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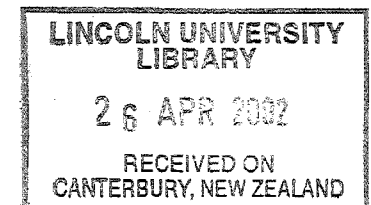
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HALSWELL SECONDARY SCHOOL

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Submitted in part fulfillment of the
requirements for the Diploma in Landscape
Architecture from Lincoln College University
of Canterbury. 1979.

TO MY WIFE LAUREN.

BRIEF

To prepare a landscape design for a secondary school in Halswell by:

- Firstly: Selecting a site based on the criteria of nearness of population, available undeveloped land, existing or potential landscape features, and potential linkage with existing open space and reserves.
- Secondly: Becoming aware of the educational needs of today, and thus surveying and appraising the site so as to develop a functional site layout.
- Thirdly: Developing a master plan of the whole site to exploit any existing landscape features, and providing a series of spaces suiting the needs of small groups through to active recreational needs.
- Fourthly: Detailing of one area to the working drawing stage.

TABLE OF CONTENTS.

	Page
The Halswell Area	1
Population	1
Land	3
Landscape features	3
Reserves	4
Soils	6
Regional	8
Regional Parks	8
Site Selection	12
Ellesmere Expressway	16
Noise	19
Halswell Community	27
Park Schools and Community Schools	31
School Buildings	39
Site Planning	51
Analysis, Implementation, Conclusion	59

THE HALSWELL AREA

The development of a secondary school in the Halswell area required a site that would satisfy four basic criteria:

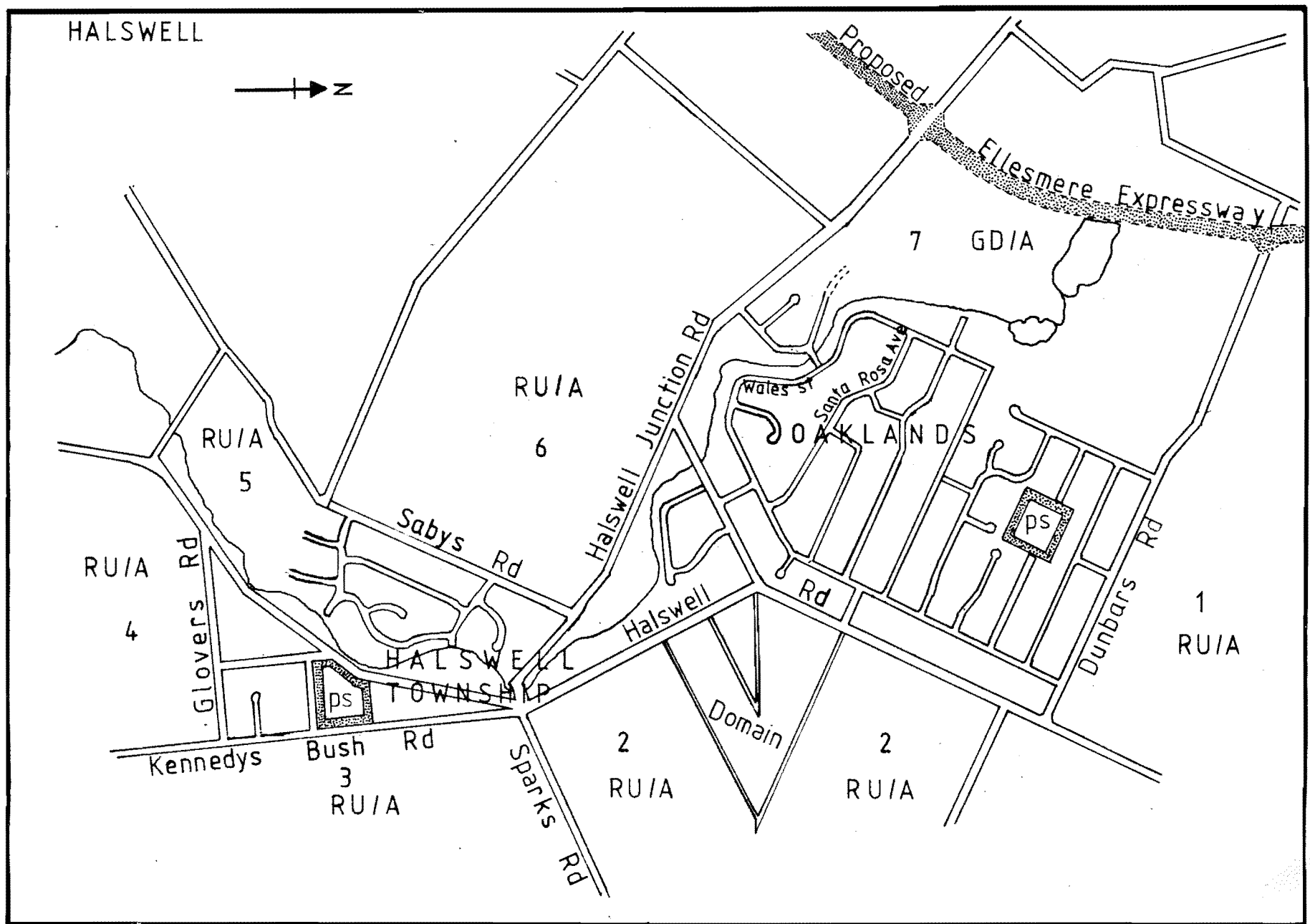
1. Nearness of population.
2. Available undeveloped land.
3. Existing or potential landscape features.
4. Potential linkage with existing open space and reserves.

These factors were each considered, and the following are the findings.

POPULATION

The population of the Halswell area is steadily increasing. In 1966 it was 2,331, in 1971 it was 3,567, and in 1976 it was 4,791. At this rate of increase a simple projection would forecast a population of 10,000 by 1998. This is the catchment population necessary before the Education Department will build a secondary school, but the department is not allowed to buy the land for a school site more than ten years in advance of the date of this projected population. For this reason the design will be a hypothetical one, but will be governed by all the restraints that the selected site presents.

Two distinct areas of development have occurred for new housing in the community. One area is to the west of Halswell Road and south of Halswell Junction Road, which is an expansion of the older part of Halswell township. The other area is to the west of Halswell Road and to the north of Halswell Junction Road in a newer area known as Oaklands. This area is the far larger of the two, and is where most rapid expansion is likely to occur in the future.



KEY	
Zone	
RU/A	Rural A
GD/A	General Development A
PS	Primary School
1-7	Site Selection Areas

LAND

Most of the land around Halswell is zoned Rural A, the only exception being that to the west of Oaklands which is zoned General Development A. This zoning is a conditional use area, with the intention being for a continuation of the residential development. This zone would allow for the development of a school site, although this could also be accomplished by designation of land in a Rural zoning.

A small pocket of land between Wales Street and Santa Rosa Avenue has been left undeveloped as a second primary school site, but being less than three hectares it is far too small for a secondary school site, and expansion is impossible because of houses on all sides.

LANDSCAPE FEATURES

The tributaries of the Halswell River begin around the Halswell township. One of these tributaries is the Nottingham Stream, which has its source in the exposed groundwater that fills the excavated gravel pits to the west of Oaklands. These water filled gravel pits and the outflowing stream are two of the major features on the flat open landscape.

The only stands of trees of any significance are in the Domain, the other established planting being Pine or Macrocarpa shelter belts.

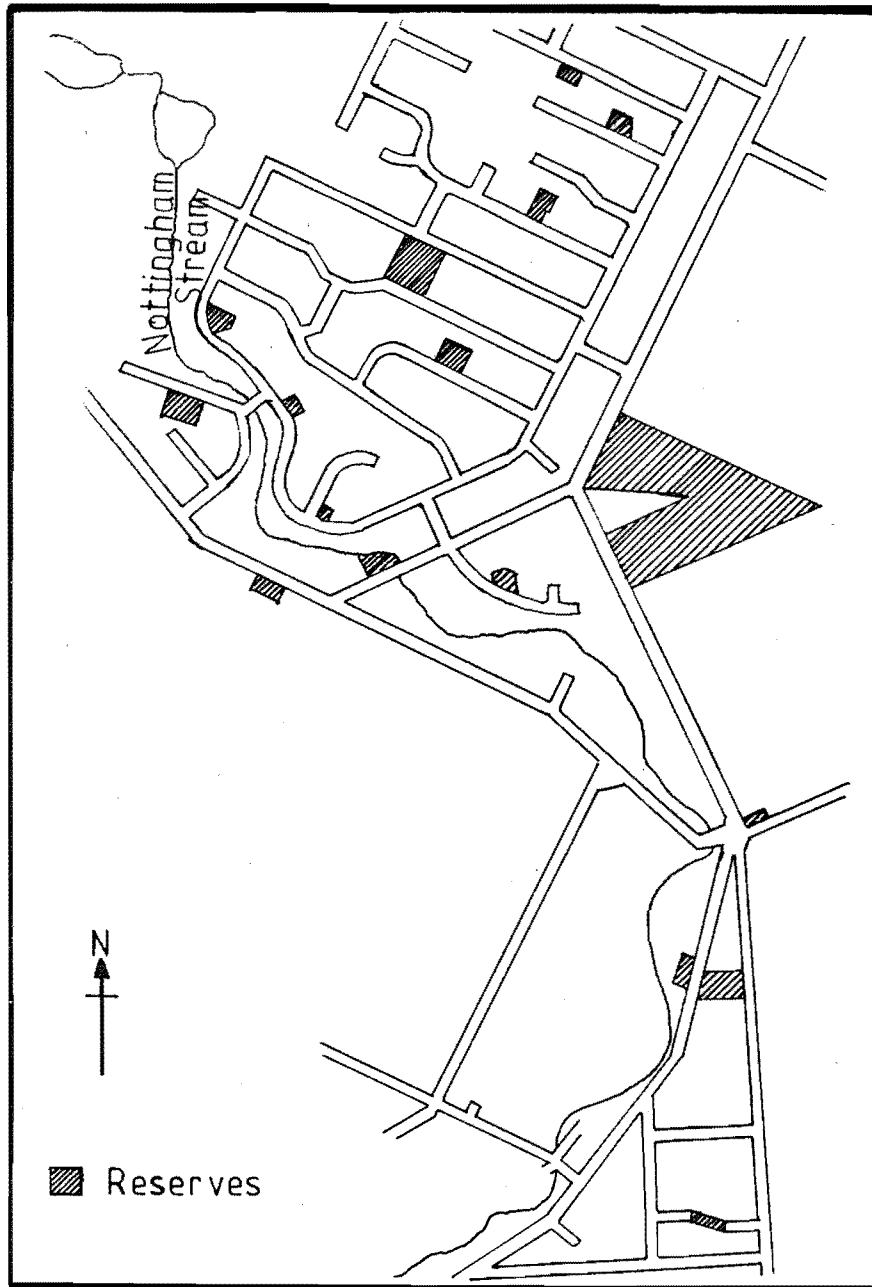
The Port Hills provide a pleasant view to the east of Halswell, and on a clear day the Southern Alps can be seen to the west.

RESERVES

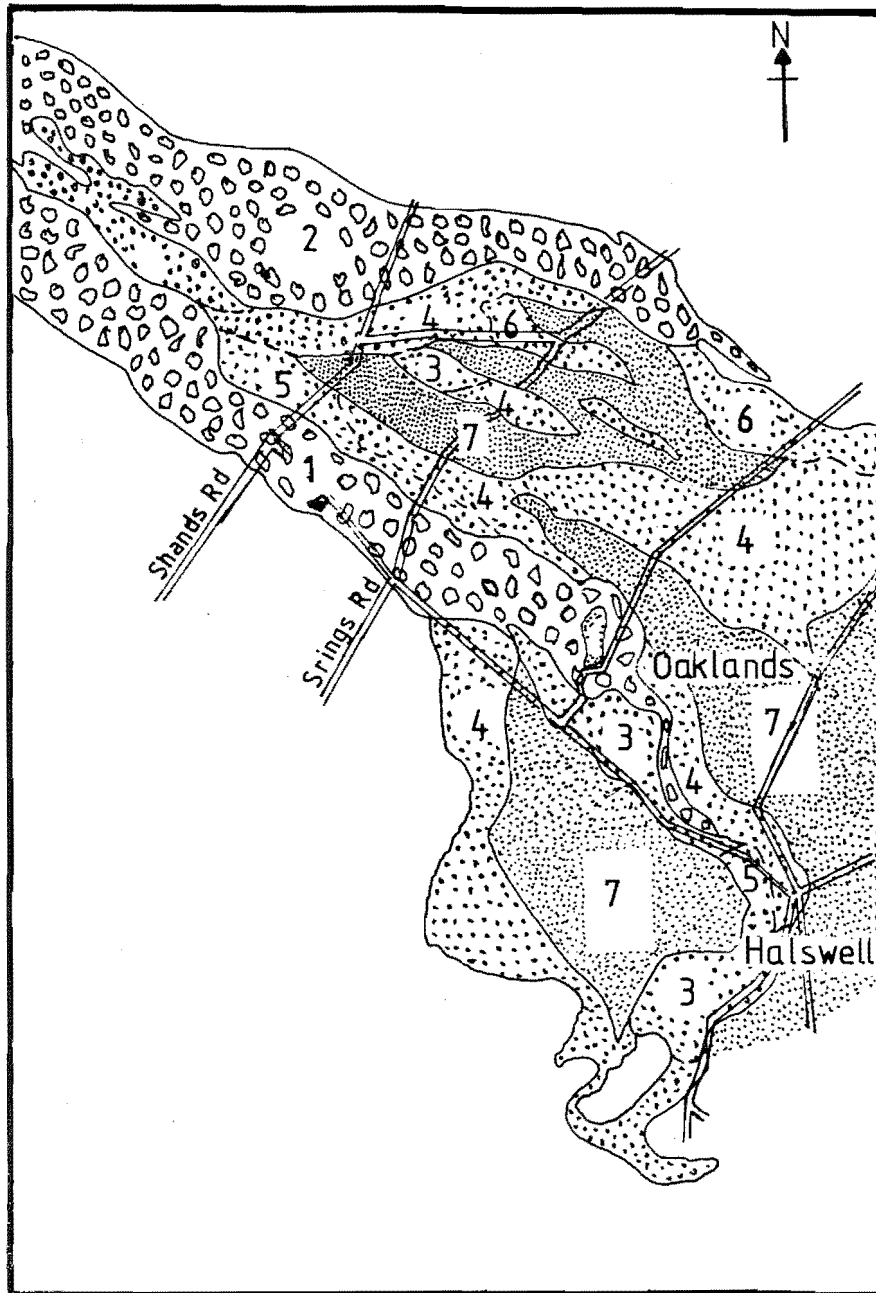
The existence of Nottingham Stream was recognised by the developers of the older Halswell area, and was exploited to be a pleasant feature by many property owners. This experience has been lost by the developers of the new Oaklands area and the stream is hidden at the back of many sections, with its public recreation potential ruined by thoughtless planning and unsympathetic development. Bare quarter acre reserves are scattered randomly around Oaklands with no linkage to one another and no features of interest except an isolated swing or slide. Fortunately the lakes in the gravel pits are still undeveloped, and their considerable recreation potential should be noted and exploited to provide a reserve area for the whole Halswell community.

The Domain, opposite the tavern, is the major developed recreation area. Several clubs have their headquarters there and make use of the facilities such as sports fields, tennis courts, and swimming pool. Linkage of open space in Halswell to this resource is not possible due to the

separation formed by Halswell Road. Also the rigid housing pattern, as mentioned above, denies access by the public to the Nottingham Stream, which was a potential open space corridor through Halswell.



SOILS



The soils in the area are recent deposits from an overflow channel of the south branch of the Waimakariri River which flowed from Islington to Halswell about three hundred years ago. The old river bed left a channel of gravel known as Selwyn stony loamy sand. This has a very thin topsoil cover, which, if left uncultivated, may be free of stones for a depth of 100mm. Underneath this is the stony loamy sand which is very rapid draining and subject to severe summer drought.

KEY	
	— Stony
	1 Selwyn loamy sand , stony phase
	2 Waimakariri sandy loam, very stony phase
	— Loam
	3 Waimakariri sandy loam
	4 Waimakariri fine sandy loam
	5 Waimakariri silt loam
	6 Waimakariri fine sandy loam, shallow phase
	— Silt
	7 Kaiapoi silt loam

The old river bed has been well mined, and many of the resultant gravel pits are now filled with water, forming a network of lakes to the west of Christchurch. The most southern lake lies to the west of Oaklands in the General Development A zone, but the stony soils continue a short distance into Oaklands before petering out.

The levee of the old river course is a loam, known as Waimakariri fine sandy loam. This was deposited along both sides of the river channel by the river when in flood, and is thus higher than the old bed. It is made up of the loam which the river was carrying that was fine enough to be carried by the floodwaters, yet coarse enough to be dropped by the water once out of the speed of the main channel. The soil is friable and very free draining, easily worked, but it can dry out rapidly in summer. Plants that survive best are deep rooting species which are able to utilise reserves of soil moisture in the dry summer months, although this problem could be overcome by irrigation. A large part of the General Development A zone is on this soil, as is some of

Oaklands and Halswell.

Further out still from the old channel is the soil known as Kaiapoi silt loam. This is the fine material that was carried and deposited by the spreading and ponding flood waters. Being fine, it is slow to drain, and being low lying, it is frequently flooded by the drainage from the surrounding plains and runoff from the Port Hills. The fluctuating water level has caused it to become a mottled soil, a factor which does not promote good soil structure, and thus inhibits plant growth to some extent. The excessive wetness in the winter is a problem in some parts of the community, especially for the primary school's playing fields which often become quagmires.

Most of Oaklands, and all land east of Halswell Road is this soil type, as is most land south-west of Halswell Junction Road. This factor critically affected the areas of land that could be considered suitable for the secondary school site.

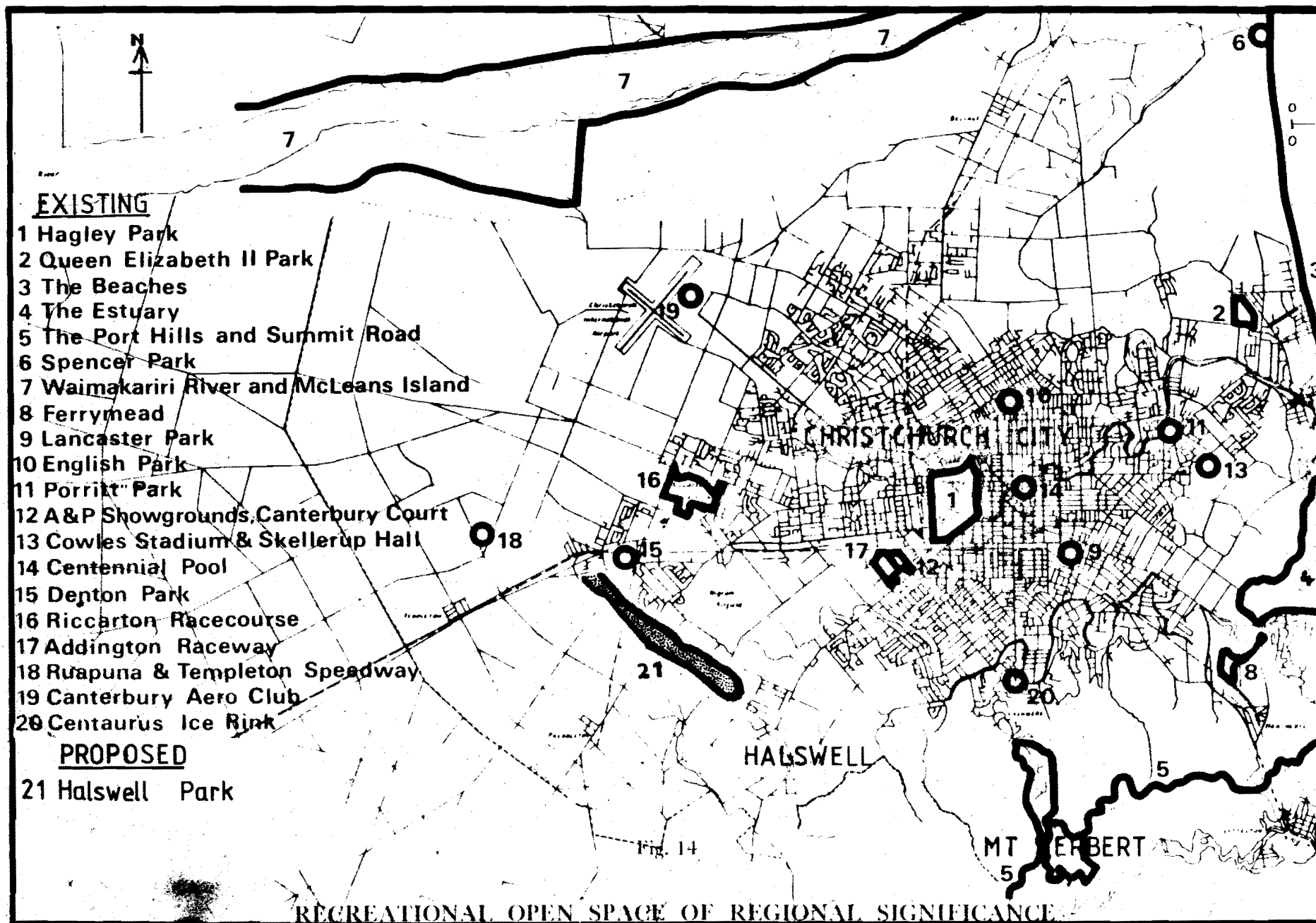
REGIONAL

Halswell, which comes under the jurisdiction of the Paparua County Council, is located at the foot of the Port Hills roughly north-west of Mt Herbert and south-east of Christchurch city. The town has grown recently as a residential area for people employed in Christchurch city, some commuting by means of the public bus service provided, and some by car which takes ten to fifteen minutes to reach The Square. The nearest built-up area is Hoon Hay, which is about 5 kilometers away on the outskirts of the city.

REGIONAL PARKS

Regional parks are becoming increasingly more popular, and there is a growing demand for parks which provide for more than organised team sports, as most parks presently do. What is termed "passive recreation" is gaining importance for planners, as this is the type of leisure activity that more and more people wish to engage in, therefore more facilities to satisfy this need are required. A 1974 study revealed that driving for pleasure was a popular recreation pastime, but this may well have changed since the oil crises. Another popular activity, for which there is no reason to doubt its continuing growth in popularity, is water based recreation of all types e.g., fishing, riverside picnics, swimming in lakes, rivers, beaches.

Christchurch already has some regional recreation facilities, but these are generally located in a semi-circle or arc around Christchurch extending from the Waimakariri River in the north, around the beaches and Estuary in the east and along the Port Hills in the south. The glaring absence is that of an extensive regional





reserve to the west. Such a reserve would provide a natural western boundary to city expansion, which tends to creep outwards in times of economic boom. It would also provide a close recreation facility for people in the south-east of Christchurch who would otherwise have to travel to the coast or the Waimakariri River for passive water oriented recreation.

The ideal location for this park would be along the old river course of the Waimakariri that runs through Halswell. The long line of gravel pits, instead of being filled with rubbish as the one between Springs Road and Shands Road is presently, could be linked to form a continuous regional reserve with a series of lakes in the old pits. This reserve could expand to the north-west as more pits were dug, and the revenue this would provide could help pay for the reserve's further development and running costs.

The aerial photograph, with Oaklands in the lower left corner and Sockburn in the upper right, shows up these lakes in

the old gravel workings, and illustrates the potential size such a park could have. Former river channels can be seen weaving their way across the farmland. These are often the only features on a flat landscape and could have been used to advantage when housing developments were planned, but they have been ignored and predictable uninteresting street patterns have resulted.

SITE SELECTION

The areas considered around Halswell for a suitable site can be broadly categorised into seven separate locations.

(refer to map) No land within the built up part of the community was available, so all investigations were focused on sites on the periphery of the town.

The sites considered were as follows:

1. North of Dunbars Road.

This site was ruled out because:

- a. Dunbars Road would separate it from the community.
- b. Expansion of Oaklands was not likely to occur in this direction, but rather to the west and south of its present development.
- c. There were no landscape features of any significance.
- d. The soils were Kaiapoi silt loam, which would prove difficult for development of all year round playing fields and cause generally muddy winter conditions.

2. East of Halswell Road, North of Sparks Road.

This site was ruled out because:

- a. The main road would have to be crossed by all pupils.
- b. The main road would separate the school from the community.
- c. The soils were Kaiapoi silt loam.

3. East of Kennedy's Bush Road, south of Sparks Road.

This site was ruled out because:

- a. The majority of pupils would have to cross Halswell Road.
- b. The lack of landscape features of any significance.
- c. The distance from the bulk of the population in Oaklands.
- d. The soils were Kaiapoi silt loam.

4. South of Glovers Road.

This site was ruled out because:

- a. The distance from the majority of the population.
- b. Halswell Road would have to be crossed by most pupils.
- c. Lack of any significant landscape features.
- d. The soils were Kaiapoi and Horotane silt loams.

5. West of Halswell Road, North of Candys Road.

This site was attractive because:

- a. It was on Waimakariri sandy loam, which is free draining.
- b. Nottingham Stream ran through it.

It was ruled out though because of its distance from the community of Oaklands where most of the pupils would live.

6. West of Sabys Road, south of Halswell Junction Road.

This site was attractive because:

- a. It was centrally located in relation to the two parts of the community.

It was ruled out though because:

- a. The lack of any major landscape features.
- b. The soils were Kaiapoi silt loam.

7. General Development A zone west of Oaklands.

This site was attractive because:

- a. There were the landscape features of two water filled gravel pits, and the beginning of the Nottingham Stream on the site.
- b. It was close to the major concentration of population in Oaklands.
- c. No main roads separated the community from the site.

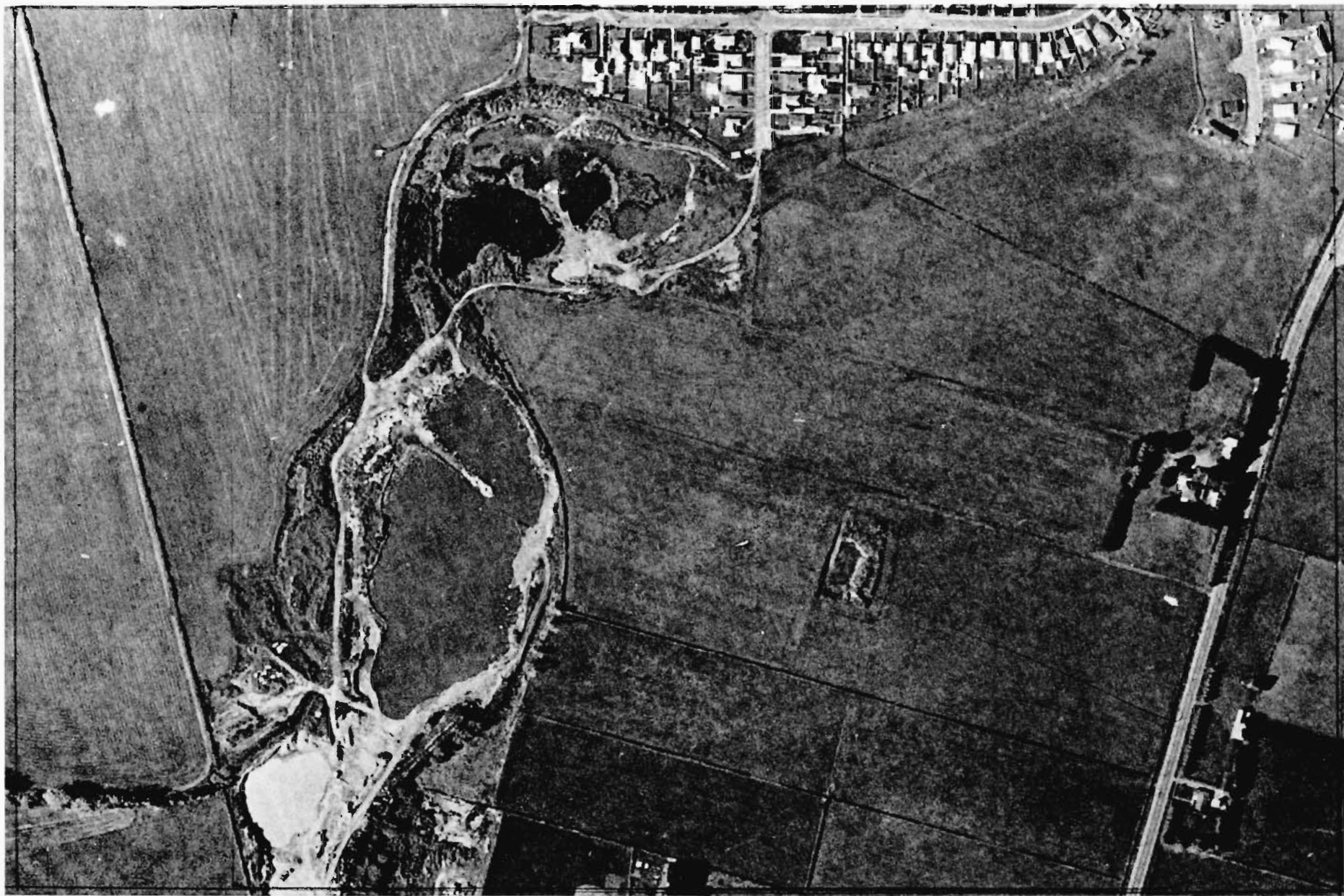
d. It was in the area where future housing development for Oaklands was sure to go (approval for such development having already been given by the council).

e. The soil was Waimakariri sandy loam, which has ideal drainage for a heavily used school site.

f. It connects to the tip of the old Waimakariri River channel, which, as stated earlier, would suit ideally to be developed as a regional park.

For these reasons, this area was decided to be the most suitable location for a secondary school in Halswell. The exact boundaries of the site were worked out later, once school facilities and dimensions were investigated.

The aerial photograph of the General Development A zone shows the water filled gravel pits to the north, Wales Street to the east, and Halswell Junction Road to the south. The approximate boundaries of the site are marked.



ELLESMERE EXPRESSWAY

As part of the master transportation plan for Christchurch, the Regional Planning Authority plans an expressway to pass along the western boundary of the site. This road is to be called the Ellesmere Expressway, and will connect onto the Southern Motorway just north of Dunbars Road.

The expressway was originally planned to serve traffic generated by Rolleston city, as well as residents in the Leeston, Lincoln, Lake Ellesmere area. It was planned to have been constructed in two stages. The first stage would be as a two lane limited access road from Halswell Junction Road to Dunbars Road, to be started by the late 1980's. The second stage would be expansion to a four lane road, and probably grade separated where it met the Southern Motorway. This was planned for 1999 to serve an internal population of 400,000, plus 200,000 population over a wider area, with 156,000 jobs in the internal area, and 60,000 in the city centre.

From a traffic engineers point of view, it is desirable to limit the growth of

Christchurch to 400,000 people, as the existing roading system cannot handle the traffic generated by a greater internal population. If Christchurch were allowed to expand to a population of 600,000, it would be impossible to concentrate the flow of traffic, as there would be no unity in the direction of desired travel, and the inter-suburban traffic would be chaotic. Any population in excess of 400,000 should be housed in satellite cities, such as Rolleston was planned to be. This would allow all the traffic travelling from Rolleston into Christchurch to be concentrated onto one or two access routes, such as the Ellesmere Expressway. Once in the city, the traffic could disperse as it wished.

Of necessity, all this planning is very long term. Since many of these roading plans were formulated, other factors have changed, such as the election of the National Party in 1975 which scrapped the Rolleston proposal, and the oil shortage since 1974, which has affected peoples attitude towards travelling long distances to work. These factors, as well as the

general economic downturn since 1974 which has greatly slowed the expansion of Christchurch, have caused the necessity of road-building programmes such as the Ellesmere Expressway to be brought into question. Planners and engineers at present are not prepared to say outright that the expressway will be scrapped, but they do concede that if it does go ahead, it will probably be only a two lane limited access road.

The land for the road's alignment is still designated for development as an expressway, so it was felt that the possibility of the construction of such a road could not be ignored. Thus the subject of noise produced by the traffic and the effect this would have on the school was looked into, and the following were the findings.

Express way
built?

NOISE

Noise is going on around us all the time, there is never absolute silence. The constant background noise that is typical for an area is known as the ambient noise level. As one would expect, this level varies for different areas, with an industrial area during the day having a far greater background noise level than a residential area at night. Acceptable levels of ambient noise have been compiled and the following are those laid down by the Standards Association of New Zealand.

The L series is a common method of measuring noise levels. L 95 means that the stated noise level (i.e., 38 dBA) is exceeded 95% of the time. L 95 is normally considered the ambient level for an area. The noise level can be measured and expressed for other percentage figures, such as L 50 and L 10. L 50 means that the stated noise level is exceeded 50% of the time, and L 10 means that it is exceeded 10% of the time. The L 10 levels should not exceed 20 dBA above the ambient noise level, whilst the L 50 level might be expected to

ZONE	DAYTIME 7 am - 11 pm	NIGHT-TIME 11 pm - 7 am
RURAL	38 dBA 1.	32 dBA
RESIDENTIAL	45 dBA	38 dBA
COMMERCIAL	52 dBA	45 dBA
INDUSTRIAL AND CITY CENTRE	60 dBA	N.A.

1. dBA is a scale of sound level measurement which approximates human response to the loudness of broad-band noises. The dBA measurement is on a logarithmic scale,

so for every 10 dBA increase in the sound level, the loudness of the sound is twice as great.

be 15 dBA above that standard. The figures in the table above are the L 95 levels which are considered desirable.

Noise levels in our cities are steadily increasing. Overseas research shows a 1 dBA increase per year for the last twenty years as an average for some cities. Measurements in Christchurch from 1970 to 1976 showed even greater increases than this. Six sites were chosen, and the sound levels were recorded on the L 50 scale.

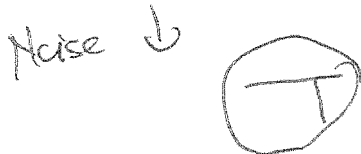
All of these sites show an increase of at least 10 dBA in sound level, which is a doubling of the apparent noise. The industrial site in Montreal Street was three times more noisy in 1976 than it was in 1970.

<u>SITE</u>	<u>AREA TYPE</u>	<u>AVERAGE SOUND LEVELS dBA</u>		
		1970	1972	1976
FLOCKTON & SPEIGHT	RESIDENTIAL	34	39	44
SIMEON & ROSEBERRY	RESIDENTIAL	33	43	50
HIGH & CASHEL	COMMERCIAL	55	62	66
ORAM & SEAVIEW	COMMERCIAL	49	58	60
GARLANDS & TANNER	INDUSTRIAL	48	53	60
MONTREAL	INDUSTRIAL	50	56	64

The reduction of the noise level is called noise attenuation. This can be achieved by a variety of means, such as:

1. Distance
2. Landform
3. Trees
4. Barriers
5. Building materials.

Distance is a sure means of reducing noise, but the distance required to reach acceptable noise levels is usually not available. Noise levels drop quickly at first, but as the distance increases, so the rate of attenuation decreases. The following table gives an indication of the distances involved in achieving noise reduction over flat soft ground.



DISTANCE	ATTENUATION	RESULT
0m	0 dBA	70 dBA
15m	- 6 dBA	64 dBA
30m	- 9 dBA	61 dBA
45m	-12 dBA	58 dBA
60m	-14 dBA	56 dBA
75m	-16 dBA	54 dBA
135m	-20 dBA	50 dBA

Due to the nature of the dBA scale, the distance / attenuation relationship is a constant one for different dBA levels. i.e., it takes 150 metres to reduce the noise level by 20 dBA whether one starts at 70 dBA, or 90 dBA. This proves useful when one comes to compare results taken at different sources, e.g., a motorway or a residential street.

One of the main producers of noise in our cities is motor vehicles. Trucks are the main problem, producing twice the noise of a car at 70 kph. At 15 metres from the road, vehicles yield the following noise level.

SPEED	CARS	TRUCKS
50 Kmph	60 dBA	70 dBA
65 Kmph	65 dBA	75 dBA
80 Kmph	67 dBA	79 dBA
95 Kmph	70 dBA	85 dBA

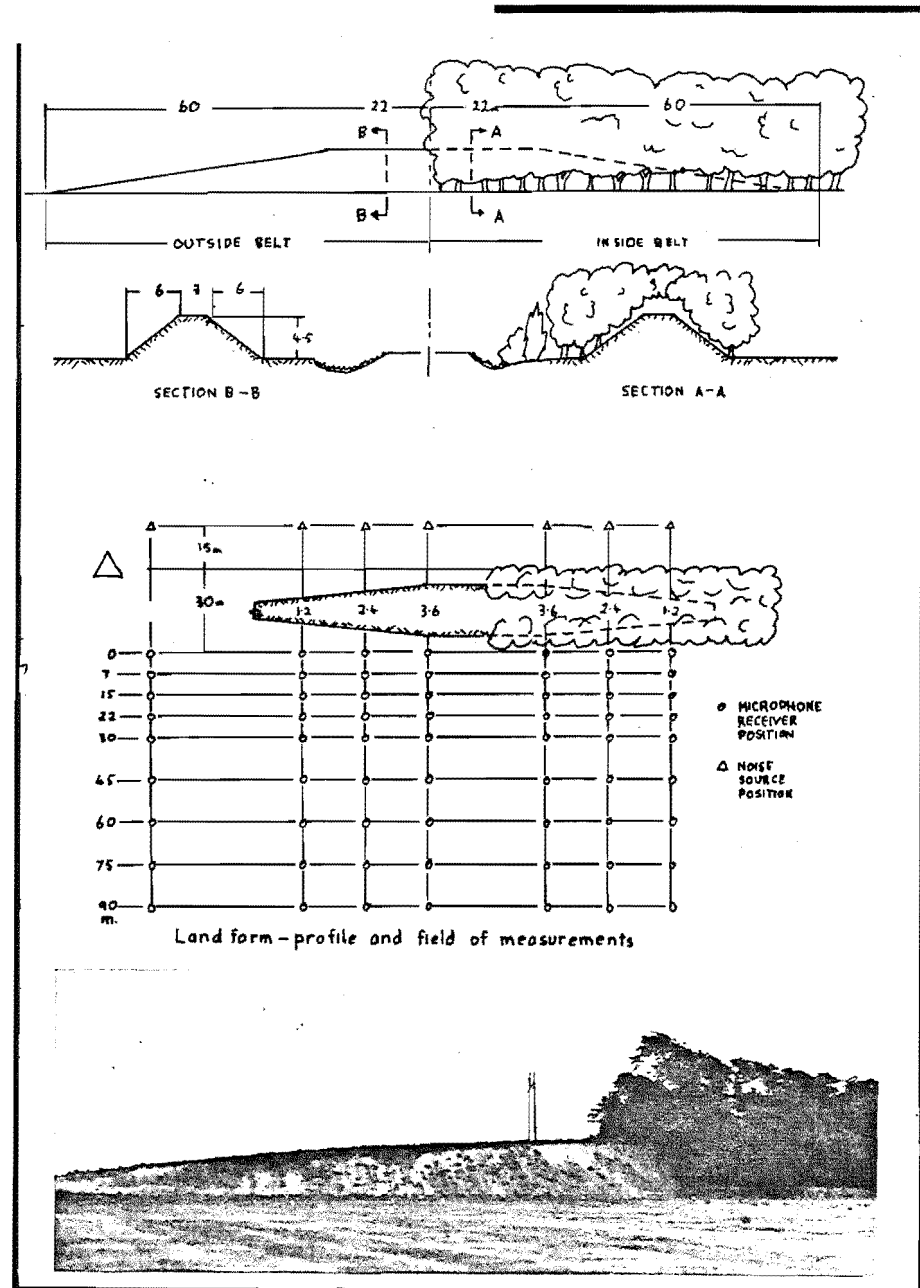
Research has shown an L 10 level of 68 dBA to be the maximum acceptable noise level for residential areas when measured over 18 hours (6 am - 12 pm) at 1m from most exposed windows in a house facade. This is regarded by some as being too generous an estimate, and they feel 60 - 65 dBA is more acceptable.

Background noise shouldn't exceed 55 dBA for L 95 in buildings where speech communication is important, and 45 dBA is a desirable level for school classrooms.

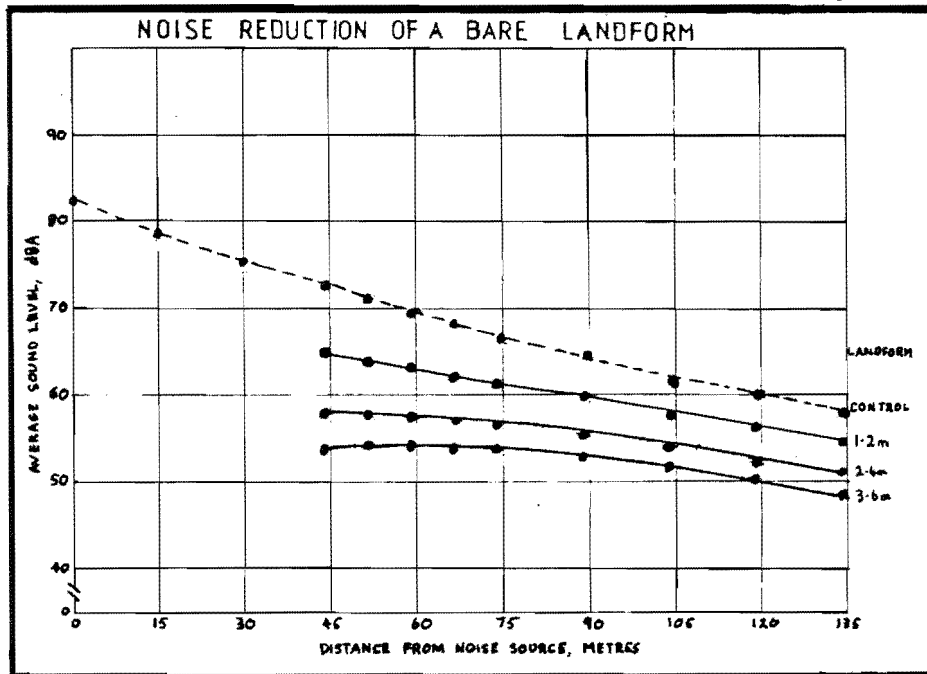
It should be stressed that when a maximum L 10 level is stated, then that should not be the level to be designed to, but that it is the closest that one should go to the noise source if it is not at all possible to be further away. The figure must be treated as it is intended to be, that is, as a maximum. It must not be allowed to become a minimum/maximum all in one as these types of design guides can tend to be once they have been assigned a specific number or level.

Landform, or mounding, is another very effective means of reducing noise levels. The advantages of mounding are that once constructed, it has an immediate effect, unlike trees which take several years to grow before they become effective. It can be done on relatively narrow strips of land, and if well designed, will enhance the appearance of the roadside. It is also cheaper to construct than other solid screens, such as walls, which are another alternative. Mounds are effective because the earth provides a very solid and dense barrier to the noise. The higher the landform is, the more noise it screens, but as a guide, it should be at least high enough to block the view from the noise protection area to the noise source. Research shows that for landform heights greater than 3m there is a diminishing reduction in attenuation. About 2.5m is considered to be the height of greatest cost / benefit.

Results from some American research show some interesting findings. The tests were done by playing tape recordings of loud traffic noise, and measuring the noise attenuation behind a landform of various heights.



The diagram illustrates the procedure.



Their results have been extrapolated slightly to have a noise source level of 83 dBA.

The control curve is the results from tests done on a flat piece of land in otherwise identical conditions. This was done to provide a means of comparing the effect that the landform had. The results show that even a 1.2m landform will reduce the sound level to 65 dBA for L 10 immediately behind the landform, a 1.8m one reduces it to 60 dBA, and a 2.5m one reduces it to 57 dBA over 45m distance.

Planting is another alternative to help reduce the noise level, but trees alone offer only a limited contribution to noise attenuation. A belt 30m wide will reduce sound by only 5 to 8 dBA. Evergreen trees are more favoured than deciduous because they offer year round protection. Different types of trees have different effects. Species with large coarse leaves are more effective in scattering low frequency noise, whereas species with small, dense, finely textured foliage (such as conifers), scatter the high frequency noise. It is this high frequency which is more disturbing to humans. For the screen to be most effective it should be as close as possible to the noise source. Planting far from the noise source and close to the protection area is far less effective, and planting mid-way between the two is least effective. The planting should form as dense a mass as possible, with shrubs close to the road to fill the lower levels, and closely planted trees growing behind.

Solid barriers are an alternative for reducing noise that is primarily suited to

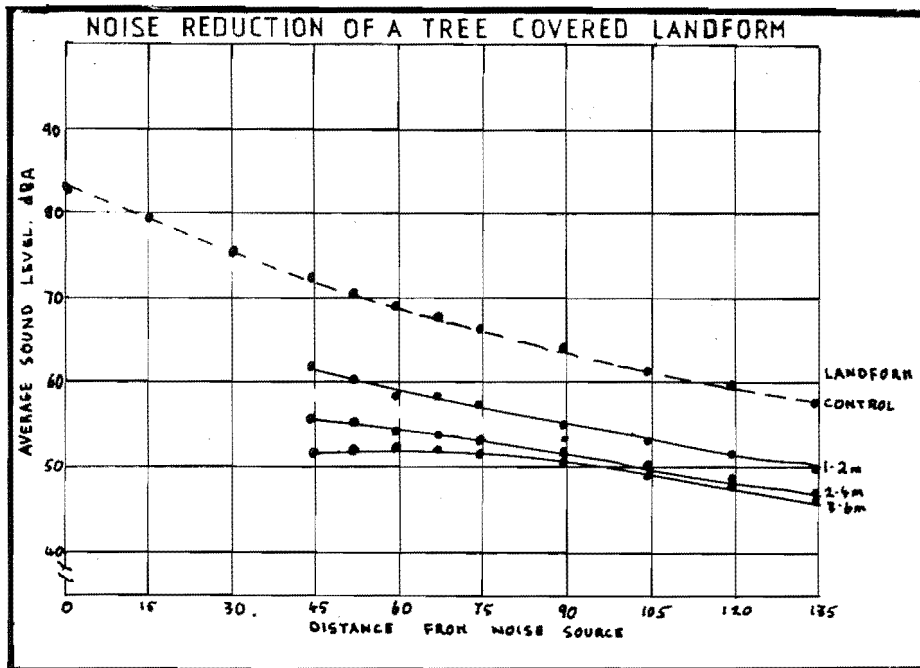
very narrow strips of land, and are usually added as a very expensive, and often unattractive, afterthought, following nearby residents complaints. The effectiveness of such barriers is related to its material, its height, and its position. As for all barriers, the closer it is to the noise source the more effective it will be. The higher it is, the more effective it will be also, but the cost / benefit cut off point tends to be about 4.5m. The material the wall is made of is important, the general rule being that the denser the material is, the more effective it is. A 4.5m high concrete stucco wall 19m from a road will reduce noise by 15 dBA, but if it were made of timber, it would provide only a 4 - 7 dBA reduction.

Building materials for houses or classrooms follow the same rules. The most effective noise reducing material is a solid concrete block or thick brick wall. These can afford reductions of over 45 dBA, and such walls with double glazed windows reduce the sound level by 35 dBA. The ordinary light framed wall with a well fitting,

closed, single glass window can reduce noise by 20 dBA, but if the window is open, this can drop to between 5 - 10 dBA (depending on the hinge arrangement).

There are many ways of reducing the inside noise level by having various combinations of the barriers mentioned above. If one went to extremes, it would, from a noise point of view, be possible to build virtually right beside a motorway, but this makes no allowance for the vibrations caused by heavy traffic, let alone the desirability of such a situation if one wanted to venture out of doors, or even open a window.

The most practical combination for noise screening from the Ellesmere Expressway is to use landform combined with trees, distance to buildings, and if necessary modified materials in the buildings themselves.



It is reasonable to assume an L 10 level of 83 dBA at 15m for the Ellesmere Expressway. The results in the graph show what the noise levels were for tests done in America for noise attenuation over a tree covered landform. If these results were applied to the Ellesmere example, then the noise levels at the classrooms could be predicted.

A 1.2m tree covered landform will provide a 21 dBA noise reduction just 45m from the noise source. If this were raised to a 1.8m landform, the noise level at 45m would be 59 dBA, well below the maximum of 68 dBA for out of door activities. The distance to the classrooms will vary, but assuming the nearest one is 60m from the noise, and a 1.2m landform is used, then the noise level will be 59 dBA outside the room, and if ordinary close fitting single glass windows are fitted, then the expressway noise in the classroom will be 39 dBA, or 49 - 54 dBA if the windows were open. This is an acceptable level, and should be able to be achieved.

It is interesting to note the attenuation effect trees have over distance, compared to bare landform. For a 1.2m bare landform, the noise level at 45m would be 64 dBA and at 135m, 53 dBA, whereas for a 1.2m tree covered landform the noise level at 45m would be 62 dBA, and at 135m, 50 dBA. This trend becomes more apparent over greater distances. Thus the attenuation effect of trees increases over distance compared to that of bare landform.

HALSWELL COMMUNITY

The Halswell community has two distinct geographical areas (Halswell township and Oaklands), which correspond with two distinct social areas. Halswell township is the older, more established area, and has an evenly spread age group structure. This is indicated by the presence of a primary school, which is supplied by the immediate area, right through to the existence of fifteen pensioner units, with proposals for eight more.

Some use is made of the primary school's facilities by the community, mainly as a meeting place for various clubs such as chess and drama. Residents who wish to go to night classes mainly travel to Hornby, Riccarton, or into Hagley High. There is quite a strong interest in craft work and the Cracroft centre in Lower Cashmere draws some of its support from this area.

Oaklands is far larger than the Halswell township, is newer, and is the area likely to expand quite significantly in the future. It is predominantly a middle class community, with an average annual income of

roughly \$9,000 - \$13,000. There is a small professional group living there, as well as a number of solo parents, being mainly mothers. It has a poorly stratified age structure, the notable absence being that of older people. The parents ages are typically 25 - 45 years, thus the childrens ages range from toddlers through to the late teens. One of the impacts of this high proportion of young people in the community is being felt by Oaklands primary school at present. In the last few years a number of relocatable classrooms have been used at the school to cope with the temporary high number of primary age school children. Another primary school was planned to have been built on a site between Santa Rosa Avenue and Wales Street, but the rate of population increase in the area has not been sufficiently fast to necessitate this. Once this primary age group bulge has passed through the Oaklands school, any increase in population from new housing in the area will hopefully yield a more sustained role for the school, with which it will be able to cope.

The secondary school children in the community at present travel to either Hillmorton High School, (about 5 kilometres) or to Lincoln High School, (about 16 kilometres). For recreation activities there is Pioneer Stadium in Lyttelton Street, Hoon Hay, which is a large new hall for indoor sports, plus squash courts, or there is the Suburbs Rugby Club facilities in Hillmorton, or the halls in the Domain which cater for the local Rugby League and Soccer Clubs. The Domain also has five tennis courts, a large swimming pool, a bowling green, and is the home of two social cricket clubs. Both the Soccer and Rugby League clubs have approached the Oaklands Primary School for permission to use the school grounds for practise, but this has been declined because of the damage caused to the grass during the winter, with the result that the field becomes unusable for the children.

There is considerable demand in the community for the craft classes run at Hoon Hay Community Centre, and the Cracroft Community Centre. There is also demand for

gymnasium facilities, the closest of which are at Hoon Hay. Some community based groups, such as dress making, defensive driving, macrame etc., make use of the Oaklands Primary School, and the potential for greater community involvement in the school is considerable. The school would like to build a hall, as the committee feels this would be beneficial to the community at large by providing a local multi-purpose meeting facility which is presently lacking.

Passive recreation areas for children are at present provided for in the scattered park system, mentioned previously in this report. The gross inadequacy and loss of opportunity apparent in the system need not be dwelt on any further, save to say that a comprehensive park system developed in conjunction with a secondary school would undoubtedly be used by the local children.

For evening or weekend entertainment children travel into Christchurch, normally by bus which offers a very limited weekend service. The nearness to Christchurch, and the mobility of many teenagers today, makes

this present situation appear satisfactory, although more local entertainment would no doubt be well received.

Oaklands at present has three groups of shops: one in Lillian Street, one in Ensign Road, where there is also a medical centre, and a third group in Nottingham Avenue. A fourth group is planned for the new subdivision west of Hindess Road in the general development A zone. The Halswell shopping centre at the end of Sparks Road includes community services such as a Library and Post Office, and further up the road in the Domain a Kindergarten operates. Thus the whole community is well catered for from a commercial point of view, but there is particular room for expansion in the passive recreation, craft, and community learning areas.

PARK SCHOOLS AND COMMUNITY SCHOOLS

A park - school concept is proposed for Halswell Secondary School. Robert Larkin explains this concept:

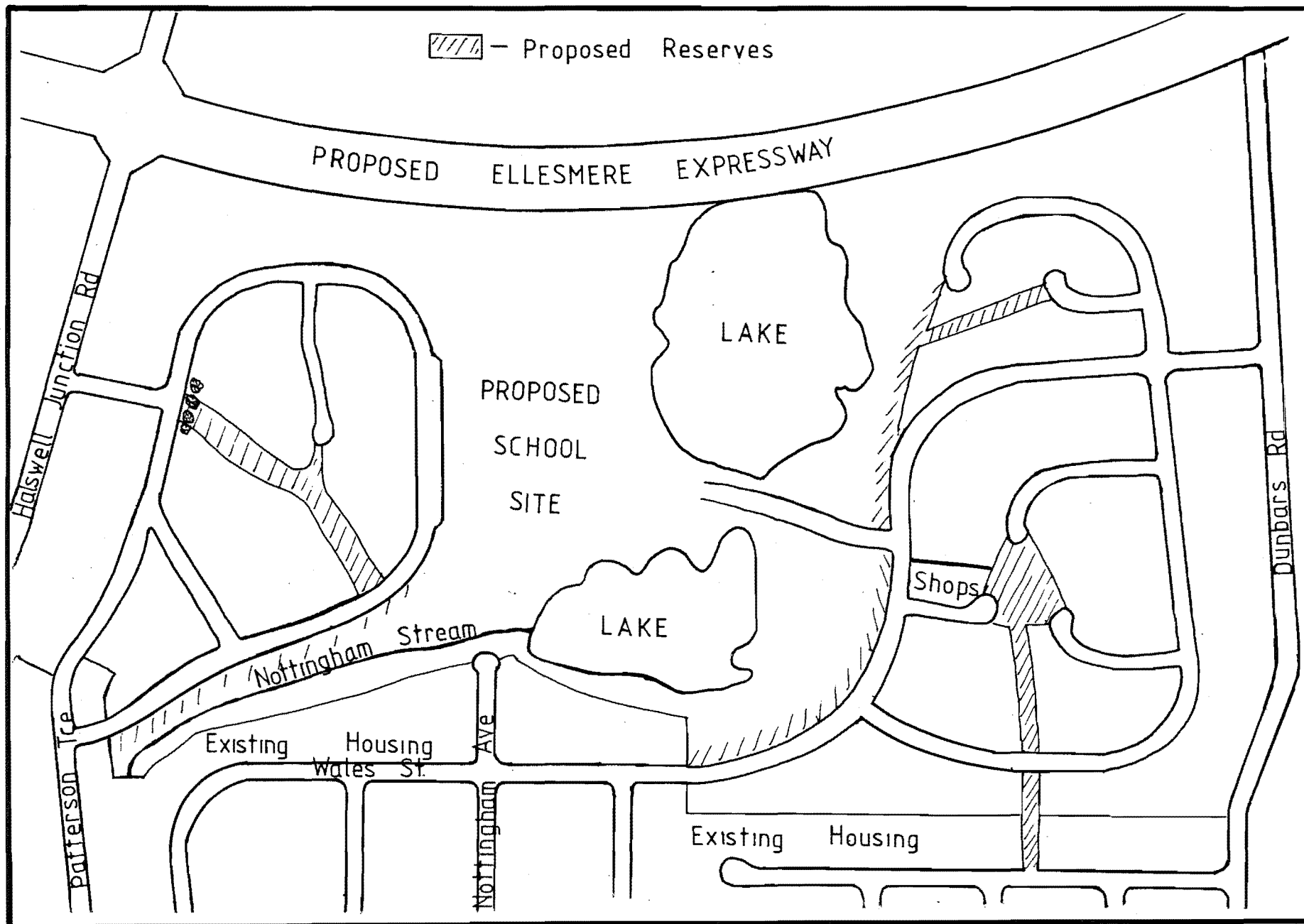
"The park - school concept plans that schools and parks, with their associated facilities, be located together so that the maximum use be made of the park by the school pupils and that, under supervision, the community may use school facilities, for community purposes. The total complex forms a Neighbourhood or District Community Centre which is especially valuable in the early life of a new housing area".²

The idea is a simple one, and the advantages are many. Costly duplication of facilities is avoided and they can be concentrated in one area, thus increasing their impact and effectiveness which would otherwise be diminished if they were spread widely and thinly over the community. The adage "the whole is greater than the sum of the parts", could well apply here when one considers the many beneficial side effects

that result from siting and operating the park and the school together. The cost of maintenance could also be reduced because of the large scale of the scheme, and because of the single location instead of a scattered series of reserves.

The park associated with the proposed school at Halswell will not be a normal park facility, but will, if recommendations in this report are adopted, be part of a regional park, as mentioned earlier. This would considerably enhance the asset the community has, with the prospects opened up by such a large park area being manifold. Thus a unique situation arises for Oaklands. Not only does the area become a focus for people outside the community because of the regional asset, but conversely, the local residents have immediate access to the facilities that could be funded from a regional level, facilities far beyond those normally possible, even through the concentration of effort that a park - school offers. This is a long term possibility that should be grasped and lobbied for by the residents if they wish to make the most of the possibilities for their community.

2. Larkin, p.1



To cater for the community use of the park - school, the roading pattern intended for the next stage of development of Oaklands, in the general development A zone, has been altered so that landscape features are developed to their upmost, reserves become meaningful open space area, and access to the school, park, and commercial area is direct and pleasant.

By refering to the attached plan, one will see that in order to fit into the existing road pattern in the area, some conflict points have had to be resolved. One obvious one is at the end of Nottingham Avenue, which has been terminated in a turnaround, with access from here to the school site being for cyclists or pedestrians only. This has necessitated the provision of alternative access points for the school, one of which is from the loop road which comes from the extension of Paterson Terrace, and the other comes from a drive between the lakes from the extension of Wales Street. No more housing has been allowed to separate either of these extensions from the park, thus the views of and

access to the park can be gained by the public from these roads, where they can park their cars.

A feature has been made of the stream flowing from the eastern lake. Unfortunately it has been ignored by previous developers and is hidden behind houses from here downstream.

The reserves, marked on the map, are designed to allow pleasant access for residents walking to the shops as well as providing areas of reasonable size and interesting shape for children to play in while still being close to home. Several of the existing Macrocarpas opposite the entrance from Halswell Junction Road have been preserved to provide a focus for both the entrance road and the reserve, as well as giving the new development a feeling of maturity right from the outset.

The commercial area is located so as to provide a balanced catchment with the other shops in Oaklands. It is placed opposite the park and next to a reserve, thus there

is considerable opportunity for development of a very pleasant, open park like shopping centre.

The practicability of the park school concept has been greatly increased since the passing of the Education Lands Amendment Act 1974. This allows for recreation or community groups to construct facilities on Education Department land, or to use school facilities under licence from school boards. The problem of maintenance, costs, and sharing have been sorted out so that full use can be made of the school by the community. This act has greater implications for community schools, but one can see the advantageous effect it would have just from this recreational point of view.

Under the park - school concept, development is primarily recreation orientated. The benefits of further developing the park school into a full community school are great, but what actually is a community school? The Auckland Headmasters Association³ considers it to encompass the following:

3. Auckland Headmasters Association, p.15

Definition

"The community school, new or existing, in addition to its normal primary and secondary programme, operates in partnership with other community agencies and groups for educational, cultural, recreational and social activities, involvement, and action. The community school serves as a focal point for people in the community and assists them to identify their own needs, interests, and resources and helps to develop appropriate and comprehensive programmes for all age groups".

The major aim of a community school is "to create a supportive learning environment for the good of the individual, the family, and the community".

The general objectives of a community school are to:

- "draw school and community closer together.
- increase use of school facilities.
- increase use of community facilities.

- increase involvement of citizens.
- make best use of skills and abilities of local residents.
- develop a balanced year-round programme for all age groups.
- encourage involvement of local government, community service groups.
- improve communication between members of the community and between community agencies.
- develop special programmes and services for the disadvantaged.
- help create a sense of community.
- help to create an "open" education system.
- accept a leadership role in facilitating community co-operation".

To achieve these goals, both the physical and the social environment are going to need to be developed. The physical environment must be able to provide the facilities and framework for the community members to use so that the social structure of the community can develop along the lines specified above. The community

school can provide the physical environment, with buildings and facilities designed to cater for the community, but it is up to the actual community members to motivate and organise themselves to make full use of these facilities, and thus to develop a meaningful community in their area.

The advantages of a community school for a new housing area is that it provides an early community centre as a focal point for community activity, as well as giving the new area some identity. This is important, as it often takes many years before a new area develops such facilities, which are normally provided by the church or sports clubs who get their support from the immediate area, and thus must wait for the community to grow before they have the resources to develop such facilities. If the school is used as the focal point, in association with the park, then this gap in time can be overcome to the advantage of all who live in the area. If sports clubs wish to build their own facilities later on then they could do so on land in or adjacent to the park, thus increasing the facilities

available to the community, and also maintaining the focal point of the area. The less scattered the communities facilities are, the easier it is for the area to foster and develop a sense of identity, which has advantages and ramification throughout that communities social structure. The more that people can identify with a cause or a community, the more pride and respect they will have for that community, as well as the greater sense of individual value and purpose they will feel in contributing to that community. This has far reaching implications, from prevention of delinquency, on the local level, right through to the anti-social behaviour of many young people of today who feel alienated from their parents values, and are searching for values in society which they can relate to. One of the basic ways of satisfying this search is to provide the type of environment that is meaningful to these people. The right environment will provide the framework for the development of the type of society being demanded. The practice of everyone having their own individual quarter acre section has produced the type of society that many

people feel is not all it could be. Full development of an individuals potential is hard to achieve when that individual remains in isolation from his or her neighbours in a community, except to say hello at the shops maybe. Greater development will occur when people have greater stimulation, and can feel useful. This can be achieved by encouraging interaction among people in the community on a level that stimulates, challenges, and develops their talents. This is not only for adults, or housewives during the day, but for everyone. There is a place and a need for everyone of every age and position in the community to participate in that community if it is to offer to all its members what each one is searching for. Thus the problem of violent youth could be attacked by giving those involved an opportunity to develop their talents, feel needed, and contribute to a society that he sees he can play a vital role in.

This can best be achieved, from an environmental viewpoint, by making the most of what is available. Instead of having scattered sections for reserves, have one

larger reserve that can be developed to a far greater extent because resources can be concentrated (This is not to deny the need for close to home play, but their cost should be realized when compared to what could have been done with similar resources). Instead of everyone sitting at home watching T.V., every night in their own enclosed world, one could interact with ones neighbours at night classes by teaching them ones skill, learning theirs, or developing ones taught by someone else. Instead of travelling many kilometres for a picnic, one could go to the local park, which would be big enough to cater for such activities. All these activities and more would develop a community consciousness, and it is the way that the areas facilities are organised that would enable the development of this identity. Thus the correct siting and organisation of such facilities is vital to the optimum development of the community at large, and the people in that community as individuals. By associating the park with the school the simple initial step has been taken, by providing community facilities in the school the next step will be taken, by

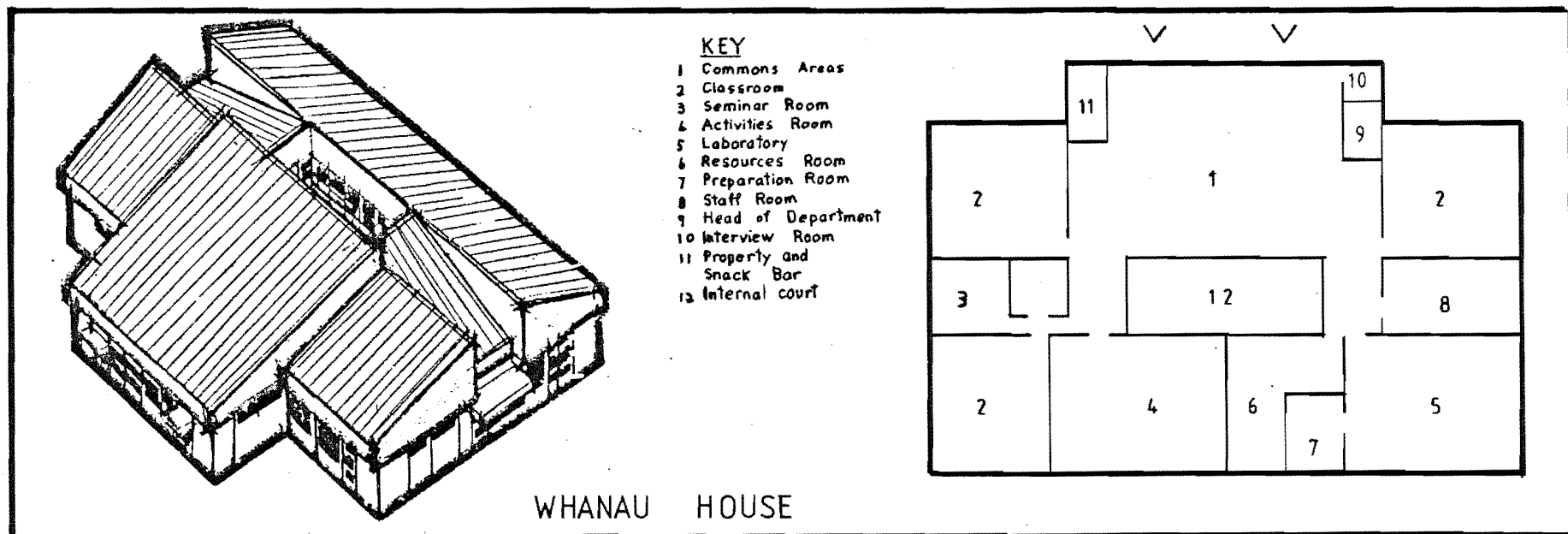
reorganising the street and reserve system another step is taken because people are able to have easy and pleasant access to the facilities, an apparently small, but really a very important point, in persuading people to use the facilities. The final step must come from within the community itself. Consciousness cannot be imposed on people, it must develop from within, but this can be stimulated by the work of a few enthusiastic residents in enlisting support for new programmes. Oaklands has already demonstrated that it has this enthusiastic core by the number that participate in evening classes at the primary school, and also the number that are willing to travel out of Oaklands to pursue their interests. This core is the sign of a community that is willing to learn, open to change, and able to appreciate the benefits that a facility designed with the whole community in mind could have for the area.

SCHOOL BUILDINGS

The following is an explanation of the buildings that are normally provided for a secondary school of one thousand pupils, plus the buildings necessary for the school to operate as a community school.

Four Whanau Houses

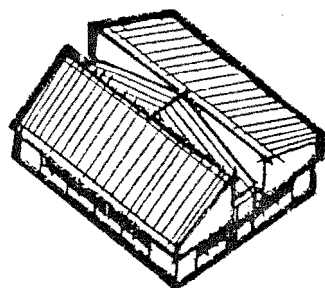
These are the new design of classroom blocks. Each one has three classrooms, an activities room, a laboratory, a common room for the children, staff facilities, and a central courtyard. Children from third through to seventh forms are based in each house, the idea being to foster a family feeling, (hence the name Whanau, which is Maori for family), to give the children something to identify with at school and hence to gain a sense of belonging and pride in their Whanau's and their school.



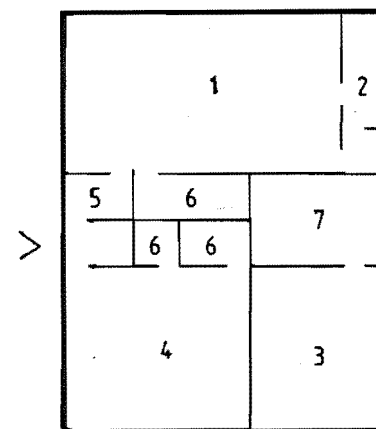
Although there are only four Whanau houses for one thousand children, there will not be two hundred and fifty children in each Whanau all the time. The timetable is structured so that other buildings around the school, such as the Arts and Crafts blocks or the gymnasium, are being constantly used so that overloading does not occur in the Whanau's.

Three Arts and Crafts Blocks

The Education Department provides two Arts and Crafts blocks for this size secondary school. The first one provides for metalwork, woodwork, arts and crafts, and drafting. The second one, which is smaller than the first, provides for homecraft, clothing, and a drop in centre for seventh formers. A third block, the same size as the second, is proposed for community use during the day to cater for the present and expected increase in demand from local residents, who now have to travel to Hoon Hay or Cashmere for such classes. The block would be community funded, and would have facilities to cater for arts and crafts such as pottery, macrame, painting etc., and a space that could be used for other work as the demand may arise. Road access is required to the first Arts and Crafts block to deliver materials, and to the third one for adults to deliver and collect work.

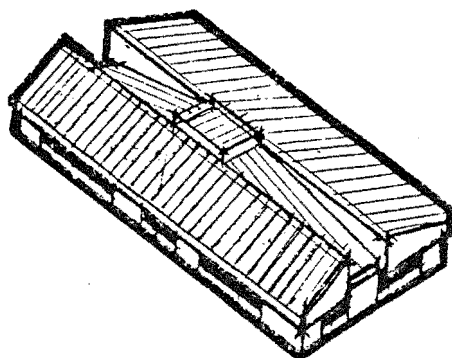


- KEY
- 1 Homecraft
 - 2 Tuck Shop
 - 3 Drop in Centre
 - 4 Clothing
 - 5 Laundry
 - 6 Resources Rooms
 - 7 Kitchen and Dining

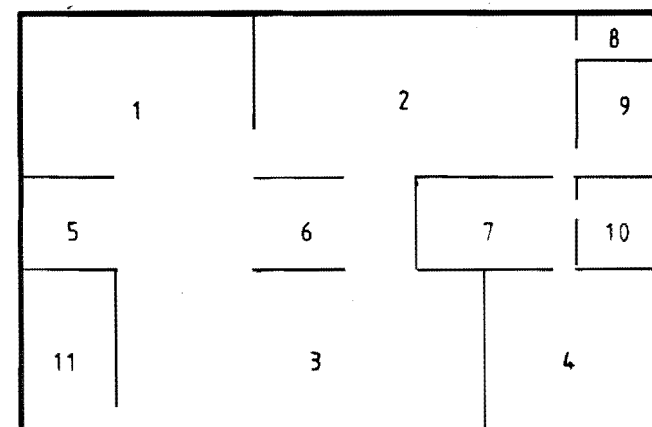


scale 1:400

ARTS and CRAFTS II



- KEY
- 1 Metalwork
 - 2 Woodwork
 - 3 Arts and Crafts
 - 4 Drafting
 - 5 Hot Bay
 - 6 Machine Shop
 - 7 Work in Progress Room
 - 8 Finishing Room
 - 9 Project Room
 - 10 Dark Room
 - 11 Resources Room

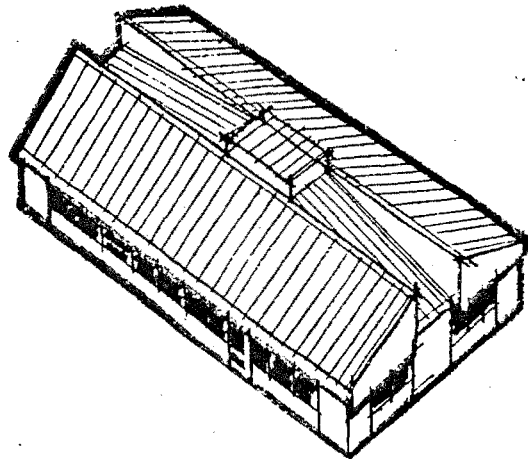


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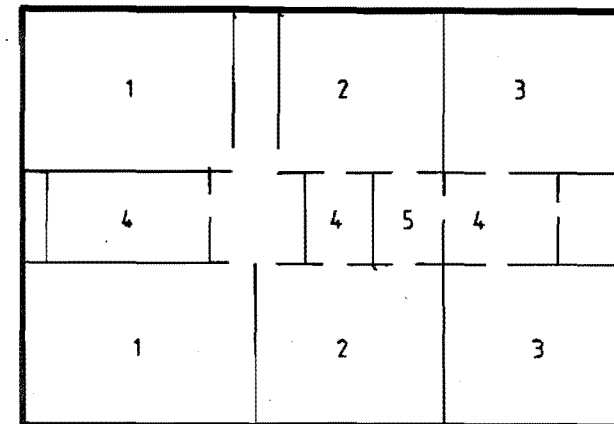
ARTS and CRAFTS I

One Practical Block

This is provided by the Department and houses resource rooms, a print room, two laboratories, two typing rooms, and two drafting rooms. The building is generally associated with the Arts and Crafts blocks in the site layout, and road access is not required.



- KEY
- 1 Laboratory
 - 2 Typing
 - 3 Drafting
 - 4 Resources Room
 - 5 Print Room



scale 1:400

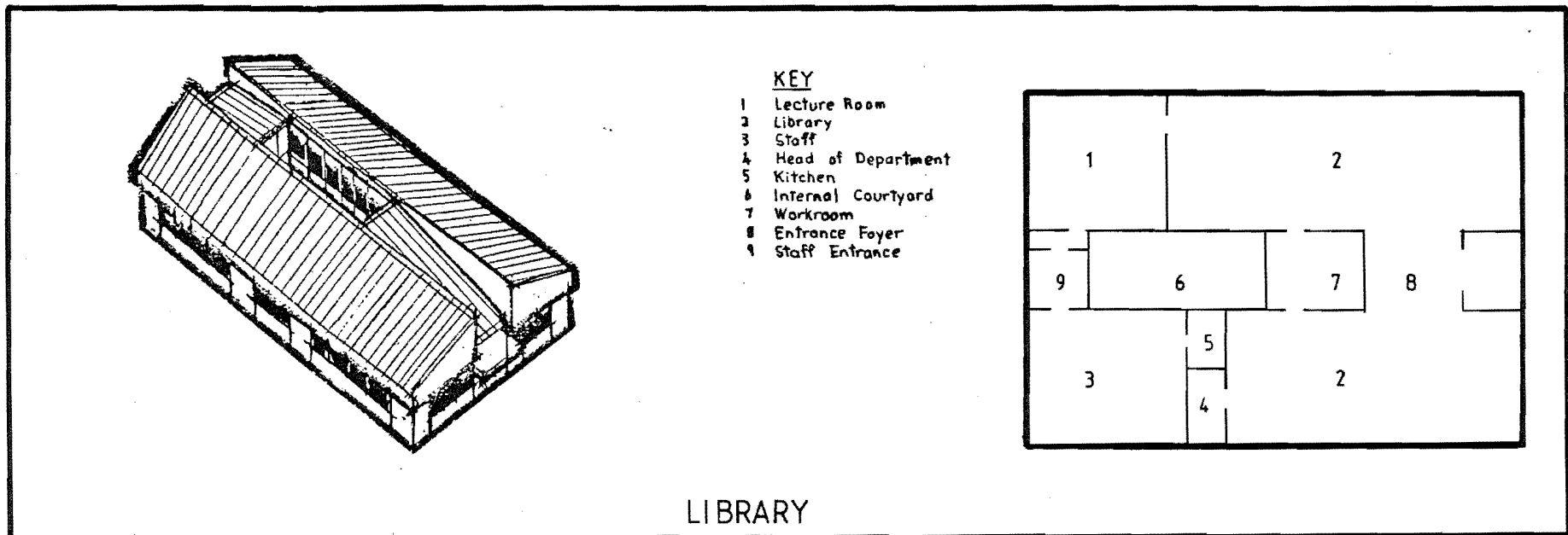
PRACTICAL BLOCK

One Library

This is intended as purely a school library in the sense that the Education Department will be the only one funding it, but adults attending academic classes at the school will have full use of it along with the pupils. There is already a library run by the Paparua County Council in Halswell shopping centre, and one of the main advantages of this library is its central convenient location for residents. Thus it was decided not to suggest moving this library

to combine with the school library, but to run the two separately, with each catering for a different market.

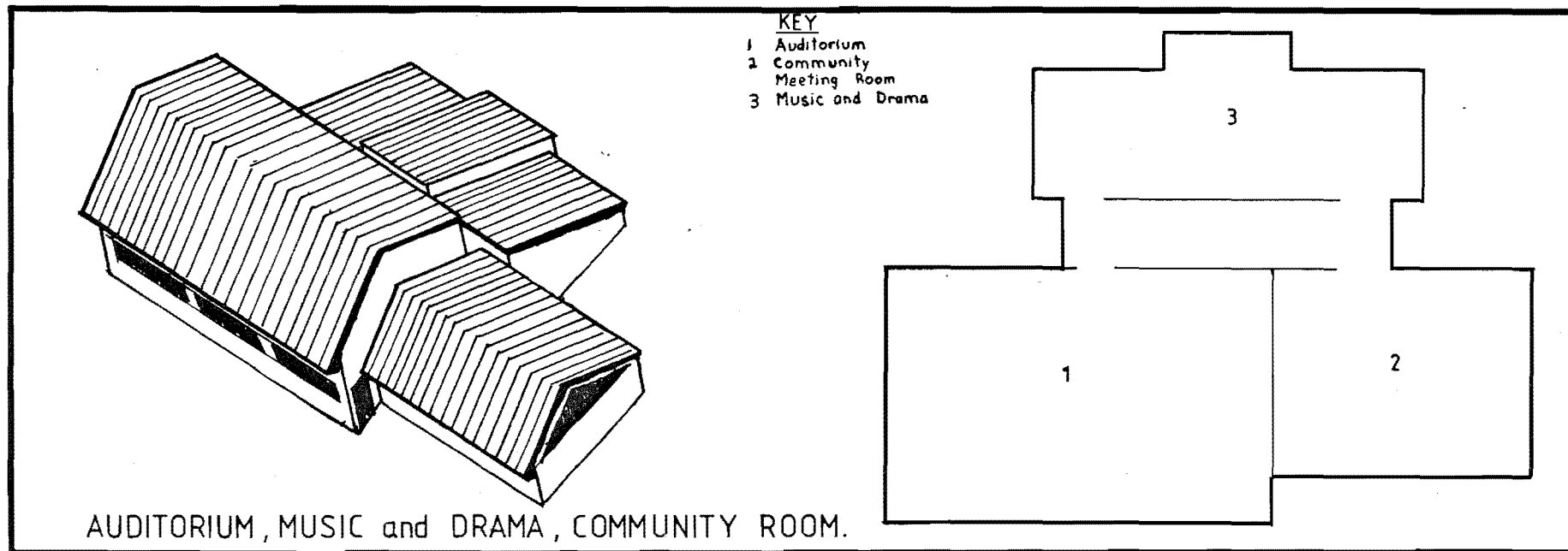
Most of the building is used as a library, with the rest being given over to a lecture room and a staff room. There is also a central glazed courtyard for visual appeal. The library does not need to be near any road, but should preferably be in a fairly central location relative to the Whanau blocks.



Auditorium, Music and Drama,
Community Meeting Room

This is a tiered lecture theatre style auditorium capable of seating four hundred people. A flat floored hall is available instead if desired, but it was felt that the tiered building catered for a wider range of activities when considered in association with the flat floored space offered by the gymnasiums. The Education Department provides the auditorium and also the music and drama rooms. A community funded meeting

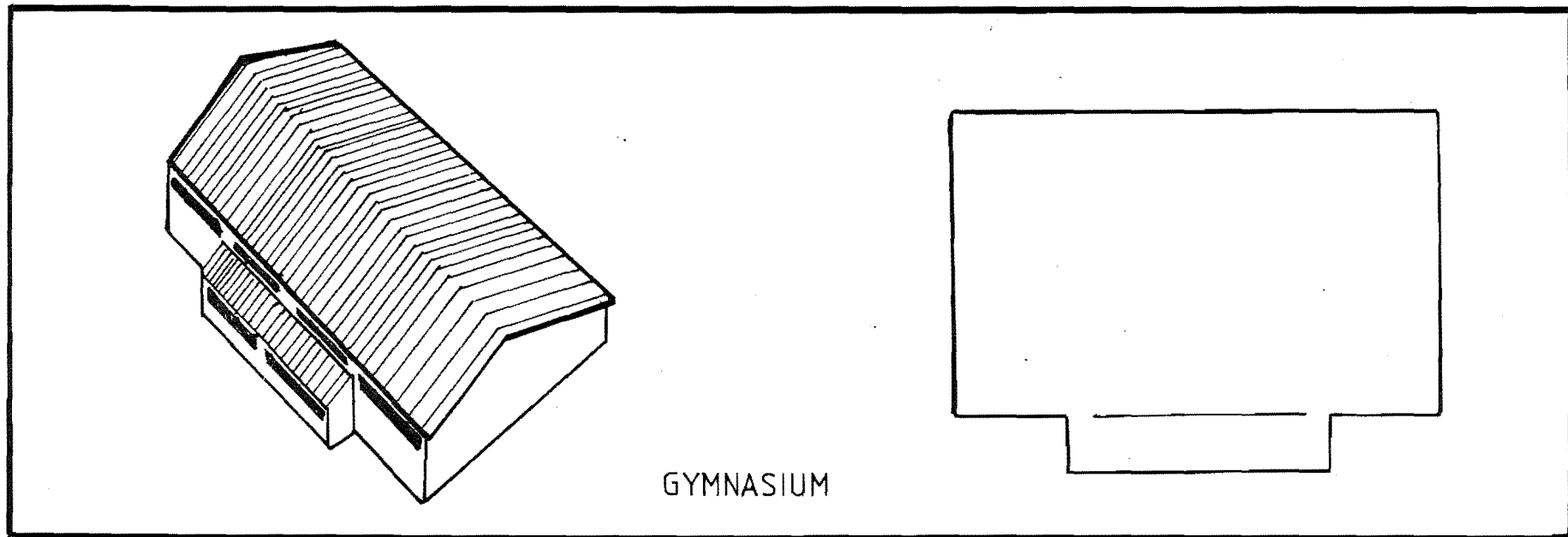
room has been attached to this complex, so that maximum use can be made by all people of the facilities. Because of the community meeting room, and the likelihood that the public will use the auditorium for public addresses, plays etc., this building should be located near to both road access and a carpark.



One Gymnasium

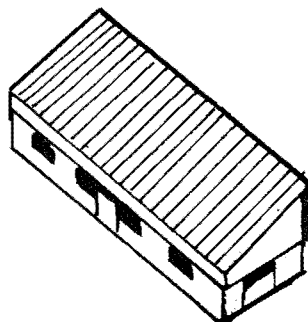
This is a fully equipped gymnasium with attached changing rooms, and is provided by the Education Department. It is intended to be used primarily by the school, and should be associated with other school recreation facilities such as the swimming pool, tennis courts, and sports fields. A hard surface area for outside activities is provided, and this should be sited near the gymnasium. The potential noise from these activities should be taken into account

when siting the gymnasium in relation to the classroom blocks. The gymnasium does not require road access, but reasonable proximity to a carpark is desirable for weekend use.



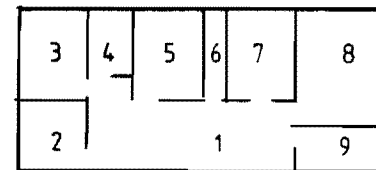
Two Administration Buildings

These are provided by the Department, and are two small buildings, normally, but not necessarily, sited close to one another. The first one has the offices of the Principal and his senior professional staff. The second has a large book room with a resources area, the general office, and several other offices. At least one of these buildings should be near road access and a carpark so that visitors can easily find and get to the school office or the Principals office.

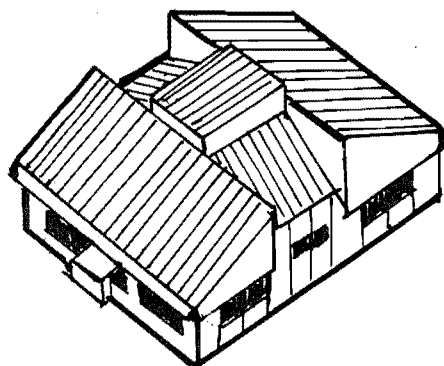


KEY

- 1 Foyer
- 2 Director of Professional Training
- 3 Principal
- 4 Secretary
- 5 Deputy Principal
- 6 Toilets
- 7 Director of Curriculum
- 8 Planning Office
- 9 Interview

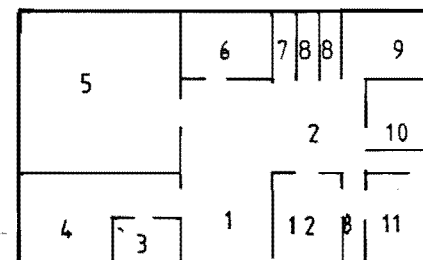


ADMINISTRATION I



KEY

- 1 Main Foyer
- 2 Secondary Foyer
- 3 Bursars Office
- 4 General Office
- 5 Book Room
- 6 Resources Room
- 7 Cloakroom
- 8 Toilets
- 9 Community Centre
- 10 Guidance Office
- 11 Casualty
- 12 Sick Room



ADMINISTRATION II

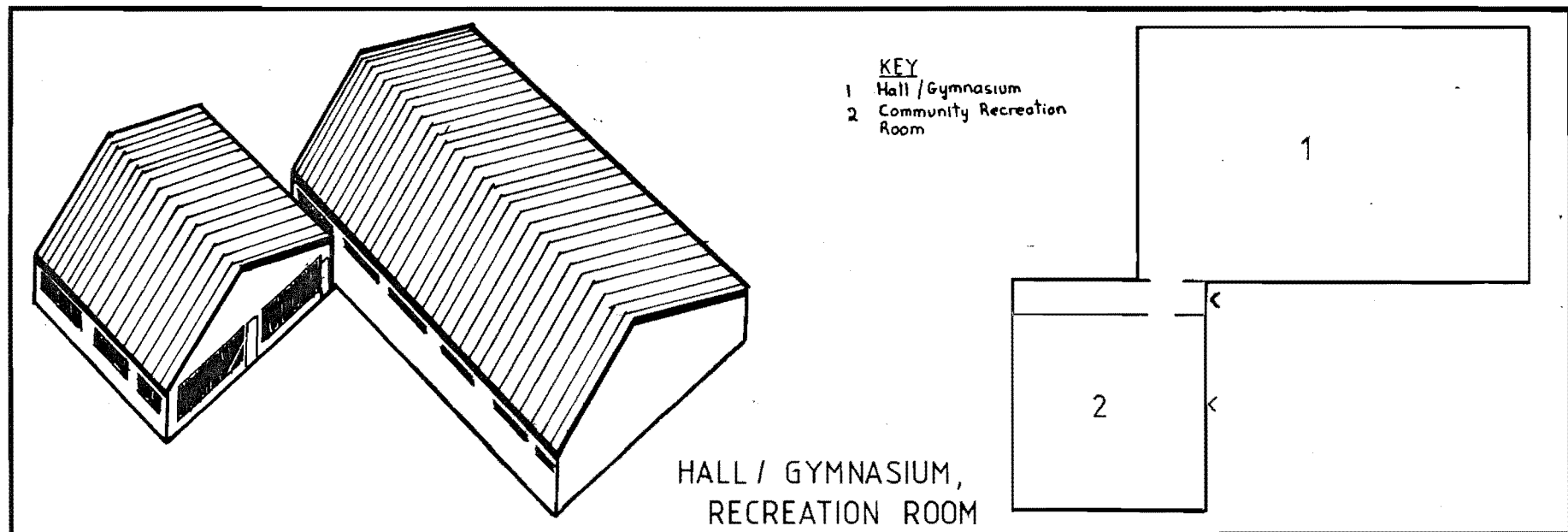
One Hall / Gymnasium, Recreation Room

This hall is a community funded facility that does not have all the equipment the other gymnasium has, such as ropes and wall bars, but does have the space for indoor sports such as basketball, badminton, gymnastics, keep fit, indoor bowls etc. The floor is made from hard baked woodchip / clay tiles, thus allowing the hall to be used for outside activities such as meetings or dances. The facility is modeled on a design by L.J. Bayly.⁴ It was deemed

necessary to provide a second gymnasium for the school, as this would allow community use of such a facility during the day, because the first one would be in constant use by the school.

A community funded recreation room is attached to the building, and this can act as a meeting or committee room, or as a lounge for relaxing in after using the gymnasium. Because of its public use, the building should be reasonably close to a carpark.

4. Bayly, p.17



One Creche and Kindergarten

This is a community funded building and is essential as it allows mothers of young children to participate in school activities while their babies are being cared for. It is proposed to move the kindergarten presently based in the Domain to new premises associated with the school. If this were not done, then mothers with babies both under kindergarten age, and attending kindergarten, would have to travel to the Domain to deliver the younger one before she attended classes in the school. By having both services together, much trouble will be avoided for all concerned. Both services will be in one building, but will be completely separate from each other. Each will have its own separate outdoor area.

This building must be separate from the school's programmed buildings, and preferably close to a road and carpark to allow mothers to drop off and pick up their children easily.

Boiler House

This, and all the following buildings, are provided by the Education Department. It is a small building, but it has a tall chimney 20.5m high. Road access is essential for delivery of fuel.

Toilet Blocks

These are free standing buildings, being associated with the Whanau blocks, and with the Arts and Crafts blocks.

Tractor Shed

This is associated with the sports fields.

Sports Equipment Shed

This is also associated with the sports fields.

Furniture Store

To be located at the discretion of the site planner.

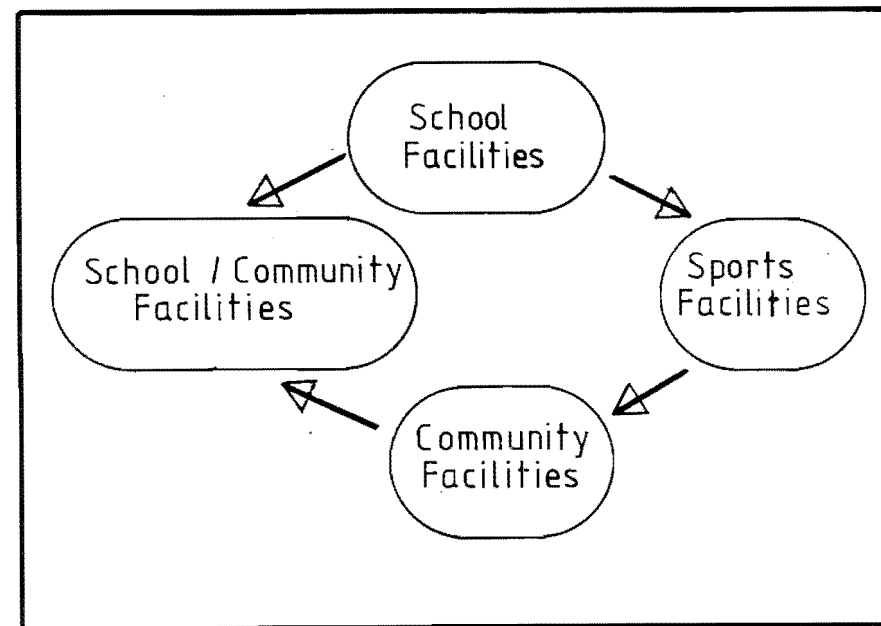
SITE PLANNING

Kevin Lynch⁵ defines site planning as "the art of arranging an external environment in complete detail". For a school environment, this definition affects circulation of all types, unification of various school facilities, and the provision of open spaces that will cater for the needs of all who use the school. These three aspects of circulation, spaces, and building placement are all inseparably related to each other, and must all be considered together when planning a site layout. Bearing this in mind, the following is intended as a guideline to help understand the various aspects that make up this integral relationship.

Unification of school facilities, or the grouping of like uses together, is essential for the layout to function well. This involves sorting out the basic function of each facility e.g., a classroom's basic function is to house school children, but an auditorium's function is to house children during the day, and community members at night, thus it becomes a school / community function. Once the status of each facility is decided upon, they should be grouped with

5. Lynch, p.3

facilities of the same function. This will reduce conflicts such as noise, traffic, access etc., which could otherwise occur. The diagram illustrates the basic relationships between facilities.



Immediately one groups facilities on a site, as in the diagram, the aspect of circulation becomes apparent. In this case, there is no direct connection between the community facilities and the school facilities, a desirable point as it minimises disturbance to each other during daytime use. The site planner should be keenly aware of this consequence, and must work out the basic intra-site relationships he wishes to establish before he can begin positioning facilities on a site. To do this, all aspects of circulation must be considered. These will normally fall into four categories:

1. Buses bringing children to, and picking them up from school.
2. Cars driven by staff and community members.
3. Bicycles and motorbikes ridden by pupils.
4. Pedestrians.

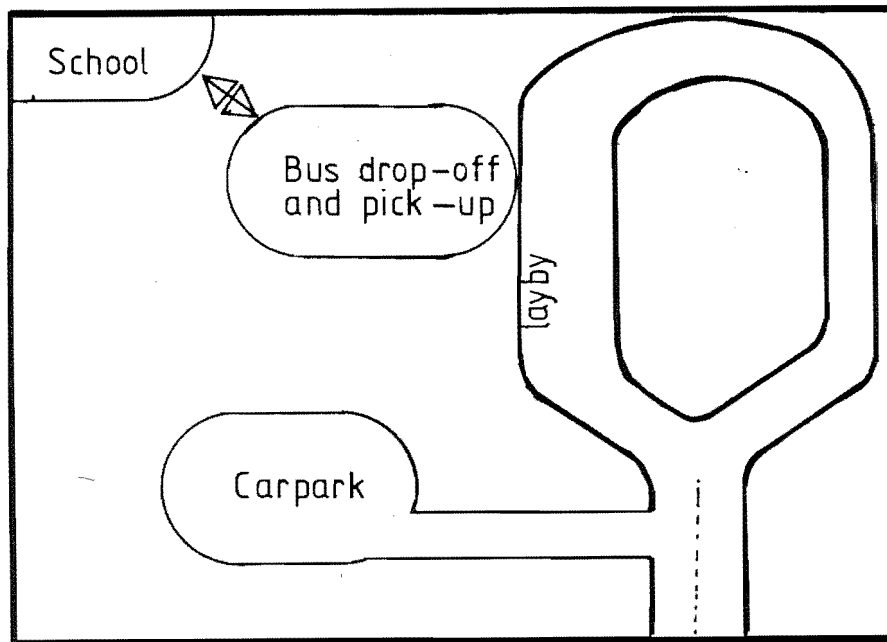
Each of these will penetrate the site to a different extent, and each needs access to various facilities on the site. No

rules can be made on how far each aspect should penetrate, or on the best layout for a site, as this depends entirely on the characteristics of each site, but the following relationships should be appreciated so that the best possible layout may be reached in each case.

1. Buses

Buses drop off and pick up children arriving and departing from school. The drop off area is under intense use for two short periods each day, so it must be able to cope with this use and not be a small cramped area. It should not conflict with other movement systems, it should have direct access to the school for the pupils, and it should allow parking space for waiting vehicles. The best way of meeting these criteria is to have a one way flow system. This may be by means of using a layby on the street outside, or by using a loop system situated on the school grounds should the site necessitate this. This loop provides a two way entry, thus keeping the number of times the buses cross the footpath to a

minimum. The buses then follow a one way circular route and drop off their passengers, as shown in the diagram. This route could also be used by cars for access to parking if the site makes this necessary, but the greater the segregation of different aspects of circulation, the better.



2. Cars

Car circulation should especially be kept separate from pedestrian circulation, yet car parks need to be conveniently located for access to a number of buildings on the site. Thus the positioning and layout of the car parks becomes very important, as they can influence building positioning within the site. Often one large car park is planned, to meet the needs of staff and visitors, but this should not be taken as set. Consideration should be given to the possibility of having several smaller parks which would have less visual impact and provide access to a wider range of facilities around the school. In the case of a community school, two separate car access and park areas may be appropriate, as this would allow for minimal interaction and disturbance between community facilities being used during the day and school facilities.

The number of cars allowed for in the school car park should be one for each staff member, but the number required in the community carpark is hard to calculate. This

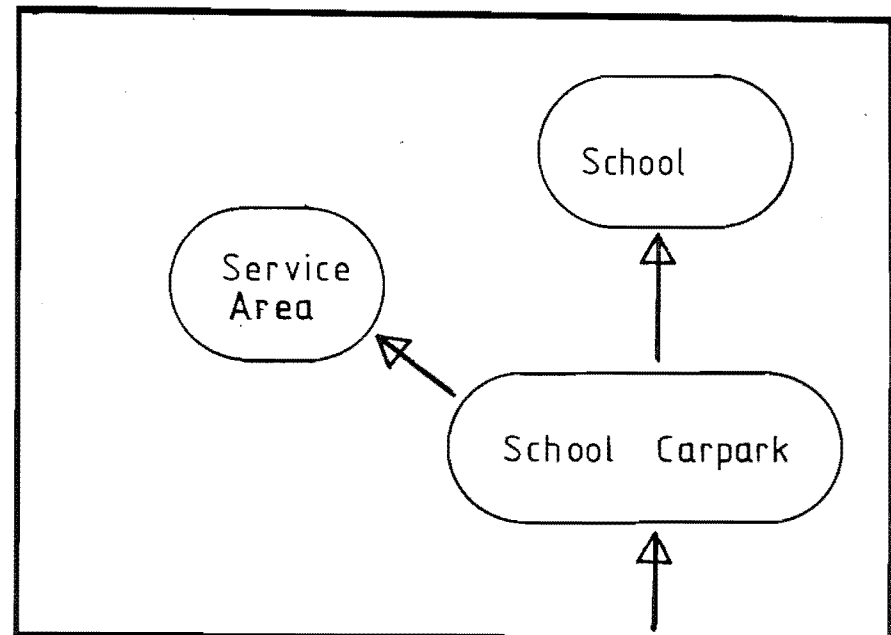
carpark should be sited so that it is not limited or contained by buildings and could thus be expanded if necessary.

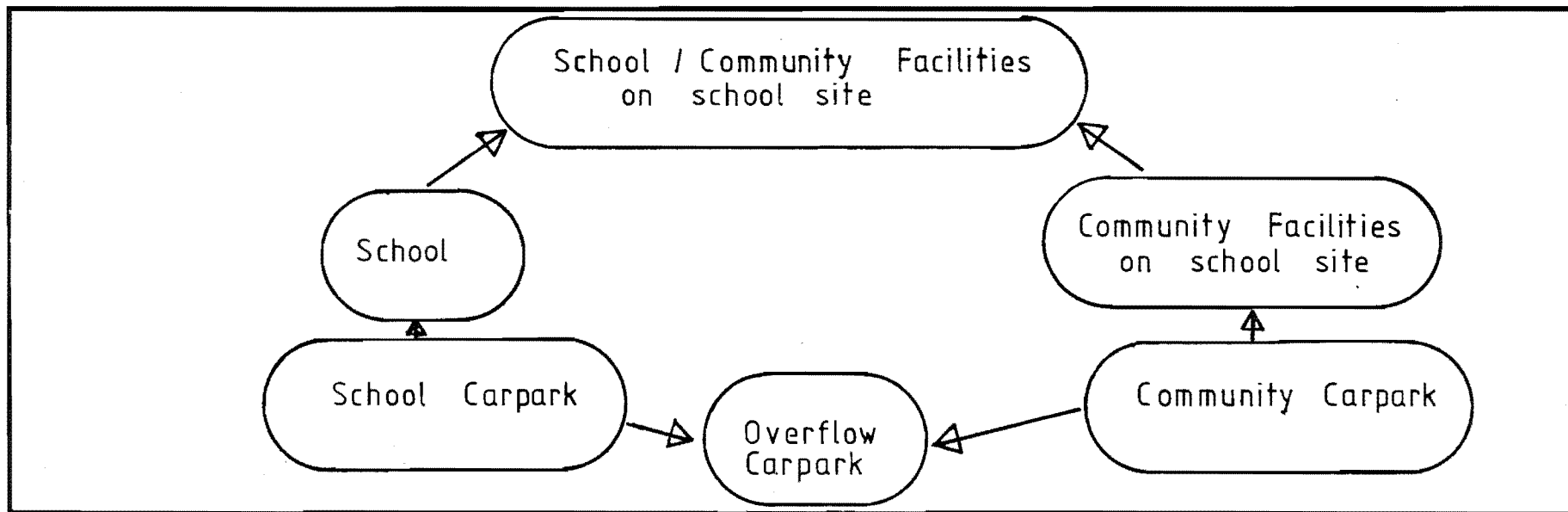
If more than one carpark is provided, they should be linked so that if one park is full, the other park can act as an overflow. On certain occasions, more cars will visit the school than there are parks provided for. To meet this situation, cars should have access to hard surface areas that can act as overflow carparks. These areas must be decided upon in the planning stage so that the subsurface can be designed to cope with this load. Such areas that may serve this purpose could be the hard surface area near the gymnasium, the bicycle park, or the bus drop off area. This is assuming that the overflow car parks will only be used outside of school hours.

Service vehicles require access to certain buildings, such as the boiler house, and Arts and Crafts block. Long term parking is not required for them, but the access must be direct and never blocked by other uses. The laboratories use L.P.G. from

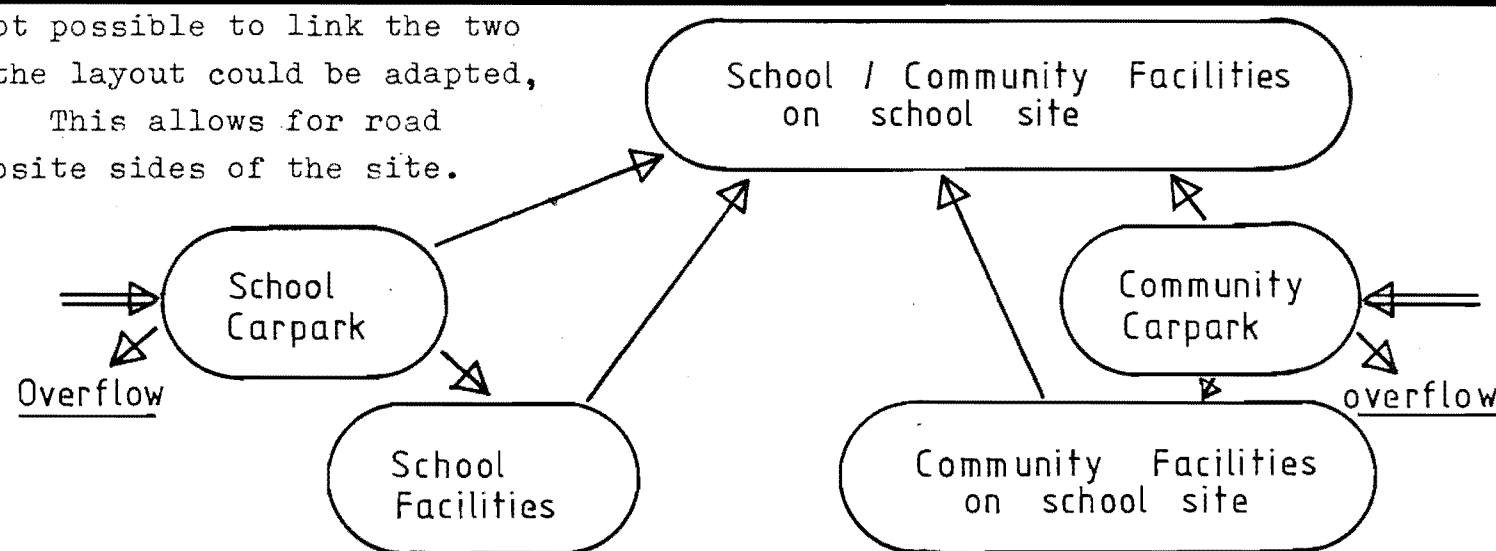
cylinders attached to the outside walls, thus they should be accessible by trolley from the truck. This presents no problem on a flat site, but should be borne in mind when designing for a sloping site.

In some cases the service area may be combined with the carpark or overflow carpark, thus eliminating any more roading than is necessary on the site.





If it is not possible to link the two carparks, then the layout could be adapted, as shown below. This allows for road access from opposite sides of the site.

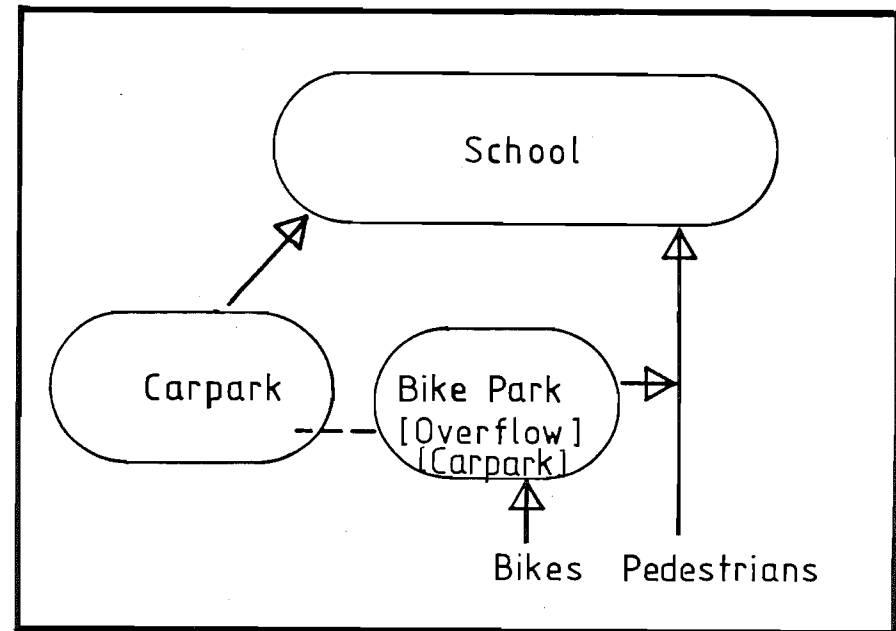


3. Bicycles

Bicycles are a very popular and practical means of transport for children, particularly in flat areas. The number of bikes is so great that they cannot be left scattered around the school grounds, but special areas must be set aside specifically for bicycle parking. If feasible, the bikes should have their own access routes and not be mixed with those of cars or pedestrians. Bike parks should allow for convenient access to the students interior use areas, with paths servicing the bike park meeting the desire lines of travel. Parks should be clearly within the school grounds so that supervision of them during school hours is possible from nearby buildings. If the bike park is to be used as an overflow carpark, there should be on site access between the two.

Moveable galvanized iron stands are available for the bikes, so that parking facilities for various numbers of bikes can easily be located. For example a stand holding ten bikes for staff could be put

near the staff room, and a stand for five bikes for visitors be located near the office. Also small stands near community facilities could be necessary. One large area for students bikes could double as the overflow carpark by stacking the stands on one side when they weren't being used. This is assuming that the overflow carpark will only be used outside of school hours.



4. Pedestrians

Pedestrian circulation is one of the most important aspects that needs consideration, along with the others mentioned, right at the start of site planning. The school is for people, or put another way, the school is for pedestrians. It is not for buses, cars, and bikes, for where they stop, pedestrian circulation starts. As has been stated earlier, it is essential to keep conflicting functions separate, and this has obvious implications for pedestrian circulation which should not have to cross any other circulation system, such as cars or buses, but should have its own access free of conflict and danger.

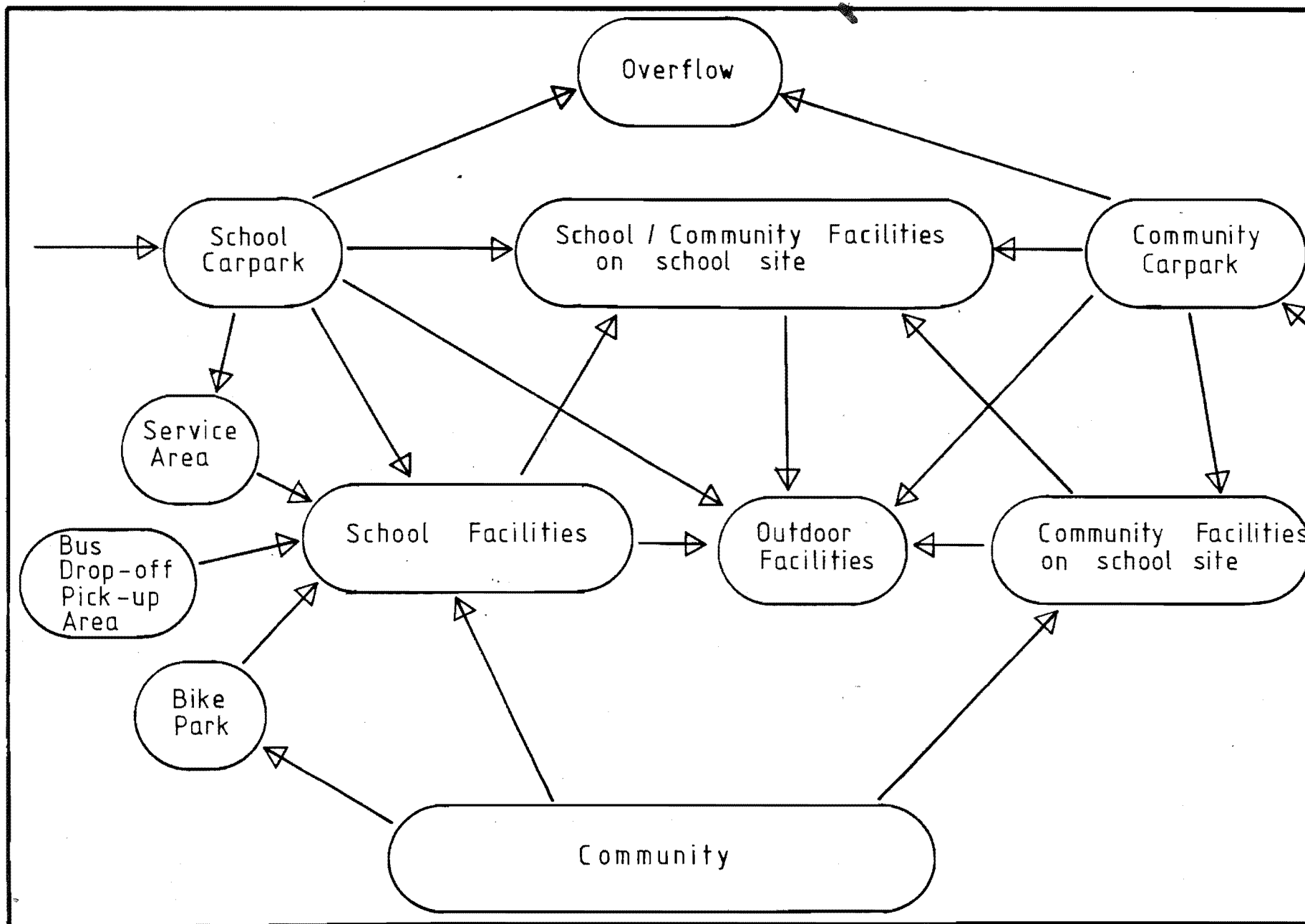
Students should have an entrance which provides a central connection to all interior use areas, such as courtyards. This entrance should be associated with outdoor play space, where children congregate before and after school.

A separate entrance is required for staff circulation from parking areas. The

community may use both student and staff path systems as necessary, but well planned building placement will minimise any interference that may occur from this combined use. School and community activities should be kept separate as required.

Paths must respond to the natural desire lines of travel from street and parking areas to the buildings, and access from buildings and parking areas to outdoor facilities should be as direct as possible. The path system must cater for peak traffic periods, such as arrival and departure times, and changes of period. In the latter, direction of travel is not uniform, but varies for each class's timetable.

By combining the various circulation systems with the school facilities, one is able to develop an overall functional relationship. This cannot be laid universally onto any site, for every site has its own restrictions, but if the basic relationships are observed, then conflict between unlike uses will be minimised. The diagram illustrates such an overall layout.



ANALYSIS , IMPLEMENTATION , CONCLUSION

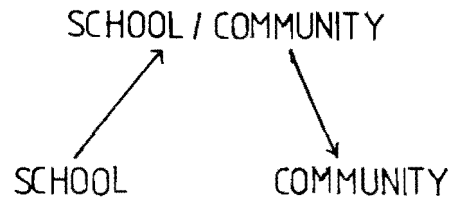
Application of the site planning process to the Halswell Secondary School site involved: firstly, analysing the facilities to determine their basic functions; secondly, examining their inter-relationships to determine desirable basic circulation patterns; thirdly, considering the combination of these two factors in relation to the limitations imposed by the actual site. The following were the findings.

Analysis

The facilities on the school site were classified as having three basic functions, as listed below.

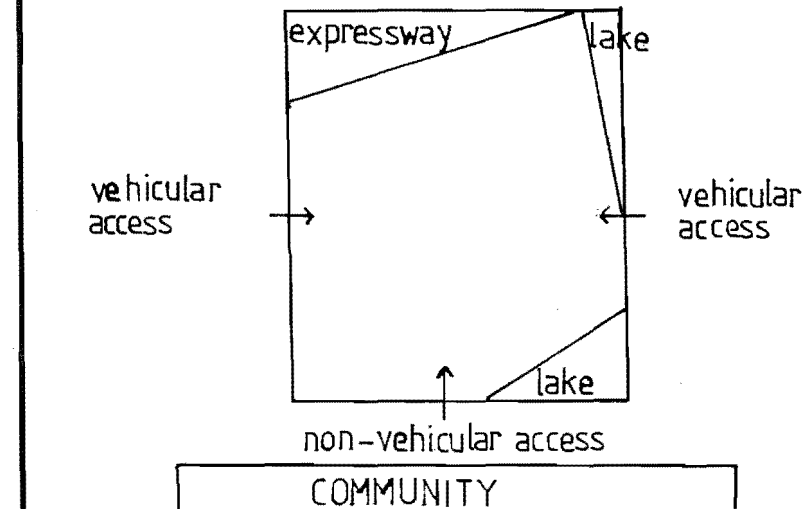
<u>FACILITY</u>	<u>FUNCTION</u>
4 WHANAU HOUSES	SCHOOL
2 ARTS AND CRAFTS BLOCKS	
1 LIBRARY	
1 PRACTICAL BLOCK	
1 GYMNASIUM	
1 AUDITORIUM	SCHOOL/ COMMUNITY
1 MUSIC AND DRAMA ROOM	
1 MEETING ROOM	
1 SCHOOL OFFICE	
1 PRINCIPALS BLOCK	COMMUNITY
1 HALL/GYMNASIUM	
1 ARTS AND CRAFTS BLOCK	
1 COMMUNITY RECREATION ROOM	

The basic functional relationship between the buildings on the site is as shown in the diagram.



This relationship was then used as the basis for two models which were developed, Model A and Model B. Model A had one car-park serving all the facilities on the site, and Model B had two carparks serving the facilities.

The characteristics of the site are indicated in the diagram, and these should be borne in mind when studying the models. It should also be noted that the site is not long enough to fit all three functions in a straight line, thus a triangular arrangement of some sort is inevitable.



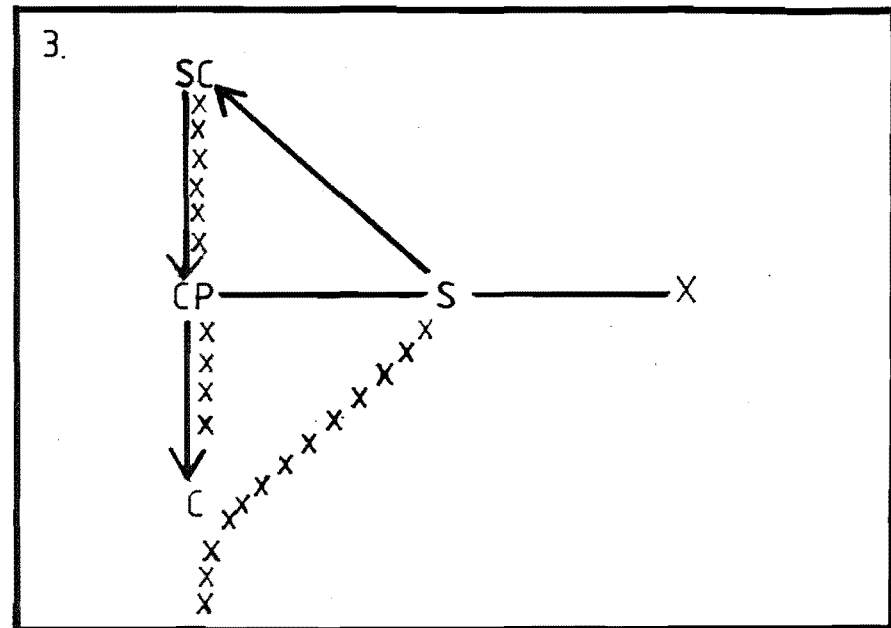
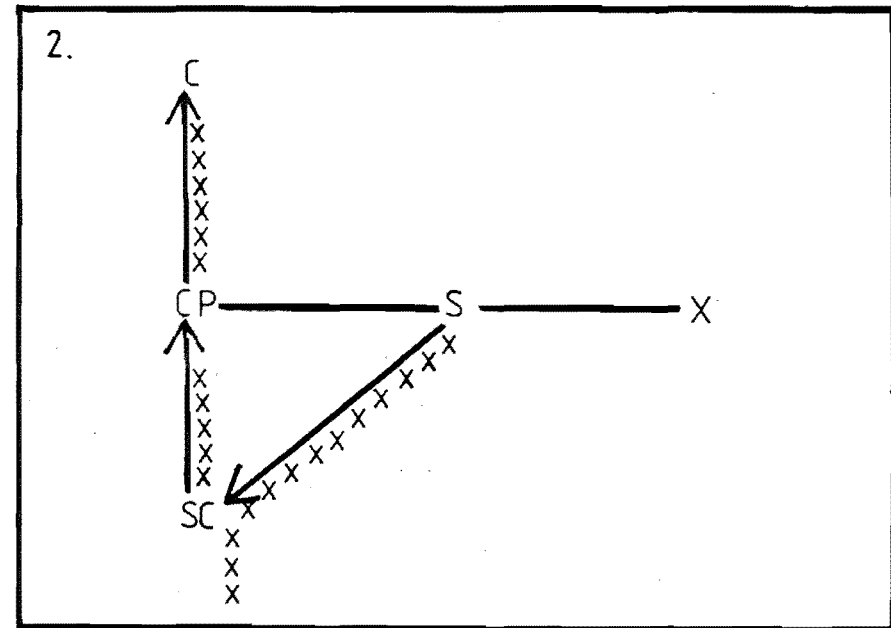
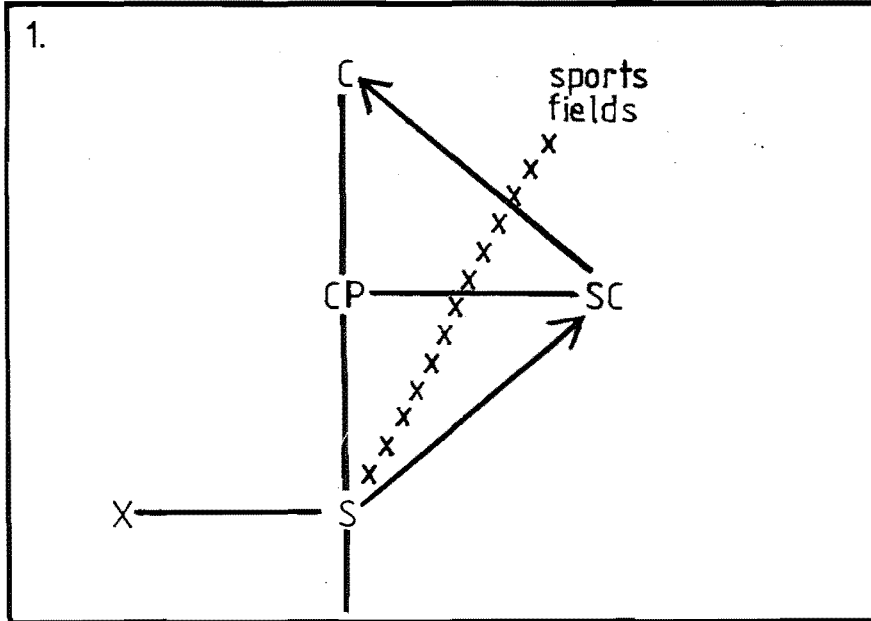
Three conditions were imposed on the models to determine missing links and conflict points.

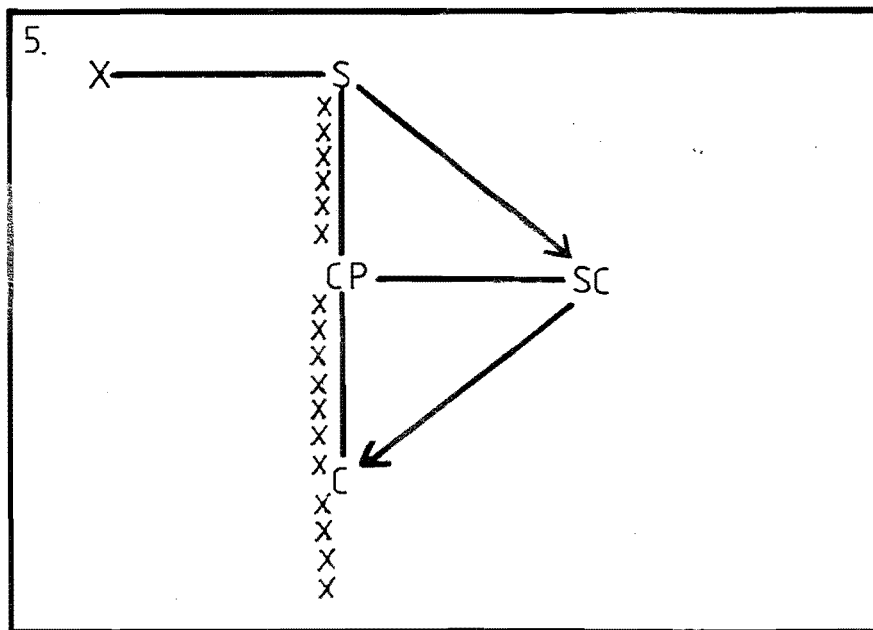
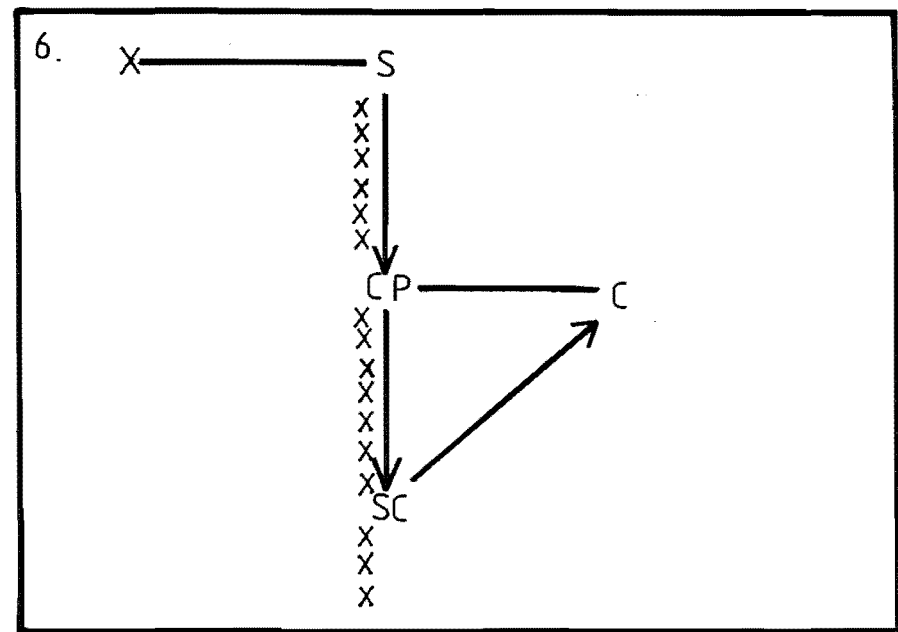
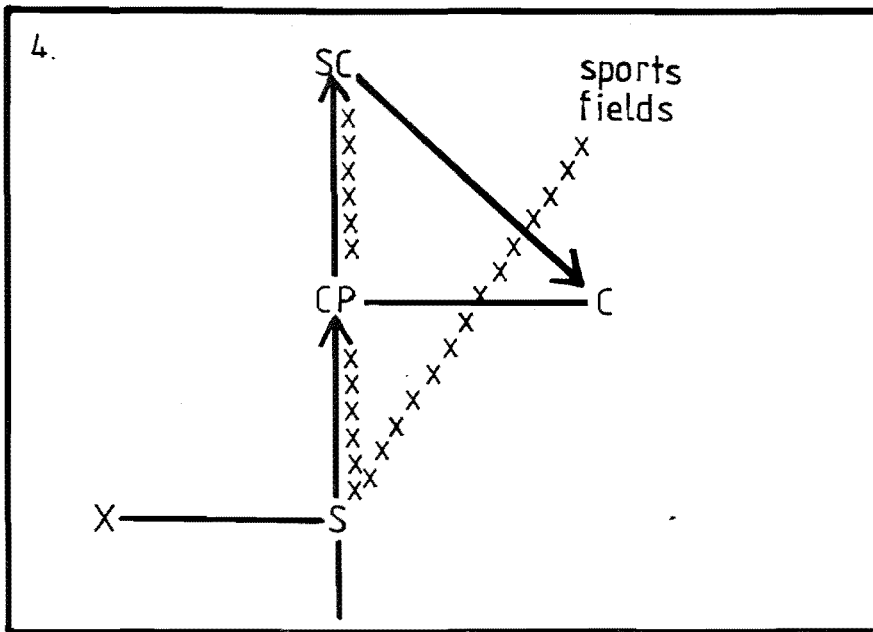
1. No road shall cross the site.
2. Conflicts shall arise when incompatible relationships meet.
3. Where two carparks are used, they should be connected to allow for overflow parking.

KEY

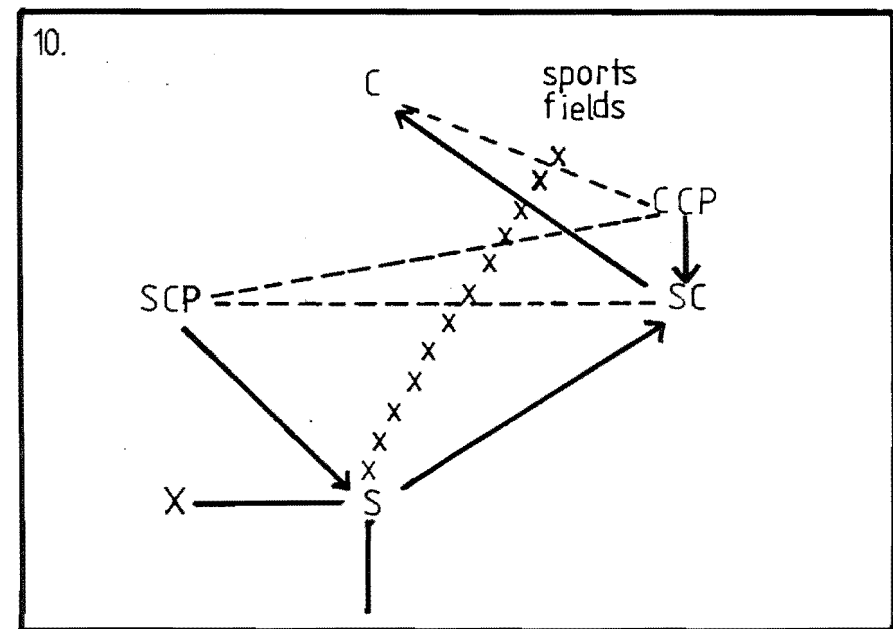
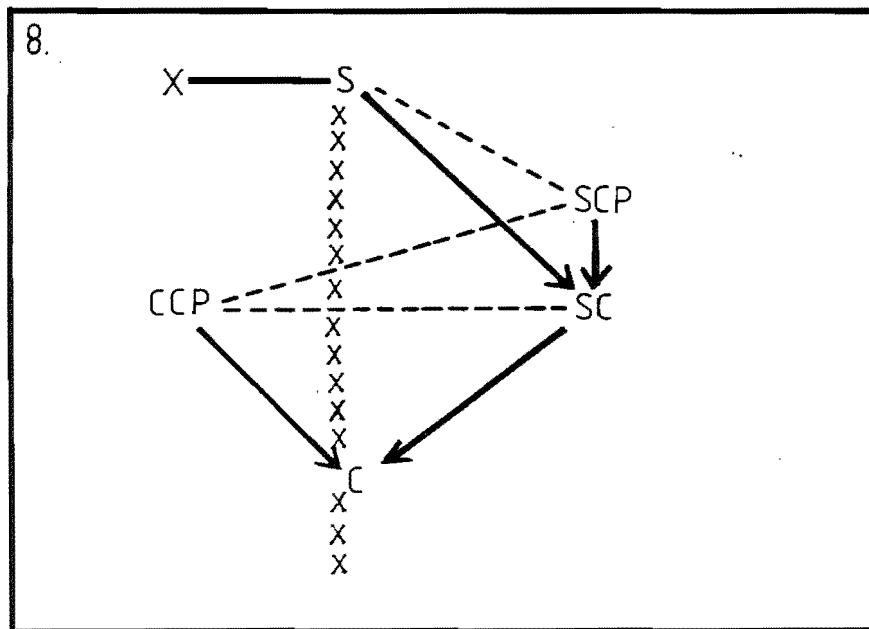
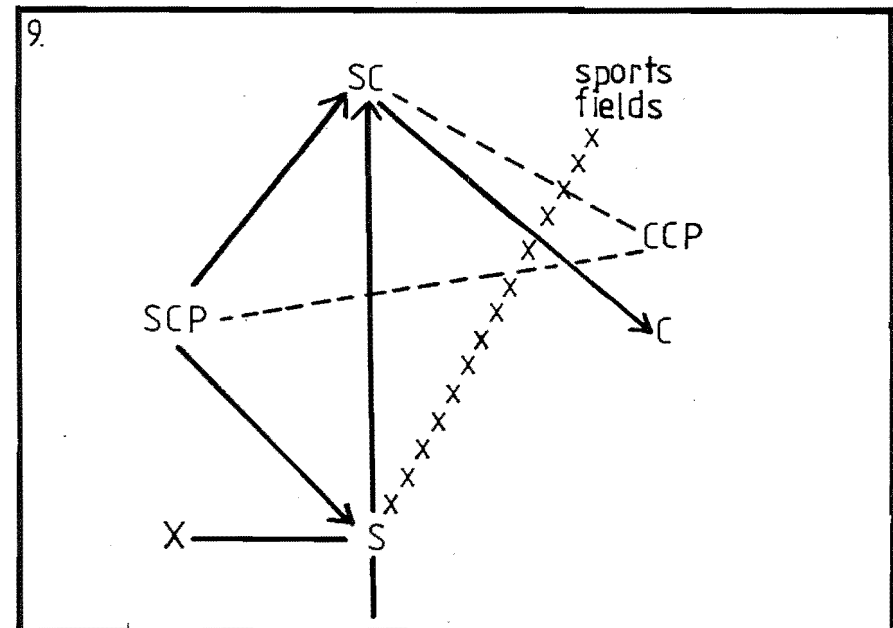
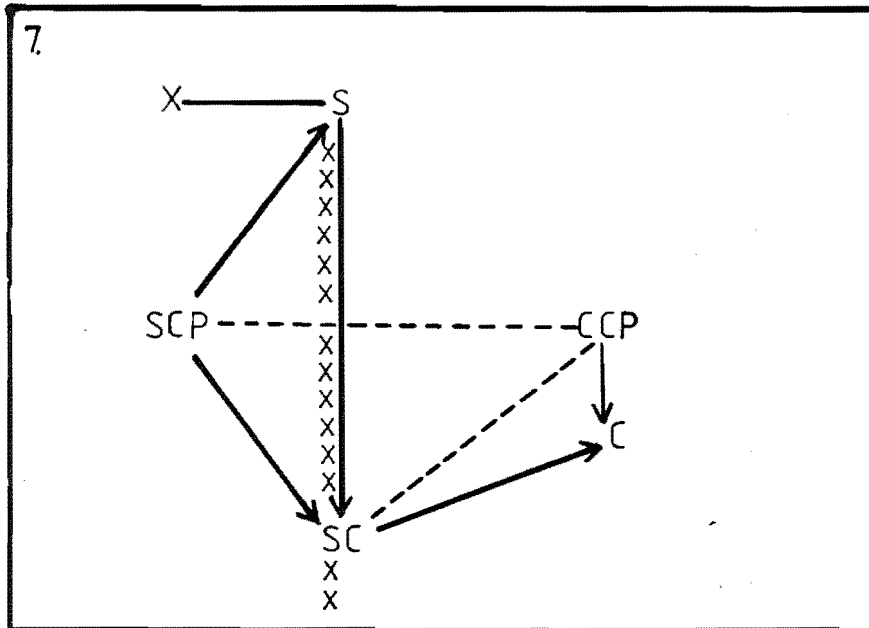
S	School facilities on the site.
SC	School/Community facilities on the site.
C	Community facilities on the site.
CP	Carpark for Model A.
SCP	School carpark for Model B.
CCP	Community carpark for Model B.
—	A relationship.
---	A missing link.
xxxx	A conflict.
X	Bus drop off point.

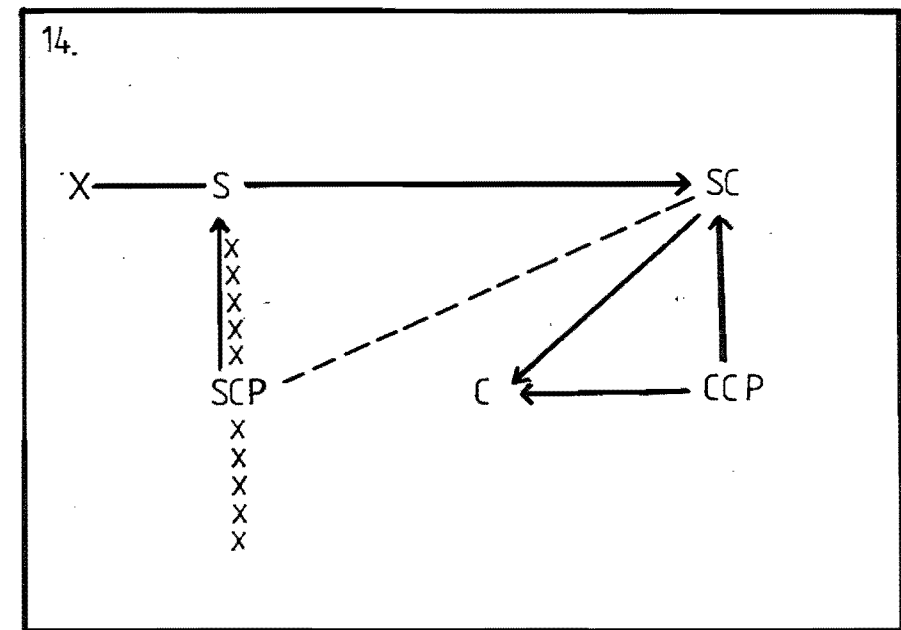
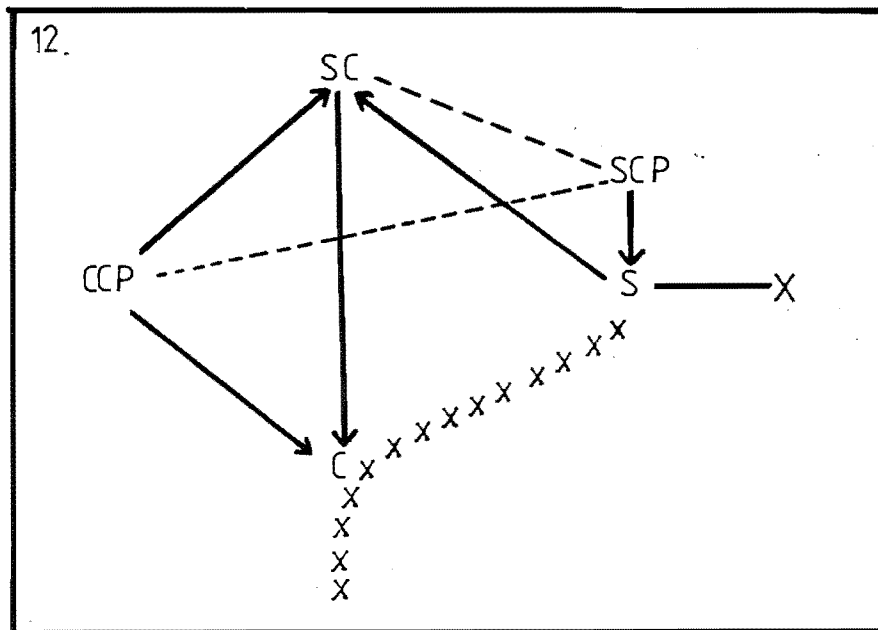
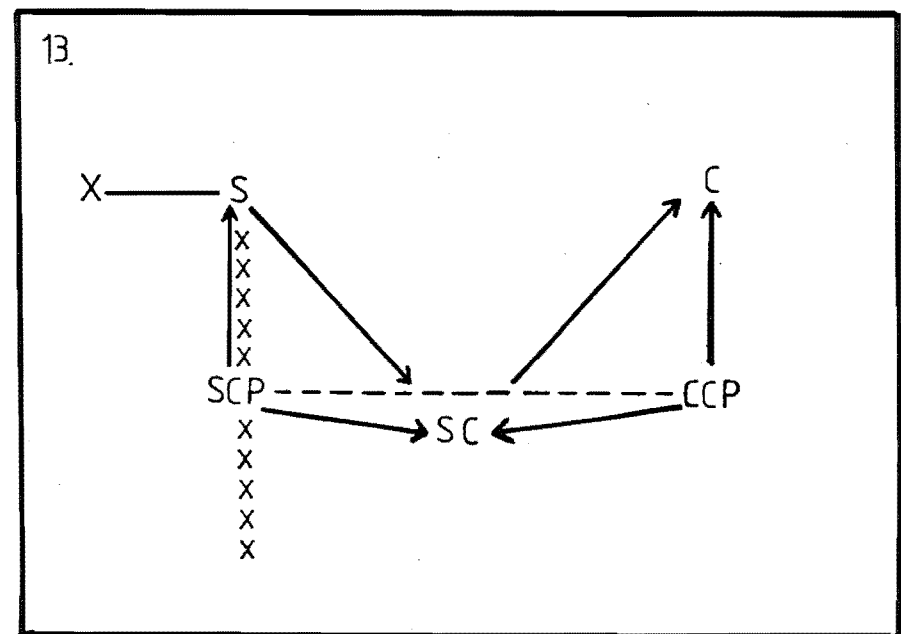
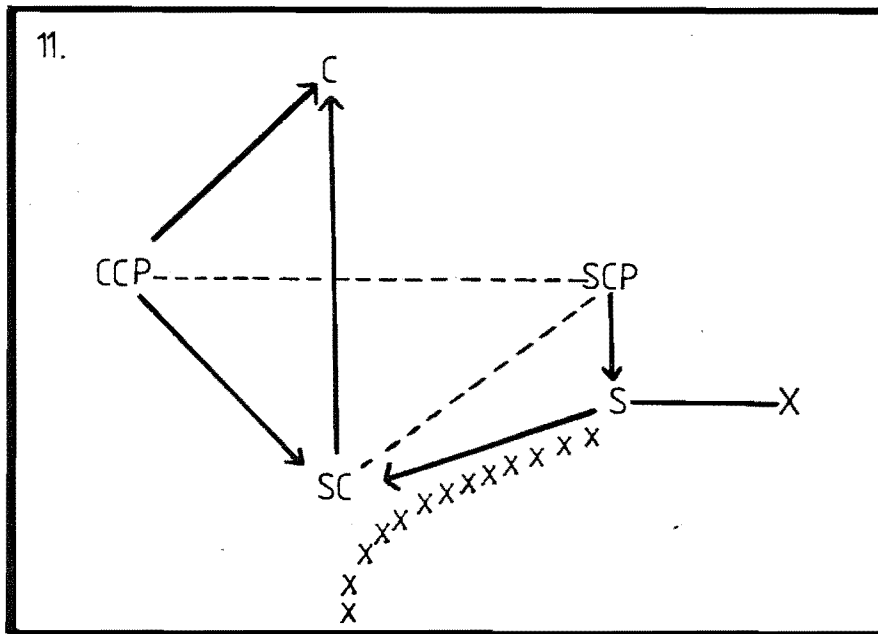
MODEL A

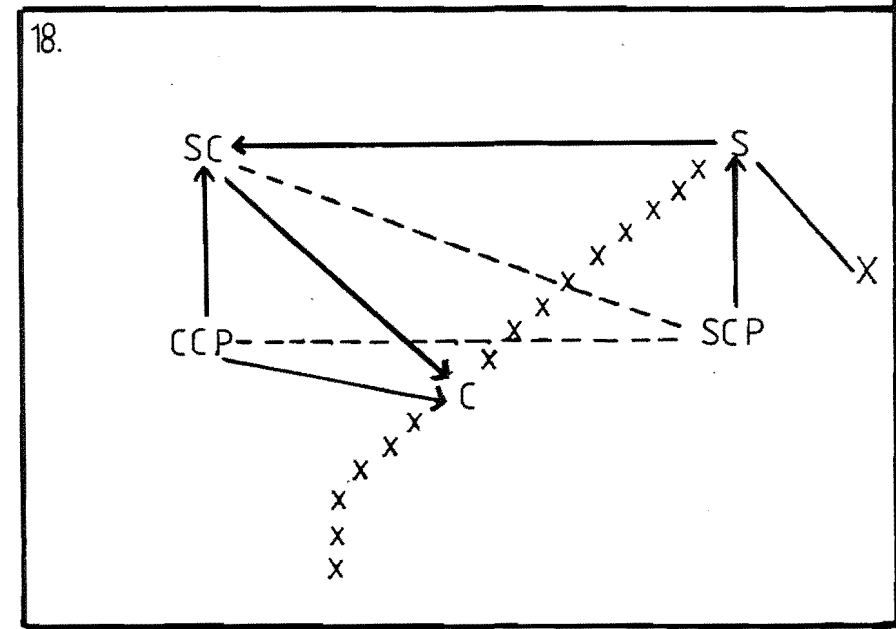
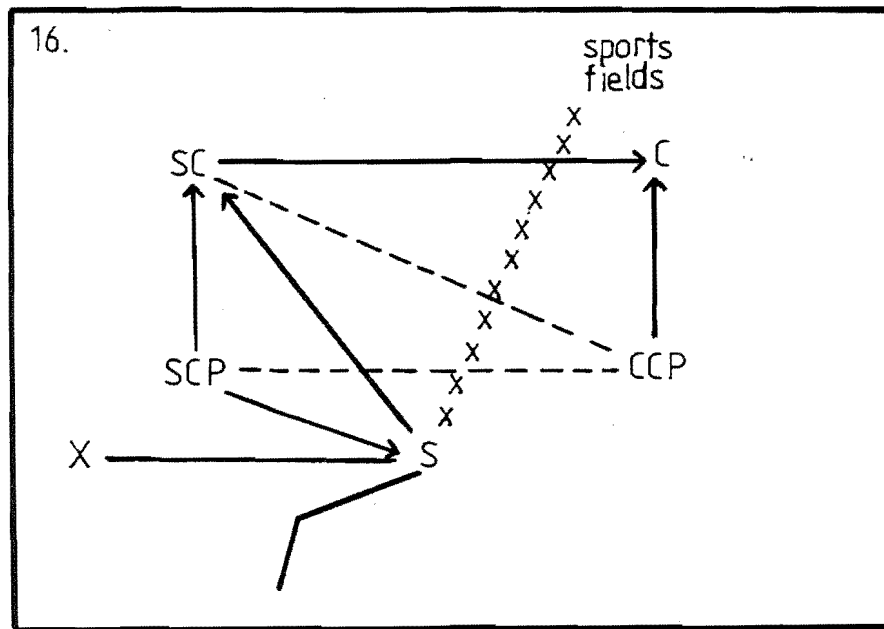
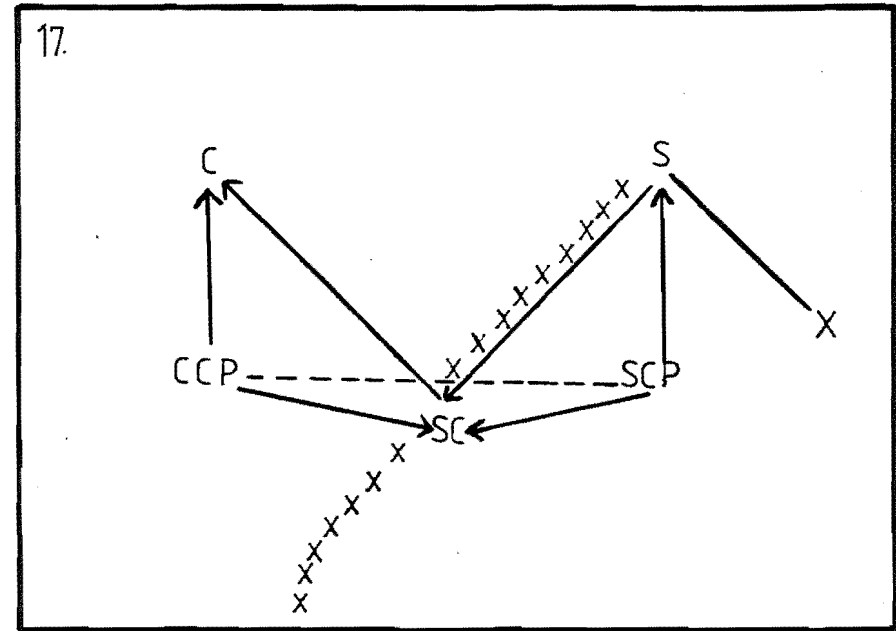
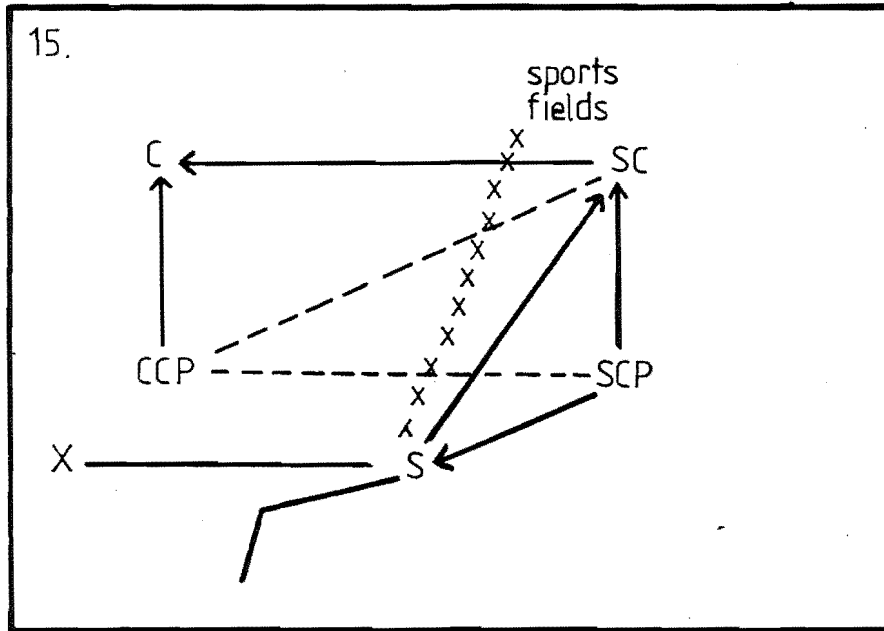


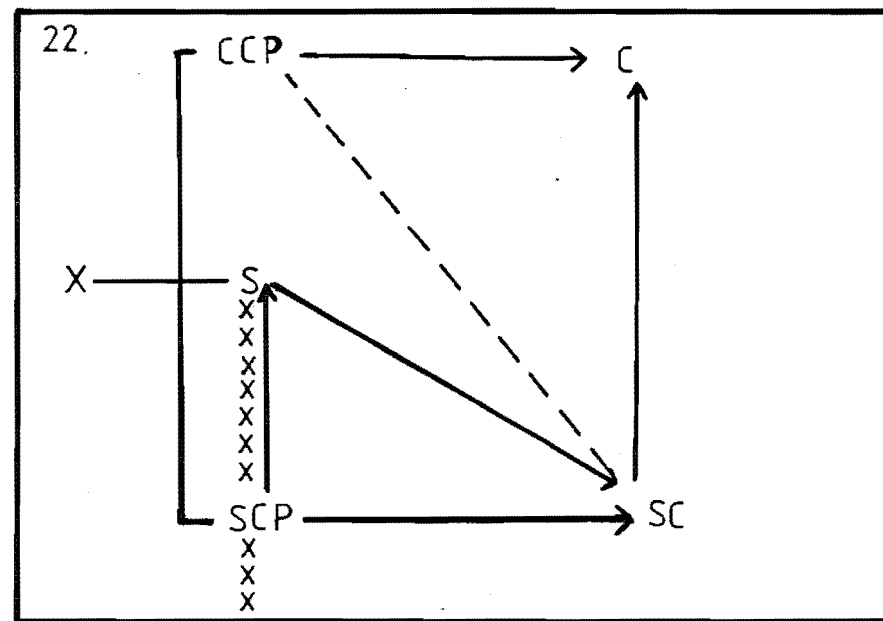
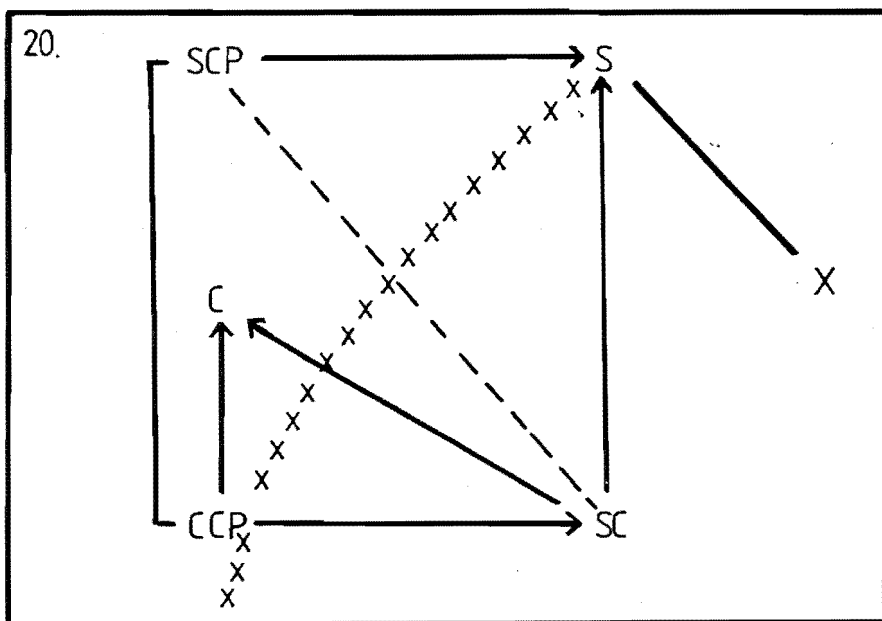
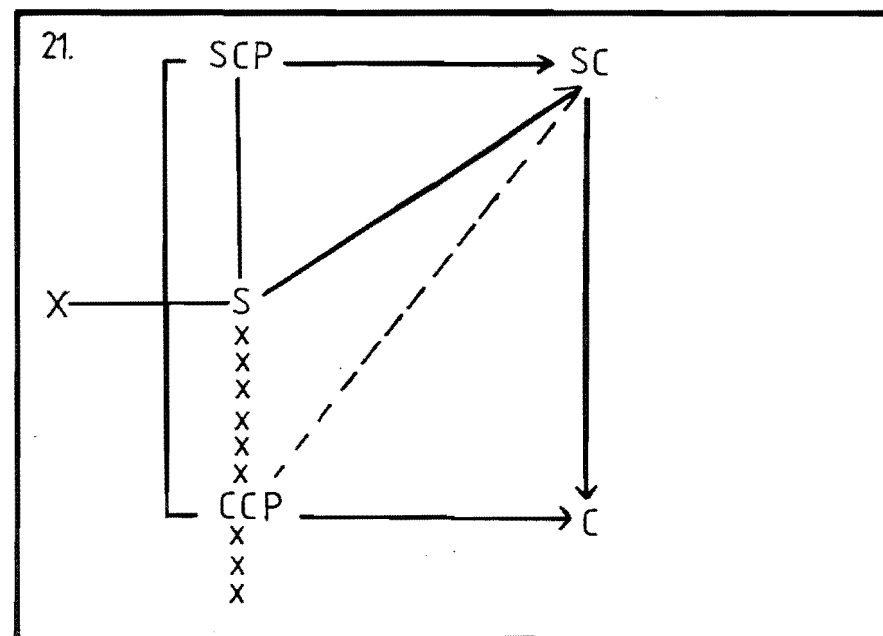
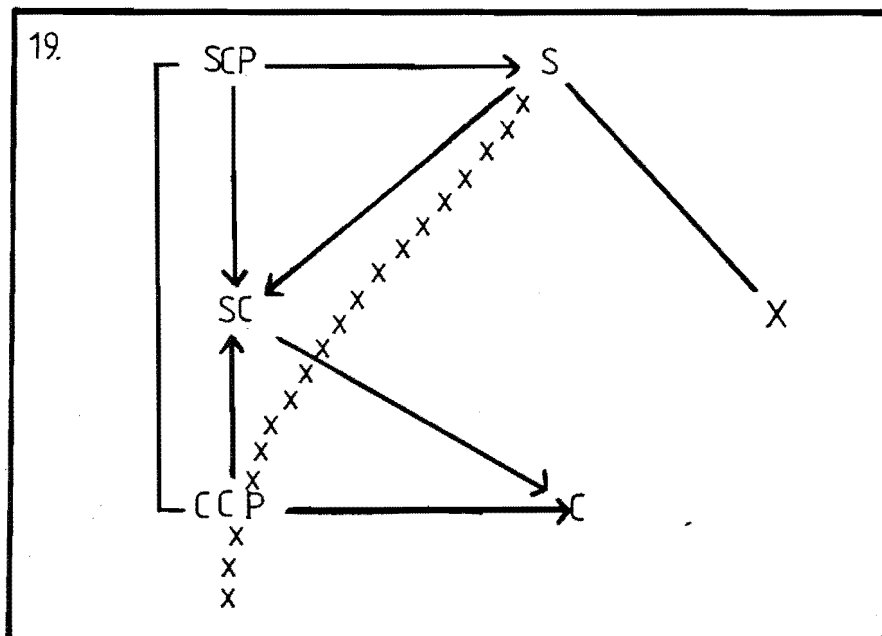


MODEL B

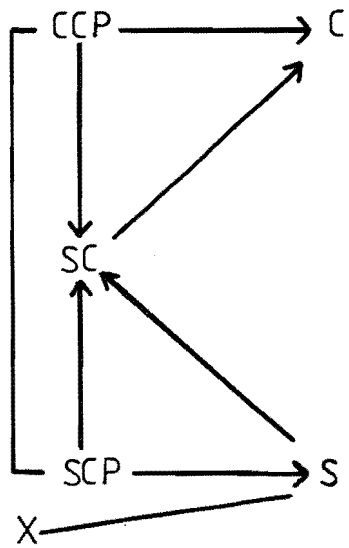




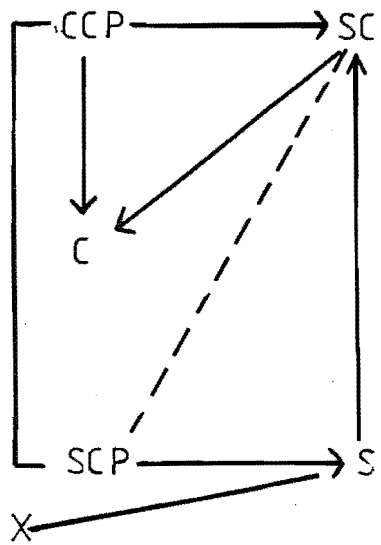




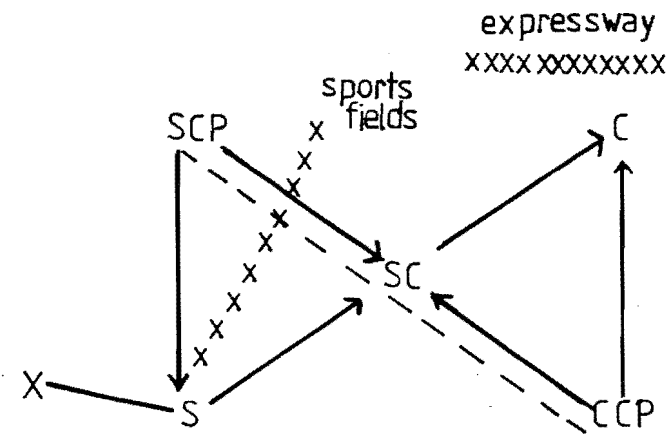
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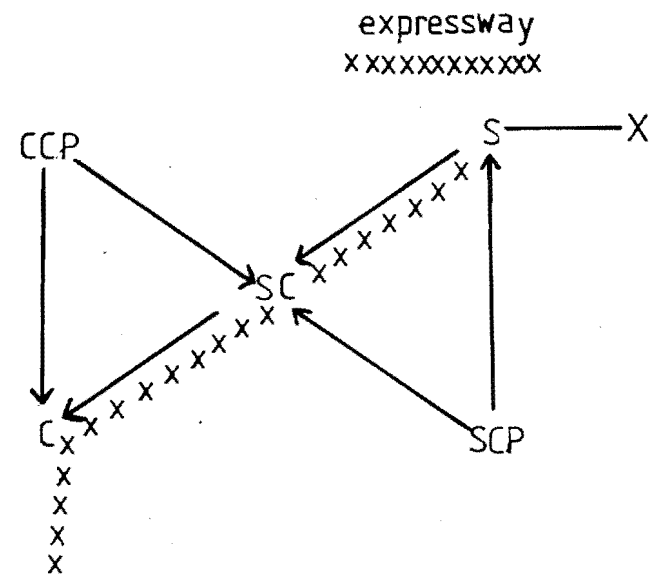
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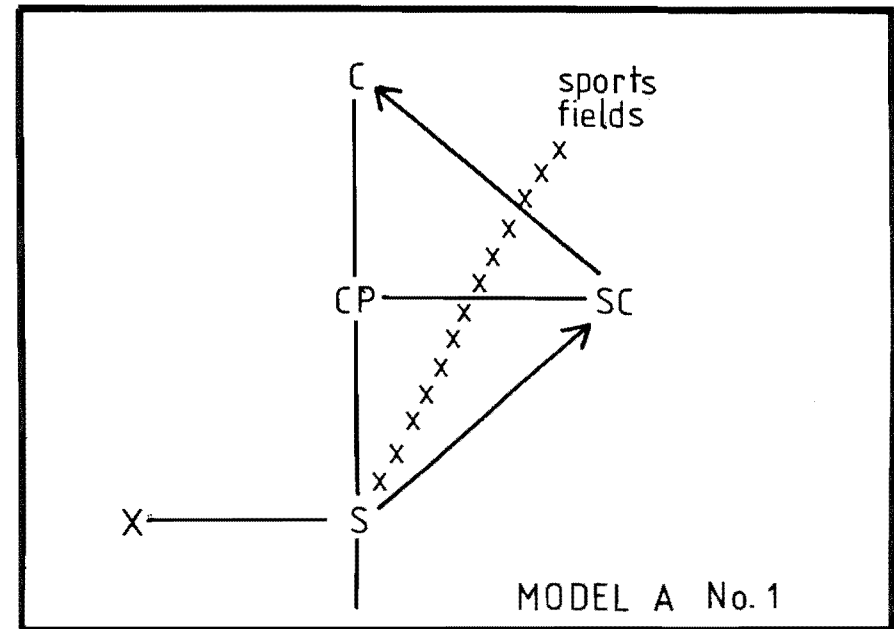
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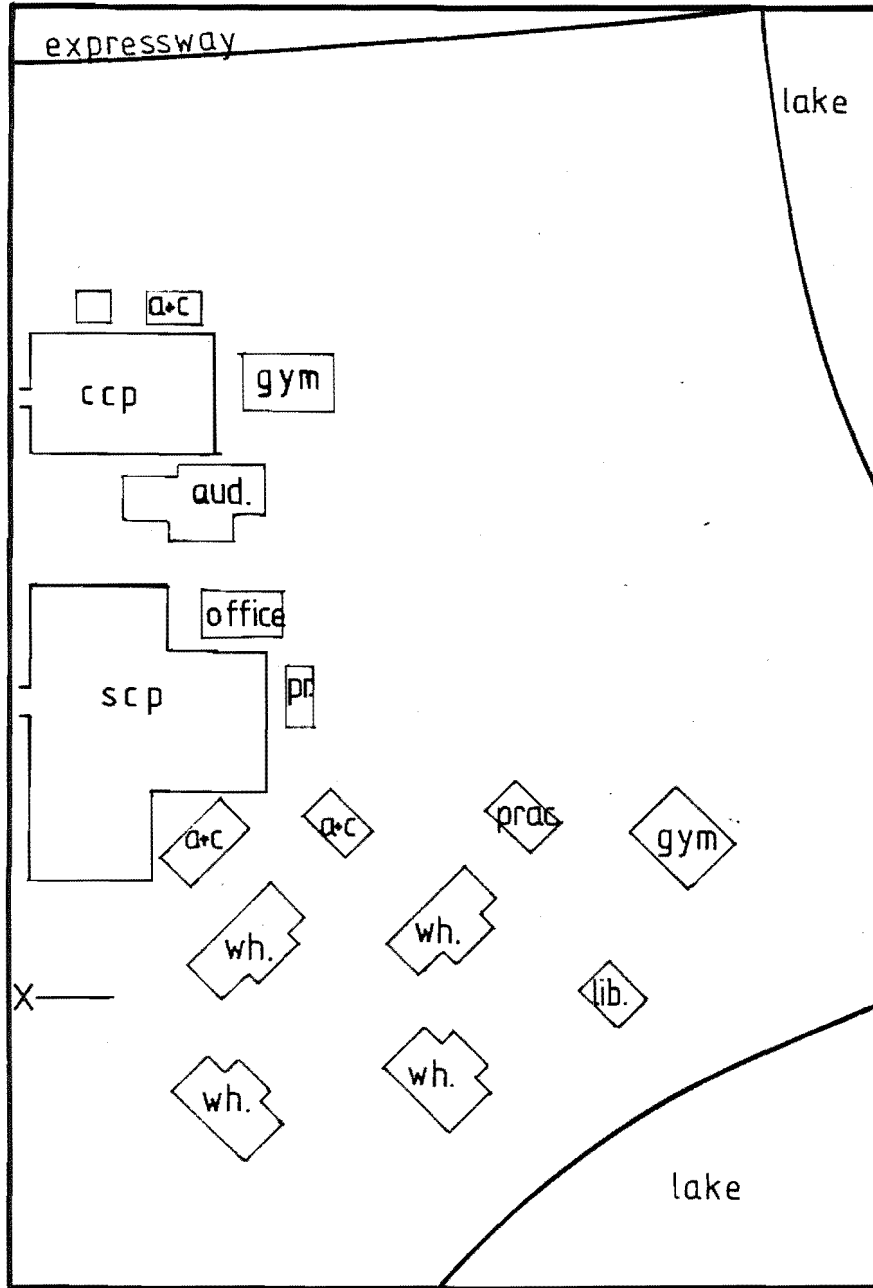


Of all the combinations, only one is free from conflicts or missing links. This is number 23 of Model B. The best combination in Model A was number 1, as it has least conflicts.

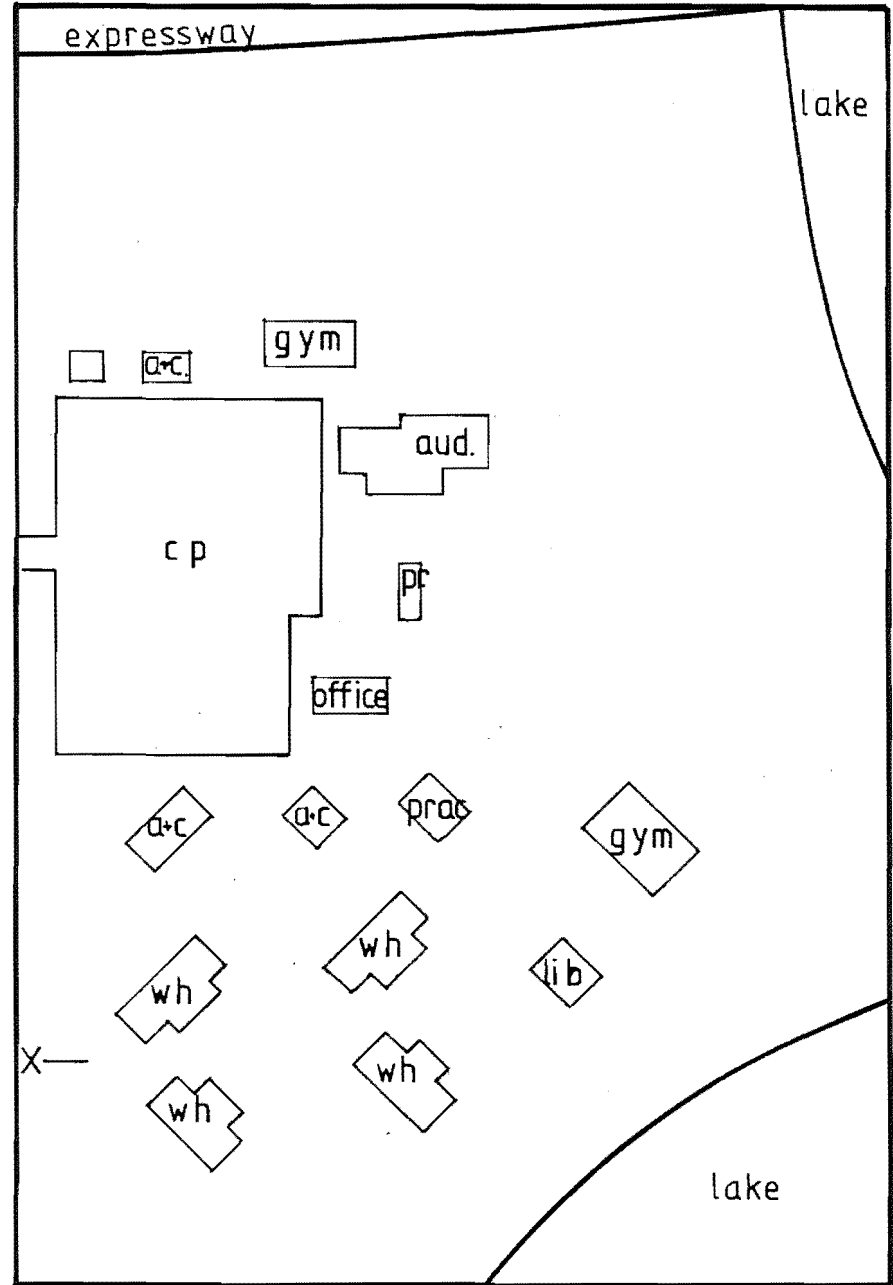


68

MODEL B No. 23



MODEL A No. 1



Model A

The inherent problems were:

1. The carpark is large, catering for one hundred cars.
2. The carpark penetrated deeply into the site.
3. The positioning of the gymnasium became a problem because of the nearness of buildings with pupils in them and the resulting conflict caused by noise from the hard surface area associated with the gymnasium.
4. Positioning of the swimming pool near the gymnasium would cause similar conflicts, as well as the adverse visual effect the fence around the pool would have on the open flat area.
5. School access to the sports fields crossed the school/community facilities.
6. The one carpark solution required a clustering of buildings around the carpark because there is less flexibility for placement of buildings that need road access.

Model B

The inherent problems were:

1. Positions of the gymnasium and pool had similar problems as with Model A.
2. The road frontage tended to be dominated by carparks.

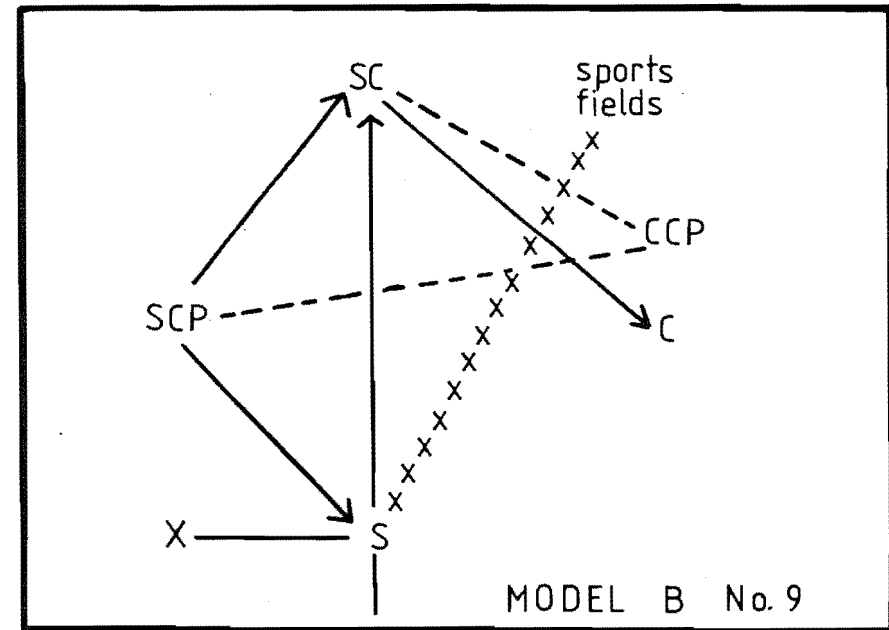
Conclusions

Model B offered the best solution from a "no conflict" viewpoint, but there were still inherent problems in the layout. An alternative layout had to be developed. The two basic problems of the Model B solution were the dominance of the carpark and the positioning of the gymnasium. These could be overcome if:

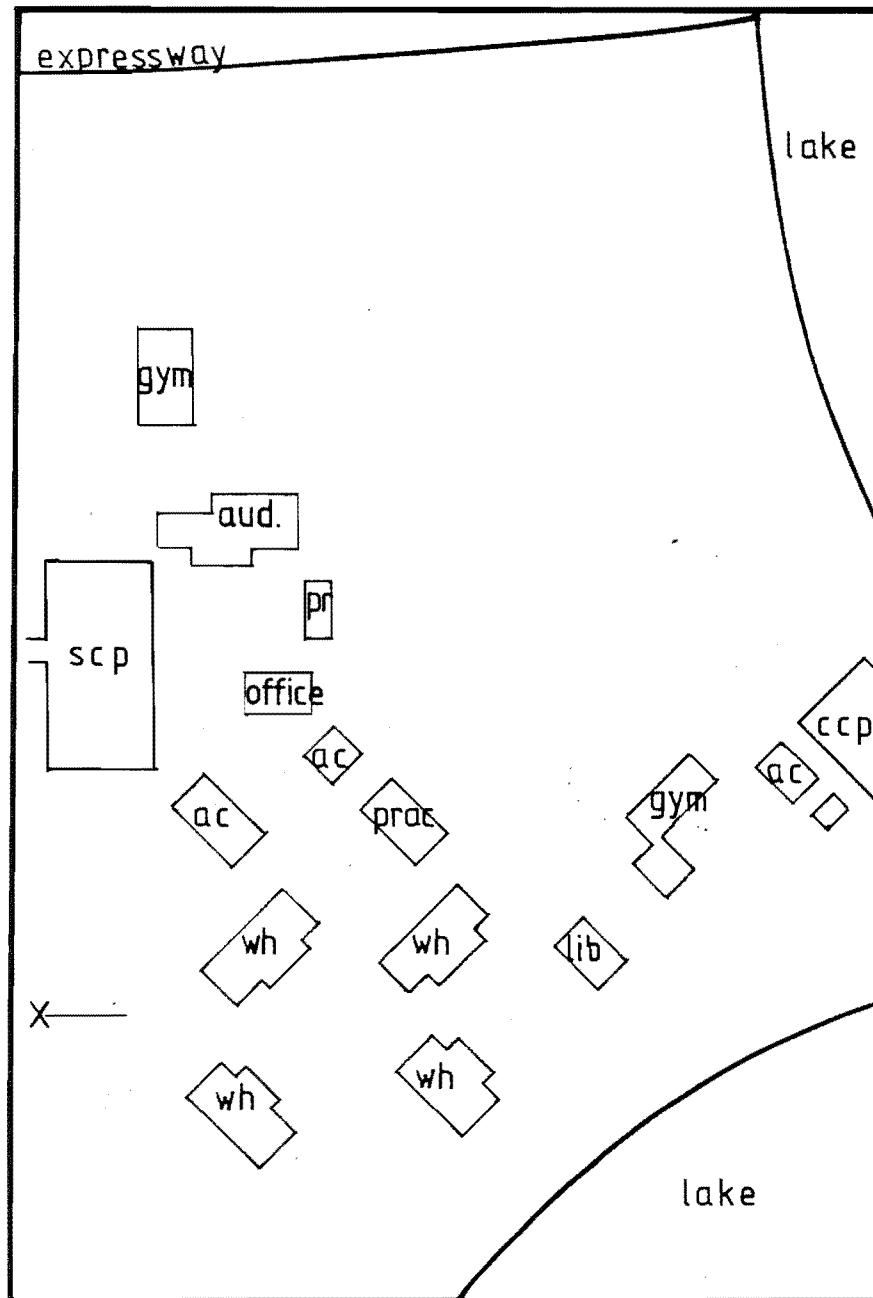
1. The requirement for road linkage between the two carparks was removed, and alternative overflow parking could be found.
2. The gymnasium was moved away from the school buildings, yet remained separate from community facilities, so conflict would not occur.

A means of meeting these requirements would be for the bus drop-off area to be used for overflow parking, and to move the community carpark to the other side of the site. Number 9 of Model B shows this combination.

Because of the ample parking available to serve the school and school/community facilities, the link between the community carpark and the school/community facilities could be removed. The requirement for a link between the two carparks is also dropped. These two factors would result in the removal of the conflict points between the school facilities and the sports fields. Thus an acceptable model could be developed from number 9 with no missing links or conflicts. The diagram shows this.



The test of this model is in the actual building layout on the site. At this stage the gymnasium can be re-positioned near the school/community facilities so as to minimise noise disturbance. The solution layout is shown in the diagram.



The Master Plan gives the details of the site layout. This is considered to be the best solution for this particular site, but it cannot be taken and imposed on any other site as a model layout, as each site has its own characteristics. The intention of this report has been to illustrate how such a solution has been arrived at. It is hoped the methods used may be appreciated by site planners, and the role the landscape architect can play be recognised from the earliest stages.

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