK

MICKLEHAM

December 1996
Amended May 1997

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CHAPTER 1 MT RIDLEY LOCAL STRUCTURE PLAN

1.0 THE LOCAL STRUCTURE PLAN

The Mt.Ridley Local Structure Plan has been produced for the Hume City Council in cooperation with affected landowners, government agencies and servicing authorities. The Local Structure Plan has been produced within the framework established by the Inter Urban Break at Craigieburn Strategy formally adopted by the Council in August 1994 and amended in April 1995. This Inter Urban Break provides for a permanent separation and landscape buffer between Craigieburn and any other development that may occur further to the north within the Merri Corridor. It also accords with the Craigieburn Local Structure Plan for the area to the south of the subject land.

This Local Structure Plan has been developed in close liaison with landowners with the aim of conserving sites of landscape and heritage significance and allowing responsible and site responsive residential development in the remaining areas.

This Local Structure Plan provides an overall structure for future development of the subject land as well as detailed local structure plans for two landholdings that account for nearly two thirds of the subject area. These two holdings are designated as Sub Area A (Mt.Ridley Homestead holding/Cockram property) and Sub Area B (Handen Holdings property holding). The detailed structure plans are included in Chapter 2 and 3.

The Inter Urban Break area is approximately 9 square kilometres and can be contained in a rectangle bounded by Mt.Ridley Road to the south, Mickleham Road to the west, the Hume Highway to the east and the overhead electricity transmission lines to the north (Refer Figure 1). This area contains the greater part of Mt.Ridley, an existing historic homestead built in 1850 as Mt Ridley (the summit was originally called Kinloch Hill), the Malcolm Creek alignment, areas of remnant Red Gum woodland and native flora and fauna. The area is used for a variety of farming pursuits such as horse breeding, and cattle grazing.

As part of the Local Structure Plan process this report is supplied to assist with the rezoning of this area from "Corridor C" to "Merri Urban Development Zone" under the Hume Planning Scheme.

1.1 Goals Of The Local Structure Plan

The goals of the Local Structure Plan are:

- To create a permanent landscape buffer north of Mt.Ridley Road which will provide a variety of landscapes and opportunities for rural residential living whilst conserving and enhancing significant landscape, flora and fauna values.

- To link open space and use the existing creeks and waterways to form an accessible and integrated linear open space network that links to the Craigieburn open space corridor further south and future open space networks proposed to the north.

- To establish routes for both significant arterial road (E14) and minor transportation links through the subject area.

- To provide a high quality rural residential living environment which if fully planned and coordinated can be relatively self sufficient in terms of meeting its servicing and effluent containment requirements and minimises the need to provide "conventional" urban support services and facilities. Such services (local and regional) will be readily accessible in the planned nearby urban area south of Mt.Ridley Road.

- To protect, promote and maximise views to hilltops and other natural features especially from proposed residential areas south of Mt.Ridley Road.

- To create a non urban buffer between Craigieburn and any additional urban development which may occur further to the north in the Merri Corridor.

- To provide an appropriate, rural based, visually attractive interface to the urban development planned south of Mt.Ridley Road.

1.2 Basis For The Plan Design

The design provides for the following:

- An open space network centred on Malcolm Creek, remnant woodlands and grasslands that connects to the Malcolm Creek corridor south of Mt.Ridley Road.

- Conservation of areas of significant landscape, flora and fauna value.

- Transport linkages with the identification of a route through the area for the arterial road alignment and minor roads to service rural residential areas (for local traffic only).

- Areas for residential development ranging from rural residential (I hectare plus) to small farmlets (3-4 hectares) to cater for market demand for rural residential living.

- Significant revegetation of creek corridors and designated conservation areas using local indigenous species.

1.3 Urban Design

The Mt.Ridley Local Structure Plan will provide for a range of housing types and lot sizes that will be suited to the local environment and ensure maximum consideration and integration of the landscape in the design of local service roads, allotments, building envelopes and location of services.

2.0 BACKGROUND

2.1 Site And Environs

The Local Structure Plan covers an area of approximately 9 square kilometres and is bounded by Mt.Ridley Road to the south, Mickleham Road to the west, the Hume Highway to the east and the SEC overhead transmission lines to the north (Refer Figure 1). Adjoining the north east corner of the area is a reservation for the Donnybrook Terminal Station (construction not as yet scheduled).

The eastern section includes one large holding, the Mt.Ridley homestead comprising approximately 500 hectares which is managed for grazing and a horse stud. The original homestead building dates from the 1850's and is classified by the National Trust, but is not on the Heritage register. The western section consists of up to 8 smaller holdings with landuse ranging from cropping/grazing farmland to small hobby farms (Map 1).

Land immediately to the south of Mt.Ridley Road is designated in the Craigieburn Local Structure Plan for an integrated residential community for approximately 26,000 people. This area is seen as being the basis of the future growth for the Craigieburn township. An important component of this strategy is for suburban residential development to be contained to the south of Mt.Ridley Road in order to create a strong sense of community and identity for the township and to define servicing limits.

2.2 Topography

The site occurs on the upland section of the Merri volcanic plains and is located on the western slopes and adjacent plains of Mt.Ridley. Landforms are long gentle slope plains, stony crests and rises (few), buckshot crests, undulating stony plains (with abundant embedded floaters and very little loose surface rock), gilgai plains and ephemeral rocky drainage lines and associated swales (Webster 1996).

The main visual feature of the site is Mt.Ridley which is situated in the eastern section of the plan area and rises to a height of 289 metres. From the peak extensive views are enjoyed to Melbourne City, the Dandenong Ranges and Mount Macedon. From Mt.Ridley a spur line runs down in a northerly direction and then tails off in a north western arc to parallel the northern boundary of the site. The area to the west of this arc contains the Malcolm Creek alignment and is within a slight depression and not visible at eye level from Mt.Ridley Road. The area west of the Creek alignment is fairly flat and consists of open farm grazing land (Refer Map 2).

The only area of slope in excess of 15% is generally found on the northern slope of Mt.Ridley, otherwise the remainder of the subject area has a slope of less than 15% (Refer Map 3).

2.3 Land Adjoining The Local Structure Plan

Land to the south of the Local Structure Plan has been designated for residential development as contained in the Craigieburn Local Structure Plan. This Local Structure Plan shows the location of the E14 road alignment, residential development and an activity centre to the south of Mt.Ridley Road. It includes an area designated as the 'Mt.Ridley Special Housing Area' which extends between the 260 and 275m contour, south of Mt Ridley Road and has special provisions to protect and enhance the rural character of the hilltop. The Cell 4 activity centre is located 250 metres south of Mt.Ridley Road adjacent to the Malcolm Creek corridor. It will accommodate a primary school, 500 square metres of convenience retail, a multi functional centre, and minor sports ground. This centre will be the closest activity centre to the area contained in the Mt.Ridley Local Structure Plan and will provide the necessary local services and facilities. A stand alone highway oriented convenience retail outlet is also designated for the southern intersection of the E14 with Mt.Ridley Road. These facilities however will not be provided for some time.

Land to the west of Mickleham Road is currently zoned Corridor A and is also used for grazing.

The Hume Highway is to be slightly realigned to a position further east of its current alignment. This will have no significant impact on future landuse in this area.

Land to the north of the Local Structure Plan has not yet been designated for development purposes but it has been rezoned to allow for some form of residential development to occur in the future, subject to broad strategy planning.

This Local Structure Plan will create an Inter Urban Break through rural residential development and parkland areas and ensure a separate identity for any land developed for residential purposes further to the north.

2.3 Site Assessment

2.3.1 Floral Values

Preliminary botanical site visits (Albrecht 1993) undertaken on the Mt.Ridley property found areas of relatively high quality indigenous vegetation of several different plant communities ranging from periodically inundated "wetland" to higher drier ridges.

The eastern section of the subject area is currently being further investigated for detailed flora values.

2.3.2 Faunal Values

A preliminary fauna survey undertaken over the subject area found a diverse range of faunal habitats with the plains woodlands at Mt.Ridley containing the most significant habitats (Beardsell 1991, Schulz & Webster 1991). Species recorded include the Little Mastiff Bat, Swift Parrots, raptors, parrots, wedge-tailed Eagle, Peregrine Falcon, Spotted Harrier, Black Falcon, Plains-wanderer, Peron's Tree frog, waterfowl and spoonbills. The most significant habitats are located on the plains woodlands at Mt.Ridley property, and along the Malcolm Creek and in particular within the two lakes created over the last few years and series of dams.

2.4 Visual Site Assessment

A visual site assessment (Webster 1996) indicates the subject area contains a number of distinct precincts.

2.4.1 Basalt Plains Grassland

These areas retain original native basalt plains grasslands in relatively intact condition and contain significant fauna and flora species. They are considered to have high significance due their relative intactness, overall rarity of such remnants in Victoria, the high diversity of flora and fauna species present and the presence of habitat for rare or threatened grassland flora and fauna. These grasslands are largely restricted to the eastern part of the subject area within the western and north western sections of the Mt.Ridley property.

2.4.2 Grassy Woodlands

These woodlands include the Red Gum and Grey Box Woodlands with the former considered to be of high significance.

The Red Gum Woodlands in the subject area range from relatively intact areas to areas heavily modified by tree removal, pasture improvement and stock grazing. Those areas that retain a natural grassy understorey and ground flora components are now very rare and regarded as being of very high conservation significance because they support a wide range of faunal habitats, high species diversity and significant flora and fauna populations.

The most intact areas of Red Gum Grassy Woodlands are found in the central and western parts of the Mt.Ridley property as shown in Figure 4.

The Grey Box Woodland occupies a small section in the far western part of the subject area.

2.4.3 Drainage Line/Wetlands

The Malcolm Creek alignment occupies an arc within the middle of the subject area continuing south to Craigieburn. The Creek is significant in providing a variety in landforms, habitat for the endangered Swollen Swamp Wallaby-Grass, subtle depressions throughout its course and certain sections downstream where it retains its natural rocky character and native vegetation both streamside and in-stream. The artificial wetlands and modifications

(such as dams) to the Malcolm Creek provide habitat for a wide range of fauna species.

2.4.4 Modified Habitats

Extensive parts of the natural grassland/grassy woodland communities have been modified as a result of clearing, cultivation and sowing of introduced crops and pastures. These areas have little conservation value but may play an important role as buffers and cater for transitory habitat.

There are also extensive plantings of mature trees in the form of windbreaks, plantings along fence lines and farm roads, and an area of woodlots in the Mt.Ridley property containing a mix of local and regional tree species.

2.4.5 Areas To The North Of The Local Structure Plan

Consideration should be given to any significant woodland and grassland areas to the north of the Local Structure Plan. Whilst not part of this Local Structure Plan, future development and the alignment of the E14 should minimise its impact on these areas once defined.

2.5 Cultural Values

2.5.1 Pre European History

Information from Aboriginal Affairs Victoria has revealed that no systematic survey has been carried out to date, but that two scarred trees have been recorded on their register. They have advised that they would retain an interest in the advent of any remnants being discovered in future development.

2.5.2 European History

The Mt.Ridley property has been classified by the National Trust and an old church cemetery site containing a number of old graves dating back from the 1850's has been identified by Council as having historical significance.

3.0 RESIDENTIAL DEVELOPMENT

The areas to be developed for residential use are designated on the Local Structure Plan. The principles underlying the design are:

- The existing landscape elements and significant environmental features are to be conserved and set the framework for residential development and the designation of building envelopes. These include existing windbreaks, trees along fence lines, woodlots, farm roads, dams and existing treelines.

- The view to the Mt.Ridley hilltop is to be maintained and building structures are to be restricted to below the 275 metre contour.

- Lots along Mt.Ridley Road and Mickleham Road are to be in the order of 2 - 6 hectares to maintain a low density rural outlook into the Local Structure Plan area from its perimeter.

- Areas within natural depressions and well screened from view of the perimeter roads and proposed open space areas are to be developed at densities of 1 to 3 hectares.

- All residential development is to be capable of catering for its water supply, sewerage reticulation, and stormwater management in keeping with the rural residential character that is proposed. Provision has not been made for the future development of full services to the Local Structure Plan area as it is intended that the rural residential character of the area provide a permanent inter urban break.

3.1 Range Of Lot Sizes

A range of lot sizes between 1 to 6 hectares is to be provided dependant on location within the plan area, proximity to proposed conservation areas, visibility of area from perimeter roads and adjoining areas, existing natural and manmade features, specific site conditions and suitability with regard to servicing and containment of effluent disposal.

Lot areas are to be detailed in the detailed Sub Area Plans in accordance with the requirements of this Local Structure Plan.

A minimum house and outbuildings area will be specified within the subdivision to ensure adequate roof run off is available for water supply purposes.

3.2 Population Targets And Dwelling Densities

Dwelling density will range across the land available for residential development. It is envisaged that a total of up to 300 lots will be achievable if all the potential land earmarked for residential development is developed. This would generate a population of around 800.

This low population precludes the need to provide "conventional "urban support services and facilities. Such services (local and regional) are currently accessible within Craigieburn and planned within the Craigieburn Local Structure Plan area further to the south.

3.3 House Siting and Building Guidelines

3.3.1 Mt.Ridley House Building Guidelines(Sub Areas A and B)

House Building Guidelines are to apply to all development within Sub Areas A and B in order to support the environmental and planning values contained within the Local Structure Plan. In particular these Guidelines will ensure that each lot is capable of collecting its own water supply, meets servicing requirements and contributes to the overall rural living environment.

The Mt.Ridley House Building Guidelines contain the following provisions for development within Sub Areas A and B:

- Only one dwelling per lot is allowed within the building envelope designated for each lot.
- The minimum floor area of dwellings is 200 m^2 (20 metric squares) with a minimum roof area of all structures including carports, outbuildings and sheds of 300 m^2 (30 metric squares). The roof areas must be grouped and linked to on site water storage facilities to provide for the lot's water supply.
- All dwellings shall have a minimum roof pitch of 25 degrees and all other structures shall have a minimum roof pitch of 22 degrees. No structure shall be higher than 2 storeys or 8m in height without specific permission.
- All dwellings are to be constructed of mainly brick, brick veneer, stone, rendered walls, or painted/ treated timber. No unpainted timber, galvanised iron or any other building materials saving for windows, doors, facias and gables are permitted. Paint colours are to be of muted tones and surfaces are to be non reflective.

- All other structures apart from the dwelling (ie. garage/carport, outbuildings, sheds, farm storage etc) are to be constructed of mainly brick, brick veneer, stone, rendered and painted concrete or cement sheet, painted/ treated timber or colourbond. No galvanised iron or any other building materials are permitted except for water tanks.

- Galvanised water tanks are permitted provided efforts are made to screen them.

- All building plans must have approval from the Mt.Ridley Local Structure Plan Design Review Panel prior to being lodged at Council or being certified by a private building surveyor.

- No transportable or removable homes are permitted within the Local Structure Plan area.

- No caravans or mobile homes are permitted on site prior to the completion of a dwelling home without approval of Council.

- Landscaping is to be provided to enhance the rural character of the dwelling.

- Typical rural style fencing should be utilised wherever possible (ie. post and wire or similar "open style" fencing).

3.3.2 Additional Guidelines - Area Guidelines, Mt.Ridley Special Housing Area Guidelines (amended May 1997)

In addition to the Mt.Ridley House Building Guidelines there are two further Guidelines affecting development. These are the Native Woodland Protection Area Guidelines which covers all residential development within areas containing Red Gum Woodlands and the Mt.Ridley Special Housing Area which covers all development between the 260m and 275 m contours. There is no overlap between these two areas. The areas covered by these special guidelines are shown in Map 6A & 6B. The Mt.Ridley Special Housing Area Policy is detailed in Chapter 2, Structure Plan for Sub Area A, as it only applies to development within this Sub Area.

The Area Guidelines covers all areas designated for residential development that include identified woodlands. The following additional provisions apply to development within these areas:

- Existing Red Gums and native indigenous trees are to be retained in these areas unless the area is defined as part of the building envelopes or services area.

- Materials are not to be stored within or underneath the canopy of the trees.
- No grazing of animals is allowed under the trees unless the trunk of the tree is protected from such grazing.
- No digging is to occur of the soil located within the drip line of any identified tree.
- Any dead limbs on red gums are to be retained for a fauna habitat.
- Dead wood provides habitat for native wildlife and is only to be removed around the tree if it poses any threat to human safety.
- Any native woodland trees that are lost or die are to be replaced with species that are local indigenous native plants – preferably local saplings or seedlings from nearby trees.
- The trees are not to be used for the purpose of supporting any play equipment.
- Any compaction of soil around the base of any native woodland tree is discouraged. Buildings, sheds, watering points or stockyards are not to be erected under the tree canopy.
- Avoid installing any services within the tree's root zone.
- Protect regenerating trees from mowing and grazing.
- Regeneration of saplings is to be encouraged wherever possible.

4.0 TRANSPORT SYSTEMS – These are shown on Maps 6A & 6B

4.1 Existing Roads

The subject area contains an alignment for the E14 arterial road and a number of unmade roads that serve the farming needs of local landowners. The Hume Highway which forms the eastern boundary of the subject area is to be slightly realigned further to the east but this is not expected to impact on the proposed development.

The objectives used to guide development of the road network are as follows:

- To provide for a route through the Local Structure Plan area for the E14 road alignment in a manner that minimises its impact on significant conservation areas and maximises the area of land suitable for rural residential living opportunities. No direct access to is to be provided to any lot from this road.

- To design local streets that are responsive to the topographical, environmental, and landscape nature of the area, and caters adequately for the traffic and safety needs of road users.

- To design local streets that can accommodate service and transport vehicles, encourage low traffic speeds and cautious driver behaviour and provide adequate access at all times.

- To provide a road layout pattern and design which enhances the rural residential character of the area.

- To provide a movement network which provides good internal and external access for residents, maximises safety, minimises through traffic and provides for connection between the subject area and abutting areas.

4.2 Road And Transport Network

The E14 roadway alignment will be accommodated within a 40 metre road reservation allowing for the construction of two carriageways with the option of a future construction of a third lane in each direction. Provision will be made for a possible light rail service (if required) within the agreed road reservation. The route has been selected as it provides the most direct link to the alignment south of Mt.Ridley Road, minimises the impact on areas of significant conservation value and maximises the area suitable for rural residential living.

The Local Structure Plan shows a network of local streets which form the road transport network for the subject area. The roads have been designed to provide access to allotments in a manner which minimises their impact on the natural environment. Alignments of existing farm roads, fence lines and bush tracks where they have responded to site conditions have formed the bulk of the basis of the local network. Many of these already have been planted with significant windbreak trees that would enhance both the rural character and allow for their long term retention.

Road access to the nearby local and regional community, retail and employment facilities to the south in Craigieburn will be adequately catered for by existing roads and this arterial road network

4.3 Regional Public Transport

Public transport will be available principally by tapping into existing and proposed bus networks along Mickleham Road, Mt.Ridley Road and the Hume Highway.

5.0 RECREATION FACILITIES AND OPEN SPACE

Approximately 26.7% or 156 hectares of the Local Structure Plan Sub Areas A and B have been designated for conservation purposes and open space. The open space network is centred on the significant tracts of Red Gum Woodlands and the Malcolm Creek alignment. When combined these two areas form a wide swathe through the middle of the subject area and link to the designated open space corridor to the south. They will eventually link to an open space corridor to the north.

The objectives used to guide the development of the open space network are as follows:

- To provide a range of passive recreation and open space opportunities that are accessible for residents of the area and further south in Craigieburn.

- To sensitively employ the areas of high conservation value as the basis for an extensive conservation area that will continue to serve as an important habitat for local flora and fauna.

- To maximise the sense of rural outlook onto the natural features of the area (ie creek, floodplains, wetlands, hilltops, dams) from within the subject area and from perimeter roads and urban development to the south of Mt.Ridley Road.

- To sensitively provide for revegetation of all open space areas to improve the overall landscape quality of the area.

There are three areas designated as proposed open space within the Sub Areas A and B:

Proposed open Space (Conservation) - 114 ha;

Proposed Open Space (Creek Reserve) - 36.8 ha; and

Proposed Open Space (Other) - 5.3 ha.

The Conservation Area covers a large area within Sub Areas A and B and includes excellent examples of Western Plain Grassland, Red Gum Grassy Woodland, Grassy Wetland and riverine vegetation communities. The area proposed is considered to be generally in very good condition. The area would provide a highly significant addition to the protection of these communities both in the Melbourne Region and in the State as a whole.

The Creek Reserve covers the creek and riverine area adjoining Malcolm Creek. This area is considered to have high conservation values and will be able to accommodate recreational access.

The other open space covers a number of farm dams and vegetation and will provide a very attractive recreation area.

It is intended that the Conservation area be transferred to the Crown with a Committee of Management formed to ensure its management and long term protection.

The balance of the open space will be transferred over to Council in line with future development agreements as part of the subdivision process. Details on the dimensions and purpose of open space areas is outlined in Chapters 2 and 3.

6.0 LANDSCAPE ENRICHMENT

The objectives used to guide the development of landscape proposals for the Local Structure Plan are as follows:

- To protect, conserve and foster regeneration of indigenous native vegetation along the Malcolm Creek corridor.
- To present the Mt.Ridley hilltop as rural woodland and protect, enhance and frame views to the hilltop from perimeter roads, open space networks, and residential development within the area.
- To maximise the rural outlook and atmosphere within the area by maximising viewing opportunities within and beyond the area.
- To use the landscape and existing plantings as opportunities for roads, screening of new development, allotment boundaries and residential precinct definitions.

6.1 Landscape Planting Themes

The protection of significant vegetation both native and introduced exotics is the key landscape and environmental objective reflected in the design philosophy of the Mt Ridley Local Structure. For details of the current vegetation on Sub Areas A and B refer to Map 4.

Significant native grassland and trees are protected through the transfer of 114 ha of land to conservation purposes. This land is currently held in private hands. Significant stands of Eucalypts camaldulersis (River Red Gums) are protected and set aside in conservation areas.

Additional landscaping with native species will be undertaken on road reserves and in other public open spaces to develop the existing character of the area and complement the site.

While many of the existing plantings on the site are exotic and part of mixed indigenous/exotic cultural landscape, the approach for the new landscape plantings on the site is to reinforce the indigenous vegetation character. This approach will create improved habitat potential and fauna movement corridors, as well as build on the informal rural character of the area.

Waterways

Within the open spaces and waterways, the intent is to use exclusively indigenous species. The species used to reinforce the open woodland character of the area will be predominantly:

Acacia mearnsii	Black Wattle
Acacia melanoxylon	Blackwood
Casuarina spp.	She-oak
Eucalyptus camaldulensis	River Red Gum
Eucalyptus viminalis	Manna Gum

Road Verges

The roadways throughout the subdivision offer excellent opportunities for additional habitat creation through the planting of relatively dense woodland edges. The species used in these locations would be native to the general region but not necessarily strictly indigenous as there is a limited number of such species that would be suitable for a roadside vegetation. The species envisaged include:

Acacia mearnsii	Black Wattle
Acacia melanoxylon	Blackwood
Casuarina leuhmanni	Bull-oak
Casuarina verticellata	Drooping She-oak
Eucalyptus goniocalyx	Long-leafed Box
Eucalyptus leucoxylon	Yellow Gum
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Grey Box

7.0 SITES OF CONSERVATION, HERITAGE AND ARCHAEOLOGICAL SIGNIFICANCE

The conservation, heritage and archaeological objectives of this Local Structure Plan are as follows:

- To provide appropriate protection to any sites of significance in terms of natural or cultural heritage.
- To protect, conserve and enhance areas of high conservation value.
- To extend and reinforce native fauna and flora corridors.
- To outline the means by which sites of conservation, heritage and archaeological significance will be managed.

7.1 Conservation

The two principal conservation areas are the Malcolm Creek and the areas of grassland and associated Red Gum Woodlands. The third area of proposed open space covers a number of existing farm dams and wetlands within Sub Area A.

The landscape and engineering proposals contained in this Local Structure Plan will ensure their protection, conservation, integration and future management into any future development.

7.2 Heritage And Archaeology

7.2.1 Aboriginal Sites

There are two Aboriginal scarred trees recorded on the Aboriginal Affairs Victoria Register. It is possible that Aboriginal archaeological sites may be uncovered during future land development. It is proposed that prior to any land development an archaeologist conduct an archaeological survey to establish the existence of any possible aboriginal sites.

The principles for the planning and design of the subject land, in the advent of any discovery of sites of significance, will be the same as outlined in the Craigieburn Local Structure Plan, namely:

- Aboriginal or archaeological sites will be avoided where possible, or permission to disturb, or destroy them will be sought from the Wurundjeri in accordance with the Aboriginal and Torres Strait Islanders Heritage Protection Act, 1984 (amended 1987).

7.2.2 European History

The Mt.Ridley homestead has been refurbished as a private holding and will not be open to the public.

The remains of the old church cemetery site have been identified in the recent Council Heritage Study. It is proposed this site be identified on the Local Structure Plan however the future of this site is a matter for discussion between the Uniting Church as owners of the site and the Council.

7.2.3 Cultural Landscape Backdrop

Mt.Ridley is an important visual and cultural features in the landscape. The Local Structure Plan provides for this hilltop to be retained, and view lines to be emphasised from within the structure plan area, perimeter roads and surrounding areas.

8.0 ENGINEERING SERVICES

The objectives for the provision and design of engineering services for the Local Structure Plan are:

- To ensure that engineering services are provided to each stage of development in an efficient, cost effective, coordinated manner which can tap into existing and proposed servicing programs.

- To ensure that engineering services design and installation is undertaken in a manner that is environmentally sensitive and minimises the impact on the natural drainage systems and water absorption of the subject land.

- To outline the location and design of major drainage lines, water features, proposed retarding basins, and floodways and the means by which they will be managed and water quality maintained.

- To provide for water, sewerage, drainage, electricity and gas service.

- To ensure that each lot has the capability to contain and dispose of sewage and sullage in accordance with the State Environment Protection Policy (Waters of Victoria).

Specific details for Sub Area A and B are shown in the relevant chapters and are available in detailed Engineering reports which are available to Council officers and Servicing agencies.

9.0 STAGING OF DEVELOPMENT

The staging and implementation objectives of the Local Structure Plan are as follows:

- To allow individual land holdings to be developed independently subject to meeting the requirements and principles of this Local Structure Plan.

- To provide for the creation of a reservation and ongoing maintenance of the E14 alignment for the next 10 years.

A staging plan for Sub Areas A and B are included in Chapters 2 and 3. This is shown on Map 5B and Map 8B.

CHAPTER 2 LOCAL STRUCTURE PLAN SUB AREA A (COCKRAM LAND HOLDINGS)

1.0 SUB AREA A STRUCTURE PLAN

The Local Structure Plan for Sub Area A (Refer Map 7A Sub Area A Structure Plan) provides for the following:

- Designation of 104 hectares for Public Open Space for conservation, creek reserve (33 ha) and other purposes(5.3 ha);
- Local road network and alignment of E14 as shown in the Mt.Ridley Local Structure Plan;
- A total of 149 lots ranging in size from 1 to 4 hectares in addition to the Mt.Ridley homestead holding.
- Additional siting and use controls on some lots relating to the Native Woodland Protection Area Guidelines and Mt.Ridley Special House Area Guidelines. These are shown on Map 6A & 6B.

2.0 BACKGROUND

2.1 Site And Environs

Sub Area A covers the whole of the land holding owned by the Cockrams and includes the historic Mt.Ridley homestead and surrounds. The property comprises approximately 500 hectare and is currently managed for horse grazing and a horse stud. It comprises the largest land holding within the subject area and contains the greater part of Mt.Ridley, the Malcolm Creek alignment, areas of remnant Red Gum woodland and native flora and fauna.

2.2 Site And Soil Conditions

Four (4) major soil types were identified on the proposed estate site. The soil types comprise :

Black cracking clay around the top of the volcanic cones.
Red Clays along the upper slope of the cones.
Heavy mottled brown clays on the mid to lower slope.
Grey Silty clays in low lying and wet areas.

The major soil types can be further subdivided on the basis of subsoil characteristics. These are shown in Table 1.1 below.

Surface Soil Type	***Subsoil Divisions***
Black Clay	Black Clay/Silty Clay Red Clay
Red-Brown Clay	Uniform Red-Brown Clay
Brown Clay	Brown Clay (occasionally gritty) Yellow-Brown Clay or Silty Clay Grey-Brown Silty Clay
Grey/Grey-Brown Silty Clay	Uniform Silty Clay

Table 1.1 : Major Soil Types and Subsoil Subdivisions

The selection of sites for percolation tests was based on covering the major soil and sub-soil types.

Percolation Results by Soil Type

Results of the percolation tests have been summarised by soil type in Table 1.2. Variations in the percolation rates for the Brown Clays are evident with variation in subsoil conditions.

Site Location	Soil Type	Average Percolation Rate (mm/hr)
1	Red-brown Clay	30
2	Uniform Black Clay	200
3	Brown Clay (Mottled Clay Subsoil)	15
4	Uniform Brown Clay	2
5	Brown Clay (Mottled subsoil with grit/gravel)	2
6	Uniform Brown Clay (Gravelly subsoil)	40
7 + 8	Grey/Brown Silty Clay	9

Table 1.2 - Percolation Test Results for Soil Types

3.0 RESIDENTIAL DEVELOPMENT

3.1 Range Of Lot Sizes

The Development Plan shows a total of 149 lots comprised of the existing homestead holding, twenty seven 3 hectare lots, ninety nine 2 hectare lots, three 1.5 hectare lots and twenty 1 hectare lots.

All lots are subject to the Mt.Ridley House Building Policy. In some cases lots are also subject to the Native Woodland Protection Area and Mt.Ridley Special Housing Area Guidelines.

3.2 House Siting Guidelines- Mt.Ridley Special Housing Area

The Mt.Ridley Special Housing Area extends between the 260 m and the 275 metre contour on Mt.Ridley. The following principles apply to development between these contour intervals:

- No buildings or structures, other than those required for water storage purposes or for additions to the existing homestead environs will be permitted above the 275 contour of Mt.Ridley, unless approved by the Hume City Council as complying with the intent of this Local Structure Plan.

- Building envelopes will be specified for all lots and the spacing and distribution of building envelopes is to be irregular to promote diversity and a non uniform pattern of development.

- Roof lines of dwellings and other building should be consistent with current Hume City Council policies and controls regarding roof forms.

- Colours and materials used for dwelling and other building and works will be consistent with current Hume City Council policies and controls regarding building colours and materials .

- Natural slopes and topography will be reasonably retained so that the visual impact of excavation can be minimised.

- Colours, materials and designs in roadways, driveways, and pedestrian paths should blend with the surrounding landscape to minimise visual contrasts.

- Effective drainage should be planned for all works prior to construction.

- Typical rural style fencing will be utilised wherever possible (ie post and wire or similar "open style" fencing). Other styles of fencing may be acceptable provided they meet the objectives of this strategy and are not visually intrusive or dominant.

4.0 ROAD NETWORK

4.1 Local Road Network

The local road network is shown in Map 7. It consists of 4 local roads off Mt.Ridley Road with several feeder roads.

Lots having secondary boundaries to Mt.Ridley Road may initially have temporary access from Mt.Ridley Road until internal roads are constructed.

It has been agreed that the E 14 road reservation is to be maintained by the Cockrams, as owners of the Mt Ridley homestead, during the period prior to the construction of the road.

It is proposed that a 16 metre road reserve be adopted for roads within the Mt Ridley Estate precinct, comprising of a 6.0m carriageway, 1m shoulders, open swales, and open space to property boundaries. The figure below is an indicative representation of a potential road reserve arrangement.

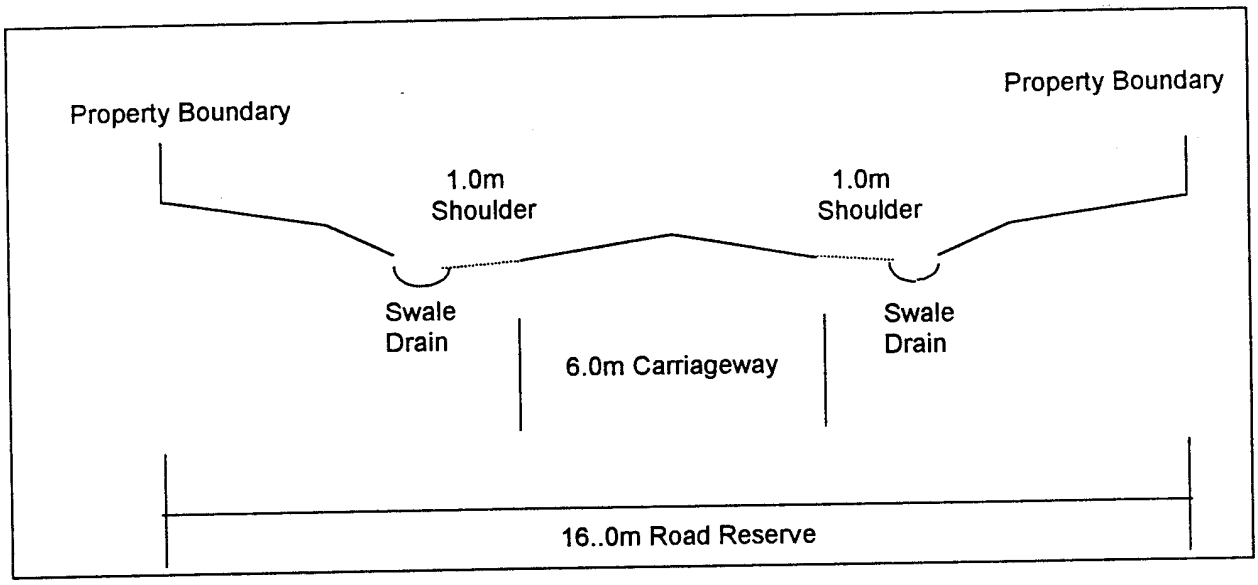

Figure 2 : Typical Road Reserve (Potential) - Not To Scale

The rural/residential setting of the development would render kerb and channel provisions as nonessential

4.2 Mt.Ridley Special Housing Area Road Design Standards

The Mt.Ridley Special Housing Area extends between the 260m and the 275m contour on Mt.Ridley (Refer Map 6A Mt.Ridley Special Housing Area). The following principles apply to road development between these contour intervals:

- The number of local roads aligned with natural contours will be maximised.
- The number of local roads running against natural contours will be minimised to reduce visual disruption to the overall form and texture of Mt.Ridley.
- Effective drainage should be planned for all works prior to construction.
- Colours, materials and designs in roadways, driveways, and pedestrian paths should blend with surrounding landscape to minimise visual contrasts.
- Effective revegetation techniques will be utilised in an erosion control program (using appropriate indigenous plant species) in the construction of roads, pedestrian pathways and roadside verges.

5.0 ENGINEERING SERVICING STRATEGIES

The objectives for the provision and design of engineering services for the Local Structure Plan are summarised as:

- To ensure that engineering services are provided to each stage of development in an efficient, cost effective, coordinated manner which can tap into existing and proposed servicing programs.
- To ensure that engineering services design and installation is undertaken in a manner that is environmentally sensitive and minimises the impact on the natural drainage systems and water absorption of the subject land.
- To outline the location and design of major drainage lines, water features, proposed retarding basins, and floodways and the means by which they will be managed and water quality maintained.
- To provide for water, sewerage, drainage, electricity and gas service.
- To ensure that each lot has the capability to contain and dispose of sewage and sullage in accordance with the State Environment Protection Policy (Waters of Victoria).

5.1 Septic Tank Field Requirements

The size of the required disposal system for the septic tanks has been based on the procedures in the Septic Tanks Code of Practice. Where soils have an indicated percolation rate of 12.4 mm/hr a series of graphs to size the trench length of the absorption system has been used.

Where percolation rates are less than 12.5 mm/hr, and annual rainfall is less than 900 mm/year, the guidelines provide a second graph by which trench length (or area) can be calculated. Disposal trench areas have been based on average annual rainfall for Melbourne being approximately 680 mm /year.

Calculated trench areas for each soil type are presented in Table 1.3 below. In all cases the trench area has been based on disposal of 1000 L/day. For lower disposal requirements, the area (or length) of the trench area can be reduced by dividing the design disposal requirement by 1000 and multiplying by the area in Table 1.3. For example a design requirement for 500 L/day on the black soils would require an area of :

500 L/day area = (500/1000) X 30 m^2 = 15 m^2

As can be seen in Table 1.3, the area required for the Brown Clays varies depending on subsoil type. A maximum figure of 125 m^2 is recommended for sites with this topsoil due to the inability to confidently map the sub-soil variations.

Soil Type	Average Percolation Rate (mm/hr)	Absorption trench Area (m^2)
Red-brown Clay	30	55
Uniform Black Clay	200	30
Brown Clay (Mottled Clay Subsoil)	15	80
Uniform Brown Clay	2	125
Brown Clay (Mottled subsoil with grit/gravel)	2	125
Uniform Brown Clay (Gravelly subsoil)	40	50
Grey/Brown Silty Clay	9	125

Table 1.3 - Absorption Areas for Soil Types Based on 1000 Litre/day Requirements

5.2 Septic Tank Systems - Summary

Soil type analysis and percolation tests have indicated that the Mt Ridley Estate area is capable of facilitating septic tank units, with one hectare lots requiring approximately 1% of total allotment area to be assigned to infiltration trenches (ie. worst case scenario of one hectare lot being situated in soil region requiring 125m^2 absorption trench).

5.3 Water Supply

Further to findings in a previously issued feasibility report and Council preference, conditions for water collection and tank storage were examined. CMPS&F Water Resources Division was engaged to undertake a more extensive review of the collection option, and subsequently provided tangible parameters and alternatives associated with pursuing collection, storage, and re-use of roof runoff. The following Section examines the feasibility of a rainwater supply system for in-house use, with findings being based on a study conducted by the Board of Works in 1991.

Discussions with Yarra Valley Water were undertaken in order to further explore the possibility of extending existing supply at nearby Craigieburn to the Mt Ridley vicinity.

For details of issues and variables associated with Water collection see Appendix 1.

Reticulated Services

Yarra Valley Water currently has no plans to service the area, hence requiring capital works to be funded by the developer. Servicing the proposed development by means of extending existing services from Craigieburn entails the following outlays :

3 km of 150mm main.
Pump Station
Elevated Tank
Internal Reticulation
Area Contributions

On-site Collection and Re-Use

Roof Water Collection System - Summary

The analysis found that in order for a roof water system to be a practical way of supplying in-house water demand, large house (roof) sizes relative to the number of inhabitants are required, otherwise substantial costs would be incurred importing "tanker" water.

The figures presented above are based on average usage figures with no demand reduction in a drought. Individual households may be able to reduce in-house usage in a drought and effect savings on the indicated cost of importing "tanker" water.

In general, for this site which has a mean annual rainfall of 640 mm, the cost of relying on a rainwater tank system is expected to be more expensive than a reticulated supply from Yarra Valley Water.

5.4 Stormwater Management

Runoff volumes for the Mt Ridley area are expected to remain consistent with existing conditions due to the large nature of the proposed lots and anticipated collection of roof runoff for re-use as part of the potential water supply strategy.

5.4.1 Minor System

The proposed minor drainage scheme for Mt Ridley Estate incorporates features such as swales and overland paths to reflect the rural/residential strategy for the area, with existing dams being utilised for retarding and water quality purposes. Runoff quantities would predominantly be routed to Malcolm Creek, although southern boundary areas are expected to continue draining into existing facilities on Mt Ridley Road. A portion of the development will be required to drain into existing drainage facilities on the Hume Highway, although development road layout modifications may result in these volumes also being routed to Malcolm Creek and Mt Ridley Road.

Pipelines have been restricted to areas where minor flows are required to be routed through proposed lots, subsequently introducing easements to affected allotments. Equalising culverts have been located at points where road reserves are parallel to contours.

The construction of the proposed E14 would require culvert provisions at existing dam/proposed retarding and water quality pond spillway location to facilitate overland flows to Malcolm Creek.

5.4.2 Major System

The proposed major drainage system would utilise internal carriageways as a means of managing large flows, incorporating overland flow paths to route volumes into Malcolm Creek, Mt Ridley Road and drainage assets associated with the Hume Highway.

Overland flow paths would need to be shaped in allotment easements where pipelines have been incorporated as part of the minor drainage system.

5.5 Electricity Supply

Consultation with Solaris Power has identified a need to augment existing assets in the Mt Ridley area to service the proposed Mt Ridley Estate development. It is estimated that the cost for augmentation works would be in the vicinity of $120,000, to be paid by the developer. Solaris have indicated that partial reimbursement would be provided at a time when adjacent owners proceed with development.

Existing conditions would adequately facilitate the development of 15-20 lots along Mt Ridley Road without major augmentation works being required, although transformers would need to be installed for each allotment at the owner's expense (at around $4000-$6000/lot).

Several options exist with regards to the type of electricity service to be provided at Mt Ridley : single-phase or three-phase supply, overhead or underground. Single-phase would be adequate for a conventional residential sub-division arrangement, where usage is restricted to household appliances. However, the rural component of the proposed development may deem it necessary to supply three-phase power for the operation of heavy duty equipment and machinery. Both single-phase and three-phase power sources are able to be mounted overhead or installed underground.

The anticipated costs (without trenching) associated with the options identified are as follows :

Single Phase Supply

- Underground $320,000 (plus $120,000 augmentation)
  Approximately $3,200/lot
- Overhead $220,000 (plus $120,000 augmentation)
  Approximately $2,500/lot

Augmentation would occur along Mickleham Road from Craigieburn Road to and along Mt Ridley Road in the form of upgrading existing conductors.

5.6 Telecommunications

Telstra have indicated that services would be extended to Mt Ridley, from Craigieburn, free of charge if conduits and cables are common trenched with other services. In the event that no other service is extended, Telstra estimate trenching to cost in the order of $200,000, depending on terrain, soil structure and existing obstructions.

Existing services in the Mt Ridley vicinity would only be capable of servicing a further six (6) connections, hence restricting the initial development of lots along Mt Ridley Road unless services are extended immediately.

5.7 Gas and Fuel

The Gas and Fuel Corporation have indicated that the following conditions would be applicable to the servicing of Mt Ridley Estate with live gas at the owner's expense :

- A cost of around $40 per metre if Gas and Fuel services are common trenched with either a water main or Telstra services;
- An outlay of around $7000 for the crossing of Malcolm Creek;
- A cost of $40 per metre for services within the Mt Ridley Estate, if common trenched with Telstra.

Reimbursement to the owner would be based on the number of houses guaranteed to be constructed in the two years following the main extension, with the Gas and Fuel currently indicating that a rebate of around $2000 per house would be offered to the owner.

5.8 Common Trenching

It would be possible to common trench Telstra, Electricity, Water and Gas main extensions to the Mt Ridley site. Common trenching within the estate would need to be further examined, although it would be possible to common trench all services, or groups of services, within the subdivision.

5.9 Servicing Plan

A servicing plan, indicating existing services and proposed main extensions is included in Map 5A.

6.0 Proposed staging

The proposed staging of Mt Ridley Estate (Refer Map 5B) would entail an initial development of six (6) lots to utilise existing Telstra services, with lots initially being serviced by portable gas and water tanks irrespective of future arrangements. Connection to reticulated water and gas (should they be extended to Mt Ridley) could occur at a time when such services became available.

Stage 2 of the development would initially require headworks to be undertaken in order to extend services from Craigieburn. Telstra cable extensions would be necessary, whilst water and gas main extensions would be optional. Telstra, Gas and Fuel, and Yarra Valley Water have all indicated a willingness to common trench their main services at this point in time if required, Stage 2 would then proceed in the form of 28 lots at the western edge of the property.

Stage 3 would utilise headworks undertaken in Stage 2, incorporating 19 lots. Stage 4 would involve the development of 21 lots and open up the main access routes for the development of future stages as well as providing for the upgrading and landscaping of an existing dam to provide the overall development with a Water Quality Pond/Retarding facility.

Stages 5-7 would further utilise headworks undertaken in earlier stages with 16, 14, and 17 lots being developed respectively. The final stage would be in the form of 14 lots, utilising remaining land in the north west corner of the property.

CHAPTER 3 STRUCTURE PLAN FOR AREA B (HANDEN HOLDINGS LAND).

1.0 SUB AREA B STRUCTURE PLAN

The Structure Plan for Sub Area B (Refer Map 7B Sub Area B Structure Plan) provides for the following:

- Designation of up to 10 hectares for Public open space for conservation and 4 hectares for creek reserve,
- Local access road off Mt.Ridley Road;
- A total of 35 lots ranging in size from 1 to 2.5 hectares;

2.0 BACKGROUND

2.1 Site And Environs

Area B covers the whole of the land holding owned by Handen Holdings and comprises an area of 85 hectares. The property is comprised of an upside down "L" shape with a frontage of 270 metres to Mt.Ridley Road extending north to the boundary of the Local Structure Plan area. The property is currently managed for cattle grazing and contains part of the Malcolm Creek alignment, several dams, areas of remnant Red Gum woodland and open grasslands.

The property title has carriageway easement rights which provide the two abutting properties to the west with access to Mt.Ridley Road. The local road network has been designed to provide a road link into these two adjoining properties off the internal access road to provide an equivalent level of access. It is anticipated that the carriageway easement would be relinquished in favour of this alternative route provided alternative power easements are created to provide power to the two existing dwellings on adjacent land.

2.2 Site And Soil Condition

A preliminary survey of soil types and distribution was completed by:

- review of aerial photographs;

- reconnaissance inspection of the property;
- limited soil sampling at two sites on the property.

Soil type was classified on the basis of texture and colour, following the Northcote Code of Classification for Australian Soils (Reference 2).
Soils on the site were found to be vary between stiff, plastic clay and silty clays (with increasing silt content with depth). Some mottling occurred in the lower horizons of both the clay and silty clay soil types. The presence of mottling generally indicates some impeded drainage during wet conditions.

Percolation Characteristics

Percolation tests to determine suitability for septic systems have been completed on typical soil types by CMPS&F in the local area. These tests included the brown clays and silty clays found on this property. Results from these tests indicated a percolation rate of 15 mm/hr for the brown clays and 9 mm/hr for the silty clays.

3.0 RESIDENTIAL DEVELOPMENT

3.1 Range Of Lot Sizes

A total of 35 lots comprised of lots, twenty eight 2 hectare lots, two 2.5 hectare lots and five 1 hectare lots.

All lots are subject to the Mt.Ridley House Building Guidelines.

4.0 ROAD NETWORK

4.1 Local Road Network

The local road network is shown in Map 7A. It consists of a local road with a feeder road off Mt.Ridley Road. It is envisage that the main road will eventually extend beyond the Inter Urban Break northern boundary to provide access to the balance of Handen Holding's property.

Lots having secondary boundaries to Mt.Ridley Road may initially have temporary access from Mt.Ridley Road until internal roads are constructed.

It is proposed that a 16 metre road reserve be adopted for roads within the Handen Holdings precinct, comprising of a 6.0m carriageway, 1m shoulders,

open swales, [illegible] open space to property boundaries. The figure below is an indicative re[illegible]tation of a potential road reserve arrangement .

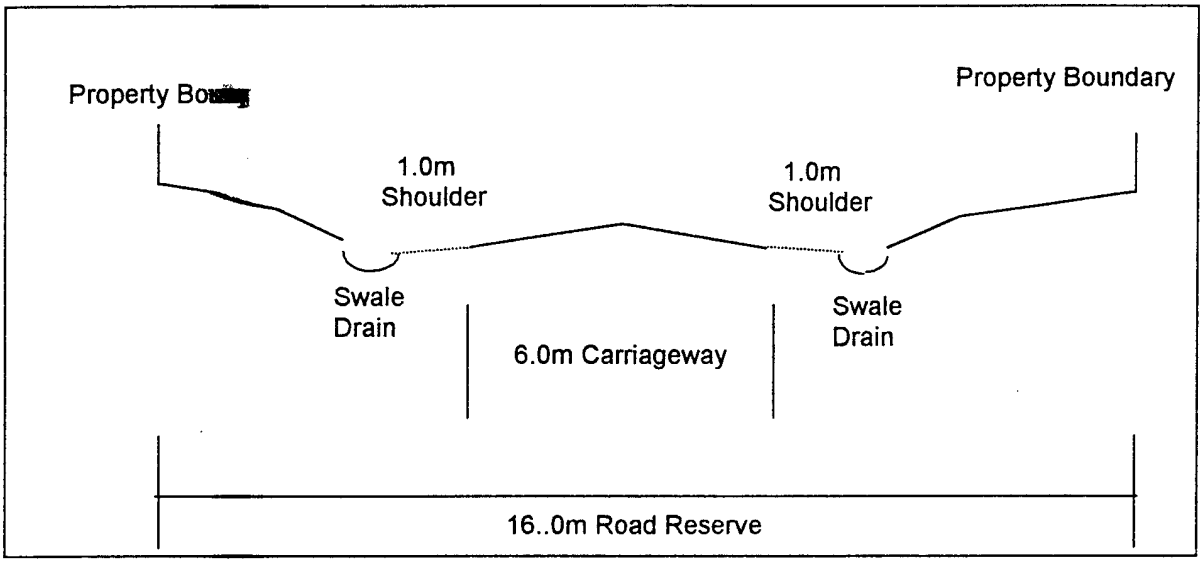

Figure 2 : Typical Road Reserve (Potential) - Not To Scale

The rural/res[illegible]al setting of the development would render kerb and channel pro[illegible]s as nonessential.

5. ENGINEE[illegible]G SERVICES

The objectives [illegible] the provision and design of engineering services for the Local Structu[illegible]an are:

- To ensure [illegible] engineering services are provided to each stage of develop[illegible] an efficient, cost effective, coordinated manner which can tap into e[illegible] and proposed servicing programs.

- To ensure [illegible] engineering services design and installation is undertaken in a man[illegible] is environmentally sensitive and minimises the impact on the natura[illegible]age systems and water absorption of the subject land.

- To outline [illegible] location and design of major drainage lines, water features, proposed [illegible]g basins, and floodways and the means by which they will be ma[illegible] and water quality maintained.

- To provide [illegible] water, sewerage, drainage, electricity and gas service.

- To ensure that each lot has the capability to contain and dispose of sewage and sullage in accordance with the State Environment Protection Policy (Waters of Victoria).

5.1 Sewerage Disposal

Yarra Valley Water has indicated that reticulated sewerage services are not anticipated for the Mt Ridley area for 5-10 years. It has therefore been proposed that the potential development be serviced by individual septic tanks, incorporating infiltration trenches. Soil tests were subsequently undertaken by CMPS&F Environmental Division to ascertain the suitability of conditions at the site with regards to implementing septic tank systems.

5.1.1 Soil Survey

A preliminary survey of soil types and distribution was completed by:

- review of aerial photographs;
- reconnaissance inspection of the property;
- limited soil sampling at two sites on the property.

Soil type was classified on the basis of texture and colour, following the Northcote Code of Classification for Australian Soils (Reference 2). Soils on the site were found to be vary between stiff, plastic clay and silty clays (with increasing silt content with depth). Some mottling occurred in the lower horizons of both the clay and silty clay soil types. The presence of mottling generally indicates some impeded drainage during wet conditions. Soils logs and sample locations have been included in Appendix C.

5.1.2 Percolation Characteristics

Percolation tests to determine suitability for septic systems have been completed on typical soil types by CMPS&F in the local area. These tests included the brown clays and silty clays found on this property. Results from these tests indicated a percolation rate of 15 mm/hr for the brown clays and 9 mm/hr for the silty clays.

5.1.3 Septic Tank Seepage Field Requirements

The size of the required disposal system for the septic tanks has been based on the procedures outlined in Appendix A4 in the Septic Tanks Code of Practice (Reference 3). Where soils have an indicated percolation rate of 12.4 mm/hr a series of graphs to size the trench length of the absorption system has been used.

Where percolation rates are less than 12.5 mm/hr, and annual rainfall is less than 900 mm/year, the guidelines provide a second graph by which trench length (or area) can be calculated. Disposal trench areas have been based on average annual rainfall for Melbourne being approximately 680 mm /year.

Calculated trench areas for each soil type are presented in the table below. In all cases the trench area has been based on disposal of 1000 L/day. For lower disposal requirements, the area (or length) of the trench area can be reduced by dividing the design disposal requirement by 1000 and multiplying by the area in the table. For example a design requirement for 500 L/day on the black soils would require an area of :

500 L/day area = (500/1000) X 30 m^2 = 15 m^2

Soil Type	Average Percolation Rate (mm/hr)	Absorption trench Area (m^2)
Brown Clay (Mottled Clay Subsoil)	15	80
Grey/Brown Silty Clay	9	125

Table - Absorption Areas for Soil Types Based on 1000 Litre/day Requirements

5.1.4 Septic Tank Systems - Summary

Soil type analysis has indicated that the proposed development area is capable of facilitating septic tank units, with one hectare lots requiring approximately 1% of total allotment area to be assigned to infiltration trenches (ie. worst case scenario of one hectare lot being situated in soil region requiring 125m^2 absorption trench). It is advised that further soil testing be undertaken and supplemented by percolation tests in order to further investigate the above mentioned findings

5.2 Water Supply

Existing water reticulation services do not extend north of Malcolm Creek, some 2km south of Mt Ridley Road. Yarra Valley Water has indicated that reticulated supply extension to the Mt Ridley area is a possibility within the next 10 years, most probably to originate from Yaroke. Alternative means are therefore required to provide water supply to the site if development is to proceed prior to this time frame.

Conditions for water collection and tank storage were subsequently examined. CMPS&F Water Resources Division was engaged to undertake a review of the collection option, and subsequently provided tangible parameters and alternatives associated with pursuing collection, storage, and re-use of roof runoff.

As indicated, Yarra Valley Water currently has no plans to service the area for approximately 10 years, hence requiring capital works to be funded by the developer if services are to be extended immediately.

Appendix 1 details issues and variables associated with on site supply of water.

5.2.1 Roof Water Collection System - Summary

The above noted analysis found that in order for a roof water system to be a practical way of supplying in-house water demand, large house (roof) sizes relative to the number of inhabitants are required, otherwise substantial costs would be incurred importing "tanker" water.

The figures presented above are based on average usage figures with no demand reduction in a drought. Individual households may be able to reduce in-house usage in a drought and effect savings on the indicated cost of importing "tanker" water.

In general, for this site which has a mean annual rainfall of 640 mm, the cost of relying on a rainwater tank system is expected to be more expensive than a reticulated supply from Yarra Valley Water.

The water quality of rainwater is unlikely to be as good as that supplied by Yarra Valley Water.

5.3 Stormwater Management

Runoff volumes for the proposed development are expected to remain consistent with existing conditions due to the large nature of the proposed lots and anticipated collection of roof runoff for re-use as part of the potential water supply strategy. The management of stormwater at the site will need to be addressed by on site measures rather than pursuing options which involve connection to conventional drainage schemes due to the lack of such services being available in the Mt Ridley area and the desire to retain a rural residential character.

Malcolm Creek (which traverses the property) offers a potential stormwater management facility, although Council attitude towards using this asset for discharge purposes will need to be determined. Stormwater treatment prior

to discharge into Malcolm Creek will be essential. This could be achieved through the introduction of gross pollutant traps and sedimentation facilities.

The introduction of a landscaped basin to the site can provide adequate stormwater provisions whilst adding to the aesthetic appearance of the site. The detention facility can be linked in line or adjacent to Malcolm Creek, with discharge being controlled by flap gates in order to ensure constant volume within the aquatic feature. The flap gate will also be critical during times of high floods to ensure that excessive stormwater quantities are not discharged from the site into Malcolm Creek.

Due to the rural setting of the proposed development, it is anticipated that swales will be incorporated along roadways rather than conventional kerb and channel, although further consultation with the City Of Hume would be necessary.

Future development in surrounding areas may allow for subsequent connection to a conventional stormwater system at a later date, although systems such as those mentioned above are frequently used throughout Metropolitan Melbourne with beneficial results.

5.4 Electricity Supply

Consultation with Solaris Power has identified a need to augment existing assets in the Mt Ridley area to service the proposed Handen Holdings development. It is estimated that the cost for augmentation works would be in the vicinity of $120,000, to be paid by the developer. Solaris have indicated that partial reimbursement would be provided at a time when adjacent owners proceed with development.

Several options exist with regards to the type of electricity service to be provided at the proposed development : single-phase or three-phase supply, overhead or underground. Single-phase would be adequate for a conventional residential sub-division arrangement, where usage is restricted to household appliances. However, the rural component of the proposed development may deem it necessary to supply three-phase power for the operation of heavy duty equipment and machinery. Both single-phase and three-phase power sources are able to be mounted overhead or installed underground.

Augmentation would occur along Mickleham Road from Craigieburn Road to and along Mt Ridley Road in the form of upgrading existing conductors.

Existing services relocation within the site would require properties currently being serviced by such assets to be reconnected to electricity supply at the developer's cost.

5.5 Telecommunications

Telstra have indicated that services would be extended to Mt Ridley, from Craigieburn, free of charge if conduits and cables are common trenched with other services. In the event that no other service is extended, Telstra estimate trenching to cost in the order of $200,000 depending on terrain, soil structure and existing obstructions.

5.6 Gas and Fuel

The Gas and Fuel Corporation has indicated the following conditions as being applicable to the servicing of the proposed development with reticulated gas, at the owner's expense :

- A cost of around $40 per metre if Gas and Fuel services are common trenched with either a water main or Telstra services;
- An outlay of around $7000 for the crossing of Malcolm Creek;
- A cost of $40 per metre for services within the Mt Ridley Estate, if common trenched with Telstra.

Reimbursement to the owner would be based on the number of houses guaranteed to be constructed in the two years following the main extension, with the Gas and Fuel currently indicating that a rebate of around $2,000 per house would be offered to the owner.

The option of portable gas for the site is considered as a viable option.

5.7 Common Trenching

It would be possible to common trench Telstra, Electricity, Water and Gas main extensions to the Handen Holdings site. Common trenching within the estate would need to be further examined, although it would be possible to common trench all services, or groups of services, within the subdivision.

6.0 SERVICING PLAN

A servicing plan, indicating existing services and proposed main extensions, is included in Map 8A.

7.0 STAGING

It is anticipated that the Handen Holdings estate would be developed in two phases, with each stage comprising of 15-20 lots.

Stage 1 would require infrastructure headworks to be extended and established at the site, with Stage 2 utilising the service mains extended to the site in the preliminary stage.

A more detailed outline of proposed staging would require further liaising with service authorities in order to determine more accurately the costs and logistics of establishing services within the site. The proposed staging is shown in Map 8B.

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Engineering

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4. CSIRO : "Northcote Code of Classification for Australian Soils (4th Edition)", 1974.

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6. Water Industry Technical Standards : "Water Supply" (Volume 1), 1995

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9. Beardsell C (1991) Draft Sights of Faunal Significance in The Western Region of Melbourne. DCF&L

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Appendix 1

Water Supply On Site collection and Reuse Issues and Variables

- Yield

The yield of a rainwater tank system depends on the average annual rainfall and the seasonal pattern of rain, the plan area of roof actually connected to the tank, the volume of the tank, the desired reliability of supply and the seasonal pattern of demand.

- Demand

For the purposes of this report, it is assumed that only the in-house water demand will be supplied from the rainwater tank system. Garden water would need to be supplied from a separate source.

In-house use, which includes water for drinking, cooking, washing and toilet flushing, is fairly constant throughout the year. Average in-house consumption values for Melbourne are:

1 person	220 L/d
2 people	370 L/d
3 people	520 L/d
4 people	640 L/d
5 people	750 L/d
6 people	850 L/d

In-house use varies and households who use water carefully, could achieve as little as half the values listed above. Conversely, the water demands of some households are more than double the listed values.

- Roof Size, Tank Size and Reliability

The larger the roof size connected to the tank, the larger the yield. In general, the larger the tank the larger the yield, but above a certain point increasing the size of the tank returns very little increased yield and cannot be readily justified.

In general, water supply systems are not 100 % reliable and consumers are occasionally required to ration their demand. The volumetric reliability of Melbourne's water supply system over the past 30 years has been 98%. The higher degree of reliability required of a system, the lower the yield. In the context of the Mt Ridley site, a lower level of volumetric reliability would be acceptable because the deficit could be readily supplied by tanker. This investigation describes reliability in terms of the average annual cost of supplementary water which would need to be bought and supplied.

- Water Quality

Water quality is a potential problem with all roof water systems and the problems are likely to be most severe in urban and industrial areas. Pollution can arise from atmospheric pollutants, bird droppings and roofing materials and paints.

Roof water tank systems require regular maintenance in order to prevent water quality from deteriorating. Even so, the bacteriological quality of untreated tank water often does not meet recommended guidelines.

Tank Sizes and Supplementary Water Required.

The sizes of tanks required and how this relates to the roof area, demand and supplementary water requirements were determined using the procedure outlined in Reference 2. The assumptions used in the calculations were that:

- the entire roof area would be connected into the tank system;
- no rainwater would be wasted by a "first flush" mechanism;
- the mean annual rainfall at the site is 640 mm which is based on Figure 1 in Reference 2; and.
- the cost of supplementary water would be \$7.00/ m^3. This assumption is based on \$0.75 per m^3 plus \$100 for a 16 m^3 tanker delivery. It should be noted that, in determining these costs, only the rainwater deficit was taken into account and no allowance has been made for demand reduction and the size of the tanker versus the duration of the drought. The implication here is that a property owner might purchase a full tanker of water towards the end of a drought and the \$112 cost would be largely "wasted". Actual costs incurred would not be spread out evenly through the year and would also vary greatly from one year to the next.

The results, which were obtained using the procedure outlined in Reference 2, are presented below. It should be noted that according to the above basis, the annual cost of "tanker water" for one person is \$562.

- House size 150 m^2:
  - 1 person:
    - 18 kL tank; plus
    - \$45 average annual additional cost for tanker water;
  - 2 people:
    - 18 kL tank; plus
    - \$435 average annual additional cost for tanker water

- House size 200 m^2:
  - 1 person:
    - 13.5 kL tank; plus
    - $17 average annual additional cost for tanker water;
  - 2 people:
    - 18 kL tank; and
    - $255 average annual additional cost for tanker water;
  - 3 people:
    - 18 kL tank: and
    - $692 average annual additional cost for tanker water;

- House size 250 m^2:
  - 1 person:
    - 13.5 kL tank; plus
    - $ 0.00 average annual additional cost for tanker water;
  - 2 people:
    - 18 kL tank; plus
    - $113 average annual additional cost for tanker water;
  - 3 people:
    - 18 kL tank; plus
    - $492 average annual additional cost for tanker water;
  - 4 people:
    - 18 kL tanks; plus
    - $815 average annual additional cost for tanker water;
  - 4 people:
    - 27 kL tanks; plus
    - $740 average annual additional cost for tanker water;

- House size 400 m^2:
  - 2 people:
    - 18 kL tank; plus
    - $0 average annual additional cost for tanker water;
  - 3 people:
    - 18 kL tank; plus
    - $160 average annual additional cost for tanker water;
  - 4 people:
    - 18 kL tank; plus
    - $473 average annual additional cost for tanker water;
  - 4 people:
    - 27 kL tank; plus
    - $310 average annual additional cost for tanker water;
  - 5 people:
    - 18 kL tank; plus
    - $748 average annual additional cost for tanker water;

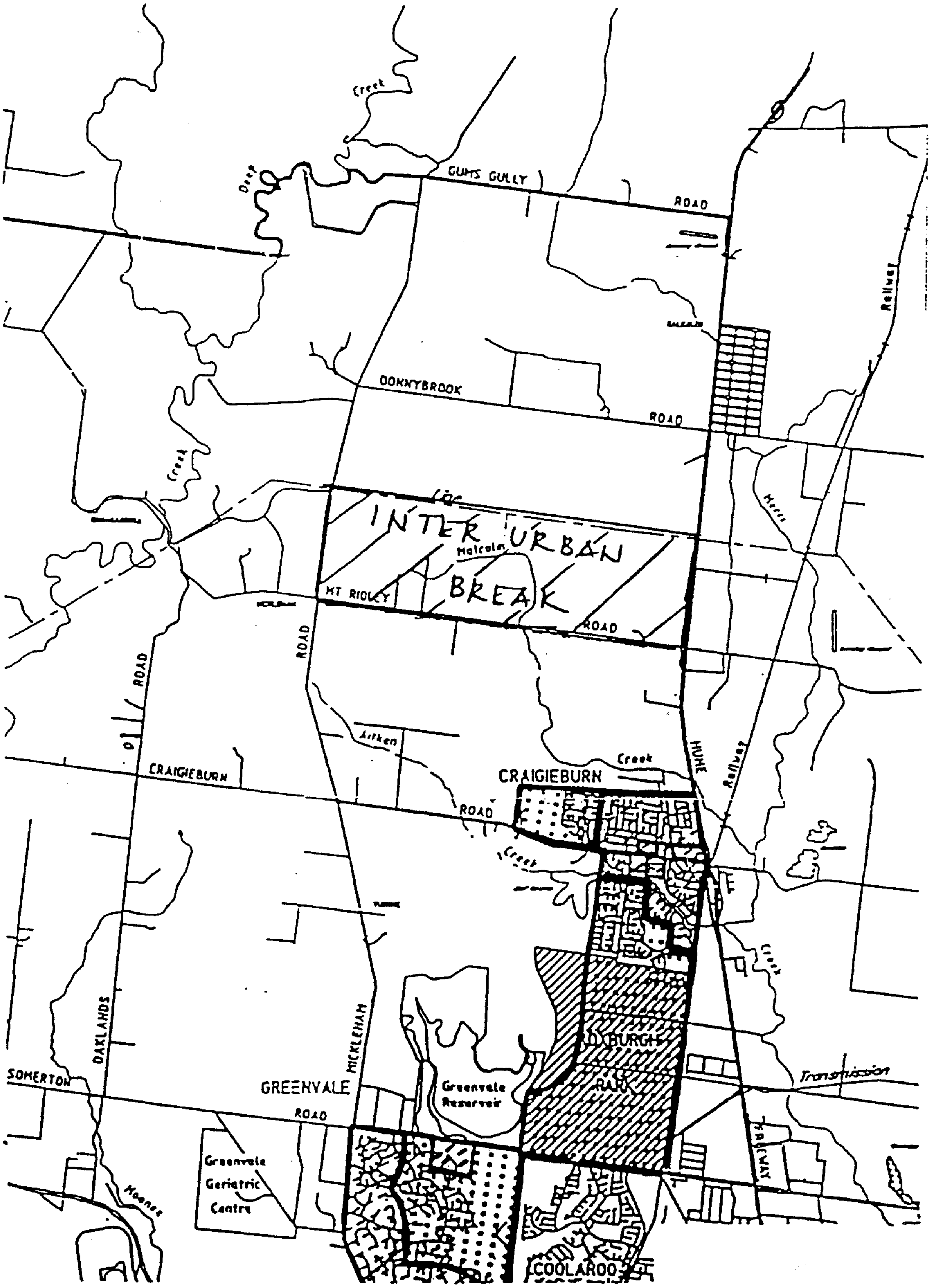
5 people:

- 27 kL tank; plus
- $588 average annual additional cost for tanker water;

6 people:

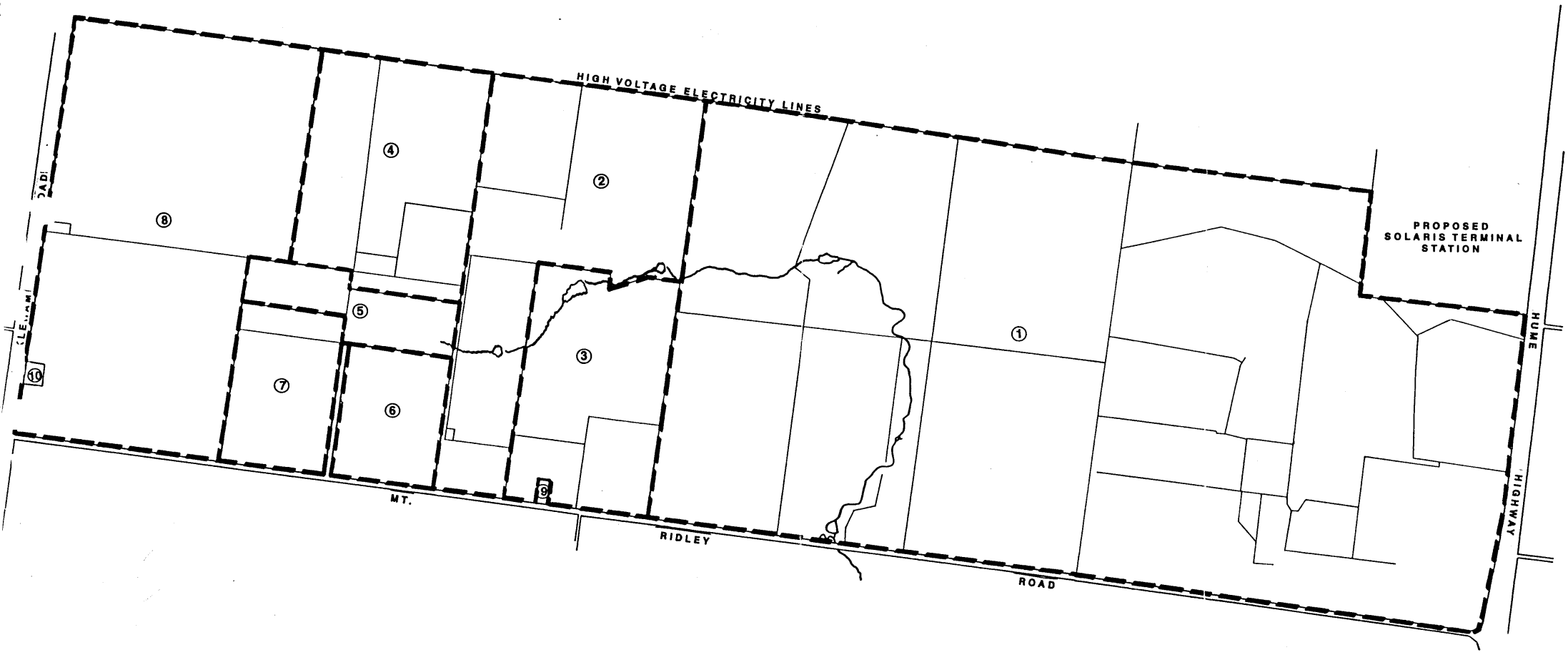
- 27 kL tank; plus
- $842 average annual additional cost for tanker water;

MAPS



Creek
Deep
GUMS GULLY
ROAD
Railway
DONNYBROOK
ROAD
Creek
INTER URBAN BREAK
Malcolm
MT RIDLEY
ROAD
Merri
ROAD
ROAD
Aitken
Creek
CRAIGIEBURN
CRAIGIEBURN
ROAD
HUME
Railway
Creek
Creek
MICKLEHAM
OAKLANDS
SOMERTON
GREENVALE
ROAD
Greenvale Reservoir
Transmission
FREEWAY
Greenvale Geriatric Centre
Moonee
COOLAROO

Figure 1



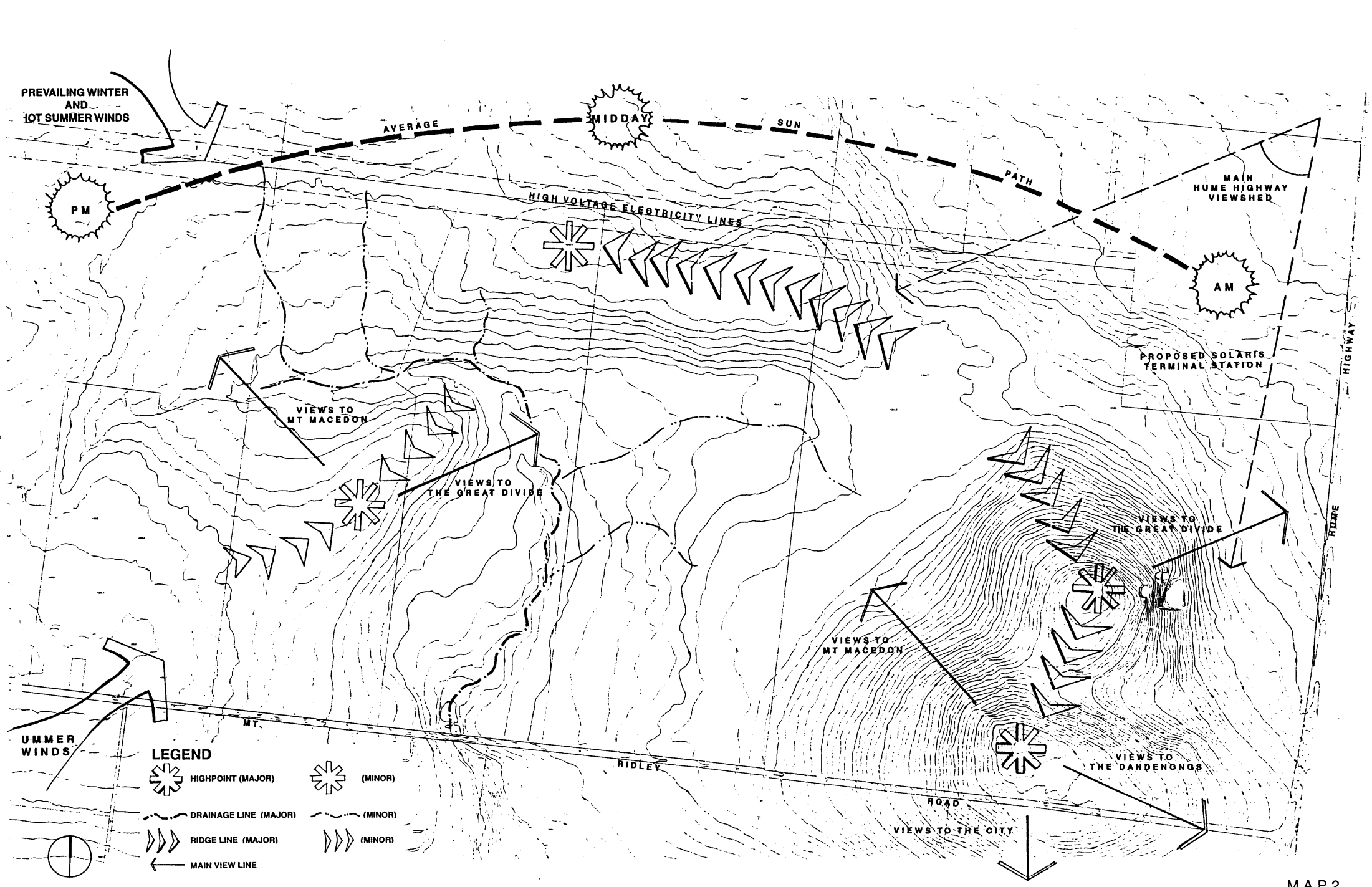
100 200 500 1KM

SCALE 1:7500 IN METRES
NOVEMBER 1996
9648 LSK-02

MAP 1
LAND OWNERSHIP

INTER URBAN BREAK, MICKLEHAM

GREENAWAY AND KATZ PTY LTD
BARRY MURPHY PTY LTD
CMPS+F PTY LTD



SOURCE: TRACT CONSULTANTS, JUNE 1993

0 50 100 200 500 1KM

SCALE 1:5000 IN METRES

NOVEMBER 1996

9648 LSK-03

MAP 2

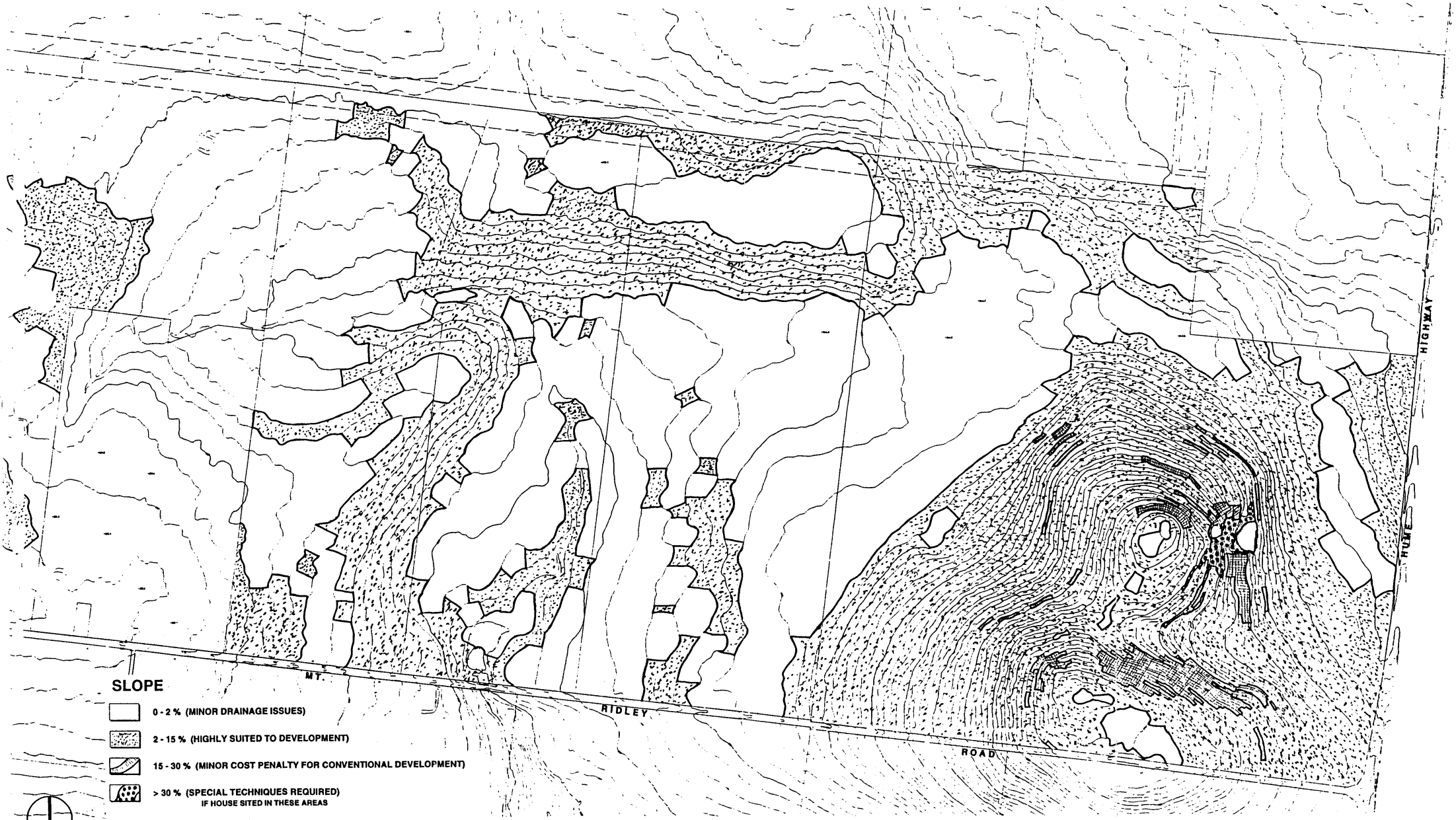
VISUAL AND LANDSCAPE

MT. RIDLEY ESTATE, MICKLEHAM

GREENAWAY AND KATZ PTY LTD

BARRY MURPHY PTY LTD

CMPS+F PTY LTD



SOURCE: TRACT CONSULTANTS, JUNE 1993

0 50 100 200 500 1KM

SCALE 1:5000 IN METRES

NOVEMBER 1996

9648 LSK-04

MAP 3

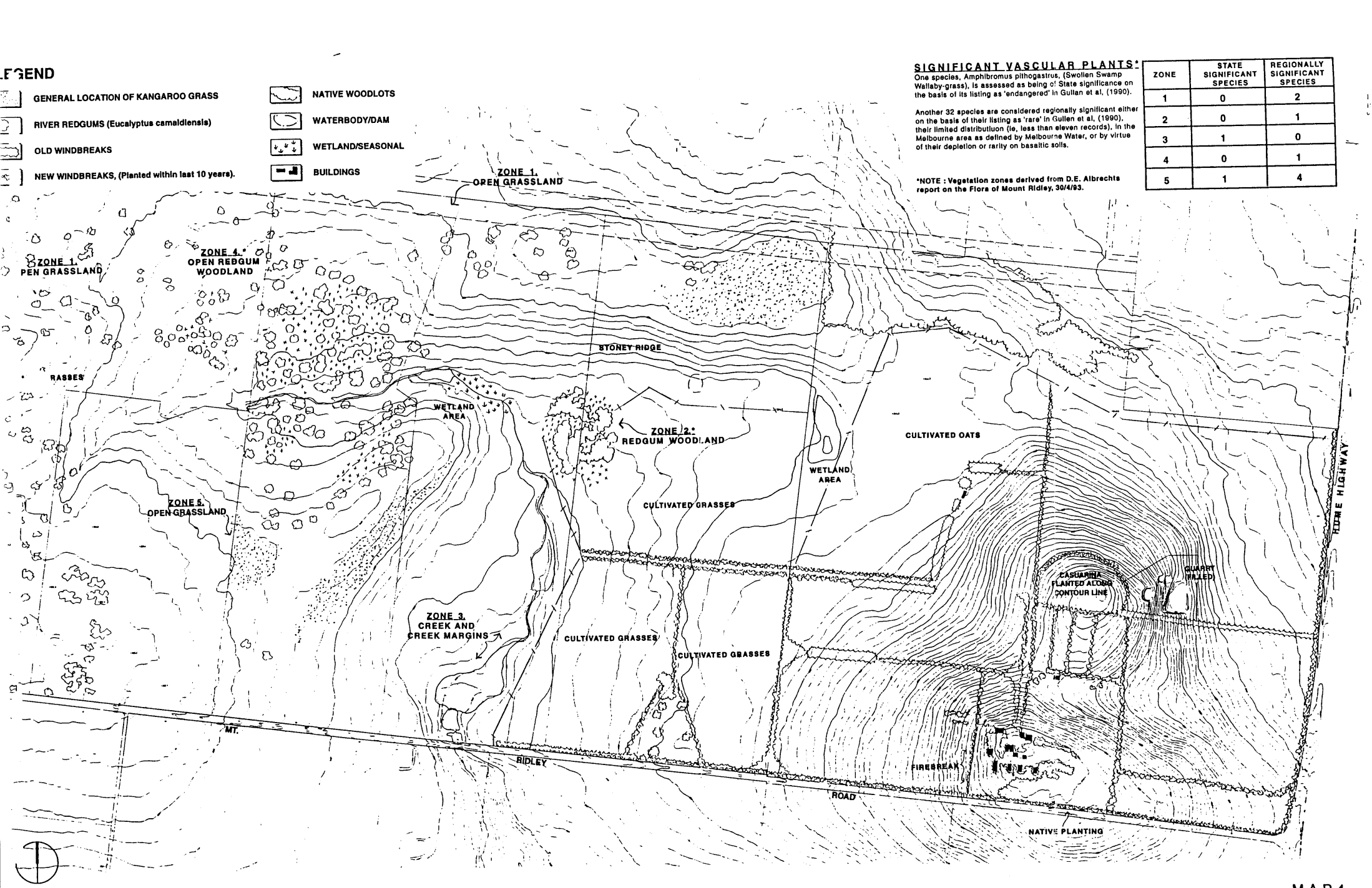
SLOPE ANALYSIS

MT. RIDLEY ESTATE, MICKLEHAM

GREENAWAY AND KATZ PTY LTD

BARRY MURPHY PTY LTD

CMPS+F PTY LTD



SIGNIFICANT VASCULAR PLANTS*

One species, Amphibromus pithogastrus, (Swollen Swamp Wallaby-grass), is assessed as being of State significance on the basis of its listing as 'endangered' in Gullan et al, (1990).

Another 32 species are considered regionally significant either on the basis of their listing as 'rare' in Gullen et al, (1990), their limited distributuon (ie, less than eleven records), in the Melbourne area as defined by Melbourne Water, or by virtue of their depletion or rarity on basaltic soils.

*NOTE : Vegetation zones derived from D.E. Albrechts report on the Flora of Mount Ridley, 30/4/93.

ZONE	STATE SIGNIFICANT SPECIES	REGIONALLY SIGNIFICANT SPECIES
1	0	2
2	0	1
3	1	0
4	0	1
5	1	4

SOURCE: TRACT CONSULTANTS, JUNE 1993

0 50 100 200 500 1KM

SCALE 1:5000 IN METRES

NOVEMBER 1996

9648 LSK-05

MAP 4

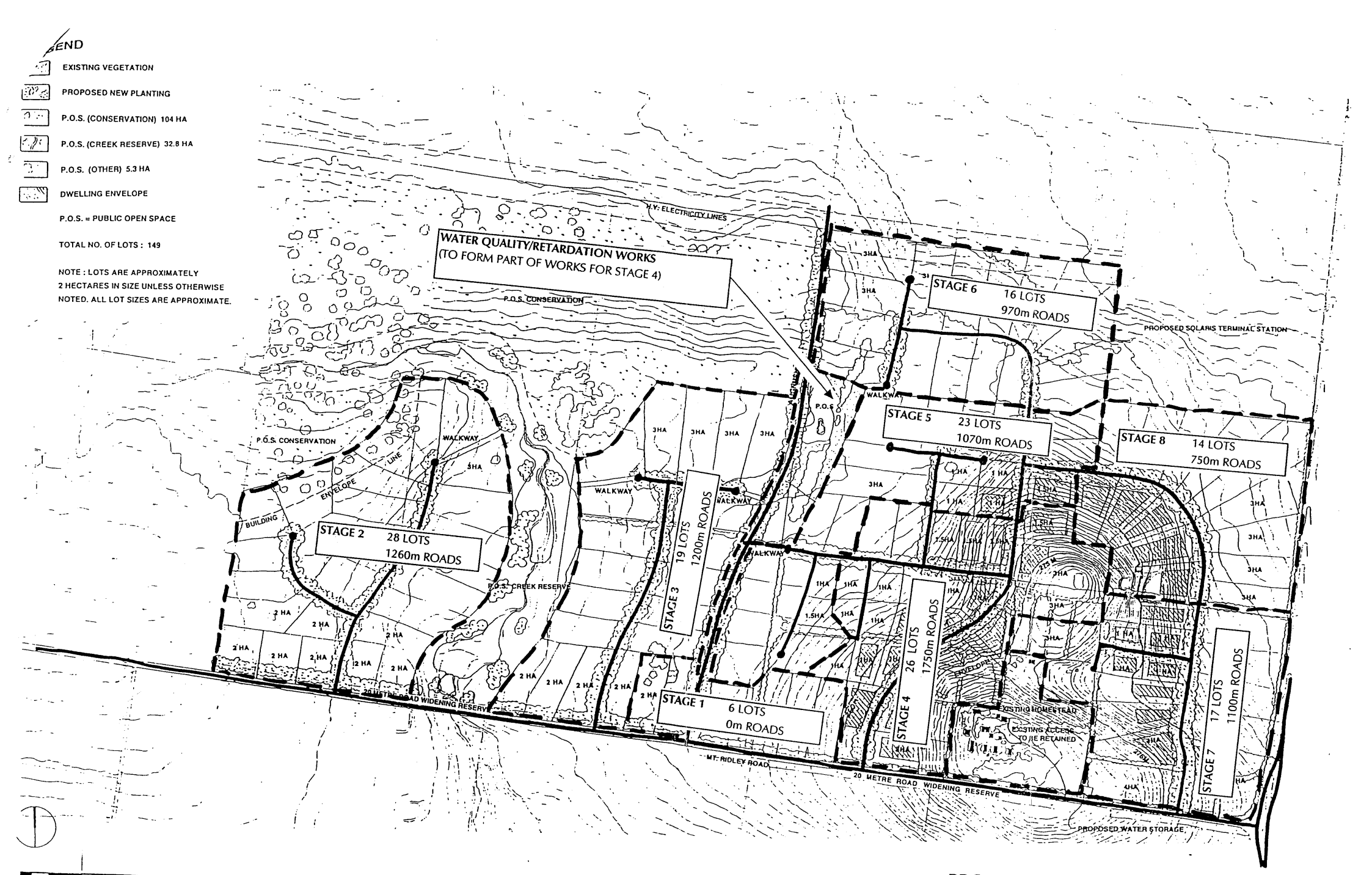
EXISTING VEGETATION SUB AREA A+B

MT. RIDLEY ESTATE, MICKLEHAM

GREENAWAY AND KATZ PTY LTD

BARRY MURPHY PTY LTD

CMPS+F PTY LTD

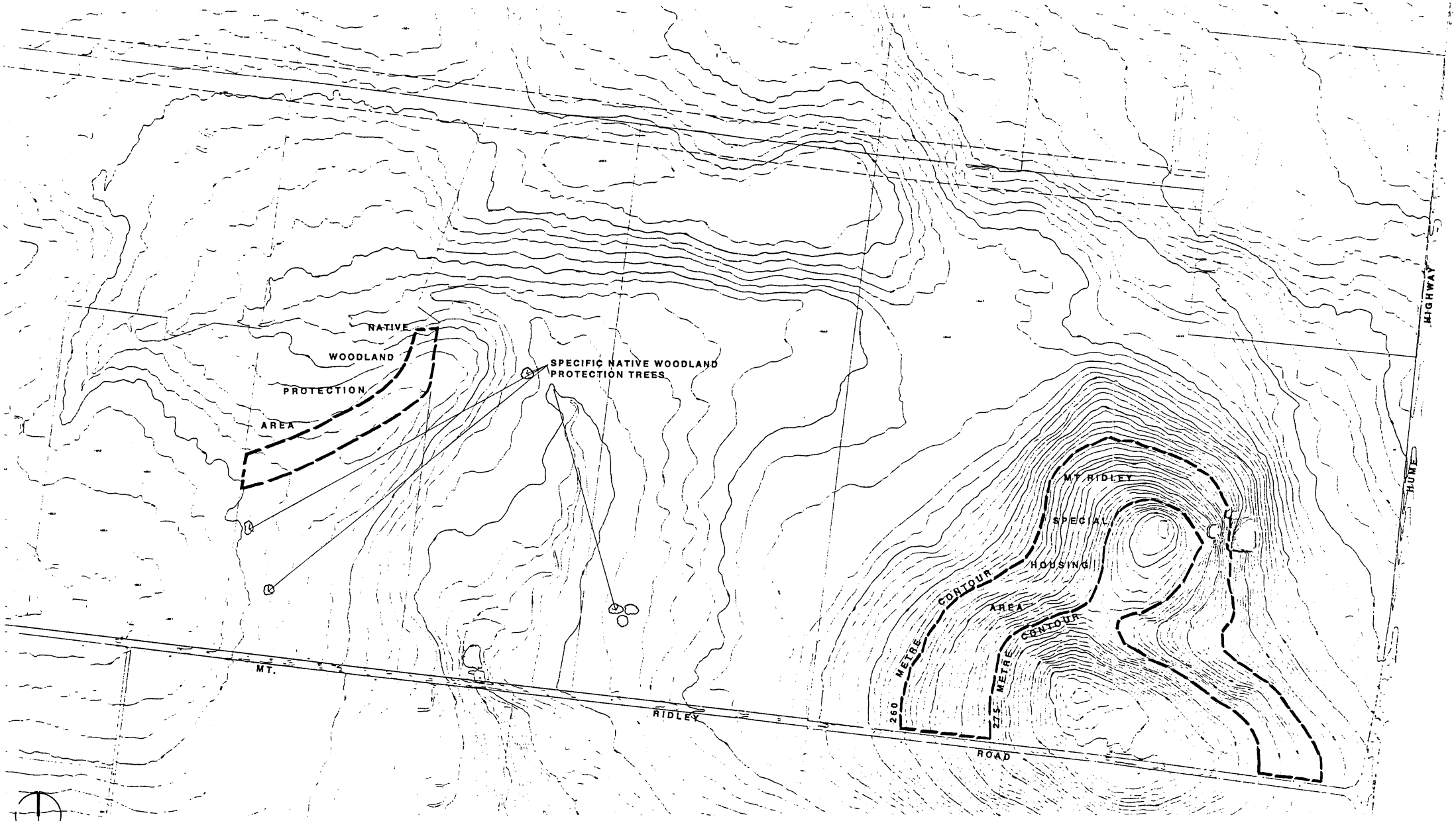


PROPOSED STAGING PLAN

MAP 5B

MT RIDLEY ESTATE, MICKLEHAM

GREENAWAY AND KATZ PTY LTD
BARRY MURPHY PTY LTD
NOVEMBER 1996
9648 LSK 01 B



SOURCE:TRACT CONSULTANTS, JUNE 1993

0 0 100 200 500 1KM

SCALE 1:5000 IN METRES

NOVEMBER 1996 AMENDED MAY 1997

9648 LSK-07

MAP 6A

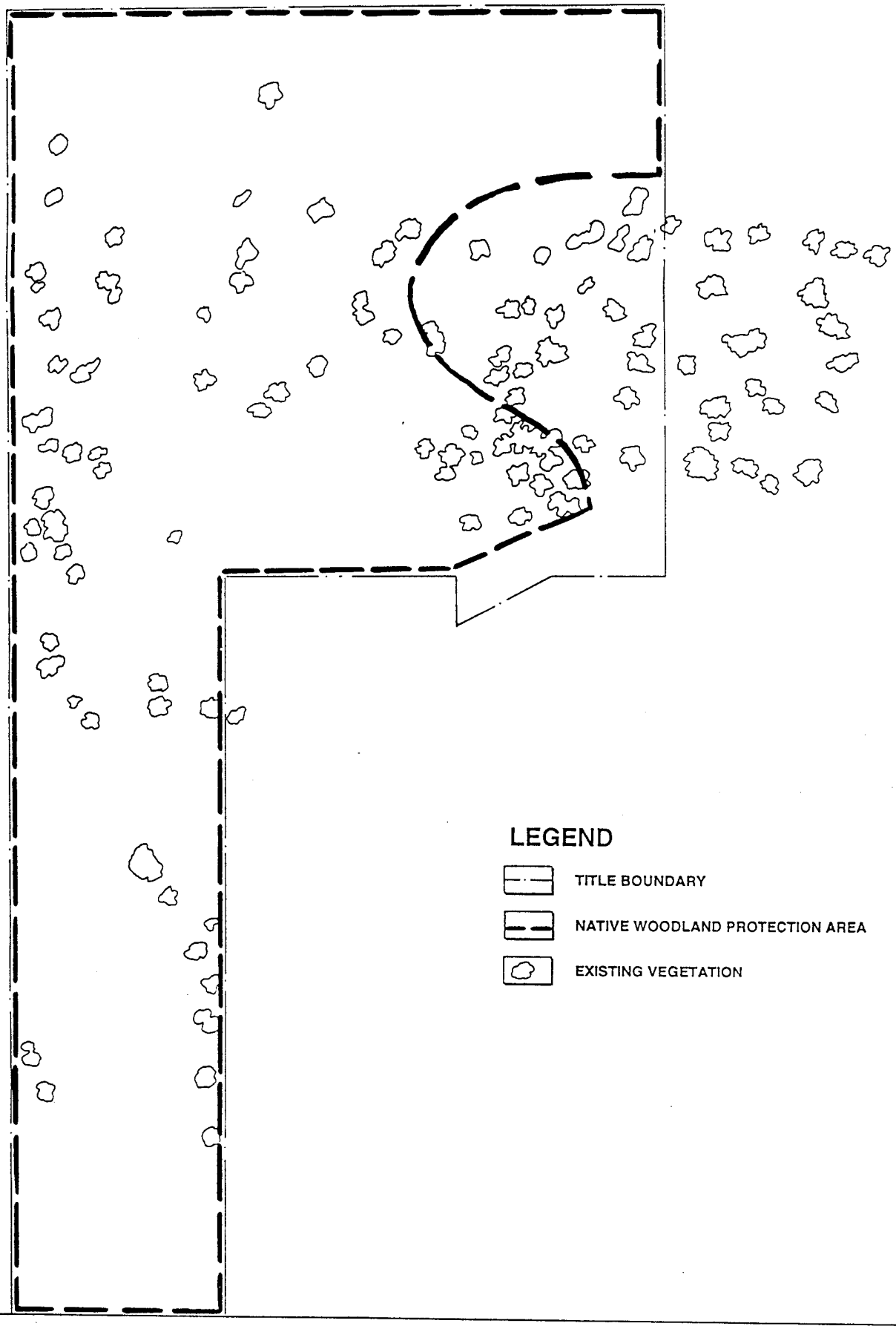
BUILDING - SPECIAL DEVELOPMENT AREAS

MT. RIDLEY ESTATE, MICKLEHAM

GREENAWAY AND KATZ PTY LTD

BARRY MURPHY PTY LTD

CMPS+F PTY LTD



MAP 6E

0 100 200

BUILDING - SPECIAL DEVELOPMENT AREA

C. LE 1: 5000 METRES

A 1997

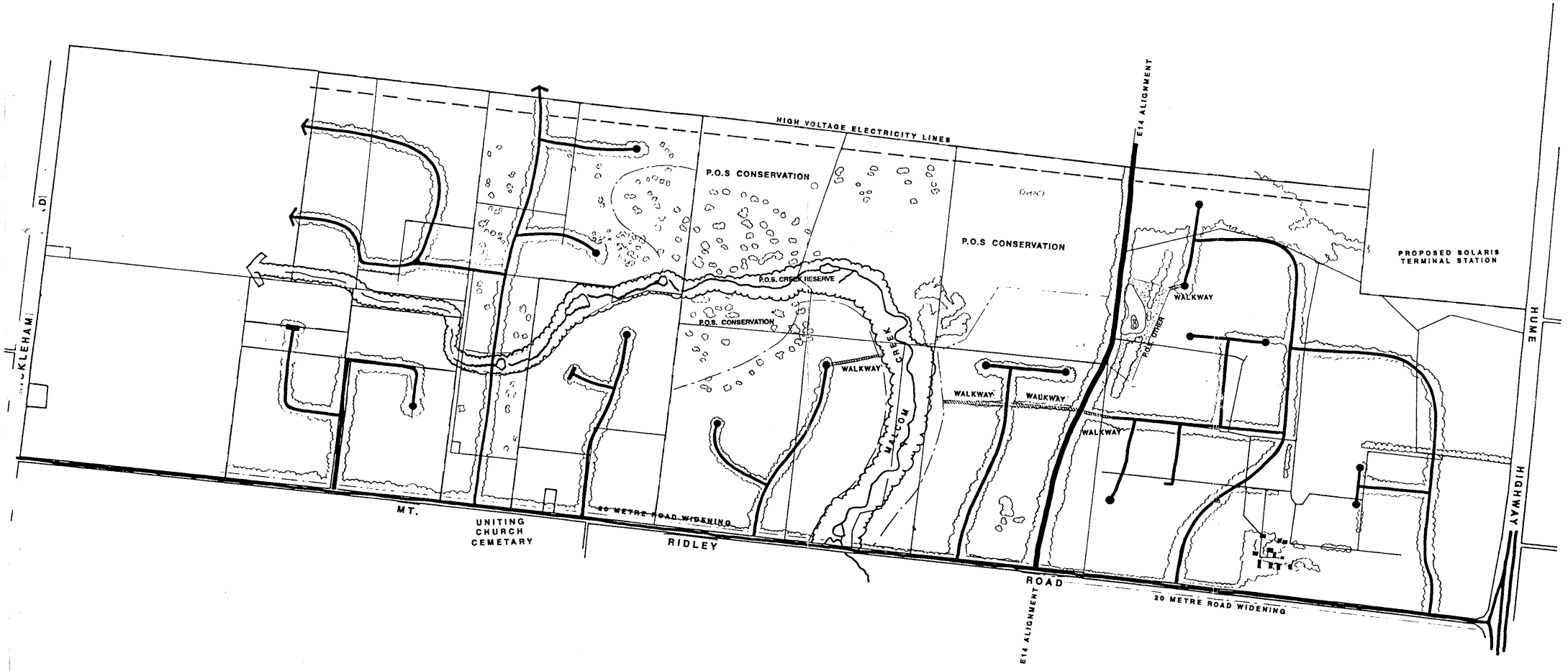
648 LSK-10

MT. RIDLEY ESTATE, MICKLEHAM

GREENAWAY AND KATZ PTY LTI

BARRY MURPHY PTY LTI

CMPS+F PTY LTI



0 100 200 500 1KM

SCALE 1:7500 IN METRES
NOVEMBER 1996
9648 LSK-08

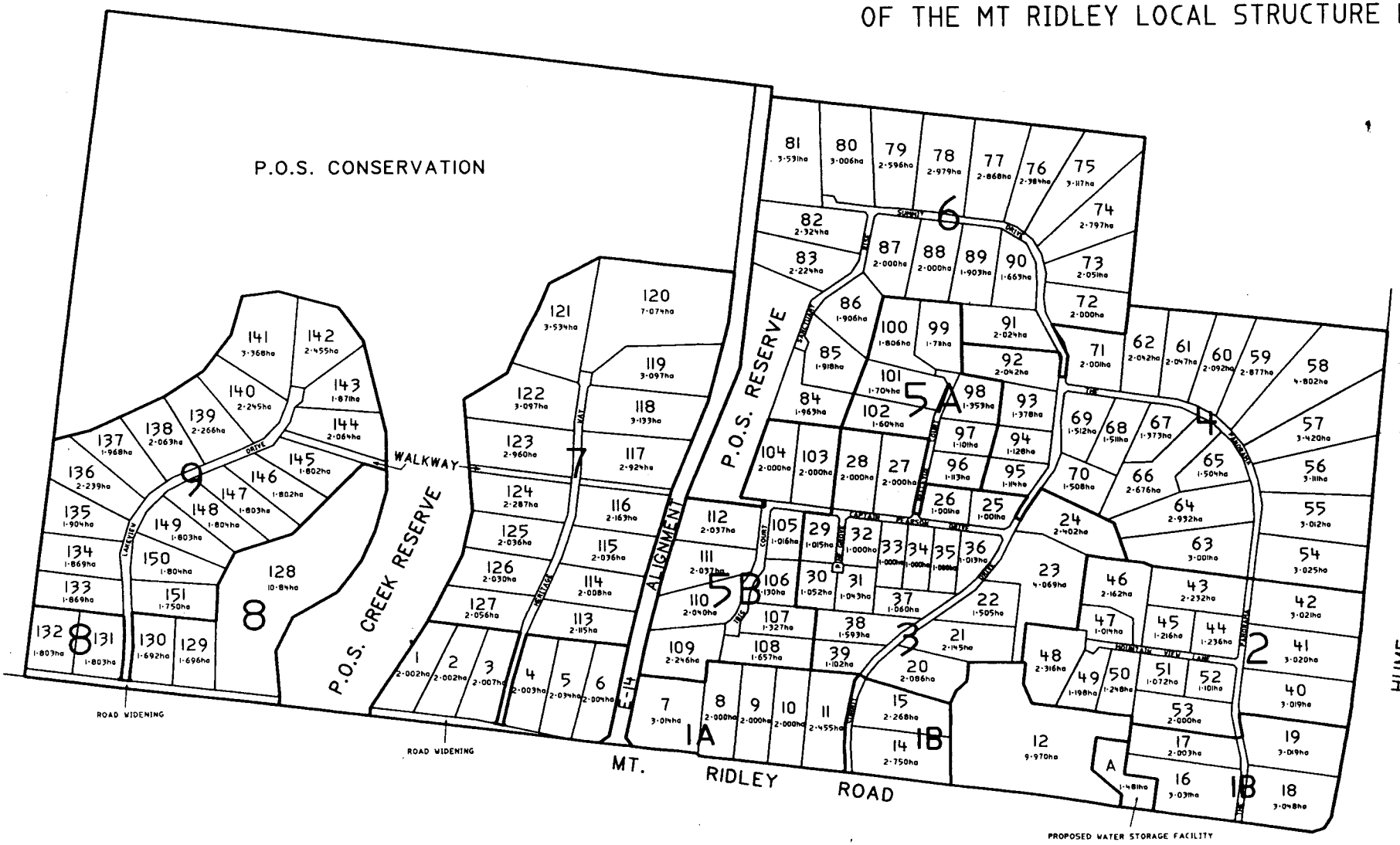
MAP 7
LOCAL STRUCTURE PLAN

INTER URBAN BREAK, MICKLEHAM

GREENAWAY AND KATZ PTY LTD
BARRY MURPHY PTY LTD
CMPS+F PTY LTD

THE MT. RIDLEY ESTATE
MICKLEHAM

MT RIDLEY LOCAL STRUCTURE PLAN
LOT LAYOUT AND STAGING PLAN
AMENDED NOVEMBER 1998
THIS PLAN IS ENDORSED TO FORM PART
OF THE MT RIDLEY LOCAL STRUCTURE PLAN



APPENDIX A

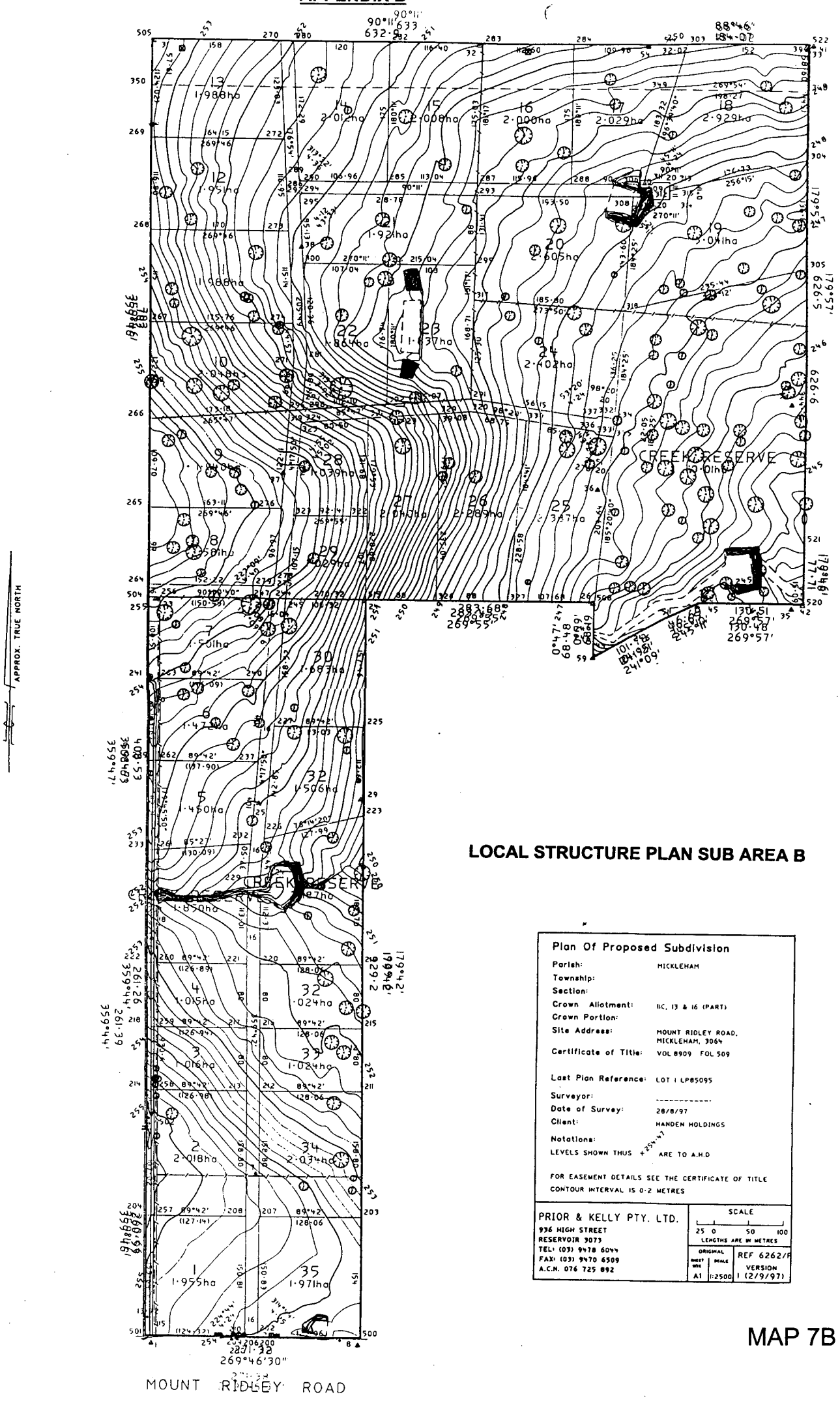
14 December 1998

SO21

GREENAWAY AND KATZ PTY. LTD.
PEYTON WAITE PTY. LTD.
REF 7140/3/04 VERSION 3
DATE 26/11/1998

LOT LAYOUT AND STAGING PLAN SUBAREA A MAP 7A

7140SUB.G34



LOCAL STRUCTURE PLAN SUB AREA B

Plan Of Proposed Subdivision

Parish:	MICKLEHAM
Township:	
Section:	
Crown Allotment:	11C, 13 & 16 (PART)
Crown Portion:	
Site Address:	MOUNT RIDLEY ROAD, MICKLEHAM, 3064
Certificate of Title:	VOL 8909 FOL 509
Last Plan Reference:	LOT 1 LP85095
Surveyor:	----------
Date of Survey:	28/8/97
Client:	HANDEN HOLDINGS
Notations:	

LEVELS SHOWN THUS +254·47 ARE TO A.H.D

FOR EASEMENT DETAILS SEE THE CERTIFICATE OF TITLE

CONTOUR INTERVAL IS 0·2 METRES

PRIOR & KELLY PTY. LTD.
936 HIGH STREET
RESERVOIR 3073
TEL: (03) 9478 6044
FAX: (03) 9470 6509
A.C.N. 076 725 892

SCALE
25 0 50 100
LENGTHS ARE IN METRES

ORIGINAL SHEET SIZE	SCALE	REF 6262/P VERSION 1 (2/9/97)
A1	1:2500	

MAP 7B