Pine Creek
Planning Concepts and
Land Use Objectives
MINISTER'S MESSAGE

Pine Creek is an important centre in the Top End of the Northern Territory and its continued growth and development requires a clear and acceptable land use planning framework to guide and encourage development and associated infrastructure in appropriate locations.

The Pine Creek Planning Concepts and Land Use Objectives 2001 are included in the Northern Territory Planning Scheme as land use objectives and incorporated documents. They provide a policy framework for the orderly future development of Pine Creek.

The planning concepts and land use objectives have been developed in consultation with the local community, including the Pine Creek Community Government Council. I thank the community for its participation in this process and I look forward to its continuing involvement in the future development of Pine Creek.

Tim Baldwin
Minister for Lands, Planning and Environment
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1. INTRODUCTION

Pine Creek is one of the Northern Territory’s oldest towns. The town was established after gold was discovered in the area during the construction of the Overland Telegraph Line in 1871. The town is one of the few remaining gold rush towns in Australia and the numerous buildings and equipment from that era in the town attests to its historic role. Over the past century, Pine Creek has been a significant player in the economic life of the Top End, with housing and community service infrastructure in the town expanding in step with mining activity.

The community has endured a number of mining-related boom and bust cycles, and is currently experiencing a quieter time with the recent closure of the Enterprise (PCGL) mining operation. Mining still remains an influential factor in the area, with Union Reefs (Acacia Ltd) operating an open pit gold mine about 12 km north of the town, and mining leases covering much of the region.

The legacy of mining in the area is also evident in the water that has filled the Enterprise and Gandys pits, the Copperfield Dam, and a number of disused mine shafts in the hillsides adjoining the town.

Pine Creek’s location at the intersection of the Kakadu and Stuart Highways, 220 km south of Darwin (Figure 1) makes tourism a key component of the local economy. Visitors are drawn by Kakadu National Park, historic railway and mining exhibits, opportunities for gold panning, the area’s unique natural landscapes and man-made lakes, accommodation and food supplies.

The continued well-being of the town in the immediate future is likely to depend on the expansion of tourism and agricultural opportunities in the area, while mining may promote further growth in the longer term.

2. PLANNING CONCEPTS AND LAND USE OBJECTIVES

The planning concepts and land use objectives establish a policy framework to preserve and enhance the key attributes of the town. They address current deficiencies and points of conflict between land uses, and provide for the coordinated and economic growth of the town.

The objectives also acknowledge the expected changes to the town’s traditional patterns of employment that will influence the future pattern of land use and provision of services and facilities. Policies are included to encourage the establishment of additional industries in the region, particularly tourism.

2.1. INTENDED OUTCOMES

Together, the planning concepts and land use objectives are designed to achieve:

- improved living conditions through a pattern of appropriately located land uses that show compatibility between activities, and the timely provision of serviced land;
- protection of heritage items, and the respect and recognition in new development proposals of the existence of heritage items and other identified aspects of the town’s character;
- identification and promotion of a town identity based on its historic settlement, an extensive mining period and a high quality outback landscape that is characterised by two man-made water bodies, mixed eucalypt open woodland vegetation, and elevated topography;
- enhancement of open space within and around the town through the establishment of maintenance and improvement programs;
- recognition of key pedestrian and cyclist movement patterns through the town with appropriate provision for a pathway network; and
- protection of the culture and places of cultural importance within the town through respect for their beliefs and cultural differences in the development of the pattern of settlement.

3. PLANNING CONCEPTS

The recommended allocation of future land uses in the Pine Creek policy area is shown on Figures 2a and 2b which are incorporated documents within the meaning of the Planning Act. The planning concepts reflect a recommended land use pattern for Pine Creek to accommodate the current needs and future growth of the area.
3.1. RESIDENTIAL

Existing residential development within Pine Creek generally consists of low density, single detached dwellings. Some duplex style development occurs in Buchanan Street on the eastern side of the town. There are approximately 120 subdivided residential allotments within existing residential areas of which, about one third are undeveloped. Many of the undeveloped lots lie in either Playford Street, on the western side of town or McClure Street on the eastern side of town.

Since 1993 only six new single or attached dwellings have been built in Pine Creek. This is despite increases in the population of over 100 persons to a peak of 770 people in 1994/5. It is likely that this growth was directly related to workforce expansion at the nearby Union Reefs mine. However, the population increase did not translate into increased permanent single-family dwelling construction, but rather additional demountable workers accommodation.

Sufficient serviced urban residential land exists in the town to meet current and short-term future housing demand. When required, five residential development areas (Areas 1-5) are recommended to accommodate future demand within the town. Development of these new residential areas should provide for increased housing choice, with a range of allotment sizes to accommodate a range of dwelling types. However, the future release of these development areas should be deferred until such time as most of the existing vacant serviced lots have been developed. Detailed feasibility studies will need to be completed to determine accurate costs for developing these areas. These studies would investigate the capability of the areas to be economically serviced with power, water, communication and effluent disposal systems.

Development of Area 1 is dependent on the future relocation of the Council depot. The depot occupies valuable community land that would be more suited to residential purposes, given the presence of housing around the site. Relocation of the depot to an industrial site would also enhance the amenity of the residential area surrounding the existing depot.

Area 2 is the current Moule and Ward Street industrial area. Eventual relocation of the existing industrial uses to a new site north of Gandys Road would release this land for residential purposes. Area 3 is vacant Crown land north-east of Whitelaw Street. Some of this land is subject to waterlogging and attention will have to be paid to ensure that adequate drainage is provided. Area 4 is also vacant Crown land north and east of the Health Centre. This area is the most readily developable of all of the suggested sites. Area 5 is within freehold Lot 293 and together with the adjoining Lot 297 provides a discrete development node bounded by the low lying land associated with Pine Creek.

3.2. ABORIGINAL LIVING AREA

Lot 179 between the Stuart Highway and Main Terrace is designated as an Aboriginal Living Area. This area provides accommodation for a small number of families within the town. No extension of this area is contemplated. Kybrook Farm, south of the town, is also included in this designation with about 110 persons currently live there. This community has its own development program but utilises services provided within the town.

3.3. RURAL LIVING

No rural residential land is currently available in the Pine Creek area. It was suggested during public consultation that small rural residential lots of 2 ha to 10 ha would be of interest to those seeking a less urban living environment.

Figures 2a and 2b allocate Areas 6 and 7, west of the town, for rural living. These areas are located within 5 km of Pine Creek by road. Area 6 is accessed from the existing Old Police Paddock Road and Area 7 from Green Valley Road. Most of the area is vacant Crown land except for the western parts of both areas that extends into the Jindare Pastoral Lease. Therefore, prior to these areas being developed for rural residential purposes, this issue must be resolved. The development of land for rural residential purposes in Areas 6 and 7 should be subject to the proponents being able to demonstrate the suitability of the land for...
this purpose, with lots designed to the capability of the land and having legal access.

3.4. Community Services (Including Heritage)

This designation includes land that accommodates government utility infrastructure, community facilities and services, and some heritage sites. Areas of public open space and recreation reserves are not included in this classification and are shown as Open Space. As a consequence of recent gold mining activity, Pine Creek is reasonably well provided with a range of community facilities and services, which are generally readily accessible and available to the whole community.

Area 8 shown in Figure 2a, adjacent to the cemetery and the sewerage ponds, has been identified for Community Use to accommodate any possible future expansion of the cemetery, sewerage ponds or other similar community infrastructure. The community rubbish dump is proposed for relocation to a new site east of town along the Kakadu Highway approximately 2 km east of the power station.

Future development of the designated residential and industrial land parcels would determine when it was necessary to expand or upgrade existing utility infrastructure, and would influence the timeframe for the use of this land.

3.5. Tourist and Commercial Services

The community is becoming increasingly aware of the role of tourism as an important component of a more diversified local economy. The focus of tourism is directed at the historical aspects of this settlement and its location as the southern gateway to Kakadu National Park. As identified in the Katherine Regional Tourism Development Plan, considerable scope exists for the development of tourism ventures and accommodation diversity.

The Pine Creek Council has plans to refurbish an old steam engine, construct some track along the old Stuart Highway alignment, and eventually provide an additional tourist attraction in the area. This would link the town with the old Chinese gold workings south of town.

The designated tourist and commercial land use covers the central part of Pine Creek to the west of Main Terrace south of Baxter Terrace and individual nodes both within and outside the town. This is intended to reinforce the role and function of Pine Creek as the main focus of these activities in the region. The level of existing commercial development appears to satisfy current demand. Future demand for commercial land within the town centre could be accommodated on Lots 37 to 45 on the eastern side of Jensen Terrace.

Other areas identified for this use within the town include the Bird Park on Lot 238 and the adjoining Gun Alley gold panning activity on Lot 210, the restaurant and mango wine distillery on Lot 211, Kakadu Gateway Caravan Park on Lot 181, the Lazy Lizard Caravan Park on Lot 299 and the adjoining Lots 150-152 fronting Millar Terrace. The in-town tourist commercial activities should be compatible with the adjacent residential uses, with the more industrial-type activities being encouraged to locate in the designated industrial area.

The existing Bonrook Lodge and convention centre to the south-east of the town on Bonrook Pastoral Lease has an international reputation as a wild horse sanctuary through the Franz Weber Foundation. Two other areas identified as potential rural tourism nodes are Green Valley and Setay Valley to the west of the town. Both areas are within Jindare Pastoral Lease and have tenancies under the Mining Act.

Commercial development along both the Stuart and Kakadu Highways is constrained by current access limitations to those roads and by objectives contained in the Pine Creek Highway Management Plan 1991.

3.6. Open Space

Open Space-Recreation includes existing and planned sites for formal or informal recreation activities. These include: the parks in town; the existing recreation reserve on Lot 157; the Pine Creek Racecourse and Golf Course; and the western arm of
Copperfield Dam which includes a camping ground, go-cart track and pistol club.

Land adjoining the southern end of the Goldfields processed water dam to the north of Jindare Road west of the old Stuart Highway is also identified as Open Space-Recreation. This area could be enhanced as a wetlands observation area once existing mining tenements have been surrendered.

3.7. **INDUSTRY (INCLUDING MINING)**

A new industrial area is located to the west of Main Terrace and north of Gandys Road near the northern entrance to the town (Area 9).

Public consultation identified concerns about heavier general industry activity in the Ward and Moule Streets area, with a recommendation that this should be reviewed. This industrial area is suggested for eventual conversion to residential purposes. This location is close to the town centre and residential areas to the north of Ward Street and currently contains mining support activities such as the assay laboratory and drilling equipment workshops. There is some incompatibility with the abutting residential land uses.

If new mineral ventures in the region result in increased activity at the assay laboratory, it would be appropriate that the laboratory relocate away from the residential area to minimise conflict. A more appropriately positioned general industry area might encourage further investment in mining infrastructure and support facilities in the town, particularly if the assay laboratory also moved to this site. Area 9 would also be suitable for the Pine Creek Council Depot, if and when a decision to move is made, freeing up Area 1 for urban residential development.

Consideration will need to be given to specific development applications on the site at Area 9, to ensure that possible environmental problems associated with the proximity of this land to the underground aquifer are satisfactorily addressed.

3.8. **MINING**

In addition to the designated areas for industrial purposes, it should be noted that the whole of the Pine Creek policy area has potential for further extractive resource activities, which could take priority over existing or proposed land uses. The mining Exploration Licences and the reservation of a 4 km wide corridor centred on the railway alignment for construction material, mean that extractive activities could occur almost anywhere, subject to meeting environmental assessment requirements.

3.9. **AGRICULTURE**

This designation covers some land to the east of the railway alignment and south of the Pine Creek watercourse, including the existing mango plantation on NT Portion 5096 (Area 10), and extending northwards into Bonrook and Mary River West Pastoral Leases.

As shown on Figure 2a, within Kybrook Farm (Area 11), about 50% of the area has been identified as suitable for horticulture/agriculture subject to the availability of suitable water.

3.10. **PASTORAL**

Large areas of both Mary River West and Jindare Pastoral Leases within the policy area are rugged and of inferior pastoral potential. The areas within these pastoral leases identified for pastoral land uses largely correspond with land that is capable of being managed for grazing.

3.11. **TRANSPORTATION**

A reasonable hierarchy of roads currently covers the policy area. The Stuart and Kakadu Highways are a part of the Northern Territory arterial road network. Access to the arterial system is limited, and no commercial development will be permitted direct access to it. The Department of Transport and Works maintain a number of other roads within the area, to provide access to Pine Creek and locations of significant interest. In addition, there are other unmade tracks around the area.

Construction of the proposed Australasia Railway (NT Corridor) will restrict access to the land lying east of the rail corridor.

Completion of the Australasia Railway will require closure of the current access to the
Sewage Ponds. It is planned that access to the Sewage Ponds will then be provided from the existing cemetery access road. Additional formalised access across the rail corridor is planned using the existing access to the mango farm on NT Portion 5096 and the existing access to Bonrook Station located approximately 1 500 m south of where the rail corridor crosses the southern town boundary. Access to land to the east of the rail corridor will also be provided using the Kakadu Highway.

Within Pine Creek itself, vehicle access and movement is generally considered to be acceptable, safe and efficient. The existing grid pattern of the local road network provides a high degree of accessibility and connection to community, commercial and recreational facilities within the town. However, some consideration might be given to improvements at the intersection of Millar Street and Main Terrace, to better define the desired vehicle path and priorities, for both day and night conditions.

It is recommended, subject to Areas 6, 7 and 9 being developed, that Playford Street be formalised and extended to Eleanor Road at its junction with Enterprise Road (to the west of Lot 238).

The provision of separate pedestrian/cycle pathways within the town is generally unwarranted. These would, however, be appropriate along the Pine Creek watercourse and through Miners Park to link up with the existing paths through Heritage Park and the Water Gardens. The recommendations of the Katherine Region Tourist Association for pathways linking Pine Creek’s tourist attractions and commercial, community and recreational facilities within the town should also be considered.

As indicated previously, consideration should be given to relocation of the informal airstrip if increased use of the facility is anticipated.
4. LAND USE OBJECTIVES
The land use objectives should be read in conjunction with the Pine Creek planning concepts (Figures 2a and 2b) and the supporting information in Section 5.

The land use objectives are shown shaded and it is only those shaded words that are "made" by the Minister as land use objectives within the meaning of the Planning Act.

The following land use objectives have been identified to achieve the desired outcomes in Pine Creek:

To enhance the town’s amenity for residents and visitors. This can be achieved by:
- containing the urban area to the west of the Stuart Highway within the existing mining reserve boundary;
- consolidating existing residential, commercial and industrial land uses into appropriate locations that provide for future expansion and compatibility between activities; and
- providing for adequate protection of mineral resources.

To enhance the town’s pioneering and mining heritage and protect buildings, infrastructure and settings associated with this history. This can be achieved by:
- establishing guidelines to control the standard and appearance of development that abuts or is in close proximity to recognised heritage items;
- providing linkages between the various items of interest; and
- enhancing the visual appearance of the main tourist routes.

To enhance the economic base of the town. This can be achieved by:
- promoting tourism based on the historic settlement, railway and mining assets;
- protecting extractive industry resources; and
- encouraging new industries, including opportunities for agricultural or horticultural production based on the water resources of the Enterprise and Gandys Pits.

To explore the potential recreational and tourism opportunities associated with the Goldfields process water reservoir.

4.1. URBAN STRUCTURE AND DESIGN
To promote development which complies with the Design Guide for Residential and Commercial Development in the Northern Territory. The siting of demountable accommodation, particularly in urban areas, requires special attention to ensure that the amenity of the location is not compromised.

To provide government services and community infrastructure matched to Pine Creek’s population level and composition.

To focus retail, commercial, administrative and civic functions in a central location in the town centre. This will be achieved by encouraging redevelopment of areas within the town that are currently under utilised. The development of home-based ‘cottage’ industry, which is compatible with the amenity of the area, is also to be encouraged.

To encourage a townscape appearance that promotes the pioneering and mining heritage of the Pine Creek settlement.

To retain the existing industrial area located on the south side of Ward Street but limiting future expansion or intensification of this area to low impact activities, to be more compatible with the adjoining land uses.

To provide land suitable for future industry development close to the town, with various sized allotments to suit a range of possible uses. Industries which produce noxious or hazardous waste streams that may enter the groundwater systems should be located away from water collection areas.

4.2. CULTURE AND LIFESTYLE
To provide for housing choice that accommodates the needs of different and changing household types in a range of allotment sizes and appropriate areas as demand requires.
To promote site-responsive design of developments which do not adversely affect the significance of heritage places or objects. Building design should consider:
- the significance of the heritage place or object and whether the proposal will adversely affect the natural or cultural significance of the place or object; and
- whether the location, bulk, form, or appearance of the proposed building is in keeping with the character and appearance of adjacent buildings and the heritage place or object.

4.3. Environment and Conservation

To minimise the impact of development on water supply areas. This can be achieved by:
- ensuring that all new development located within the aquifer recharge area is connected to a reticulated sewerage system or served by an appropriate waste disposal system to the satisfaction of Northern Territory Health Services and the Department of Lands Planning and Environment; and
- ensuring that any development within 100 m of a town water supply bore does not compromise the potable water supply as determined to the satisfaction of Northern Territory Health Services and the Northern Territory Power and Water Authority (Figure 8a and 8b).

To create an interconnected open space reserve along Pine Creek linking the former Enterprise mine pit with the Pine Creek cemetery, Miners (Alex Gory) Park and the historic railway precinct, the Water Gardens and other locations of public open space.

To retain and enhance a significant area of natural vegetation on the perimeter of the town, particularly along the main highway approaches, thus preventing the establishment of any activities alongside the Stuart Highway that would disrupt the free flow and safety of traffic on this arterial road.

To recognise and protect known mineralisation and extractive mineral zones. This will be achieved by ensuring that land use proposals do not knowingly result in the sterilisation of extractive or mining industry resources.

To encourage agricultural and horticultural activities in appropriate areas on land which is capable of supporting such use without causing nuisance to neighbouring properties.

To support continued pastoral activity in appropriate locations.

4.4. Transportation and Infrastructure

To provide appropriate alternate road access to existing lots where access will be severed by the proposed railway alignment.

To encourage safe pedestrian and cyclist movement through the town. This will be achieved by providing pathways and designated routes for shared use, safe road crossing locations, rest points, street furniture and shade protection.

To provide appropriate and safe connections to all areas from the principal access roads.
5. PLANNING CONTEXT AND EVALUATION

5.1. PURPOSE AND STATUS

A sound planning framework will support this changing economic base and provide for future flexibility. This document, the Pine Creek Planning Concepts and Land Use Objectives 2001, describes a coordinated approach to the future development of land use and services infrastructure, while preserving the existing qualities which the community holds in high regard.

5.2. SOCIO-ECONOMIC FACTORS

5.2.1. Population and Growth

The Department of Local Government estimates the population of Pine Creek at approximately 600 persons as at June 2000.\(^1\) This includes Kybrook Farm and an annual measure of tourists.

However, the anticipated closure of the nearby Union Reefs mine in the future (approximately 3-5 years) will probably serve to reduce the community population, as many mine employees are currently accommodated in the town.

Recent Census data indicates that the structure of Pine Creek’s population, in terms of age groups and sex, exhibits characteristics typical of a small mining town; namely a youthful population, a large proportion of children of primary school age or under, and a high proportion of unmarried working-age males.

In planning for the future development of Pine Creek, including provision for appropriate levels of community services and infrastructure, it is necessary to make some judgement about future population numbers. It is expected that the current population level of about 600 persons can remain steady over the next decade, provided that new employment opportunities are created. In this case, the current provision of commercial and community services and facilities in Pine Creek should meet the foreseeable future demands, although some services may need to address the needs of an aging population. Although the current population is only about 600 persons, for land use planning purposes a population level of 1,000 persons has been used for determining the future spatial requirements of Pine Creek.

5.2.2. Mining, Primary Industry and Tourism

The Pine Creek region has a high potential for mineral development. Because mining is a cyclical industry, affected by world and regional economies, new discoveries and new extraction processes, there is a strong likelihood that more mining activity will occur in the Pine Creek region in the future, generating further growth in the town. In the immediate term, however, the town’s well being will depend upon the development of a more diversified local economy. Expanding opportunities for tourism and possibly agricultural or horticultural pursuits (subject to the availability of suitable soil and water resources) offer the best prospects for future stability and growth.

5.2.3. Administration

In addition to the Pine Creek Planning Concepts and Land Use Objectives 2001, the only other planning control document applicable to the area at present is the Pine Creek Highway Management Plan 1991 which restricts land use along the frontages of the Stuart and Kakadu Highways within the community government council area.

Vacant Crown land and leasehold land is administered by the Department of Lands, Planning and Environment. Freehold land is subject to subdivision control under the Planning Act, with the Minister of Lands, Planning and Environment as the consent authority. Control of building within the Town of Pine Creek comes under the Building Act, also administered by the Department of Lands, Planning and Environment.

The Pine Creek Community Government Council is empowered to perform a range of functions within the town boundary. These include provision and maintenance of recreation and sporting facilities, libraries and other community facilities, provision of

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\(^1\) NT Grants Commission 3-year average 1998/2001
community services such as after school and vacation activities for children, collection and disposal of garbage, dog control, promotion and development of tourist attractions and maintenance of sites of historic interest.

Mining activity across the Northern Territory is regulated under the provisions of the Mining Act and must meet the requirements of the Environmental Assessment Act.

5.3. PHYSICAL FACTORS

5.3.1. Existing Land Use

A survey of the Pine Creek area was carried out to determine the pattern of land use activity including heritage sites. Current land use is shown on Figures 3a and 3b.

The old railway reserve through the centre of the town provides a focus for residential, commercial and community uses in Pine Creek. Main Terrace, which connects to the Stuart Highway, is flanked by park and open space on the old railway reserve on the north-east side. Tourist accommodation is available in the town core, as well as restaurants and a convenience store. Detached single family residences and demountables or caravans provide the bulk of the residential accommodation, sometimes in association with other uses such as tourist and community services. An Aboriginal town camp is located at the north end of the town, with Kybrook Farm Aboriginal Community, south of town, providing additional accommodation. The Council offices and community hall are located on Main Terrace, with a Council works depot and the Health Centre nearby. The Pine Creek Primary School occupies land off Millar Terrace. Some light industrial uses have established on Moule Street. A racecourse and golf course are located just outside the town boundary on the Kakadu Highway, and the sewage treatment facilities and town cemetery are east of the Stuart Highway. A mango farm, which utilises old alluvial gold workings for water storage, is located in the south-east corner of the town.

The now inactive open pit gold mine to the west of the town has left behind two lakes, a tailings pond and process water reservoir and industrial land on which the mill facilities were located. The Stuart Highway was relocated as a bypass to the east of the town to accommodate this open pit development. The capped and revegetated tailings pond and the process water reservoir lie south of the town boundary.

5.3.2. Heritage

Aborigines, Europeans and Asians have all contributed to the heritage of the Pine Creek area. Aborigines used the local rock as a source for tools. Archaeological surveys have determined that the largest known complex of Aboriginal quarries in the Northern Territory was established in this locality. Extensive surface disturbance has occurred for this purpose. The number of sites still present is testimony to the scale of the operation.

There are also a number of recorded Aboriginal sacred sites within the policy area. Under the Northern Territory Aboriginal Sacred Sites Act 1989 an Authority Certificate is required from the Aboriginal Areas Protection Authority (AAPA) advising of, and specifying any constraints to, a proposed change of use or major works on land containing a sacred site. A certificate is also required from the AAPA to confirm that sites for a proposed use or activity do not contain a registered or recorded sacred site.

It is possible that there may be other sites not yet recorded by the AAPA within the policy area. A tree which stands adjacent to the creek on Lot 281, is regarded by local Aboriginal residents as sacred, although it has not been registered or recorded in terms of the Northern Territory Aboriginal Sacred Sites Act.

A National Trust of Australia (Northern Territory) study conducted in 1982 identified a number of heritage sites in the Pine Creek district related to European and Chinese mining activity. The study resulted in the formulation of the Pine Creek District Heritage Scheme, which has status under the National Trust of Australia (NT) Act. Two of the zones identified in the study, the Pine Creek Railway Siding and Pine Creek Chinatown, occur in and adjacent to the town (see Figure 4). The Pine Creek Railway Siding heritage area is within Alex Gory Park,
located on the east side of Main Terrace. The Pine Creek Chinatown heritage area was located approximately 1 km south-west of the town within Lot 285, which is owned by the Crown. However, the recent mining activity in this area has all but obliterated the original Chinese settlement. Evidence of the Chinese occupation and mining can still be found in the area immediately south of the town in the Bonrook Pastoral Lease, adjacent to the Old Stuart Highway.

In addition to the two areas, there are five other declared heritage sites within Pine Creek. These include:

- Pine Creek Post Office and Repeater Station (Museum and Library);
- Pine Creek Bakery;
- Old Bonrook Station Homestead;
- Old Playford Club Hotel (now a private residence); and
- Old Pine Creek Butchery (Fred Frith’s House).

A ‘Heritage Trail’ provides a walking tour that links the first four places listed above.

5.3.3. Land Tenure

Land tenure and ownership are important factors affecting the availability and rate at which land can be developed. Figures 5a and 5b illustrate current land tenure in the Pine Creek area.

Four pastoral leases: Mary River West, Mary River, Jindare, and Bonrook; surround the town. A number of freehold parcels and Crown leases are also located within the policy area outside the town boundary. Of the approximately 1,500 ha within the town, about 1,300 ha are vacant Crown land, with the remainder either freehold or leasehold.

The area of Pine Creek, east of the old Stuart Highway alignment, has been reserved from mining under RO 1381 (Reserved from Occupation). This reservation was established to preserve resources that may be suitable for construction of the railway. This reservation is likely to be removed following construction of the line.

5.3.4. Land Resources and Capability

Pine Creek is situated on moderately sloping ground, at an altitude of approximately 200 m Australian Height Datum (AHD). The land slopes gradually to the east. To the north, the stream that gives the community its name, also flows to the east. Immediately south-west of the town lies a series of hills, with relatively steep slopes, sharp crests and numerous immature creeks. The physical features of the land are shown on Figures 7a and 7b.

Some of the land within the town, and areas in the adjoining pastoral leases, may be suitable for additional agricultural/horticultural development, providing that soils and water are available to support this more intensive development.

Areas regarded as unsuitable for urban development include:

- the lower foothills up to the ridgeline that are generally characterised by steeper slopes and shallow soils covered by stone and gravel. Rock outcrops are also evident on the upper slopes;
- undulating areas that are severely disturbed by old mine workings. These locations are typically in areas of shallow lithosols and have extensive surface cover of stone and gravel; and
- drainage channels where potential erosion and flooding problems exist.

Rugged terrain and flood prone and seasonally waterlogged drainage channels will restrict future development in parts of the area. Additional urban development will be mainly limited to infill and expansion of existing developed areas within the town.

Given current expectations for growth there would appear to be sufficient developable land for urban purposes already within the town boundary. Expansion beyond this area is not likely to occur in the foreseeable future.
5.4. INFRASTRUCTURE AND SERVICES

5.4.1. Community Services

Pine Creek contains a range of essential community services and facilities to serve its basic needs. Facilities include a pre-school and primary school, police and fire stations, post office, community health centre, a community council office and depot, a public library and a multi-resource centre comprising a hall, tennis courts, public toilets and an indoor recreation facility. A non-denominational church building is shared by various religious organisations. More significant medical, health and welfare services are available in Darwin and Katherine.

The pre-school and primary school have capacities of 50 and 90 students, respectively. The enrolment in both facilities currently totals 50 students. As the regional population ages, basic medical services for the elderly may require upgrading from their current position to match a higher level of demand.

In general, even a doubling in population would have only a marginal impact on the existing level of most of the existing community services, given current utilisation. The need for further facilities in the future is therefore expected to be low.

5.4.2. Power and Water

Some of the public infrastructure established in the Pine Creek area is shown on Figures 8a and 8b. All major services including electricity, water, sewage and communications are currently available. Existing capacities are considered adequate to serve current needs and to provide for some growth.

Additional power and telecommunication capacity is not anticipated to present a problem unless the demand is related to industry and of a significant nature. Electricity is supplied from a natural gas generating station on the Kakadu Highway. The Darwin-Katherine high voltage powerline passes to the east of the town, with a substation located off the Kakadu Highway.

Historically, water was supplied to Pine Creek and Kybrook Farm from borefields located just north of the town and south of Kybrook Farm. These borefields exploit two aquifer systems of mediocre supply, which were previously identified as being a limitation on future expansion. In the early 1980s Renison Gold Mines developed a substantial surface water system for their operations, virtually drought proofing the town supply. As a result Pine Creek and Kybrook Farm are now served by substantially upgraded water systems. Wet season flow in Copperfield Creek adjacent to Kybrook Farm is pumped to Copperfield Dam where it is stored for Dry season use. From here water is pumped to the town storage tanks and reticulated to the town. Water from Copperfield Dam can also be pumped to Kybrook Farm to supplement its supply.

A significant increase in domestic demand may require further storage facilities to be developed in the town. Although the surface supply has replaced the borefield as the primary source of town water, the aquifers are still important and any development over them needs to be assessed carefully. The approximate extent of the aquifers is shown on Figures 6a and 6b. The borefields are used as a back-up supply, and during the Wet season.

Mangoes are a proven crop in Pine Creek. Opportunity for expanded production depends on availability of surface water supplies, as groundwater resources are limited. Allowing for maintenance of environmental flows, up to 20% of streamflow may be diverted and stored from the Pine Creek catchment. This would be equivalent to approximately 500ML/year potential water storage for irrigated horticulture. Up to 250 ML/year is already diverted from the Pine Creek catchment to maintain good water quality in the abandoned Enterprise and South Gandy's gold mine pits. After allowing for evaporation losses from the pits, there would be sufficient storage for dry season irrigation of up to 100 ha of mangoes. However, the feasibility of using the pits for irrigation will need to be carefully assessed before sustainable expansion of horticulture can be considered.
Effluent disposal within the town is by a reticulated sewerage system draining to a pump station to the north-east of the town. From there, sewage is pumped to the open-air treatment ponds located near the cemetery (see Figures 7a and 7b). There is sufficient land abutting the existing ponds to cater for additional expansion of this facility if demand requires this action. As the site is well removed from the living areas of Pine Creek, infringement of required buffer distances is not anticipated. Treated effluent is used during the Dry season to irrigate Heritage Park and the sports oval. During the Wet season there is partial discharge of effluent into the downstream section of Pine Creek.

KYbrook Farm has both reticulated water and electricity, with wastewater disposal provided by a gravity sewerage system to ponds on the property.

5.5. OTHER ENVIRONMENTAL FACTORS

5.5.1. Flooding and Stormwater Drainage

Approximately 270 km² (67%) of the policy area is drained by the Pine and Bonrook Creeks flowing to the east and Copperfield and Playford Creeks to the south, all ultimately discharging into the Cullen River, a tributary of the Daly system. Of the balance of the policy area, the north-east drains via Harriet Creek to the Mary River, with the north-west draining into the Daly system via the Douglas River which begins less than 5 km from the Town of Pine Creek.

The natural drainage of the area of the town is from west to east. Pine Creek is the main watercourse through the town. It rises in Green Valley and traverses the northern part of the town past the Enterprise pit to beyond the town cemetery (Figure 6a). Although land in the town is generally well drained, some areas adjacent to Pine Creek and several small watercourses that drain into it, are subject to Wet season inundation and need to be avoided as development sites. A comprehensive study of the flood potential of the town has not been undertaken and it is therefore not possible to accurately determine flood levels for events of 1% AEP (Annual Exceedance Probability). In the absence of suitable flood mapping and data, land development proposals need to demonstrate that the potential for flooding is minimal.

The relatively easily eroded nature of the land allows damage to occur and land development should minimise alteration and disturbance to natural drainage systems. This is required to minimise the potential for surface degradation and deposition of sediment in watercourses.

Inappropriate development should not occur on low lying land. A management plan could be formulated, adopted and implemented to maintain the Pine Creek watercourse as a desirable element of the landscape.

5.5.2. Climate

The climate in Pine Creek is monsoonal with two distinct seasons: Wet and Dry. The temperatures are more extreme, and with lower rainfall, than at the coast. In June and July the daily maximum ranges between 29°C and 32°C, and between 37°C to 41°C during October and November. The annual average rainfall of 1140 mm is received between December and March.

5.6. TRANSPORTATION

5.6.1. Road

The Stuart Highway, which passes to the east of the town, is the Northern Territory's main north-south transport route. For reasons of traffic-carrying capacity, safety and maintenance of the commercial health of the community, access to and from the highway is restricted by the Pine Creek Highway Management Plan 1991.

Under the provisions of the Pine Creek Highway Management Plan 1991, development of land within 500 m of the centreline of the Stuart and Kakadu Highways requires the prior consent of the Minister for Lands, Planning and Environment. Some previously developed urban land falls within this 500 m area. The proximity of the highway to existing and future development areas may require noise attenuation measures such as landscaped buffers, mounding, fencing or a combination of these.
In response to concerns about heavy vehicle movements in the town, a road train turnaround and parking facility has been provided on the Gandys Road near its intersection with Main Terrace. This facility provides for the breakdown and unhitching of trailers, allowing prime movers into the community to make local deliveries with minimal conflict to the movement of local traffic.

Directional signs have been provided at the town entrances and at the Stuart Highway/Kakadu Highway intersection to encourage travellers to visit rather than bypass Pine Creek. As further encouragement for visitors by road, several parking areas for campervans and caravans have been provided on the east side of Main Terrace.

5.6.2. Rail

The proposed Australasia Railway (NT Corridor) shown in Figures 7a and 7b will follow an alignment east of the town, crossing the Kakadu Highway about 1 km east of its intersection with the Stuart Highway. There are, however, no plans for providing a stop to serve Pine Creek.

5.6.3. Air

An unsurfaced airstrip, located adjacent to the Stuart Highway on the eastern edge of the town, is used infrequently by light aircraft. It is now only 900 m long and will be further shortened by construction of the railway. Because of the community’s accessibility from Darwin and Katherine by road, the role of air transport in the movement of goods and services to and from Pine Creek is very small, reducing the necessity for the airstrip. If future service by air is to be encouraged, an alternative location for the airstrip should be investigated. A sealed runway dating from the days of World War II is located about 15 km north-west of the town, outside the policy area. A helipad is located behind the Police Station.

5.7. Community Concerns - Townscape

Pine Creek’s pioneering and mining heritage is recognised as an important element in the town’s cultural development, and in the shaping of its character and identity. This heritage can be identified for both residents and visitors alike. The town’s long history, and the good range of well preserved buildings and other relics of early activity in the area, firmly establish a level of permanence and character, which make the town an attractive living environment. The community has requested that the town’s history is reflected and reinforced through its built environment and through the landscaping of its public roads, open spaces, town entrances, signs and community facilities. A comprehensive set of building and streetscape guidelines would assist in achieving the desired consistency in the townscape and would ensure compatibility between land uses.

The Pioneer Discovery Trail serves to further enhance the ‘pioneer’ and ‘gateway to Kakadu’ themes, tying in with the existing Heritage trail. Common signage and a theme trail map have been used in order to further link the two projects.
NOTE: The land use information depicted on the map was compiled from a land use survey undertaken at the policy stage on 21st June 1994. The information depicted has been obtained from visual observation only on the date recorded and requires confirmation from the respective land owners and lessees.

PINE CREEK
Existing Land Use - Townsite Area

Figure 3a
NOTE: The land use information depicted on the map was derived from a land use survey undertaken of the policy area on 29th June 1999. The information depicted has been derived from visual observation only on the data provided and requires verification from the respective land owner and lessee.

PINE CREEK
Existing Land Use - Policy Area

Figure 3b
Pine Creek
Major Physical Features - Townsite Area

Figure 7a