

Redland Shire Council

Redland Shire Integrated Employment Area Study

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Executive Summary

Definition of an Integrated Employment Area

The concept of Integrated Employment Areas (IEAs) emerged upon recognition that traditional planning controls for business or industry areas were too restrictive. They failed to recognise advancements in manufacturing and environmental technology that enabled quite disparate activities to co-locate, thereby realising potential benefits to activities that can result from such co-location. IEAs were also acknowledged as a way of enabling employment areas to locate closer to residential areas.

While an IEA could take on many forms, an appropriate definition of an IEA in the Redland Shire context would be an area of land which:

- is not committed to any alternative higher order land use;
- is relatively constraint free and easily developed;
- offers convenient access to the local and regional road network;
- is not regarded as being environmentally sensitive;
- can be buffered from surrounding residential areas;
- is well located with respect to existing and/or future population concentrations;
- can be readily serviced with water, sewerage, electricity and communication infrastructure;
- comprises an area and ownership pattern that could facilitate comprehensive integrated planning; and
- is to be used for the establishment of low impact employment generating activities with competitive and comparative advantage within the Shire, together with other supporting or synergistic employment generating activities.

The most recognisable form of an IEA is perhaps a fully managed estate with high quality landscaping and urban design. These often attract high profile or high technology activities and offer the following locational attributes:

- they are in locations with excellent transport linkages;
- they are in either highly visible locations and/or central to substantial population catchments;
- they are/were in single ownership;
- they can attract high quality/high profile land uses due to their accessibility, synergies with existing/proposed uses, management structure, location with respect to the CBD and higher socio-economic residential areas;
- they have high capacity communications infrastructure; and
- they can attract uses with a high “office” content which deliver quite high employment numbers.

Selection of Candidate Sites

Eleven candidate sites for the establishment of an IEA were identified based on the locational criteria identified above. These sites are shown on Figure 1.

A two staged evaluation process was then adopted in order to compare the relative merits of each of the sites. The first stage comprised a relatively coarse evaluation, to identify the best performing sites in relation to the 'core' evaluation criteria of

- accessibility
- servicing costs
- proximity to population
- environmental sensitivity.

The top five ranking sites for an IEA based on these criteria and listed in order of ranking were:

1. Area 7 - Marlborough Rd/Main Rd, Wellington Pt.
2. Area 1, Birkdale Rd, Birkdale and Area 6 Kinross Road ranked equal second.
3. Area 4, German Church Road, Redland Bay and Area 2 Taylor Road, Mt Cotton ranked equal third.

Further evaluation of these sites was then carried out based on a more comprehensive range of evaluation criteria, (discussed in Section 4.2), which enable a wider range of social, environmental and economic factors to be considered.

The results of this evaluation enabled the sites to be ranked as follows:

1. Area 1 - Birkdale Road, Area 4 German Church Road
2. Area 6 - Kinross Road
3. Area 7 - Wellington Point
4. Area 2 at Taylor Road.

It should be noted that in the analysis equal weighting was given to each of the criteria.

Economic Opportunities

Three sources of employment growth were identified relevant to Redland Shire:

- population driven growth;
- growth through comparative advantage; and
- growth through competitive advantage.

Population driven growth typically comprises retailing, personnel services, and population serving business and industry

Comparative demand, driven growth, (growth driven by the natural attributes of the Shire) and competitive demand driven growth (growth driven by infrastructure and other forms of investment in the Shire, such as synergies resulting from other industry investment), offers additional potential within the Shire.

Analysis indicates there is presently insufficient land identified within the Shire to accommodate the employment needs of future residents, and as much as 200 hectares is likely to be needed. Population growth within the Shire will generate the need for over 4700 jobs over the next 15 years, some of which could be accommodated in an IEA.

Following a review of the Shire's comparative and competitive advantages in the regional context, a range of employment activities has been identified which could initially be targeted by an IEA. The mix of activities within any one IEA will ultimately be influenced by the location of the site. Those activities which could be targeted are detailed in Section 5 and include:

- manufacturing and value adding services to the marine industry
- manufacturing and value adding services to the horticultural, viticulture and poultry industries;
- manufacturing and value adding services to environmental industry;
- technological and research activities related to each of the above sectors.

Opportunity for the development of an IEA focussing on "New Economy" activities is considered somewhat limited since:

- such activities rely on high capacity, low cost communications infrastructure which is not available in Redland Shire;
- activities rely on high profile, high exposure locations, opportunities for which are limited in the Shire;
- many professionals in this industry prefer a CBD lifestyle; and
- the nature of activities for which Redland Shire provides competitive and comparative advantage focus principally on other industry sectors, outlined above.

Recommendation

Area 1 (Birkdale Road) and Area 4 (German Church Road) are the most suitable sites in Redland Shire for the establishment of an IEA.

Area 1 is the best available site in regard to those attributes that are likely to be attractive to high profile low impact activities often association with fully managed IEAs and business parks. These include a well exposed location, pleasant natural setting, relatively good access to the Brisbane CBD and close proximity to the existing Shire population. It would be particularly suitable for development as an education/research facility which may in turn make nearby Area 7 (Wellington Point) suitable for associated rural research activities.

Area 4 (German Church Road) offers possibilities to accommodate activities which find comparative and competitive advantage within the Shire, together with some population serving employment activities.

Implementation Issues

Identifying sites for IEAs is essential, but it will be insufficient on its own to attract development.

Maintaining a favourable investment environment within the Shire will be critical to attracting employment generating activities. This involves establishing the pre-conditions necessary to encourage investment such as:

- a strong planning framework;
- streamlined approval process for targeted activities in designated employment precincts;
- ongoing promotion and development of the Shire's social infrastructure which make it an attractive place in which to both set up business and to live;
- promotion of the Shire's existing strong employment sectors and highlighting the Shire's (and each site's) competitive and comparative advantages ;
- recording and promoting all new business start ups in the Shire;
- use of financial incentives;
- establishment of a 'can do' image with potential investors.

Suggested actions to further the planning process on the preferred sites are also included in Section 6.3.

1. Introduction

This report presents the findings of the Redland Shire Integrated Employment Area Study prepared on behalf of Redland Shire Council by GHD and Abnett Consulting.

The key aims of the study are as follows:

- to determine the definition of an Integrated Employment Area appropriate to the context of Redland Shire;
- to identify and evaluate the potential sites for an Integrated Employment Area;
- to identify the range of potential land uses that should be encouraged and likely to be attracted to an IEA in the Shire; and
- to identify a range of possible incentives for such activities.

This report discusses the findings in relation to the first three components mentioned above. The report also provides a broader overview of employment needs and prospects within the Shire, as it has become clear that identification of a single IEA is unlikely to meet the future employment needs generated by forecast population growth within the Shire.

Eleven sites were identified for evaluation, including the Kinross Road area, the use of which for employment generating uses has previously been rejected by Council based on local resident opposition. Inclusion of this area in the analysis serves to provide a comparison, or benchmark, against which all other candidate sites can be compared.

Land at Capalaba, referred to as the 'Turf Farm' was not included in the analysis as it already comprises part of the Capalaba Sub-regional Centre's land bank and is currently being developed for a range of employment generating activities.

Specific recommendations are offered in relation to the German Church Road Site, as it is understood there are current proposals under consideration for the use of this area.

The project brief describes two phases to this study:

- Locational and Business Analysis
- Possible Range of Uses and Incentives

The tasks under each of these phases were carried out concurrently, together with additional tasks aimed at establishing the context for employment needs within the Shire. The findings of these tasks are brought together in the final section of this report which endeavours to match identified opportunities to preferred sites.

2. Definition of Integrated Employment Area

2.1 What is an Integrated Employment Area?

The concept of IEAs emerged upon recognition that traditional planning controls for business or industry areas were too restrictive. They failed to recognise advancements in manufacturing and environmental technology that enabled quite disparate activities to co-locate, thereby realising potential benefits to activities that can result from such co-location. IEAs were also acknowledged as one measure through which the relationship between place of residence and place of work could be improved (ie, by having employment areas closer to residential areas).

In its simplest form, the former Queensland Department of Business, Industry and Regional Development (DBIRD) describes IEAs as “*an area which permits a host of traditionally incompatible industries to locate together, subject to various design standards*” (DBIRD Best Planning Practices for Integrated Employment Areas - Information Paper and Guidelines 1995).

A more descriptive definition offered by DBIRD is:

“areas suitable for a wide range of industrial, warehouse, transport storage and office uses together with commercial, retail and recreational uses providing such uses are able to demonstrate compatibility with objectives and performance criteria related to off-site impacts, site and building design and amenity, applicable to the area”.

To attract the range of uses envisaged, higher levels of amenity are required in an IEA, often resulting in higher land prices and the exclusion of some “bottom end” employment generating activities. Often these higher amenity levels are achieved through establishment of a management body for the IEA, particularly in instances where the site is under single ownership.

The concept allows for the incorporation of some commercial and retail uses for the convenience of employees, these could include take-away food stores, banks and the like.

Brisbane City Council adopted a similar concept termed the Mixed Industry Business Area (MIBA) to achieve the same objectives as an IEA.

IEAs in the best known form include office parks, business parks and ‘high tech’ parks, often in campus like settings. Such examples require high levels of management and are located in highly visible and prestigious locations, as discussed further in Section 3 below. IEAs can equally include mixed use industrial areas, which often provide cheap land which attracts a wide range of non industrial, large scale activities, such as retail showrooms and indoor sport complexes. Increasingly, largely due to the introduction of more performance based planning controls which control activities by the nature of

likely impacts rather than the type of use, many modern business and industry areas display characteristics, of and could be regarded as, IEAs.

According to the DBIRD Guidelines, the characteristics of IEA would include:

- provision for a range of employment activities;
- ease of accessibility for workers;
- no off-site impacts on adjoining land uses;
- integration with the community;
- access to essential services for workers and a high quality working environment;
- high quality visual appearance through landscaping and building design;
- efficient and effective road networks;
- climate sensitive and energy efficient site planning; and
- opportunities for linkages between synergistic uses.

In the Redland Shire context, Council has indicated there are other preconditions or requirements applicable to the establishment of an Integrated Employment Area. These include the following:

- the area should be a high sustainable employment generator (ie attract those activities which tend to generate a large number of jobs);
- it should include uses that are “clean and green”;
- the IEA does not impact on the role and function of existing retail and commercial centres;
- it should be complimentary to the provisions of the Koala Coast Policy; and
- the IEA will not result in urban sprawl.

The above preconditions raise several issues, which are discussed below.

2.1.1 Employment Generating Activities

In order to determine the type of activities that tend to generate the greatest number of jobs, an analysis of jobs growth by industry sector in Queensland for the 1991 and 1996 censuses was carried out. This analysis indicated the following:

- a) the greatest growth in industry sector employment was in recreation, personal and other services with an increase of 70.9% (65,800 jobs) over the intercensal period;
- b) other high growth industry sectors were:-
 - i) finance, property and business services with an increase of 42.9% (57,100 jobs);

- ii) communications with an increase of 29.4% (5,400 jobs);
- c) industry sectors growing between 10% and 20% in employment over the intercensal period were manufacturing, construction, wholesale and retail trade, transport and storage and community services;
- d) industry sectors growing between 0% and 10% in employment over the intercensal period were mining plus public administration and defence.
- e) industry sectors which declined in employment in the intercensal period were electricity, gas and water (down 8.6%) and agriculture, forestry, fishing and hunting (down 0.3%).

Throughout Australia, 80.8% of all private sector enterprises had fewer than 5 employees in 1996/1997. In Queensland, some industry sectors were above the national average of 80.8% and others below it. This situation was as follows:-

- a) industry sectors above the national average (i.e. had a higher percentage of micro-businesses) were:-

• recreation, personal and other services	90.2%
• construction	89.8%
• mining	89.3%
• transport and storage	88.4%
• property and business services	85.6%
• finance and insurance	82.1%

- a) industry sectors below the national average (i.e. had a lower percentage of micro-businesses) were:-

• education	79.3%
• retail	76.8%
• health and community services	75.5%
• manufacturing	71.2%
• wholesale	63.8%
• accommodation, cafes and restaurants	57.5%

The above analysis indicates that those industry sectors with a lower percentage of micro-businesses tend to have a higher proportion of employment per establishment, with the highest sectors being:-

- accommodation, cafes and restaurants
- wholesale, and
- manufacturing.

Of those industry sectors with a higher proportion of employees per establishment, a number stand out as having high levels of part-time and casual employment, namely accommodation, cafes and restaurants; retail and to a lesser extent, health and community services and education. Manufacturing and wholesaling still have high proportions of full time employment.

In Queensland between 1991 and 1996, there was a strong shift towards increased female and part-time employment. This shift correlates particularly with the significant growth of jobs in recreation, personal and other services, but also the overall growth of jobs in the larger employing industries of retail and community services. The trend towards part time and casual employment is likely to have continued, as strongest growth in these industry sectors continues and as this form of employment is suited to many lifestyles. These type of employment opportunities need to be provided close to home as there is often less propensity to commute long distances for part time/or casual employment.

Not all activities in the high employment generating sectors identified above would be consistent with the “clean green” image being sought for the Shire. This would include many types of manufacturing activities. Further, manufacturing activities are strongly reliant on transport linkages for inputs and outputs and the Redland Shire competes with other employment areas within the Brisbane metropolitan area which have better accessibility.

Other ventures which appear to have high employment numbers are corporate offices and some IT research and development activities. However, as discussed in Section 3, these activities have quite specific locational requirements and experience greater employment fluctuations. Service activities mentioned above have traditionally been the most sustainable employment generators..

2.1.2 Local Business Requirements

The locational requirements of business and industry uses varies markedly with the nature of activity.

Some activities require small, high profile, high amenity sites, visibility to passing traffic and a sense of “address” being the most important locational considerations.

At the other end of the scale, some activities require larger less visible, low amenity locations, well buffered from public view and surrounding residents.

Whilst IEAs were conceived to allow activities from both these ends of the spectrum to co-locate, often the site, the land values and particular needs of activities may prevent this from being achieved in the one area.

For example, two economic opportunities identified for the Shire (discussed fully in Section 4) are marine service industries and horticultural / agricultural research. The former use is a low-moderate amenity use, whereas the latter use requires a high amenity. There are no synergies between the two types of activities and no apparent advantages in them being established in the same location.

Co-location of these activities may not achieve any benefits over separate locations in discrete areas.

2.1.3 Role and Function of Existing Centres

It is noted that uses envisaged in the IEA should be such that the IEA does not compete with existing centres. Furthermore, the uses envisaged should not include uses that could locate in the Shires' existing industrial areas.

On the first point, the IEA should not cater for retail commercial and service trades activities that would typically be expected within one of the Shires' major centres. Activities associated with centres are generally high to medium amenity, low scale and require high visibility. They are also often synergistic uses with linkages to other activities in the centre (eg. a motor repair centre obtains spare-parts from a component distributor). High to medium amenity uses therefore to be targeted by an IEA in Redland Shire would need to be ones with some comparative and competitive advantage within the Shire, including synergies with existing (non centre based) economic activities.

Uses that can be accommodated in existing industrial areas are also not intended for the IEA. It is noted however, that whilst Council has indicated there are some 50-55 hectares of land available for industry development within existing industry areas, population based estimates (discussed in Section 5) suggest some 240 hectares may be required for growth to the year 2016.

2.2 Definition of an Integrated Employment Area in Redland Shire

Based on the above discussion, an appropriate definition of an IEA in the Redland Shire context would be an area of land which:

- is not committed to any alternative higher order land use.
- is relatively constraint free and easily developed
- offers convenient access to the local and regional road network
- is not regarded as being environmentally sensitive
- can be buffered from surrounding residential areas
- is well located with respect to existing and/or future population concentrations.
- can be readily serviced with water, sewerage, electricity and communication infrastructure.
- comprises an area and ownership pattern that could facilitate comprehensive integrated planning.

- is to be used for the establishment of low impact employment generating activities with competitive and comparative advantage within the Shire, together with other supporting or synergistic employment generating activities.

The above criteria have been used as the basis for the initial selection of candidate sites within the Shire, discussed in Section 4.1. They were then further developed as evaluation criteria, discussed in Section 4.2.

3. Some Examples of Integrated Employment Areas

There are two quite recent examples of highly managed IEAs in the Brisbane Region. The Metroplex on Gateway development at Murarrie, and the Brisbane Technological Park at Eight Mile Plains. Some features and locational attributes of these are listed below.

3.1 Metroplex on Gateway

This site covers 62 hectares and comprises 40 lots ranging in area from 3000m² to 3 hectares. It is referred to as a Business and Industrial Park and is a product of Brisbane City Council's MIBA concept.

It provides several precincts catering for a variety of uses including:

- industrial and warehousing;
- service trade and light industries;
- business and corporate offices;
- convenience retail and showrooms;
- riverfront hotel/conference centre; and
- public open space, walkways.

Marketable features of the development, apart from its innovative and attractive layout include:

- high levels of accessibility (15 minutes from Brisbane CBD, the Airport and the Brisbane Port);
- strategically located on a 'cornerstone' site of Brisbane's Gateway Port Precinct;
- high quality buildings and landscaping achieved through an Architectural and Landscaping Code;
- high levels of management through an established management company (Metroplex Management Pty Ltd);
- considered a prestigious location due to its high visibility, relationship with Brisbane Port and the high level of "investment protection" delivered through architectural and landscape codes administered by management.

Current tenants include:

- | | |
|----------------------|-------------------------|
| • Schroders | • Fisher and Paykel |
| • Big Country | • Gresham Cosmetics |
| • Capral Aluminium | • Michael Hill Jeweller |
| • Filtronics Pty Ltd | • Edwards Dunlop |

Metroplex management advise there are currently around 650 employees in the estate. It is anticipated that employment could ultimately reach 4000-5000 once fully developed.

3.2 Brisbane Technology Park

This was developed in conjunction with the State Government and comprises 33 lots ranging from 3000m² to 1.33ha in a 32 hectare estate. The estate targets low impact, high profile technology based companies, light assembly firms, (no manufacturing), corporate technology, and research and development companies.

Its facilities include:

- Conference Centre/Office Facilities
- Bistro and Catering Centre
- Proposed Major Data Storage Centre
- Open Space

The estate is managed by the Department of State Development who also approve uses, building design and landscaping plans.

It again is a highly accessible location with convenient access to the south East Freeway and the Gateway Arterial. It is served by high quality and affordable very high band width fibre optic cabling linked into the Pacific Innovative Corridor (refer Section 6.1.9).

Current Uses Include:

- Cook Australia (medical equipment and research developer and exporter)
- Retail Technology (software)
- Qld Manufacturing Institute

According to DSD, there are presently about 1000 employees on site, with expected job numbers to increase to 4000-5000 in 3-4 years.

3.3 Norwest Business Park - Sydney

This has been touted as the first 'true' Business Park in Australia and was modelled in the mid eighties on the best examples of business and office parks in the United States. It covers an area of approximately 400 hectares (originally in single ownership) in the rapidly growing North West sector of Sydney. Population over the next 20 years is expected to increase from around 30,000 to 250,000 residents. The area is served by Sydney's M2 Freeway and is sited on what will eventually be the Western Sydney Orbital/Castleway Freeway.

It has a potential catchment population of 600,000 within commuting distance.

Features of the Business Park include:

- Office and Industrial use;
- Retail;
- Residential Precincts;
- Hotel; and
- Warehousing

The Norwest Business Park is a privately developed and fully managed estate, with design cornerstones being environmental excellence and achievement of human scale, (ie making the Park an alternative place to work recreate and do business in).

3.4 Yatala Enterprise Area

A different form of IEA developing close to Redland Shire is the Yatala Enterprise Area (YEA). Unlike those discussed above, this is not a managed estate, rather a major long term employment precinct being actively promoted by Gold Coast City Council.

The YEA will cater for a range of business and industry uses, with emphasis being on those activities requiring larger sites. Food processing activities, marine support industries, environmental recycling activities as well as warehousing, building services industries and manufacturing are being targeted.

This area, comprising some 2000 hectares, is expected to accommodate some 20-25000 jobs ultimately. Unlike the previous examples, the absence of tight management controls and nature of activities suggests high profile business activities seeking landscaped settings would not be attracted to Yatala.

3.5 Discussion

The above three examples of managed IEAs have the following in common:

- they are in locations with excellent transport linkages;
- they are in either highly visible locations and/or central to substantial population catchments;
- they are/were in single ownership;
- they can attract high quality/high profile land uses due to their accessibility, synergies with existing/proposed uses, management structure, location with respect to the CBD and higher socio-economic residential areas;

- they have high capacity communications infrastructure; and
- they can attract uses with a high “office” content which deliver quite high employment numbers.

Opportunities for such forms of IEA within Redland Shire are considered limited for the following reasons:

- there are few available sites that have the high visibility / profile that appeals to tenants of this form of IEA;
- the nature of the Shire’s comparative and competitive advantages is not as conducive to attracting high profile tenants;
- high capacity, low cost communications infrastructure is currently not available;
- there are no sites which offer the desired levels of accessibility to the CBD, Airport or Sea Port and the regional road network, and
- uses with high office component are required to be located in or adjacent to one of the existing centres within the Shire to reinforce the role and function of the Centre.

However, there are two locations within the Shire which are considered to have some of the attributes for an IEA of this type. One would be the DPI Research Centre at Cleveland (further investigations of which have not been carried out for this study due to current land use commitments on the site), and the other being the Commonwealth land at Birkdale Road, Birkdale, (Area 1 in this investigation).

Having said the above, Redland Shire has attracted footloose, higher profile activities in the past such as Fisher and Paykel because of the Shire’s comparative advantages in terms of lifestyle. It is possible that other similarly driven activities will also locate in the Shire (if land is available), although those activities requiring any of the locational attributes referred to above are more likely to be attracted to developments such as the Metroplex Estate. The Fisher Paykel administration and distribution functions have established in the Metroplex development as an example.

Another important consideration will be the ability of the Shire to attract a developer of an IEA. Councils that send signals to the development industry that they have a clear vision for the economic development in their Shire together with a consistent record of attracting and facilitating quality development are more likely to attract investment, particularly where other locational benefits are available

4. Identification and Evaluation of Candidate Sites

4.1 Site Identification

Broad site selection criteria were developed based on the definition and requirements of an IEA discussed in Section 2.2, and used in the identification of possible candidate sites.

The criteria included:

- site area should be sufficient to enable establishment of an “estate”, with a minimum area of 30 hectares (the 1993 DBIRD publication “*Best Planning Practices for Business Parks*” indicates an area of 40 hectares may be required, however the Brisbane Technological Park is around 32 hectares. The actual area required will depend on site, characteristics and location, and type of IEC being considered);
- sites with relative proximity to the existing and future urban areas of the Shire;
- were not excessively fragmented or at least contained several larger sized holdings.
- sites which were cleared or largely cleared of native vegetation;
- sites which had frontage or close proximity to distributor and high order roads;
- sites which were not identified for some higher order use, or entirely identified as Open Space or Special Protection Area under the Shire Strategic Plan; and
- sites which were not identified as being located in the Leslie Harrison Dam water supply catchment.

This was necessarily a coarse analysis from which 11 sites within the Shire (including sites already identified by Council) were selected for further evaluation. These sites are shown on Figure 1.

4.2 Site Evaluation Criteria

Site evaluation criteria were a development of the selection criteria mentioned above and also reflected those criteria identified by the Redland Shire Council (Community Planning Committee Agenda, 09/02/00, p12), and in Best Planning Practices for Integrated Employment Areas Information Paper and Guidelines (GHD, 1995).

The site evaluation criteria are described below.

4.2.1 Access and Traffic

Both Redland Shire Council and the IEA Guidelines discuss the importance for many activities of access to the local and regional road networks. Locations close to national, State and interstate highways and transport facilities are favoured because of the need to transport goods to and from other regions with minimum delay. In addition, business and industry activities are becoming increasingly “market orientated”, with IEAs requiring locations that are easily accessible to the community.

i) Access to the local road network.

For the purposes of this study, the local road network refers to the distributor and higher order roads identified in the Redland Shire Transportation Study Draft Final Report (VLC, et al., 1998). All but two of the candidate sites have direct frontage to the Shire’s distributor roads. These roads are better able to accommodate traffic flows generated by the IEA and are the most likely future public transport routes.

ii) Access to the regional road network.

IEAs should have convenient access to the regional road network. The regional road network has been identified as the Gateway Arterial, the South-east Freeway, and the Gateway Motorway. Those sites with closest access to the regional road network rate highest.

4.2.2 Ability to Service Site

Any potential employment centre must be able to be adequately serviced by water and sewerage. Preliminary investigations were carried out to assess the serviceability of each site and the relative costs of servicing.

Electricity and communication services are generally provided to areas as required, and consultations with Energex confirmed there would be no difficulty in providing or upgrading electricity to each of the areas.

4.2.3 Leslie Harrison Dam Catchment

To prevent water quality issues arising from the development of an IEA, a candidate site must not be located within the Leslie Harrison Dam water supply catchment.

4.2.4 Environmental Sensitivity

Redland Shire Council supports the concept of an IEA, providing that it is complimentary to the provisions of the *SPP 1/97: Conservation of Koalas in the Koala Coast (SPP 1/97)*. *SPP 1/97* allows for development to proceed where it can be demonstrated that there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposed use. The *SPP 1/97* also recognises that some habitat disturbance has already occurred, some of the bushland is fragmented, and that there are some barriers to movement.

The *SPP 1/97* does not prevent development from occurring, but requires detrimental impacts on koala habitat values to be minimised. For these

reasons, sites which are largely cleared but are also located within the Koala Conservation Area have been identified and included in the evaluation.

This criteria also takes into consideration Council's Environmental Inventory and Strategic Planning desired land uses. These are shown in Figures 2 and 3 (Environmental Inventory) and Figures 4 and 5 (Greenspace).

4.2.5 Landscape and Visual Values

The sensitivity of the visual landscape and landforms to development is also an important consideration for site evaluation. The landscape and visual values for each candidate site have been determined from the Redland Shire Council Landscape and Visual Assessment report (Gillespies Asia Pacific, 1995). The Landscape and Visual Assessment report identifies fourteen Land Units, and the associated sensitivity to alteration.

Each Land Unit is characterised by its landform, vegetation and vistas, with the associated sensitivity to alteration being rated on a scale of low, medium to low, medium, or high. Each of the sites was assessed in terms of their sensitivity to alteration as identified in the Landscape and Visual Assessment Report and as supplemented by ground truthing.

4.2.6 Land Use and Amenity

IEA's may need to be located sufficiently far away from existing and future residential areas to minimise the impacts of heavy vehicle traffic, noise, light, odours and other emissions detracting from residential amenity.

Compatibility with adjacent land uses.

A number of considerations were made in this evaluation criterion. Candidate sites must be already buffered from existing or proposed residential development or environmentally sensitive areas, or have the ability to incorporate buffering on the site.

Equally as important, is the minimisation of the negative impacts of incompatible development. This is closely tied with the above comments.

Appropriate distance to nearest residential areas.

It is recognised that some businesses in an IEA may operate all night and during the weekend. It has been identified that it is favourable that IEAs are located in close proximity to urban and population centres. However, it is also essential that IEAs are located sufficiently far away from these areas such that detrimental impacts associated with noise and odours are minimised.

Dominant land use (Figures 6 and 7), and zoning (Figures 8 and 9) are shown overleaf.

4.2.7 Air Quality

While IEAs are intended to accommodate 'clean green' activities, some environmental or horticultural activities which could fall into this category may have potential to cause periodic air quality concerns. The location of IEAs in respect to the nearest residential areas and prevailing winds also warrants inclusion as an evaluation criteria.

Wind roses produced by the Environmental Protection Agency at Eagle Farm indicate that the predominant winds during the day come from the south-west, east and north-west. At night, predominant winds tend to be more limited to the south west. The preferred location of IEA from an air quality/circulation prospective would be to the north east of the nearest residential areas, whereas locations immediately south west of residential development may require additional buffering.

4.2.8 Economic Aspects

As mentioned previously, business and industry activities are becoming increasingly “market orientated”. IEAs therefore require locations that are easily accessible, central and close to major concentrations of residential population and other businesses. Locations on major arterials, especially locations near major intersections are likely to be favoured.

Site Exposure

A candidate site with high visibility, exposure to passing trade and a ‘prestigious’ location has numerous benefits for the development of an IEA. A subjective comparison of each of the sites was carried out in respect to this criteria having regard to site aspect, road function and surrounding development.

Access to Existing and Future Population.

A favourable attribute of the location of an IEA is the close proximity to urban and population centres and integration into growth corridors for ease of accessibility between work place, residence and availability of workforce. Furthermore, overseas experience has shown there should be “outgrowth” areas for home-based industries within 5 kilometres of all residential areas. Therefore in the evaluation, those sites with the highest proportion of population within 5 kilometres rate highest.

4.2.9 Slope

IEAs are best located on generally flat land, as sites with slopes less than 10% are more likely to be economically developed, as earthworks and building costs are minimised. However, it must be noted that sites with slopes less than 5% may need to be investigated for potential drainage problems. This evaluation criterion is measured as the percentage of the site with a slope between 0 and 5%. Slope maps are shown in Figures 10 and 11.

4.2.10 Land Ownership

Land ownership patterns will influence the potential availability of the site for development. Sites under single ownership can more readily be planned and serviced and avoided the need for lot amalgamation and protracted negotiations with multiple owners with differing expectations. Sites with the fewest ownerships rate highest in the evaluation. Figures 12 and 13 show land ownership patterns.

4.3 Site Evaluation

This section outlines the attributes of each candidate site and a brief discussion on how it rated in relation to the above evaluation criteria.

4.3.1 Area 1 - Birkdale Road, Birkdale

This site consists of 89.84ha of largely Commonwealth owned land currently zoned Public Purpose which is located adjacent to Birkdale Road in Birkdale. The Preferred Dominant Land Use of the site is Special Protection Areas and Special Facilities/Public Purposes. Surrounding land uses consist of open space (Special Protection Areas) to the west and south-west, Integrated Employment Areas to the south, Urban Residential to the east and mixed residential land uses to the north. Existing land use consists of grazing and the location of a number of Commonwealth radio transmission towers and buildings. The site and surrounding development has a high ranking in terms of compatibility with an IEA.

Topography is flat (all of site 0 - 5% slope), with possible constraints due to flooding in some areas. The site has the highest ranking in terms of slope.

The site is partially cleared, with the remaining vegetation providing important habitat and movement characteristics and has high ecological values. The site is entirely within an area defined as Greenspace Habitat and Special Protection Area in Council's Strategic Plan. The site is also part of the Koala Conservation Area. Sections of the site are listed as Major Habitat under Council's Environmental Inventory. The site has a low ranking in terms of the environmental sensitivity criterion.

The visual landscape is classified as Lowland Transition and has a medium sensitivity to alteration, resulting in a moderate ranking for this criterion.

The site is well serviced with distributor road access off Birkdale Road. The site is the closest to the Brisbane CBD, and it is 10km from the Gateway Motorway. As a result, the site ranks highly in terms of access to both the regional and local road network.

The site has access to mains water, and a \$1.9 million trunk sewer system to Thorneside Water Pollution Control Works is to be constructed through the site during 2002/3. The site ranks highly for this criteria.

The nearest residential areas are located on all sides of the site, with exception to the west. In terms of the prevailing wind directions for the Shire, the site performs poorly.

The site has a 5km catchment population of 51,039, which has the highest population catchment of all candidate sites.

The street frontage is very prominent and very accessible and the site has a high compatibility rating with adjacent land uses. However, as the site is also located adjacent to existing residential areas, ranking low in terms of the "appropriate distance to residential areas" criteria.

In terms of ownership pattern, there are three holdings for the site, resulting in a high ranking for this criteria.

4.3.2 Area 2 - Taylor Road, Mt Cotton

This site consists of two major sections, east and west of Taylor Road with a total area over 400ha. The Preferred Dominant Land Use of the site is Non Urban. The site is defined by Duncan Road to the north, Mount Cotton Road to the west and Woodlands Drive to the south and south-east. Zoning on the site is predominantly Rural/Non-Urban, with Habitat Protection and Rural Water Supply and Public Purposes zonings towards the west of the site. Surrounding land use is similar in all directions except the north which is zoned Park Residential and some Residential Low Density. Land use within the site is a mix of grazing, high intensity animal husbandry, educational and numerous large residential allotments. Therefore, the surrounding land uses are considered to be moderately compatible with a proposed IEA.

Topography is gently undulating over most of the site with 99% of the site have slopes between 0 and 5%, obtaining a low ranking for the slope criterion.

A mosaic of remnant vegetation exists over the site. The eastern half has more cleared lands with only two or three large vegetation remnants. The western half of the site has a greater vegetation coverage and is located entirely within Greenspace Habitat area in the Strategic Plan. In addition, most of the remnant vegetation stands have been identified as Other Major Habitat under Council's Environmental Inventory with the remainder of vegetation General or Enhanced Habitat. The western boundary is also adjacent to the Koala Conservation Area. These remnants provide a north-south vegetation linkages through the site. As a result, the site has the lowest ranking for the environmental sensitivity criterion.

The site has good access from Mount Cotton and Redland Bay Roads in particular, and is located 13km from the Gateway Motorway. Therefore, the site ranks highly in terms of access to the local road network, and moderately in terms of access to the regional road network.

Water is available at the southern end of Taylors Road via a 450mm main Area 2 is not sewerred, however the site could be serviced by Cleveland Water Pollution Control Works provided that Area 6 is not developed and that the sewage from Area 2 does not exceed 39L/s. If both Area 2 and Area 6 are developed, a new treatment facility would be required. Constraints exist to sewerred the southern section of the site. The site ranks moderately for services.

The closest residential areas are located to the north and north-east of the site. Taking into consideration the prevailing wind direction, the site performs moderately for this criterion.

There are a number of land use constraints including the large number of residential allotments, existing major industries (poultry, quarries) Sheldon College and Pine Mountain Equestrian Centre. These later two uses also provide potential opportunities for related education / training ventures.

The existing vegetation provides both buffering opportunities but also make the site sensitive to visual alterations. The site is classified as Upland Forest (high sensitivity to visual alteration) and Settled Upland (medium sensitivity to visual alteration), resulting in a moderately rank.

The area has a 5km catchment population of approximately 28,257, ranking moderately for this evaluation criterion. The site has a high to moderate compatibility ranking with adjacent land, but as it is also located adjacent to existing residential areas, ranking low in terms of this criterion.

The site ranks the lowest of all candidate sites in this criteria, as there are 128 holdings for this site.

4.3.3 Area 3 - Between Double Jump And Giles Road, Redland Bay

This area consists of 292ha, and is zoned Special Rural. The site currently consists of a mix of lifestyle and home occupation (cattery, kennels, mechanic, rural storage, produce store). The Preferred Dominant Land Use of the site consists of Non Urban, Special Protection Areas, Special Facilities/Public Purpose (cemetery). The site has minimal topographic interest, with elevated areas to east viewing the Bay. Over 99% of the site has slopes of between 0 and 5%. Surrounding land uses are primarily rural, with potential future urban development to the east. Therefore, the site ranks moderately in terms of compatibility of surrounding development with a proposed IEA.

The area is largely cleared with some larger remnants in the east or associated with drainage lines running north-south across the site. These remnants are identified in the Strategic Plan as providing links to coastal habitat and the Koala Conservation Area. A number of these remnants are identified as General Habitat under the Environmental Inventory, some of which link to Priority Areas both north and south of the site. The site is also located entirely within the Koala Conservation Area. Low lying sections will be subject to inundation. Therefore, the site ranks low in terms of this criterion.

The visual landscape is defined as Undulating/Lowland Terrain Watercourse with a medium to low sensitivity to visual alteration. The site ranks highly in terms of this evaluation criterion.

The site is accessed from Cleveland Redland Bay Road or from Double Jump Road to the north, and is located 15km from the Pacific Highway. Thus, the site ranks highly in terms of access to the local road network and low in terms of access to the regional road network.

Mains water is available to the site via large trunk mains on Heinemann Road, however the site is not sewered. Sewerage could be connected to Victoria Point Water Pollution Control Works. Sewering the western section of the site would be difficult given the undulating ground. A significant study would be required to evaluate the feasibility of sewerage the site. The site therefore scores moderately in this criterion.

The nearest residential areas are located to the east and north-east of the site. In terms of the prevailing wind directions for the Shire, the site performs moderately poor.

The 5km catchment population is approximately 15,762, scoring moderately in terms of access to existing population.

The site has a moderate ranking in terms of compatibility with adjacent land uses (Residential, Special Protection, Non Urban And Special Facilities/Public Purposes), and a low ranking in terms of appropriate distance from residential areas, as it is located adjacent to existing residential areas.

The number of holdings for Site 3 is 51, resulting in a low ranking in terms of ownership pattern.

4.3.4 Area 4 - German Church Road, Redland Bay

This site consists of 108ha, which is zoned Special Rural to the north, and Rural/Non Urban to the south. The Preferred Dominant Land Use of the site is Non Urban. Surrounding land uses are generally compatible and include a major waste transfer station and quarry. Land use to the north includes Special Facilities/Public Purposes and Non Urban; to the south, Special Protection Area and Special Facilities/Public Purposes; to the west, Non Urban; and to the east, Special Protection Area, Special Facilities/Public Purposes, Residential/Low Density and Urban Residential. The site is opposite a large conservation area. Land use within the site is rural, and includes a large plant nursery and poultry farm. It is considered that the surrounding land uses are highly compatible with the proposed IEA, with the site retaining the highest ranking in terms of this criterion.

The area is undulating for the majority of the site (92% of site 0 - 5% slope) which may provide some constraints. However a number of building platforms have been established. These slope constraints result in the site gaining a low ranking in terms of slope.

The site is largely cleared, but includes small sections of Priority Habitat Area (under Council's Environmental Inventory) to the west and south, adjoining larger Priority areas in these directions. The site is also located within the Koala Conservation Area. The visual landscape of the site is defined as Upland Forest (high sensitivity to visual alteration) and Undulating Forest Terrain (high sensitivity to visual alteration). Therefore, the site is given a moderate ranking in terms of the environmental sensitivity criterion, and a low ranking for the landscape and visual values criterion.

There is good access to the distributor road network onto Cleveland Redland Bay Road or German Church Road. The site is located 14km from the Pacific Highway, indicating moderate access to the regional road network.

The site is supplied with water and a 300mm trunk sewer has now been extended close to the area. It would be feasible to connect the sewer to Victoria Point Water Pollution Control Works. The site therefore has a high ranking for this criterion.

The nearest residential areas are located to the east and north-east of the site. In terms of the prevailing wind directions for the Shire, the site performs moderately.

The 5km catchment population is approximately 12,844, gaining a moderate ranking in terms of accessibility to existing population.

The site has a high compatibility ranking with adjacent land uses (including waste recycling facility, rural uses), ranking the highest for this criterion. The site is also located adjacent to a small area identified for future park residential purposes, it ranks moderately in terms of appropriate distance from residential development.

The site ranks highly in terms of ownership pattern, as there are three holdings for this site.

4.3.5 Area 5(a) - Serpentine Creek Road, Redland Bay

This site contains an area of 60ha, which is zoned Rural/Non Urban. The Preferred Dominant Land Use of the site is Non Urban and Special Protection Area. The site is used for small acre cropping and is located adjacent to Moreton Bay. The surrounding land uses are primarily rural however there are Residential/Low Density and Urban Residential areas to the north. Therefore, it is considered that there is moderate compatibility between surrounding land uses and a proposed IEA.

The site has a gentle slope towards the coast of between 0 and 5%. All stormwater from the site would discharge directly into Moreton Bay. As a result, the site has obtained a moderate ranking in terms of slope.

The site is largely cleared, although it fringes marine ecosystems listed as Special Protection Areas under Council's Strategic Plan. There is also a small protected remnant within the site and another immediately to the south. The visual landscape of the site is classified as Coastal Rural with a medium sensitivity to visual alteration. Therefore the site ranks low in terms of both the environmental sensitivity criterion and the landscape and visual values criterion.

The site ranks moderately in terms of access to the regional road network, as it is located approximately 15km from the Pacific Highway. In terms of the distributor road network, the site is accessed from Serpentine Creek Road and is highly visible from this road.

Water is available from the nearby 150mm main however this would be insufficient to service the site. A 750mm trunk main could be taken from the 750mm Stradbroke Island main. A 250mm main, costing \$125,000, is planned for 2009/10. There is no sewerage service to the site. Sewerage would be extremely expensive and a significant feasibility investigation would be required. The site has a low ranking for services.

The nearest residential areas are located to the north of the site. In terms of the prevailing wind directions for the Shire, the site is ranked very highly.

The 5km catchment population is 3,543, ranking low for this evaluation criterion. The site is located some 300m from existing residential areas, and this ranks moderately.

The site has moderate compatibility with adjacent land uses (Special Protection, Non Urban, Residential/Low Density).

The number of holdings for this site is four, resulting in a moderately high ranking in terms of ownership pattern.

4.3.6 Area 5(b) - South of Scenic Drive

This site consists of 60ha of cleared grazing land zoned Non Urban, and Public Purposes. The Preferred Dominant Land Use of the site is Non Urban, Special Protection Area and Special Facilities/Public Purposes. Land use on the site is Non Urban and Special Protection Area. Surrounding land uses are predominantly Non Urban with a large cluster of residential properties immediately to the east. Therefore, the site ranks moderately in terms of compatibility of an IEA and surrounding development

The site's topography varies from flat to undulating, which included man-made features on the eastern side of the site (dam wall). The entire site has slopes between 0 - 5%, resulting in a relatively high ranking for this criterion.

The site is predominantly cleared, with exception to a small protected remnant on the western side. The site is just outside the Koala Conservation Area but is included in the Greenspace Habitat area under the Strategic Plan. The protected remnant and areas immediately to the west are listed as Priority Habitat under Council's Environmental Inventory. Park residential allotments to the east are listed as Major Habitat. The rear of the site will have constraints from inundation unless the existing dam is drained and the site levelled. As a result, the site ranks highly in terms of the environmental sensitivity criterion.

The visual landscape is classified as Coastal Rural with a medium sensitivity to visual alteration. The site ranks low in terms of the landscape and visual values criterion.

The site is located approximately 14km from the Pacific Highway, indicating moderate access to the regional road network. Good access to the local distributor road network is also provided, as the site is located on Serpentine Creek Road. The site is highly visible from this road.

Water is available from the nearby 150mm main however this would be insufficient to service the site. A 750mm trunk main could be taken from the 750mm Stradbroke Island main. A 250mm main, costing \$125,000, is planned for 2009/10. There is no sewerage service to the site. Sewerage would be extremely expensive and a significant feasibility investigation would be required. The site has a low ranking for the provision of services.

The nearest residential areas are located to the north and east of the site. In terms of the prevailing wind directions for the Shire, the site is ranked very highly.

The 5km catchment population is 1,947, ranking very low in terms of access to existing population. The site ranks moderately well in terms of distance to existing and future residential areas, being 400m to the nearest residential area.

The site has a moderate compatibility ranking with respect to adjacent land uses (Special Protection, Non Urban, Urban Residential).

The site ranks highly in terms of ownership pattern, as the number of holdings is two.

4.3.7 Area 5(c) - West of Serpentine Creek Road

This site consists of 69ha of cleared grazing land including a large poultry processing plant on the southern side. The Preferred Dominant Land Use of the site is Non Urban. The site is zoned Rural/Non Urban, and surrounding land uses are similarly rural other than a Special Protection Area to the east. The site has a moderate compatibility ranking with adjacent land uses (Special Protection Area, Non Urban, Urban Residential).

The topography of the site consists of gently undulating slopes, with the entire site having slopes less than 5%. Thus, the site ranks moderately low in terms of slope.

There is little remnant vegetation on the site, however the whole area is listed as Greenspace Habitat under the Strategic Plan. The site is excluded from, but borders the Koala Conservation Area. The western boundary of the site is also adjacent to areas listed as Priority under Council's Environmental Inventory, and Major and General Habitat areas are located to the north. This site is considered to have a relatively high ranking in terms of the environmental sensitivity criterion.

The site is classified as having a Coastal Rural (medium sensitivity to visual alteration) and Undulating Forest Terrain (high sensitivity to visual alteration) visual landscape. As a result, the site ranks very low in terms of the landscape and visual values criterion.

There is good access to the local road network and moderate access to the regional road network, as the site is located on Serpentine Creek Road and is 14km from the Pacific Highway.

Water is available from the nearby 150mm main however this would be insufficient to service the site. A 750mm trunk main could be taken from the 750mm Stradbroke Island main. A 250mm main, costing \$125,000, is planned for 2009/10. There is no sewerage service to the site. Sewerage would be extremely expensive and a significant feasibility investigation would be required. The site has a low ranking for the provision of services.

The nearest residential areas are located to the east of the site. In terms of the prevailing wind directions for the Shire, the site is rated very highly.

The site rates very low in terms of access to existing population, as the population contained in a 5km radius is approximately 1,947 persons.

The nearest residential area is located 1.2km from the site, therefore the site rates highly in terms of this criterion.

As the site has one holding, it ranks highly in terms of ownership pattern.

4.3.8 Area 6 - Kinross Road, Thornlands

The site consists of 153ha, on both sides of Kinross Road. The site is zoned Rural/Non Urban, Restricted Open Space and Public Purposes (dog and livestock pound). The Preferred Dominant Land Use of the site is Non Urban and Special Protection Area. Land use on the site is predominantly Non Urban (with large areas or Special Protection Areas at the northern end of the site) with surrounding land uses being Residential/Park Residential. Potential future urban areas exist to the east. There are a number of park residential blocks adjacent to Duncan and Kinross Roads at the southern end of the site. Major nurseries and some rural industries are also present. It is therefore considered that the proposed IEA is moderately compatible with surrounding development.

The topography of the site is undulating, with approximately 95% of the site retaining slopes between 0% and 5%. Thus the site has a moderately low ranking in terms of slope.

The site is predominantly cleared in the southern section, with a large area of remnant vegetation at the northern end of the site. This is listed as a Priority area under Council's Environmental Inventory. The balance of the site includes Enhanced, General and Major Habitat categories. The site is located outside the Koala Conservation Area. In comparison to other candidate sites, this site ranks relatively low in terms of the environmental sensitivity criterion.

The site is classified as having a Settled Upland visual landscape unit, with a medium sensitivity to alteration. In comparison to other candidate sites, this site ranks the moderately in terms of the landscape and visual values criterion.

The site is located 13km from the Gateway Motorway, with site access from Boundary and Kinross Roads. It therefore ranks highly in terms of access to both the regional and local road network.

A water supply is available from Panorama Drive. Despite being close to the Cleveland WWTP, sewerage is currently not provided. However, development west of the site allows the construction of a 450mm rising main in the next six months. This main will allow a maximum of 39L/s from the site to be treated at Cleveland Water Pollution Control Works. This site has a high ranking in relation to the provision of services.

The nearest residential areas are located on all sides of the site, with exception to the south. As a result, the site ranks low in terms of the prevailing wind directions for the Shire.

The population contained in a 5km radius of the site is approximately 41,529 persons, ranking highly with respect to current population. The site is adjacent to existing and future residential areas, ranking very low in terms of land use compatibility.

The site has a moderate compatibility ranking with adjacent land uses (Special Protection Area, Non Urban, Urban Residential).

This site comprises 32 land holdings, resulting in a moderately low ranking in terms of ownership pattern.

4.3.9 Area 7 - Marlborough Road/Main Road, Wellington Point

This site is located either side of Marlborough Road and extending south-east along Main Road, Wellington Point. It consists of 47ha of land currently zoned Rural/Non Urban. Around Marlborough Road, this area forms the non-urban delineation between the suburbs of Wellington Point and Birkdale.

The Preferred Dominant Land Use of the site is Special Planning Intent. The site is currently used for horticultural purposes. Surrounding land uses include Urban Residential (east and south), Residential/Low Density (south), Special Facilities/Public Purposes (north and east) and Public Open Space (north). These uses are considered to be moderately compatible with an IEA.

The topography of the site is considered flat to gently undulating, with the entire site retaining slopes less than 5%. Thus, the site rates very highly in terms of slope. The site is predominantly cleared, and traversed by remnant vegetation linkages. An eastern portion of the site, either side of Main Road is contained within the area defined as Greenspace Habitat in Council's Strategic Plan. The western portion, either side of Marlborough Street, is contained within the Dominant Landscape And Visual Values area. The site is not part of the Koala Conservation Area, nor is it identified in Council's Environmental Inventory.

The Landscape and Visual Assessment Report identifies the site as being contained within two land units, namely Settled Lowlands, with low sensitivity to alteration, and Lowland Transition, with a medium sensitivity to alteration. In comparison to other candidate sites, the site has a low rating.

The site's access to the regional road network is considered to be moderate, as the site is 14km from the Gateway Motorway. The nearest distributor road is Old Cleveland Road East/Birkdale Road, collector road access to which would be along either Birkdale Road or Main Road. Both these latter roads are principally residential collectors. Therefore, the site rates moderately in terms of access to the regional road network, and low in terms of access to the local road network.

It is expected that the site can be provided with water, sewerage, electricity and communications services, given the adjacent residential development.

The site is not in a highly visible or prestigious location. It rates low in terms of synergies with existing employment activities, being predominantly surrounded by residential development.

The site rates very highly in terms of accessibility to the existing population, with approximately 50,598 persons living within a 5km radius of the site. However, the site rates low in terms of distance to the nearest residential areas, as the site is adjacent to residential development towards the east.

The site ranks moderately in terms of ownership pattern, as there are 18 holdings for the site.

4.3.10 Area 8 - Woodlands Drive, Sheldon

This site is located on the southern side of Woodlands Drive, Sheldon, and consists of 277ha of land currently zoned Rural/Non Urban. The Preferred Dominant Land Use of the site is Non Urban. Surrounding land uses include Special Facilities/Public Purposes (Nazarene Theological College), Non Urban, Park Residential, and Urban Residential to the north; Special Protection Area and Non Urban to the south; and Non Urban to the east and west. These uses are considered to be highly compatible with the proposed IEC.

The topography of the site is undulating, with 7% of site retaining a slope between 5% and 10%, resulting in possible slope constraints towards the east of the site. Therefore, the site ranks low in terms of slope.

The site is partially cleared, with remnant vegetation linkages traversing the site. A watercourse and the eastern portion of the site are contained within the area defined as Greenspace Habitat in Council's Strategic Plan. The site is not part of the Koala Conservation Area. Sections of the site are listed as Major, General and Enhanced Habitat under Council's Environmental Inventory. Existing land use consists of rural residential lots, some containing rural and agricultural based industries. Therefore, in terms of the environmental sensitivity criterion, the site ranks moderately.

The Landscape and Visual Assessment Report identifies the site as being contained within two land units, namely Settled Upland, with medium sensitivity to alteration, and Undulating/Lowland Terrain Watercourse, with a medium to low sensitivity to alteration. Thus the site ranks moderately in terms of the landscape and visual values criterion.

The site's access to the regional road network is considered to be low, as the site is located 16km from the Gateway Motorway. Access to the site is gained from Woodlands Drive and Springacre Road. The site does not have direct access to the Shire's distributor road network, with the nearest distributor road being Boundary Road. As a result, it ranks moderately in terms of access to the local road network.

Water is available to the site, from a 450mm trunk main at the southern end of Taylors Road. No sewerage services are available to the site, however the sewerage could be connected to Victoria Point Water Pollution Control Works if a new trunk main was constructed at the plant and a trunk sewer was constructed for the site. This option would have a significant cost. The site has a low ranking for service criterion.

The nearest residential areas to the site are located in an area between north and east. In terms of the prevailing wind directions for the Shire, the site is ranked relatively highly.

In terms of a high profile, visible and prestigious nature of the site, the site is considered to have a moderately low ranking.

The site ranks moderately in terms of accessibility to the existing population, with approximately 20,809 persons living within a 5km radius. The site also ranks moderately high in terms of appropriate distance from the nearest residential areas, the closest being approximately 500 metres distance.

There are 33 holdings for Site 8, resulting in a moderately low ranking in terms of ownership pattern.

4.3.11 Site 9 - Mount Cotton Road, Mount Cotton

Site 9 is located on Mount Cotton Road, Mount Cotton, and contains an area of 203ha. The site is predominantly zoned Rural/Non Urban, with pockets of Public Purposes zoned land on the corners of Krause and Seaview Roads (hall and place of worship). The Preferred Dominant Land Use of the site is Non Urban and Special Facilities/Public Purposes. The site is generally surrounded by Non Urban land uses, with a Special Protection Area located west of the site. East of the site a mixture of land uses exist, including a mixture of residential development (ie. Park Residential, Residential/Low Density and Urban Residential), Special Protection Area, Special Planning Intent and Special Facilities/Public Purposes (school). These uses are considered to be moderately compatible with the proposed IEC.

The topography of the site is undulating, with nearly one-third of the site being constrained by slopes between 5% and 10%. As a result, the site ranks among the lowest of all candidate sites in terms of slope.

With the exception to the western parts of the site, the site is predominantly cleared. However, approximately half the site is contained within an area defined as Greenspace Habitat in Council's Strategic Plan. The site is also part of the Koala Conservation Area. Sections of the site are listed as Major, Enhanced, General and Priority Habitat under Council's Environmental Inventory, with the Major and Priority Habitat predominantly located along the south-western boundary of the site. Existing land use consists of large lots predominantly used for grazing purposes. Therefore, in terms of the environmental sensitivity criterion, the site ranks moderately.

The Landscape and Visual Assessment Report identifies the site as being contained in the Settled Upland land unit, which has a medium sensitivity to alteration by development. Therefore, in terms of the landscape and visual values criterion, the site has a low ranking.

The site is very well located in terms of access to the regional road network, as it is located approximately 11km from the Pacific Highway. In terms of the local road network, the eastern frontage of the site is serviced by Mount Cotton Road, identified as an distributor road by the Redland Shire Transportation Study (1998). The northern frontage of the site is located on Krause Road, and Seaview, Darwalla, and Hillview Roads also provide access to the site. Therefore, the site ranks very well in terms of access to the local road network.

Water is supplied to the site via an existing large mains, however low water pressure could be a problem as the site is located higher than neighbouring reservoirs. A new reservoir and pump may be required to adequately service

the site. There are no sewerage services at the site, however the sewage could be treated at Mt Cotton Water Pollution Control Works if the treatment plant was significantly upgraded and a major trunk sewer constructed for the site. This site has the lowest ranking for the provision of services.

The nearest residential areas are located towards the east of the site. In terms of the prevailing wind directions for the Shire, the site is ranked moderately.

In terms of a high profile, visible and prestigious nature of the site, the site is considered to have a very low ranking, due to its' location away from the more major roads in the Shire, and the undulating nature of the site obscuring a large proportion of the site from Mount Cotton Road.

The site ranks very low in terms of accessibility to the existing population, with only 2,395 persons residing within a 5km radius of the site. The site is adjacent to residential development, therefore ranking moderately low in terms of this criteria.

The site ranks moderately in terms of ownership pattern, as there are 27 holdings for the site.

4.3.12 Site 10 - Giles Road, Redland Bay

Site 10 is located on Giles Road, Redland Bay, contains an area of 78ha, and is zoned Special Rural. The Preferred Dominant Land Use of the site is Non Urban. The site is generally surrounded by non urban land uses, with a Council quarry (ie. Special Facilities/Public Purposes) located to the east, and a Special Planning Intent and Special Protection Area to the south of the site. These adjacent land uses are considered to be moderately compatible with the proposed IEC.

The topography of the site is undulating, with approximately 98% of the site with slopes between 0% and 5%, and with less than 2% of the site retaining slopes between 5% and 10%. Therefore, the site ranks highly for this evaluation criteria.

The site is predominantly cleared, with the western portion of the site contained within an area defined as Greenspace Habitat in Council's Strategic Plan. The site is also contained within the Koala Conservation Area. The western portion of the site are listed as Enhanced Habitat under Council's Environmental Inventory. Existing land use consists of rural residential lots, some containing home-based businesses of an agricultural or rural nature. Therefore, in terms of the environmental sensitivity criterion, the site ranks moderately high.

The Landscape and Visual Assessment Report identifies the site as being contained within two land units, namely Upland Forested with a high sensitivity to alteration by development, and Undulating/Lowland Terrain Watercourse with a medium to low sensitivity to alteration. As a result, the site ranks relatively high in terms of the landscape and visual values criterion.

Access to the regional road network is considered to be very poor, with the site located approximately 17km from the Pacific Highway. In terms of the

local road network, the site is considered to be the most poorly located candidate site, as it is located approximately 2km from Cleveland-Redland Bay Road.

Mains water is available to the site, however the site is not sewered. Sewerage could be connected to Victoria Point Water Pollution Control Works in lieu of Area 4, however the sewerage would be impeded by the undulating ground. A significant study would be required to evaluate the feasibility of sewerage to the site. This site has a low ranking for services.

The nearest residential areas are located towards the east of the site. Given the distance to the residential areas, there is likely to be little impact from the prevailing wind directions for the Shire. As a result, the site is ranked highly.

In terms of a high profile, visible and prestigious nature of the site, the site is considered to have a low ranking, due to its' lack of visibility from the local road network.

The site ranks moderately low in terms of accessibility to the existing population, with approximately 13,859 persons residing within a 5km radius of the site. However, in terms of appropriate distance from the nearest residential areas, the site scores ranks the highest of all candidate sites as it is located approximately 1.3km to the nearest residential development.

Site 10 has eight holdings, resulting in a moderate ranking for the ownership pattern criteria.

4.3.13 Site 11 - Cleveland Redland Bay Road, Redland Bay

Site 11 is located on Cleveland Redland Bay Road, Redland Bay, contains an area of 51ha, and is zoned Rural/Non Urban. The Preferred Dominant Land Use of the site is Non Urban. The site is predominantly surrounded by Non Urban uses. To the south a Special Protection Area is located; to the west, a quarry (ie. Special Facilities/Public Purposes); to the north exists Council's rubbish tip (ie. Special Facilities/Public Purposes); and to the north-east, Residential/Low Density, Urban Residential and Special Protection Area. These adjacent land uses are considered to be moderately compatible with the proposed IEC.

The topography of the site is gently undulating, with the entire site with slopes less than 5%, thus the site ranks moderately in terms of slope.

The site is predominantly cleared, and is contained within an area defined as Greenspace Habitat in Council's Strategic Plan. The site is also part of the Koala Conservation Area. The entire site is listed as Enhanced Habitat under Council's Environmental Inventory, and is surrounded by Major Habitat to the east and Priority Habitat to the north, west and south. Therefore, in terms of the environmental sensitivity criterion, the site ranks moderately low.

The Landscape and Visual Assessment Report identifies the site as being contained within the Undulating Forested Terrain land unit which has a high sensitivity to alteration by development. Therefore, the site ranks moderately low in terms of the landscape and visual values criterion.

Access to the regional road network is considered to be poorest of all candidate sites, with the site located approximately 20km from the Pacific Highway. In terms of the local road network, the site is considered to be well located on Cleveland Redland Bay Road, identified as a distributor road by the Redland Shire Transportation Study (1998).

The site could be supplied with water from the 750mm Stradbroke Island supply. Sewerage is currently not provided at the site, however it may be possible to connect to sewers in adjoining areas and treat the sewage at Victoria Point Water Pollution Control Works. A minor study would be required to evaluate the feasibility of this option. The site has a moderate ranking for the servicing criterion.

The nearest residential areas are located towards the north-east of the site. Therefore, in terms of the prevailing wind directions for the Shire, the site is ranked moderately.

In terms of a high profile, visible and prestigious nature of the site, the site is considered to have a low ranking.

However, in terms of accessibility to the existing population, approximately 7,542 persons reside within a 5km radius of the site, resulting in this candidate site ranked relatively low in this selection criterion. The distance from the site from the nearest residential area is approximately 200 metres, ranking moderately for this evaluation criteria.

Site 11 ranks highly for the ownership pattern criteria, as there is only one holding for the site.

4.4 Evaluation

A two staged evaluation process was adopted in order to compare the relative merits of each of the sites. The first stage comprised a relatively coarse evaluation, to identify the best performing sites in relation to the 'core' evaluation criteria of

- accessibility
- servicing costs
- proximity to population
- environmental sensitivity.

It was considered that unless each of these criteria could not be satisfactorily met, any IEA was unlikely to be commercial successful or economically feasibly.

Each of the sites was rated (from 1 to 11) for each of the evaluation criteria. A rating of 1 indicated the *best* performer for that criteria, whereas a rating of 11 indicated the *worst* performer. Where more than one candidate area scored the same on any particular evaluation criteria, they were given an equal rating.

Totalling the ratings enabled the most preferred area for an IEA to be identified based on the core criteria. The *lowest* score is the overall best performer in relation to these criteria.

Table 1 shows the results of this first level evaluation, which indicates the top five ranking sites for an IEA based on these criteria, listed in order of ranking, were:

1. Area 7 - Marlborough Rd/Main Rd, Wellington Pt.
2. Area 1, Birkdale Rd, Birkdale and Area 6 Kinross Road ranked equal second.
3. Area 4, German Church Road, Redland Bay and Area 2 Taylor Road, Mt Cotton ranked equal third.

**Table 1
Evaluation of Site Against the Core Criteria**

Evaluation Criteria	Candidate Sites													
	1	2	3	4	5a	5b	5c	6	7	8	9	10	11	
Accessibility														
Access to Local Rds	1	1	1	1	1	1	1	1	3	2	1	4	1	
Access to Regional/Rds	1	3	5	4	4	4	4	3	4	6	2	7	8	
Proximity to Population	1	4	6	7	10	12	11	3	2	5	13	8	9	
Cost of Services	1	5	6	2	9	11	10	3	2	8	12	7	4	
Environmental Sensitivity	11	12	9	4	10	1	2	5	3	6	7	6	8	
Total Score	15	25	27	18	34	29	28	15	14	27	35	32	30	
Ranking	2	3	4	3	9	6	5	2	1	4	10	8	7	

These are the sites which on first examination, would appear to be the best locations for an IEA.

Further evaluation of these sites was then carried out based on all the evaluation criteria, which enable a wider range of social, environmental and economic factors to be considered.

Table 2 depicts the results of this evaluation, and enabled the sites to be ranked as follows:

1. Area 1 - Birkdale Road, Area 4 German Church Road
2. Area 6 - Kinross Road
3. Area 7 - Wellington Point
4. Area 2 at Taylor Road.

It should be noted that in the above analysis equal weighting was given to each of the criteria.

To test the sensitivity of the result the evaluation process was repeated three times, each time giving greater weight to the costing criteria, the environmental criteria, or the transport/access criteria. The Birkdale Road

site (Area 1) rated highest when greatest weight was given to the transport and the costing criteria, and in both instances German Church Road ranked second. When greatest weight was given to the environmental criteria, German Church Road site ranked first followed by the Birkdale Road site.

Based on this sensitivity test, the ranking of the sites as depicted in Table 1 appears to be quite robust.

Table 2
Evaluation of Highest Ranking Sites Against All Criteria

Evaluation Criteria	Candidate Sites				
	1	2	4	6	7
Transport and Access					
Access to Local Rds	1	1	1	1	3
Access to Regional/Rds	1	3	4	3	4
Access to Existing Pop	1	4	7	3	2
Sub Total	3	8	12	7	9
Cost of Development					
Availability of Services	1	5	2	3	2
Land Ownership	3	9	3	7	3
Sub Total	4	14	5	10	5
Physical Environment					
Sensitivity	11	12	4	5	3
Dam Catchment	1	2	1	1	1
Landscape and Visual	5	7	8	3	6
Air Quality	11	5	7	9	11
Slope	1	5	4	6	4
Sub Total	29	31	24	24	25
Social Environment					
Compatibility of Land Use	3	6	1	7	8
Separation from Resident	13	10	7	11	12
Exposure	1	3	4	2	12
Sub Total	17	19	12	20	32
Total Unweighted	53	72	53	61	71
Unweighted Ranking	1	4	1	2	3

5. Economic Opportunities Analysis

The objective of this section is essentially to provide an assessment of the economic opportunities that could be pursued in order to establish an Integrated Employment Area. However, before focussing in on specific opportunities, it is considered appropriate to overview general factors influencing employment growth.

5.1 Sources and Limitations of Employment Growth

There are three sources of employment growth, namely local population driven employment growth, comparative advantage driven employment growth and competitive advantage driven employment growth. It is intended to provide a short explanation of these sources of employment growth, followed by the recent sources and limitations of each type of employment growth within Redland Shire.

Redland Shire has come to rely on these traditional sources of employment growth.

5.1.1 *Local Population Driven Employment Growth*

Local population driven employment growth meets the day to day needs of the local population and the businesses that serve them.

Examples include:

- Retailing- ranging from grocery and discount stores to dry cleaners, hairdressers, fast food, cafes and restaurants.
- Personal Services-ranging from hair dressers to real estate agents, taxi drivers, personal trainers and gyms, to teachers, police and emergency services.
- Business services- ranging from couriers, insurance, banking to cement batching.
- Local Industries- ranging from fly screen making to panel beating.

In terms of local population driven employment growth in Redland Shire, a number of advantages have been identified. The population has grown from 17,080 in 1971 to an estimated 110,000 by the end of 1999, indicating a 644% increase. There has also been an increase in high net worth people that brought expenditure to the region. In 1996, 32% of the population were managers or professionals and a further 15% trades persons.

There are a number of implications to this type of employment growth in Redland Shire. As the population is continuing to grow rapidly, but at a declining rate (increasing by 22,587, or 7.5% p.a., between 1986 and 1991, and by 20,362, or 4.9% p.a., from 1991 to 1996), likely future population growth in the order of 55,000 by 2016 (based on DCILGP, 1998) will require the creation of an additional 22,000 jobs over the next 15 years. This assumes a workforce participation rate of 45% of the population and an

unemployment rate of 5%. However, local population driven employment can only be expected to provide 15 to 25% of the jobs needed by the resident workforce.

The industry sectors likely to contribute mostly to employment levels within an IEA will be the manufacturing sectors, and transport and storage sector. In 1996, 12.7% and 5.4% of the workforce within the Shire were employed in these sectors respectively. As the proportion of the workforce involved in manufacturing industries is in general decline, a more appropriate figure for long term participation in this sector would be 12% of the workforce (as adopted for Maroochy Shire by DSD: *A Study of Business & Industry locations in Maroochy Shire, 1998*) which compares to the national figure in 1996 of 13%.

As the IEA will also accommodate a mix of support activities outside these two industry sectors, a nett draw off of 5% from each of the other industry sectors has been assumed, (this is also the same assumption as adopted by the DSD). This equates to about 4.1% of the total workforce.

Based on the above assumptions, the total number of jobs likely to be required in the target sectors over the next 15 years is therefore:

$$22,000 \times (12\% + 5.4\% + 4.1\%) = 4884$$

Benchmark employment densities from DSD (*Establishing Future Business and Industry Land Requirements*) are as follows:

- Heavy General Industry - 18 employees/ha
- Modern General Industry - 30 employees/ha
- Warehouse and Storage - 20 employees/ha
- Miscellaneous - 25 employees/ha

The above compares with the overall employment densities being achieved across the Gold Coast City's business and industry areas of 10 employees/hectare (Gold Coast City Council, 2000). For this exercise, a conservative estimate of 20 employees is assumed which would suggest that 237 hectares of business and industry land would be required just to cater for projected growth. Note that this includes land for "heavy general industry" (about 50ha) which may not be appropriate within the Shire, given the desire for clean green activities.

This also assumes that 100% of this employment is to be provided within the Shire. At present 60% of Redland Shire's resident workforce is employed outside the Shire. Left unchecked this is likely to increase to 65% of the resident workforce needing to find jobs outside Redland Shire in 15 years time. However, accessing jobs elsewhere in Brisbane is likely to become increasingly difficult. The relative decline in employment in the Brisbane central business district and in other areas easily accessed by rail from Redland, and the likely deterioration in travel times by road are likely reasons for this.

Increasingly, part-time, casual and multiple employment requires jobs to be found close to home or easily and cheaply accessed from home, otherwise unemployment and related social problems will grow.

5.1.2 Comparative Advantage Driven Employment Growth

Comparative advantage driven employment growth relies on natural attributes to attract visitors or businesses that create employment.

Examples include:

- Beaches and areas of outstanding natural beauty that attract tourists and day visitors.
- Coast lines that provide safe harbours, landings and staging points for ferries.
- Good agricultural land that supports agriculture, horticulture and market gardens.
- Mineral, sand and clays that support mining, quarries and processing industries.

In terms of comparative advantage driven employment growth in Redland Shire, a number of advantages have been identified, including:

- horticulture, food processing market gardens and wholesale nurseries based on the excellent soils, moderate climate and proximity to Brisbane;
- marine industry based on water access and local markets; and visitor and barge trade with the islands.
- technology and research, particularly associated with the horticultural industry
- tourism
- supply chain activities associated with aged persons facilities.

There are a number of limitations to this type of employment growth in Redland Shire. Firstly, it is considered unlikely that natural comparative advantages can stimulate sufficient future employment growth.

Horticulture, picking, quality control and packing crops and plants is labour intensive, but there appears to be little opportunity to substantially expand on these activities. However, opportunity exists to consolidate these industries and to spin-off higher value added horticultural, floriculture and arboriculture businesses and higher skilled research and development activities. This depends on protecting the areas that underpin these industries (especially from residential subdivision) for as long as the industry as a whole can remain viable.

5.1.3 Competitive Advantage Driven Employment Growth

Competitive advantage driven employment growth is built by investment rather than determined by nature. Transport investment has been

traditionally important, as has investment in enterprises which then creates opportunities for “downstream” or “upstream” activities. For example, investment opportunities for horticultural activities provides opportunities for related research and development activities.

In the ‘post-industrial economy’, competitive advantage is found in the ability to attract and retain investors, high net worth individuals and those with scarce skills. The quality of employment areas can play an important part in building this type of competitive advantage.

In terms of competitive advantage driven employment growth in Redland Shire, large, flat, affordable sites for major industries, and quality urban areas and canal estates attractive to those with higher incomes and scarce skills have been identified as advantages.

There are a number of limitations to this type of employment growth in Redland Shire. Redland Shire is unlikely to provide sufficient accessibility to compete for distribution activities requiring good metropolitan, regional or inter state access. These are likely to locate at Warwick, Ipswich, Coomera/Yatala or closer to the greatest concentrations of population. In addition, the Shire is also unlikely to compete for industries and businesses that rely on closeness to major markets. These are likely to locate closer to other businesses or where there is greater concentrations of population.

In addition, the present high physical amenity may not be sufficient to overcome future difficulties of residents having to commute to external business and employment areas. This, combined with growing unemployment and accompanying social problems could lead to a process of cumulative decline as potentially mobile higher net worth families and those with skills forsake Redland Shire. Better employment outcomes will be achieved by Redland Shire providing opportunities for those with high net worth or scarce skills to set up their businesses or work in Redland Shire.

5.2 Marine Specific Industry Opportunities

Marine activities and Redland Shire have long been associated, given the area’s proximity to Moreton Bay. The Bayside Marine Industry, which includes marine activities in eastern Brisbane, Manly/Wynnum and Redlands has great potential. Not only is it close to Moreton Bay, but it is also an area with one of the largest number of private pleasure vessel registrations in SEQ (refer to Appendix 1). The large sub-regional customer base and little competition in the support services for boats especially under six metres, create substantial opportunities for the Bayside Marine Industry, and particularly within the Redland Shire part of the sub-region.

The marine industry is based on sub-regional demand, access to recreational boating waters, the availability of cheap land and competing on price. However, these price advantages may be difficult to sustain as urban growth forces up land prices, there are higher standards of development and stronger environmental controls are required. As a result, Redland Shire is likely to face growing competition from new boat building clusters at other locations, such as at Coomera. This issue is possibly best addressed by creating a more

competitive marine industry by developing and clustering related marine services and trades, and building on sub-regional demand from the growth in marina berths (wet and dry berths), whilst also retaining the low cost nature of the existing industry.

a) Competitors of the Bayside Marine Industry

The main competitors of the Redlands Marine Industry are:

Gold Coast Marine Precinct

The new Gold Coast Marine Precinct at Coomera is a competitor for any new marine development in Redlands, however its marina is disadvantaged by high dry dock and site rental costs. These higher costs mean that the Gold Coast Marine Precinct may only cater for the upper end of the private pleasure vessel market, and boat building markets. To date the major new boat building entrants have been large manufacturers. In actual fact, one smaller scale boat building form has left the precinct and relocated to a standard industrial area on the Gold Coast. Redlands' competitive advantage lies in lower site costs for those in the industry, hence lower costs to consumers, the boat owners.

Bulimba and Hemmant

Bulimba and Hemmant have been areas associated with the marine industry for most of this century. However environmental controls and encroaching residential development are making some enterprises non-viable due to the costs of overcoming noise, odour and other environmental pollution problems. Also, these areas within the Bayside Marine Industry district cater predominantly for ship building, rather than boat building for small private vessels under six metres.

Hence there is a market niche that boat building enterprises can develop in Redlands with limited or no competition from other areas of Brisbane.

One of the highest ranking candidate areas, the German Church Road site, Redland Bay is within close proximity to the Weimann Creek Slipway facility at Redland Bay and to the Erapah Creek facilities, which include a 70 tonne shiplift. Also Redlands is ideally situated to service the large marina facilities at Manly (no boat building occurs there) and the northern Gold Coast (e.g. Steiglitz).

b) Manufacturing Opportunities within the Bayside Marine Industry

The scope for marine manufacturing within the Bayside area includes the manufacture of small recreational vessels under six metres and marine equipment and supplies, although there are already a number of manufacturers of larger vessels in the Bayside area. There is significant employment potential in these sectors, along with the proliferation of small business enterprises. The various manufacturing activities that may be undertaken within these sectors are as follows:

- Boat building of vessels under six metres in length
- Aluminium fabricators and welders

- Fibreglass suppliers and moulders
- Marine Trailers
- Fishing tackle and pots
- Sails and masts
- Sailing equipment (e.g. ropes, rigs)
- Marine upholsterers
- Marina equipment (e.g. pontoons and floats)
- Marine equipment (e.g. anchors)
- Canvassers.

Within Redland Shire, a key issue relating to the manufacture of larger vessels upon the site of German Church Road is that they must be able to pass under over head power lines or arrangements must be made with Energex to have them temporarily lifted prior to transport. This reinforces the point that the site is best suited to the manufacture of vessels under six metres in length.

c) Value Adding Service Opportunities within the Bayside Marine Industry

Within Redland Shire, the German Church Road site's proximity to a large recreational fishing and sail boat fleet makes it ideal for a number of value adding service providers within the Bayside marine industry. Opportunities include:

- Marine parts recyclers and reconditioners
- Resin suppliers/processors
- Marine engine reconditioners
- Marine modifications and customising.

d) Service Trade Opportunities within the Bayside Marine Industry

The Bayside sub-region's proximity to a number of very large marinas, at Manly and the northern Gold Coast, means it is an excellent location for a range of marine trade service providers, such as:

- Marine mechanics
- Marine electricians
- Marine surveyors
- Hull maintenance and repairers
- Sail repairers.

Vessels berthed at marinas, such as those at Manly and the northern Gold Coast often employ the services of mobile tradespersons to service and repair

their vessels. These operators often work out of vans or small industrial units. Opportunities exist in offering small premises that will suit the needs of such operators at the German Church Road site, within Redland Shire. This is because of its general centrality to the very large marinas, where, in total, thousands of vessels are berthed.

Within Redland Shire, there are a number of opportunities to be exploited for servicing vessels under 6m, which are not being fully serviced by competing marine industrial areas, such as at Coomera, Bulimba and Hemmant. The German Church Road site's proximity to the Erapah Creek marine cluster, the slipway at Redland Bay, a number of launching points in Redland Shire and the Manly and Gold Coast Marinas lends itself to the development of an Integrated Employment Area including a range of businesses providing marine goods and services.

5.3 Horticultural Industry

The Bayside Horticultural Industry, with an estimated 170 firms, represents 10% of Queensland's amenity horticultural industry. It is characterised by a range of retail and wholesale nurseries, landscapers, landscape suppliers, cut flowers and research and educational facilities, such as the DPI Queensland Horticultural Institute, and training programs at the Moreton Institute of TAFE. Comparative advantage exists for the horticultural industry due to the Redlands temperate climate, with warm dry winters (generally frost free) and humid summers which results in shorter production times as opposed to southern competitors.

The industry is supported by the DPI Queensland Horticultural Institute, which provides crop diagnostic services and ongoing research into new products and processes, along with the Moreton Institute of TAFE's horticultural training programs. The Moreton Institute of TAFE has recently expanded its range of courses, with the introduction of a course in arboreculture, and has just received funding to continue expanding its range of courses. In addition, the DPI's Queensland Horticultural Centre intends to become a Horticultural Centre of Excellence, which will benefit the Bayside area.

Threats to the industry include increasing land values, and encroaching residential development, decreased community tolerance for noise and spraying and a lack of managerial skills, however there are a number of opportunities to further develop the industry.

a) Manufacturing Opportunities within the Bayside Horticultural Industry

Opportunity for manufacturing within the Bayside Horticultural Industry exists within the supply chain. The large number of nurseries and landscapers within the Bayside area provides a sizeable market for horticultural suppliers. The various activities that can be undertaken are as follows:

- Wholesale landscape supply and distribution

- Manufacture of:
 - landscape supplies (e.g. pavers, aerated concrete)
 - garden ornaments
 - irrigation equipment (e.g. plastic extrusion of piping)
 - nursery and garden supplies (made from recycled materials, rubber, plastic and metal)
 - greenhouse/shadehouse supplies (prefabricated houses)
 - hydroponics equipment

b) Service Trade opportunities within the Bayside Horticultural Industry

Due to the clustering of amenity horticulture and floriculture within the Bayside area there is scope to develop service trade providers within the supply chain. Service Trade opportunities within the Bayside Horticultural Industry include:

- Landscapers
- Weed and pest controllers
- Soil testers
- Horticultural Consulting services
- Arboreculture services

The Moreton Institute of TAFE offers a range of certificate and diploma courses in horticulture. The scope of trade service activities is likely to expand with the addition of new courses and training opportunities at the Moreton Institute of TAFE.

5.4 Environmental Industries Within The Bayside Area

Currently, the Bayside area has 16-18 firms engaged in activities that may be considered as environmental. Environmental Industrial activity may take a number of forms. This report will consider opportunities to further develop recycling opportunities within Redland Shire and the potential to develop a High Technology Environmental Centre within Redlands, which would service the Bayside area, metropolitan Brisbane and beyond.

A High Technology Environmental Centre would draw on the strengths of a number of research and support facilities within Redlands and nearby areas, including the DPI Queensland Horticultural Institute, the CSIRO Marine Research Facility, the University of Queensland Agricultural Research Farm, the Queensland Manufacturing Institute at Eight Mile Plains and the Moreton Institute of TAFE. The Centre would include a research and education facility, environmental consultants and a range of enterprises employing and developing environmentally sound production techniques. (Please refer to Appendix 2 for more details).

a) Manufacturing Opportunities in Environmental Industries within the Redlands

Currently there are few enterprises operating within the Environmental Industry sector within Redland Shire, however there are many opportunities for firms within this industry sector to provide goods and services to the region. The manufacturing opportunities within the Environmental Industry sector are as follows:

- Stormwater tanks and plumbing supplies
- Oil Traps
- Filtration units
- Solar Panels
- Wind Turbines

b) Value Adding Service Opportunities within the Environmental Industries

Environmental Industries by their nature lend themselves predominantly to value adding service enterprises, such as recycling. There are a number of existing industries within the Redlands, which could benefit from linkages to this kind of service provision. Indeed, the German Church Road Site's proximity to the Redlands Bay refuse tip makes it ideal for recycling enterprises.

The enterprise opportunities include:

- Oil recycling (i.e. cooking and automotive oils)
- Building and construction materials recycling (i.e. for further building uses or landscape materials)
- Rubber and plastics recycling
- Waste water collection and processing (linkages to the marine, horticulture and poultry industries located within Redland Shire)
- Research and development (e.g. Research centre facility investigating recycling technologies within a High Technology Environment Centre located within Redland Shire.

c) Service Trade Opportunities within the Environmental Industries

Increased awareness of environmental issues, particularly within the Redlands provides a sound foundation for the establishment of a number of service trade providers within the Shire such as:

- Environmental/Pollution Consultants
- Erosion and Soil Control Consultants
- Site Remediation Consultants

The German Church Road site is ideally located for the development of an Integrated Employment Area incorporating environmental industries, as it is located opposite the Redlands Bay Refuse Tip. A recycling centre in close proximity to the Refuse tip could recycle materials left at the tip and would also assist local rural and urban based businesses with waste management issues.

5.5 The Bayside Poultry Industry

Research carried out for the Redlands Economic Development Board on the Poultry Industry in Redland Shire suggests that the Poultry Industry supply chain is already established. However given the size of the Poultry Industry in Redlands and the homogeneity of the support services it is likely that the area could support a greater number of enterprises supplying the Poultry industry, along with additional processing facilities. Enterprises within the Poultry supply chain include:

- Pollution Management Consultants (odour, dust and noise)
- Canvas manufacturers and repairers
- Tradespersons (specifically plumbing and electrical)
- Feed supplies
- Refrigeration
- Cleaning services
- Environmental consultants
- Waste management consultants

5.6 Specialist Manufacturing In The Bayside Region

Research carried out by Redlands Economic Development Board suggests, there is scope to develop specialist manufacturing activities within Redland Shire. Specialist manufacturing generally relates to small scale operations, usually located upon industrial lots of between 1500m² and 3000/4000m² in area. These small scale manufacturers tend to seek out niche markets, in which they possess a competitive advantage. Industries in which firms in Redland Shire may possess both comparative and competitive advantages are in marine, horticultural and poultry. Other activity areas may include processed food manufacture, component & equipment manufacture, construction materials manufacturing (processing and assembly) and enterprises associated with leisure and environmental management industries. The constraints upon small scale manufacturers within the Shire are likely to include:

- Environmental sensitivity of the Redland Shire (e.g. Koala coast, Moreton Bay Marine Park); and a,

- Lack of suitable land.

The above points support the need for the development of an Integrated Employment Area within the Shire.

5.7 'Old and New Economy' Industries

a) The Growth of the Communications Industry

The Communications Industry was one of the fastest growing industry sectors in Queensland, in terms of percentage employment growth between 1991 and 1996, although absolute jobs growth was quite small compared to the other faster growing industry sectors.

Since the mid 1990's the Communications Industry has been identified with major growth of the so-called "new economy", made up of information technology and communications versus the "old economy", made up of primary and secondary industries. This had led to many communities trying to determine if they can become part of the "new economy" to generate further economic growth and development, plus higher levels of employment generation.

Since the mid 1990's the number of establishments in the Communications Industry in Queensland has grown from 756 in 1994 to 1,154 in 1998, a nett growth of 398 establishments and a growth rate of 52.64% over the four year period. At the same time, the total number of establishments in Queensland rose from 161,115 in 1994 to 201,337 in 1998, a nett growth of 40,222 establishments and a growth rate of 24.96% over the four year period. Hence, the growth of establishments in the Communications Industry has been twice the rate of all establishments in Queensland and this is quite spectacular. However, such growth is on a very low base and in 1994 the Communications Industry's share of total establishments in Queensland was 0.47%, rising to 0.57% in 1998.

The main location of Communications establishments was Brisbane City, which saw a growth from 291 establishments in 1994 to 467 in 1998, a nett growth of 176 establishments and a growth rate of 60% over the four years. A significant proportion of these new establishments have located within the Brisbane Central City Area. Within Redland Shire, the number of Communications Industry establishments rose from 7 in 1994 to 22 in 1998, a rise of 14 establishments, and a growth rate of 200%.

These percentage growth rates in Brisbane City and Redland Shire are very high, but in terms of the number of firms, the Communications Industry constitutes a very small percentage. In Brisbane City its percentage share of Brisbane's total establishments rose from 0.52% in 1994 to 0.6% in 1998, whilst in Redland Shire, the percentage share rose from 0.27% in 1994 to 0.54% in 1998. Therefore, the growth in Communications firms, although significant in percentage terms is quite small in real terms.

b) The "New Economy" and the "Old Economy"

The impact of information technology and communications is not so much in the growth of new firms in the Communications Industry, (i.e. the "new economy"), but in the utilisation of information technology and communications in the existing well established industry sectors of the economy (i.e. the "old economy").

Over the past twelve months (1999/2000), many new internet firms and other communications companies offering services in electronic retailing (e-tailing), plus a range of internet services in information, have witnessed amazing rises in their share prices as speculative investors have rushed to invest in the so-called “new economy”. Share prices have then fallen dramatically as investors have discovered, upon a more detailed analysis of many “new economy” firms, that they have yet to make, or will make a return on investment, or a profit, a fundamental reason for investment.

At the same time as this speculative investment bubble has grown and burst, “old economy” firms in resources, manufacturing, transport, distribution, wholesaling, retailing and banking have invested in more practical and realistic uses of information technology and communications systems and established business to business electronic commerce via the internet, or in the modern technology jargon B2B e-commerce. This includes supply chain ordering and purchasing; national and international sales and financial transactions; inventory and stock controls by firms with a large number of sales outlets, and many other aspects of business activities which can operate in the “real time economy” of the internet. These uses of technology and communications are increasing the overall productivity of many industry sectors and economists are now noticing a significant increase in national productivity levels of economies where this is happening, such as the USA, Australia, Ireland, the Scandinavian countries and Britain.

Therefore, instead of a so-called “new economy” emerging, the existing or “old economy” has absorbed the existing and potential benefits of information technology and communications to produce a more effective and efficient economy overall.

c) The Implications of Communications Industry Growth on an Integrated Employment Area in Redland Shire

The implications are likely to be as follows:

- use of information technology and communications in industry sectors such as wholesaling, transport and distribution and manufacturing, rather than in the establishment of communication firms, within an Integrated Employment Area. This is particularly the case in Redland Shire, as many of the sites investigated for an Integrated Employment Area are some distance from existing business and commercial centres in the Shire. There is a tendency for communications firms, including a wide range of software producers, to locate within existing commercial centres, as they are then close to a wide range of support services. This is already the case in Redland Shire with a number of software producers or manufacturers located in Cleveland’s commercial centre.
- The development of B2B e-commerce by wholesaling, transport, distribution and manufacturing firms which could locate within an Integrated Employment Area/s. This would involve either the internal employment of information technology staff, or the contracting out of information technology services to specialist firms, either located within Redland Shire, or Brisbane.

The rapid increase during the mid 1990s of communications establishments in Redland Shire could be further enhanced by the development of an Integrated Employment Area or Centres within the Shire. The businesses establishing within such a Centre/s, would generate an increased local demand for information technology and communications services and this could enable more firms providing these services to locate in the major commercial centres of Capalaba and Cleveland.

d) Major Constraints to Further Development of the Communications Industry in Redland Shire

There are a number of constraints within Redland Shire which may inhibit the growth of information technology and communications firms, irrespective of an Integrated Employment Area/s developing or not. These are as follows:-

- there is relatively limited telecommunications infrastructure within Redland Shire. There is limited fibre optic cabling along the major road routes within the Shire, servicing Capalaba, Cleveland, Thorneside, Thornlands and Victoria Point. However, we understand there are limited or no other telecommunications companies currently providing or planning to provide fibre optic broadband width cabling to and within Redland Shire. These other companies, such as Powertel, can provide new forms of telecommunications, infrastructure and services far more cheaply than current providers. They are opening up significant markets with a wide range of businesses in the central city area of Brisbane. These other companies have also identified future market opportunities in the Brisbane/Gold Coast Corridor and the Brisbane/Sunshine Coast corridor in South East Queensland, rather than a corridor to Redlands Shire. This is because there are currently far higher population levels in these north/south corridors and forecasted significant population increases over the next twenty years or so. Redlands, in comparison, has a relatively limited population today and relatively limited growth prospects over the next ten years or so, in a regional context.
- Very large investments in high technologies are currently occurring within the Brisbane/Gold Coast growth corridor. Examples include:-
 - the Pacific Innovation Corridor concept being developed by Powertel and Boeing, linking the Brisbane/Gold Coast corridor to a national broadband width fibre optic cable network, which is very affordable for businesses to connect to and use compared to Telstra's current national fibre optic cable network.
 - the Department of State Development's Brisbane Technology Park at Eight Mile Plains is now fully serviced by high quality and affordable broadband width fibre optic cabling linked into the Pacific Innovation Corridor. In addition a \$30m computer system is being developed within a 4,000m² building within the Technology Park to provide a wide range of information technology and communications services to both current and future Technology Park businesses, plus a wider range of businesses throughout metropolitan Brisbane.

These very high levels of technology investment within Brisbane and the Gold Coast corridor strengthen the already dominant position Brisbane holds in the information technology and communications industry.

- A very high proportion of information technology and communications employees are male (80%), of which a large percentage are young males. These young males are seeking areas with a good lifestyle to work and live in, but it doesn't necessarily correlate with Redland's view of "lifestyle". For example, central city locations in Brisbane, Melbourne and Sydney have a high proportion of information technology and communication firms compared to other areas. A contributing factor these IT companies can offer their predominantly male employees is a rich lifestyle close to where they work, comprised of a diversity of housing, shopping, entertainment, culture, nightlife, and major sporting venues.

Redland Shire, by way of comparison offers a high amenity suburban lifestyle (with limited housing choice), sought by many families in particular. This suburban lifestyle does not necessarily offer a lot of appealing attributes to IT employees such as young males on relatively high incomes, seeking a more diverse, adventurous and vibrant lifestyle and living environment.

5.8 High Employment Generating Development within the Above Sectors

Those industry sectors which have a higher tendency to have a greater number of jobs per establishment (i.e. high employment generating developments) are:-

- wholesale
- manufacturing.

When these broader industry sector perspective's are brought down to the local level within Redland Shire, the opportunities are as follows:-

a) Wholesaling

This covers a range of local activities, including the supply chains to industries identified as having a comparative and competitive advantage in the Redlands, such as amenity horticulture, poultry and the marine industry. These specific industries have already been identified as being considered suitable for location within an Integrated Employment Area.

Wholesaling can also cover a wide range of other industry sector activities, including the supply chain to industries as diverse as building and construction through to education and health services.

Some forms of wholesale establishments will operate at lower levels of employment, such as those with a storage and distribution warehouse, which acts as a depot, whilst sales and administration staff are based elsewhere.

These forms of wholesaling tend to have lower levels of jobs per hectare, down to between 5 and 10 persons. Other warehousing establishments centralise their administration, sales, storage and distribution operations under one roof and hence employment per establishment is higher. Therefore employment per hectare can rise to between 10 and 20 persons.

b) Manufacturing

This covers a wide range of opportunities, including those already identified in the marine industry, amenity horticultural industry, the emerging environmental industries, and other industries referred to under specialist manufacturing, such as processed food, component and equipment manufacture, construction materials (processing and assembly) and manufacturers associated with leisure products.

The majority of manufacturers are still likely to be small to medium scale enterprises on smaller industrial allotments of between 1,500m² and 3,000m² to 4,000m² in area. Although the employment per establishment may be low, i.e. 10 to 15 persons, the jobs per hectare is likely to be in the order of 30 persons, due to the number of establishments per hectare.

6. Conclusions and Recommendations

6.1 Conclusions

There are three sources of employment growth relevant to Redland Shire.

- population driven growth;
- growth through comparative advantage ; and
- growth through competitive advantage.

Population driven growth typically comprises retailing, personnel services, and population serving business and industry.

Comparative demand, driven growth, (growth driven by the natural attributes of the Shire) and competitive demand driven growth (growth driven by infrastructure and other forms of investment in the Shire, such as synergies resulting from other industry investment), offers additional potential within the Shire.

Analysis indicates that the Shire has insufficient land to accommodate the employment needs associated with anticipated population growth.

The Shire faces strong competition from other parts of the Brisbane Metropolitan Region for employment growth. In particular, the Shire does not provide the exposure opportunities, centrality and/or communications infrastructure that leading IEAs offer in other areas. While the Shire may continue to attract the occasional footloose activity, a strategy needs to be developed to ensure the Shire's comparative and competitive advantages are clearly signalled to investors and provide the basis for attracting sustainable employment. One of the key elements of such a strategy is the identification of suitable sites for IEAs that offer tangible benefits to investors.

A range of employment activities has been identified which could initially be targeted by an IEA. The range of activities will ultimately be influenced by the location of the site (or sites). These activities are detailed in Section 5 and include:

- manufacturing and value adding services to the marine industry
- manufacturing and value adding services to the horticultural, viticulture and poultry industries;
- manufacturing and value adding services to environmental industry;
- technological and research activities related to each of the above sectors.

The ability to attract other footloose activities will to an extent depend upon the site opportunities available within the Shire. However, footloose industries should not be the focus of economic development initiatives if sustainable employment is the objective, as such industries by definition can leave as readily as they come.

6.1.1 Preferred Sites for a IEA

As discussed in Section 4.4 Area 1, Birkdale Road Birkdale, and Area 4, German Church Road Redland Bay, rated highest in the evaluation. These sites are considered suitable for the establishment of an IEA should they become available. The Kinross Road site (Area 6) was the next highest ranking site followed by Wellington Point (Area 7) and Mt Cotton (Area 2).

In determining the preferred sites for an IEA several other matters warrant discussion. It is understood Site 1 has been identified in the past as a suitable area for an educational campus, and more recently has been considered for commercial recreational uses. Given that the site has been evaluated as one of the most suitable locations for an IEA in the Shire, (particularly for high amenity and higher profile activities), the preferred use should be one that has the ability to generate a large number of jobs. An educational campus would provide employment and also a potential catalyst for the establishment of related research and development activities, or special enterprises which have synergies with the courses being offered. A number of leading IEAs in Australia and overseas were established in association with educational campuses.

Area 7, at Wellington Point, could provide for additional research and development opportunities as a further annex to the activities at the Birkdale Road site.

The Birkdale Road site is also ideally located as an outgrowth area for home based activities that are looking to expand.

Area 4, German Church Road, is the highest ranking site likely to present the least physical and ownership constraints for establishing an IEA. This site provides opportunity for a range of uses for which comparative and competitive advantage in the Shire has been identified. It is less suited to the opportunities identified for Area 1 and is not seen as an alternative to an IEA at Area 1.

6.2 Recommendation

Area 1 (Birkdale Road) and Area 4 (German Church Road) are the most suitable sites in Redland Shire for the establishment of an IEA.

Area 1 is the best available site in regard to those attributes that are likely to be attractive to high profile low impact activities often association with fully managed IEAs and business parks. These include a well exposed location, pleasant natural setting, relatively good access to the Brisbane CBD and close to the existing Shire population. It would be particularly suitable for development as an education/research facility which may in turn make the nearby Area 7 (Wellington Point) suitable for associated rural research activities.

Area 4 offers possibilities to accommodate activities which find comparative and competitive advantage within the Shire together with some population serving employment activities.

As mentioned in Section 5, based on population growth alone, some 244 hectares of employment land will be required within the Shire by 2016, and there is only 50-55 hectares available in currently identified industry zones. While some additional land will be potentially available for additional service industry areas associated with the Victoria Point District Centre (and possibly other centres), it is considered that a single IEA site will not be adequate for the Shires future employment needs.

6.2.1 Type of Uses at German Church Road (Area 4)

The type of activities recommended for Area 1 Birkdale Road are discussed above. As mentioned, this site lends itself to a highly managed 'campus like' development.

On the other hand, Area 4, German Church Road provides opportunity for a less formal development appearance, with fewer design constraints and the ability to accommodate the type of activities listed below.

*Small Scale, Moderate Intensive, Moderate Amenity**

- Population Serving
 - Cleaning Services (domestic and industrial)
 - Domestic Repair (Maintenance)
 - Small Distribution - Courier Services
- Identified Opportunities
 - Horticultural Service Trades
 -

*Moderate Scale, Moderate Intensity, Moderate Amenity**

- Population Serving
 - Motor/engine repair
- Identified Opportunities
 - Marine industrial service
 - Marine industrial recycling
 - Industrial service industries

*Moderate Scale, Moderate Intensive, Low Amenity**

- Population Serving
 - Engineering firms
 - Refrigeration
- Identified Opportunities
 - Marine industrial manufacturing

- Environmental industrial manufacturing
- Environmental recycling industries
- Rural product manufacturing
- Rural industrial trades
- Rural and poultry services
- Environmental

For definition of characteristics, refer to Appendix 3.

6.3 Implementation Issues

Attracting employment activities of the type discussed above to the Shire will depend upon establishing the right development environment. Identifying sites for IEAs is essential, but it will be insufficient on its own to attract development. This section provides some preliminary thoughts and guidance on implementation issues at two levels, the strategic level and the site specific level.

Strategic Level

While many residents of Redland Shire are clearly content to commute to jobs in Brisbane or elsewhere outside the Shire, the ability to do this in the future will become increasingly difficult, as travelling times increase and employment opportunities decline. The need to provide local employment opportunities and the level of self containment in the Shire needs to be highlighted as key issues of sustainable development and brought to the community's attention. As part of this process, Areas 1 and 4 together with other possible sites for future employment activities need to be explored with the community with the view to identifying and including candidate sites in future updates of the Shire's Strategic Plan.

The ultimate acceptance of employment precincts will be determined by the public's perception of such areas. Establishment of a quality development in Area 1 and/or Area 4 will help establish these perceptions.

Maintaining a favourable investment environment within the Shire will be critical to attracting employment generating activities. This involves establishing the pre-conditions necessary to encourage investment such as:

- a strong planning framework which is pro-active, not re-active and generates certainty, especially in relation to IEAs and what can or cannot be developed in such areas;
- streamlined approval process for targeted activities in designated employment precincts, covering approvals in planning, building, engineering and health;

- ongoing promotion and development of the Shire’s social infrastructure (health and education, recreation and cultural facilities) which make it an attractive place in which to both set up business and live;
- promotion of the Shire’s existing strong employment sectors and highlighting the Shire’s (and each site’s) competitive and comparative advantages. In other words, clarifying the “right type” of activity for the Shire;
- recording and promoting all new business start ups in the Shire;
- waivering of local rates for the first two to three years of operation of the targeted businesses and business startups;
- use of other financial incentives, such as headworks charges and note deferment. As an example, Gold Coast City Council have recently resolved to defer a portion of the headworks charges for development in the Yatala Enterprise Area, and Logan City Council has waived rates for a period of time to secure a food processing industry in that City. Estate developer incentives are more typically related to marketing and promotional initiatives ; and
- establishment of a ‘can do’ image with potential investors, which clearly signals that “if you have the right type of activity, we will facilitate your development”, via the approvals processes, financial incentives and other mechanisms.

Site Specific Level

Suggested implementation actions at this level to be carried out by either the land owner or Council, would include the following:

- for Area 1, establish the Commonwealth’s intention for the site and determine opportunities for its future use. If the site is available then the following actions can be pursued;
- conduct detailed site analysis investigations of Area 1 and Area 4 and identify:
 - areas of high conservation value and buffer requirements for these;
 - areas potentially suitable for development;
 - the potential allotment configurations taking into account the spatial needs of the identified employment activities;
 - site access and vehicle circulation opportunities.
- identify precincts suitable for accommodating uses with different impact levels and the likelihood of such uses creating economic clusters;
- determine infrastructure requirements in respect of:
 - likely service needs, access requirements;
 - the preliminary costings; and
 - the timelines to construct the infrastructure.

-
- review alternative land management arrangements having regard to:
 - desired urban design environmental outcomes;
 - the nature of activities to be accommodated and
 - the compatibility of activities to be accommodated.
- undertake a community consultation program addressing:
 - the general need for employment activities within the Shire;
 - proposals for the two sites and other locational opportunities;
 - the potential to create high employment generating activities upon the two sites;
 - the potential for upskilling the local population, especially young people;
 - the potential synergistic effects of proposals for the sites upon the rest of the Redland Shire locality economy (ie multiplier effects).

Appendix 1

Overview of the Bayside Marine Industry

APPENDIX I

OVERVIEW OF THE BAYSIDE MARINE INDUSTRY

1.0 CHARACTERISITICS

The Bayside marine industry, covering Eastern Brisbane, Manly/Wynnum and Redlands Shire, is characterised by a large number of small firms undertaking a diverse range of activities within the larger Marine Industry of Queensland and Australia. The main areas of business activity within the Bayside Marine Industry include:

- Limited ship building and repairs of larger commercial vessels
- Prolific activity in boat building including boat repairs, manufacture of small inflatable craft and yacht building
- Passenger transport, island ferries, water taxis and charter vessels
- Marine surveying, insurance and design

Although there is a high level of industry activity within the Bayside area exporting is limited, due to a thriving domestic market for pleasure or leisure vessels and allied services.

2.0 DEMAND FOR PRIVATE PLEASURE VESSELS IN QUEENSLAND

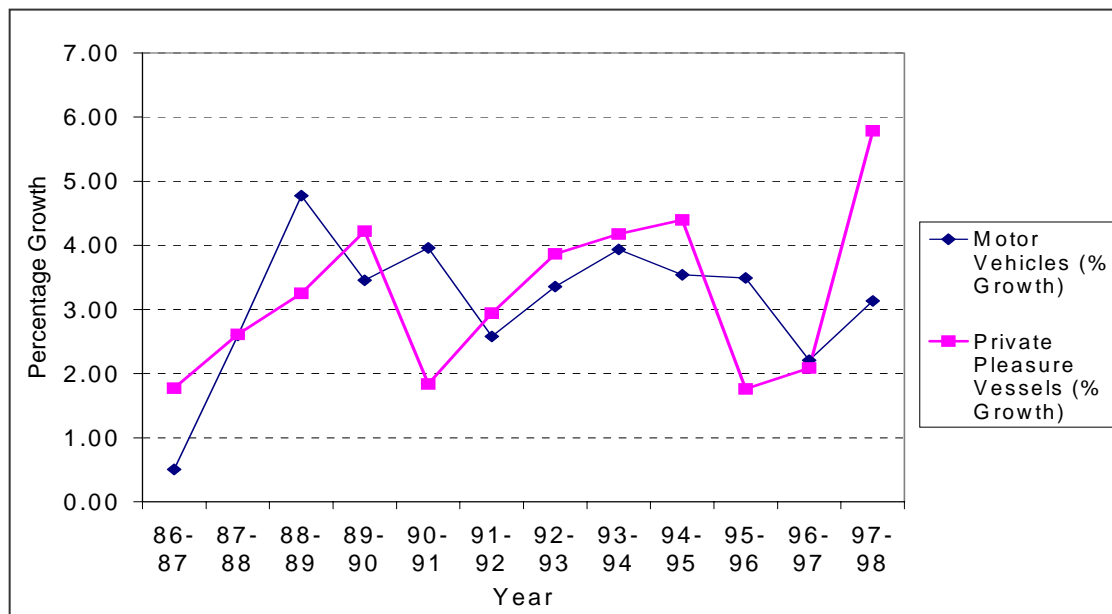
a) Growth in Registrations

The growth in demand for private pleasure vessels, as measured by the growth in registrations of private pleasure vessels within Queensland, is very strong and is regularly greater than vehicle registrations. See Figure I below.

Figure I
Growth in Motor Vehicle and Private Leisure Vessels Registrations

Source: Queensland Transport
Queensland Statistics Web Page
Private Pleasure Vessel Registrations 1986-1998
Car Registrations 1986-1998

Growth in private pleasure vessels has been consistently positive since 1986-87. In fact for the time series, in Figure I, above, growth in private pleasure vessel registrations has been greater than new vehicle registrations for eight out of the twelve periods, indicating the strength in demand for private pleasure vessels.



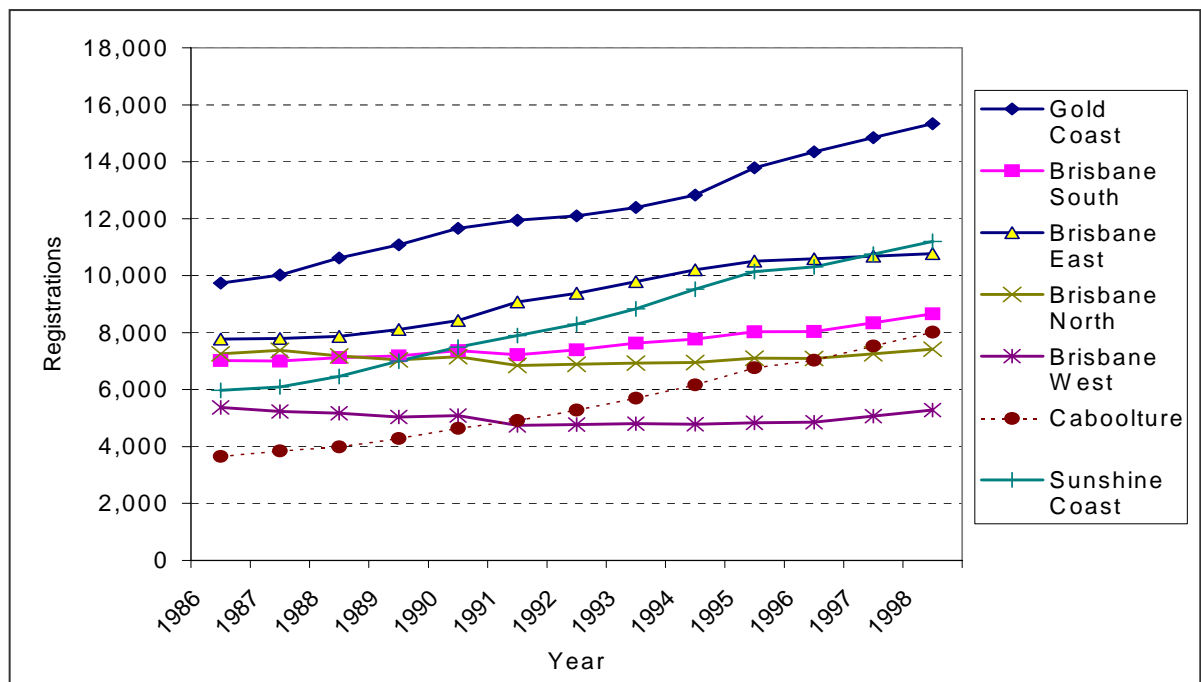
b) Growth in Private Pleasure Vessel Registrations by Location

Figure II below shows the growth in private pleasure craft registrations from 1986 to 1998 for certain key locations in South East Queensland (SEQ).

Figure II
The Number of Private Pleasure Vessel Registrations by Location

Source: Queensland Transport
 Queensland Statistics Web Page
 Private Pleasure Vessel Registration levels by district and length, Queensland, 1986-1998 (a)

The largest number of private pleasure vessel registrations are on the Gold Coast, the Sunshine Coast and in Brisbane East (this contains Redlands). Given the high level of private pleasure vessel registrations within the Gold Coast and Brisbane East, there would exist a large market for associated services within Redlands.



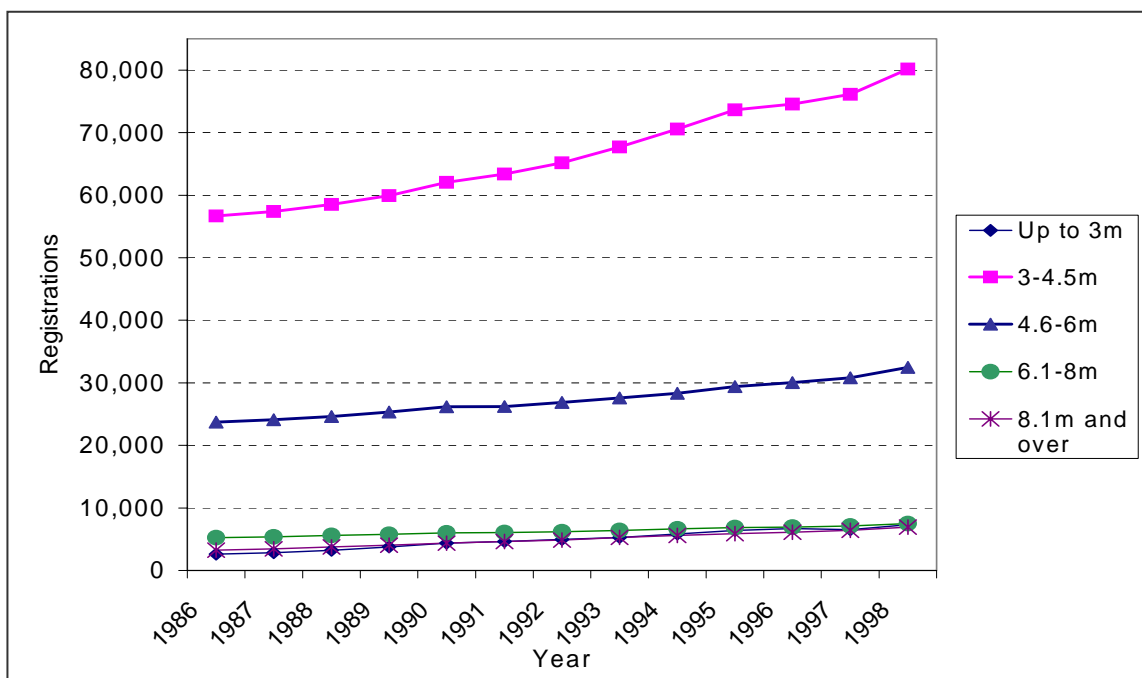
c) Growth of Private Pleasure Vessels by Size

Figure III below shows the growth of private pleasure vessels by size for Queensland, as data is not readily available at the regional or locality level.

Figure III
Private Pleasure Registrations by Size

Source: Queensland Transport
Queensland Statistics Web Page
Private Pleasure Vessel Registration levels by district and length, Queensland, 1986-1998 (d)

Figure III clearly shows that the main area of growth in private pleasure vessel registrations within Queensland is between 3.0-4.5 metres, with the next largest segment being 4.0-6-6 metres. Most of these vessels would be transported on trailers and stored at private residences or in dry storage at marinas. Clearly there is a significant demand for vessels under six metres in length and for allied services within Queensland.



3.0 GROWTH IN PROVISION OF LAUNCHING FACILITIES

Strong growth in demand for private pleasure vessels has resulted in sizeable growth in launching facilities within Queensland. Within SEQ there has been significant growth in launching facilities, such as boat ramps, since 1985-86. A large proportion of this growth can be attributed to strong growth in boat ramps in the area from the Border (with NSW) to Brisbane City, including the Gold Coast and Redlands, while growth in boat ramps from Redcliffe to Noosa has been minimal.

Figure IV
Boat Ramps within South East Queensland, by Location

Source: Queensland Transport
Queensland Statistics Web Page
Boat Ramps by Region, Queensland, 1985-86 to 1997-98

The proportion of boat ramps in SEQ located between the Border and Brisbane city has increased substantially since 1985-86 from 57.5% to 64% in 1997-98, as shown in figure V.

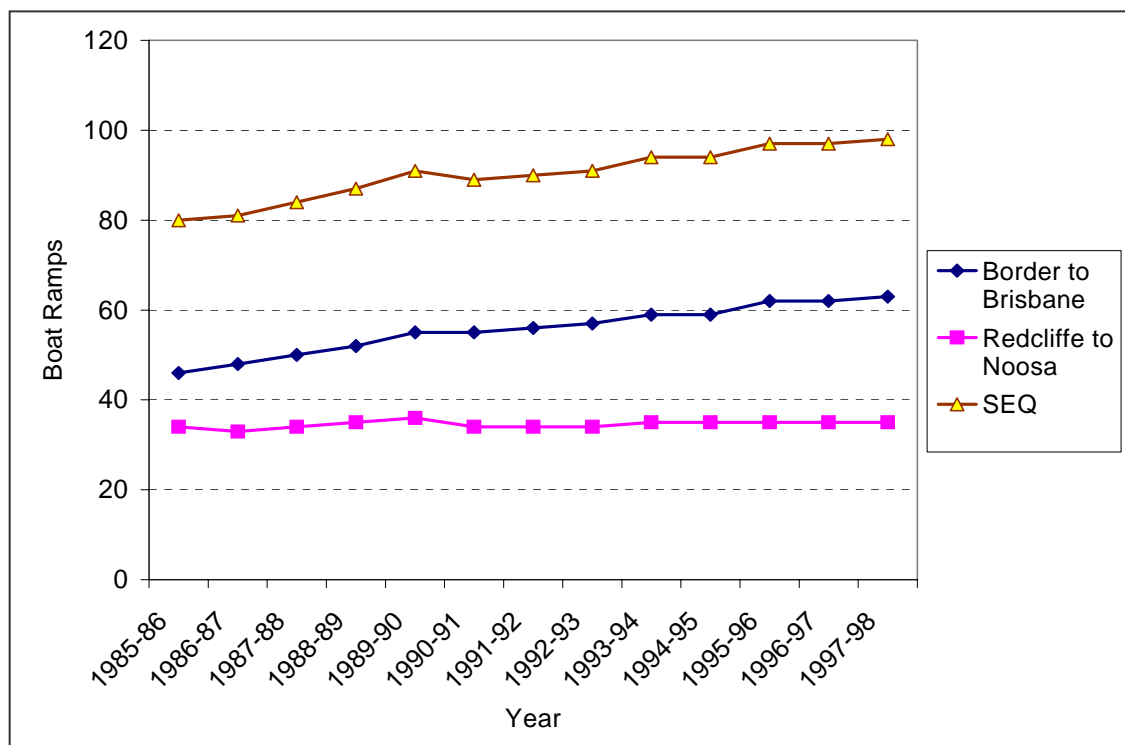
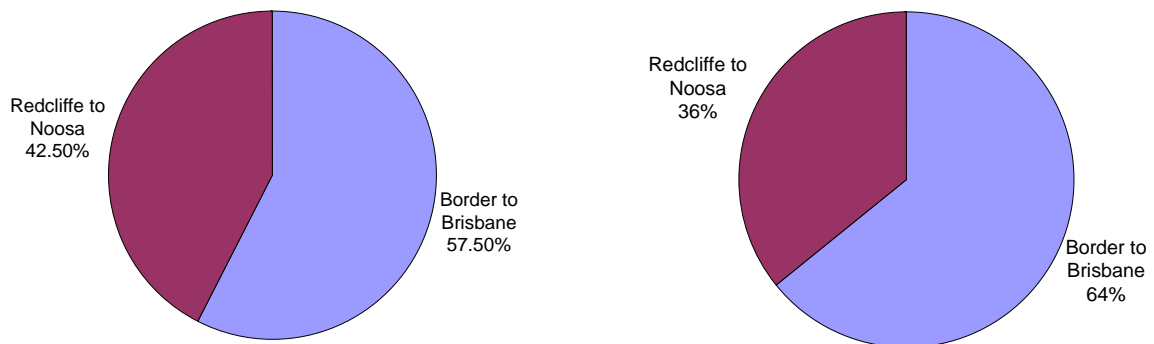


Figure V
The Location of Boat Ramps in SEQ

	1985-86	1997-
98		

Source: Queensland Transport
 Queensland Statistics Web Page
 Boat Ramps by Region, Queensland, 1985-86 to 1997-98

The above data clearly shows that there has been sizeable growth in demand for and provision of launching facilities for private pleasure vessels since 1985-86, and that the number of launching facilities has especially increased in the area between the border and Brisbane City.



4.0 BAYSIDE MARINE INDUSTRY FACILITIES AND SERVICES

The above data has shown that the Bayside area, including Redlands, is an area with a significant demand for marine products and allied services: also this data has shown that the focus of the marine industry is on smaller vessels up to six metres in length. If the Bayside Marine Industry is to cope with the continuing increase in demand for private pleasure vessels, there needs to sufficient support services for manufacturers and owners of vessels, particularly under six metres in length.

a) Current Facilities

The current facilities of the Bayside Marine Industry are predominantly geared towards users, in the form of boat ramps, day trailer parking and commuter traffic from the Bay Islands, such as water taxis, vehicle and passenger ferries. A stocktake of marina and launching facilities and sites is presented below.

Table I
Marina and Launching Facilities by Location in the Brisbane Bayside Area

Manly Boat Harbour	Wellington Point	Redlands Harbour	Raby Bay Marina	Toondah Harbour	Victoria Point	Redland Bay
<ul style="list-style-type: none"> • Substantial wet and dry berthing (secured) 	<ul style="list-style-type: none"> • Day parking 	<ul style="list-style-type: none"> • Volunteer rescue 	<ul style="list-style-type: none"> • Marina berths 	<ul style="list-style-type: none"> • Stradbroke Ferries, includes vehicular and passenger ferries and water taxi 	<ul style="list-style-type: none"> • Small boat sales (Pt Hallaran Rd) 	<ul style="list-style-type: none"> • Pelican Slipway & Boat Builders & Repairers (2 Slipways)
<ul style="list-style-type: none"> • Marine Trimmers (Q&S Marine Trimmers) 	<ul style="list-style-type: none"> • Small jetty 	<ul style="list-style-type: none"> • Boat Ramp suitable as an entry point for recreational fishing 	<ul style="list-style-type: none"> • small administration office 	<ul style="list-style-type: none"> • Boat Ramp 	<ul style="list-style-type: none"> • Two large boat ramps 	<ul style="list-style-type: none"> • North Stradbroke Island Ferries (Vehicular and Passenger)
<ul style="list-style-type: none"> • Shipwrights (B&K Marine) 	<ul style="list-style-type: none"> • Trailer parking 	<ul style="list-style-type: none"> • Trailer Parking 	<ul style="list-style-type: none"> • Fishing and Passenger Charter vessels 		<ul style="list-style-type: none"> • Trailer parking 	<ul style="list-style-type: none"> • Minimal existing parking with substantial new parking under construction
<ul style="list-style-type: none"> • Inboard Marine Services 	<ul style="list-style-type: none"> • Small 4t high tidal boat ramp 	<ul style="list-style-type: none"> • Secured parking for boat club members 	<ul style="list-style-type: none"> • Yacht Sales and Brokerage 		<ul style="list-style-type: none"> • Volunteer Marine Rescue (3 vessels >8m) 	<ul style="list-style-type: none"> • Moreton Bay Water Taxi and Water Bus
<ul style="list-style-type: none"> • Sales, Bait, Ice and Gas 			<ul style="list-style-type: none"> • Secured Parking 			<ul style="list-style-type: none"> • Secured Carparking
<ul style="list-style-type: none"> • R.Q.Y.S. Marine College 			<ul style="list-style-type: none"> • Fuel, Bait & Ice 			<ul style="list-style-type: none"> • Boat Ramp, small jetty & fuel
<ul style="list-style-type: none"> • Large Marina 						<ul style="list-style-type: none"> • Three private covered boatsheds
<ul style="list-style-type: none"> • Substantial trailer parking 						<ul style="list-style-type: none"> • Coastguard
<ul style="list-style-type: none"> • Manly Eco Cruises 						<ul style="list-style-type: none"> • Simple high tidal marina
<ul style="list-style-type: none"> • Marina • Slipway • Dry Storage • 5t Boat Ramp • Three 35t Shiplifts 						

Source: Abnett Consulting Field Surveys, May 2000, Interviews and discussions with marina and marine industry operators

The issue that emerges is that a majority of launching sites have little or no support facilities. In fact interviews with marine industry personnel indicate that, many marina berth holders employ the services of mobile tradespersons, who operate from a van or small industrial shed within the eastern Brisbane and Redland Shire areas.

b) The Marine Industry in Redland Shire

The industry within Redlands is composed of predominantly small operators, including Boat Builders (Aluminium and Fibreglass), sales, marine consultants marine upholsterers and trimmers, marine equipment suppliers, marine fitters and chandleries. Within Redlands there already exists a small cluster of marine activities on Erapah Creek. This consists of two (2) dry storage operators (off Beveridge Road, Victoria Point) that provide dry storage and launching facilities to allow for repairs and modifications of vessels. Once again these sites are serviced by a number of mobile trade operators or hobbyists. In addition to these storage facilities there are two (2) boat builders: Fastback Catamarans (small operator) and Aluminium Marine, a large aluminium boat builder employing 15-20 staff. However these operators have had difficulty securing access to Erapah Creek due to perceived environmental constraints and land ownership issues.

At Redland Bay is the Pelican Slipways, located on the southern side Weimann Creek. It is a long established boat building and repair facility with two slipways.

This small cluster of marine industry activities at Victoria Point and Redland Bay does not represent a competitor to further development of the Bayside marine industry. Rather it presents itself as a potential complementor. Discussions with the operators on Erapah Creek have indicated that there is a commitment to source inputs from the local region where possible. The preferred sites for an IEA is close to this small marine industry cluster and would be an excellent area for supporting enterprises, such as upholsterers, trimmers, parts depots, etc. Therefore the development of an integrated employment area including enterprises from within the marine industry would assist in meeting the demand for marine goods and services, not only in the Bayside area, but the whole of surrounding region.

Appendix 2

Overview of Environmental Enterprise in the Bayside Area

APPENDIX 2 OVERVIEW OF ENVIRONMENTAL ENTERPRISES IN THE BAYSIDE AREA

1.0 CHARACTERISTICS

The number of existing environmental enterprises within the Bayside region is limited. Existing enterprises fall into a number of categories, such as:

- Environmental & Pollution Consultants
- Erosion Control Specialists
- Recycling
 - Scrap metal
 - Automotive parts
 - Printer Cartridges
- Waste water collection & recycling
- Worm farming and sewerage sludge recycling

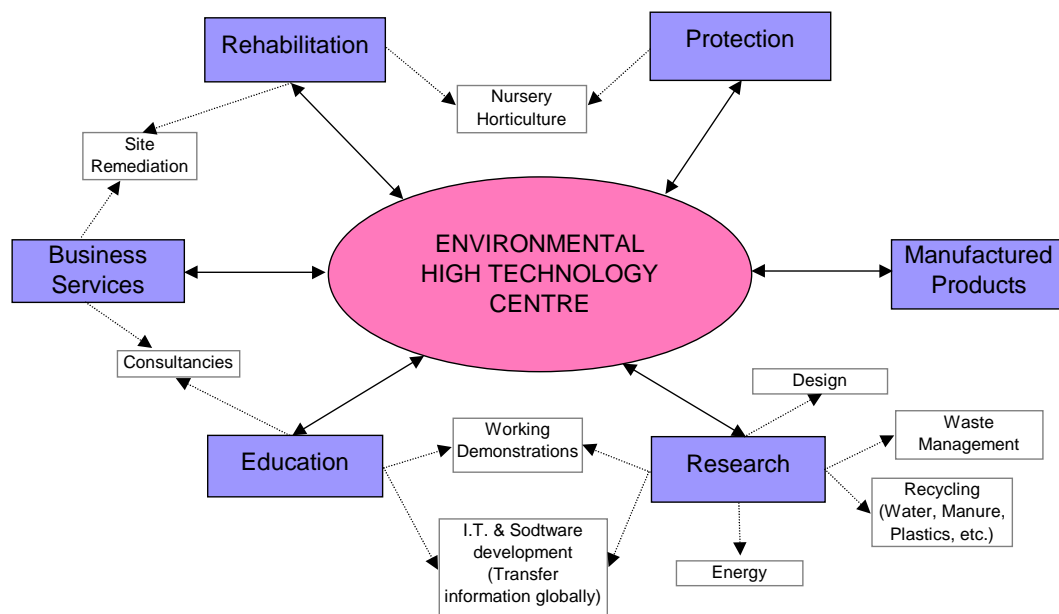
Many of these enterprises are small and are unlikely to be able to invest profits into research and development of their product and/or processes. Hence an opportunity exists in the development of an environmental research or high technology centre. Such a development would have to draw upon existing research and support facilities within and in areas adjoining the Redlands, such as the DPI Horticultural Institute, CSIRO Marine Research facility, the University of Queensland Agricultural Research Centre, the Queensland Manufacturing Institute and the Moreton Institute of TAFE.

2.0 THE ENVIRONMENTAL HIGH TECHNOLOGY CENTRE CONCEPT

As identified above there exists an opportunity for the development of an environmental high technology centre concept. This is a new concept for environmental enterprise within Redlands, i.e. an integrated research and development facility, which both the Redlands Economic Development Board and Vermitech, the Worm Farm Operator, see considerable merit in. Figure I is a conceptual diagram of such a facility.

Figure I

Conceptual Diagram of an Environmental High Technology Centre



The Environmental High Technology Centre may have a number of areas of investigation, such as:

- Research
- Education
- Business Services
- Rehabilitation
- Protection
- Manufactured products

The aim of the centre may be to develop environmentally sound activities by integrating the above areas of investigation.

a) Research

The research activities may relate, but not restricted to:

- Design and development of environmentally sound products that may be manufactured within the Redlands
- Recycling, although there has been an increased take up of recycling in recent years. The activity in some cases is still inefficient, hence the need for research into recycling
- Waste management, disposal and/or recycling of sewerage is an area of major concern for communities and still requires considerable investigation
- Energy Generation. Increased community concerns relating to the impact of burning fossil fuels, suggest that there is a need to develop alternative and renewable energy sources and generation

b) Education

Educational activities within the environmental high technology centre would be strongly linked to research activities upon the site. These linkages may take the form of:

- Working demonstrations. The development of a working prototype as a result of research would serve as an educational tool for business and industry.
- IT and software development. Once a procedure or process has been developed a software application can also be developed and marketed as an educational tool.

c) Business Services

Business service activities that may closely link in with the environmental high technology centre concept may draw upon rehabilitation work performed by the centre or educational and research activities. Possible business service activities may include:

- Consultancies. A growing awareness of the impact of business activities upon the environment has highlighted the need for services of environmental specialists.
- Site Remediation services. The need for environmental balance, post construction or incident, highlights the potential demand for site remediation specialists and the development of their skills.

d) Rehabilitation

Research, education and training in environmental rehabilitation has strong linkages to the Redlands. The large reservations of land for Koala habitats and the Moreton Bay marine park highlight these linkages. Activities that may flow from research, education and training into environmental rehabilitation include site remediation (as discussed above) and nursery and amenity horticulture, specifically relating to native flora.

e) Protection

The centre may undertake research into environmental protection. The flow on from this may be educating business and the community about environmental protection.

f) Manufactured Products

The centre, in partnership with business may seek to develop environmentally sound products, or may set aside lands to encourage environmental business activity upon the site to result in a fully integrated enterprise area. Additionally, there may be scope to manufacture environmental equipment, such as:

- Oil Traps, for the collection of oil and grease so that it may later be recycled
- Filtration units, used to filter grey water so that it may be used again
- Solar Panels & Wind Turbines. The development of alternative energy generation equipment would create substantial export opportunities for the region.

3.0 POTENTIAL EMPLOYMENT OPPORTUNITIES

The environmental high technology centre concept is likely to directly and indirectly create significant full time employment opportunities for the following categories of jobs:

- Scientists
- Educators
- Technicians
- Administration
- Professionals
- Labourer

Appendix 3

Employment Generating Activity Characteristics

DIMENSIONS FOR SETTING PERFORMANCE REQUIREMENTS

Site Area or Footprint of Activity

Small scale - under 1,000 sq m

Moderate scale - 1,000 to 5,000 sq m

Medium scale - 5,000 sq m to 1 ha

Large scale - 1 ha to 5 ha

Extra Large scale - 5 ha to 20 ha

Mega Scale - over 20 ha

Site Coverage of Premises

Intensive - over 60% site cover

Moderately Intensive - 40% to 60% site cover

Extensive - 15% to 40% site cover

Open Area - less than 15% site cover

Amenity, Emissions and Aesthetics

High Amenity - residential and office based business compatible

Moderate Amenity - non-office based business compatible

Low Amenity - scale, appearance, hazard, or emissions restrict compatibility

Appendix 4

Bibliography and Interviews

BIBLIOGRAPHY AND INTERVIEWS

ECONOMIC COMPONENT OF THE REPORT

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2.0 INTERVIEWS

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Vermitech, Sydney
(environmental industry issues)
- Keith Eigeland - Principal
Environmental Management Solutions Pty. Ltd., Birkdale
- Glenn Crompton - Director
AccSpa Pty Ltd,
Alexandra Hills
(recycling)
- Vicki Lane - Department of Primary Industries
- Queensland Horticulture Institute,
Cleveland
- Leonie Youdale & Robert Brolken - Lecturers, Horticultural Dept,
Moreton Institute of TAFE
- Nick Young - Telstra Network Planning
Division
Brisbane
- Steve Taylor - Powertel, Brisbane
- Kevin Quinn - Emerging Industries Branch
Department of State Development
(re Brisbane Technology Park)

- Geoff Pemberton - Lecturer
Brisbane Institute Gateway
Campus, Eagle Farm
(marine industry training and trends)

- (Name not given) - Boat Brokerage Operator
East Coast Marina, Manly Boat
Harbour

- Steve Cordingley - Aluminium Marine Consultants
And Fabricators, Thornlands

- (Names not given) - Operators and Owners of marine
facilities at Eprapah Creek,
Thornlands
(4 operators interviewed)

- David Brown - Redlands Economic Development
And Cloe Rogers-Bell Board
(interviewed on various issues,
including Environmental
High Technology Centre)