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**From:** Margaret Clinch  
**Sent:** Wednesday, 3 September 2008 8:55 PM  
**To:** Committee, CCWEA (Reps)  
**Subject:** H of Reps Committee on Climate Change. Coastal Communities

3.9.2008

The Secretary,  
House of Representatives  
Standing Committee on Climate Change,  
Water, Environment and the Arts,  
Inquiry into climate change and environmental  
impacts on coastal communities  
Parliament House,  
Canberra, ACT

Submission No:	..... 1a .....
Date Received:	..... 3-9-08 .....
Secretary:	..... [Signature] .....

Dear Sir/Madam,

Please find below a submission to the Committee.

This is a second submission, responding to an invitation from the Chair of the Committee at the hearing held recently at Parliament House, Darwin.

M A CLINCH

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Submission (second) from Margaret Clinch to

The House of Representatives Standing Committee on Climate Change, Water,  
Environment and the Arts.

Inquiry into Climate Change and Environmental impacts on Coastal  
Communities. 20.8.2008

**How will climate change affect the NT Coastal Communities ?**

1. Introduction

This submission, put together immediately after my verbal presentation at the Committee's hearing in Darwin on Wednesday, 20 August, 2008 is to further inform the Committee. The text will be emailed directly to the Secretariat. However, there are a number of Appendices, including aerial views, listed at the end of the submission. As I lack the computer capacity to scan and attach these

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to emails, a complete hard copy of text and appendices will be mailed to the Secretariat.

## 2. Credentials

This is a personal submission. However much of my ability to contribute derives from my membership of PLAN: the Planning Action Network, Inc. This is a community organisation which has for the last fifteen years worked to protect the living environment of Territorians.

This submission is mainly about Greater Darwin in its coastal context as part of Darwin Harbour and catchments. It supplements the initial submission dated 30.3.2008.

## 3. Setting the scene

Darwin is a small tropical capital city lying on a beautiful harbour of about 450 square kilometres. There is both a wide outer harbour, and an inner harbour with its catchments. First settlement was in 1869 and the population small, the harbour has until recently been in pristine condition. (Appendix A)

Top temperatures hover around 28-32° Centigrade. Monsoonal seasons contrast between a Dry April-September (Winter) with prolonged sunshine, and Wet (Summer) October - March with tropical rains, and the potential for storms and cyclones.

The natural vegetation is tropical savanna. Rank vegetation is burned off in the Dry.

With a population of about 100,000 people, we are remote from other populations.

Initially government was by South Australia, changing in 1911 to Commonwealth administration. Since 1978 the Northern Territory (NT) has been a self governing territory. Longstanding industries are cattle, fishing, mining and tourism. Tourism is the major industry of the Top End. Pearling is an important specialist industry of international significance.

Seeking rapid economic development, particularly since 2000, the NT governments are fostering an industrial boom based on ocean gas. The present government sees its future in attracting industry to Darwin, and becoming Australia's northern port, interacting with Asia.

## 4. World Climate Change, and the Greenhouse Effect

The current wisdom is that, without a reduction of burning of fossil fuels in the world, including Australia, temperatures will increase, sea levels will rise, and storm action will be more frequent and intense. Minimising the impact on the atmosphere of emissions will depend on less use of all fossil fuels which release

carbon dioxide into the air.

Whilst using gas for actual energy generation in Japan, or elsewhere, may produce less CO<sub>2</sub> than coal, one must not ignore the other emissions released in Australia in preparing the LNG for transport.

#### 5. Planned new heavy industries in Darwin

In contrast with longer established southern cities, Darwin plans massive new 'downstream' industrial processes, such as aluminium refining, fertiliser, and concrete production, and hosting Dow Chemicals locally, with a whole range of processing. A ship graveyard has also been proposed. Some of these industries would use lots of water, including precious ground water.

Late in 2007, Planning Minister Delia Lawrie decided to locate industry in, or near, Darwin Harbour, at Blaydin Point (Middle Arm Peninsular). This was a sudden reversal of an earlier promise limiting harbour industry to the one existing ConocoPhillips LNG (gas freezing for export) plant, on Wickham Point (Middle Arm Peninsular) opposite the CBD.

The NT Government is now so desperately locked into attracting the Inpex LNG gas project away from Marat Islands, or a special natural gas hub in Western Australia (WA), that an election was called citing that issue. The stated aim was to provide 'certainty' for Inpex that this second LNG plant could come to Middle Arm Peninsular at Blaydin Point. There remains strong public opposition to this site.

#### 6. Greenhouse Gas Exemptions

Given the Australian Government's drive to reduce Greenhouse Gas Emissions, can the NT expect to see new industries in Darwin Harbour exempt from Climate Change and Greenhouse policy ?

The situation is different now that Australia has signed the Kyoto Agreement which is binding on everyone.

Public advertisements by the Commonwealth Government now state:  
'If you think Climate Change won't hurt our economy, think again'

The policy affects us all, but the NT Government may like to assume these rules will not apply here. Whether it is just an LNG processing plant, or downstream industries as well, the CO<sub>2</sub> emissions cannot be ignored.

#### 7. How might the NT reduce the growth of CO<sub>2</sub> emissions ?

There is huge potential for seasonal solar, and wind power. Throughout the year

there may be a possibility of harnessing tidal power from a tidal range of eight metres, with high and low tides twice a day, but there have been no experiments.

During Commonwealth days, solar hot water heating was part of most new homes. This has decreased in recent years. In remote locations, off the power grid, solar generated power could reduce dependence of diesel for power for lighting, airconditioning and refrigeration. In city buildings, solar energy might supplement grid power. Simple shading of walls and windows would reduce natural heating of the buildings.

Windfarms might be established in places such as the Cox Peninsular, and to support power generation for remote settlements. Winds blow from alternate directions during the year, being noticeably strong at certain times.

There is an able community contingent of environmentally aware people. Interest is high as shown by the Green Party results in the recent NT election. Darwin City Council has a very useful active recycling project at Shoal Bay. However, in spite of overwhelming calls from the community led by Keep Australia Beautiful, the NT Government is refuses to introduce deposit legislation for beverage containers. Some residents living in high-rise apartments want have more recycling opportunities..

#### 8. Need for Better Suburban Design for Development

Much more could be achieved by improving layouts in new suburbs. Developers retain very little natural vegetation and provide few parks. The government now depends on commercial developers to plan, manage and market new suburbs as integrated estates. These arrangements require greater prescription by government, as developers are strongly profit motivated.

House designs, based on southern (Australian/National) building codes/standards are unsuitable here. Heat retention in concrete box-like structures is wrong for the tropics. Openness, allowing cross ventilation for natural cooling and good orientation, to minimise airconditioning, is important. Now, with there is little choice in design, and southern buyers can easily be sold what is familiar, rather than what is energy saving and coolest..

The move to smaller lots, and bigger houses, needs reversing, because families in the tropics live a lot outside. Larger individual housing footprints, closer together, with narrow streets, block out breezes from whole neighborhoods, leaving no room for protective shade trees. Hardstand, instead of lawn grass, increases heat generation.

Fewer parks, the privatisation of foreshores, and building on green open spaces, all reduce natural cooling, and the ability for the community to take their recreation outdoors. New suburbs built without schools, child care, or community halls, mean that walking or cycling to these community facilities is impossible. They must be replaced by bus or car journeys.

Darwin is remote from many supplies, including much supermarket stock brought here primarily by road. There are concerns about Darwin grown products being transported back to Darwin from southern markets, because big supermarkets are not geared to buy locally.

Even with our small population, there are peak hour traffic jams for commuters, often using large four wheel drives. With the satellite city of Palmerston, there are strong calls for light rail, for the 'park and ride' and for dedicated cycle paths.. Rhetoric recognises the need for better transport, but nothing has been done, except some small improvements have occurred in bus transport.

Unfortunately 'vision' type suggestions for a high cost cycle path all along Mindil Beach, from Myilly Point to Bullocky Point, are impractical. Experts and local residents know that wave action would soon destroy such an expensive cycle path, and sea levels are rising.

#### 9. Need for Better Greenhouse Design of CBD Buildings

During the last fifteen years, there has been a developer-driven rush to denser CBD living, with buildings up to 30 storeys. Some also have shop and office components. These buildings maximise even small CBD lots, and another 31 storey building is currently being proposed. Such buildings increase electricity consumption per lot, particularly where living and/or working space is rented, not owned by occupants.

Centralised airconditioning should be capable of individual unit adjustment. Buildings should be set back from the street, equivalent green space provided to prevent solid concentrations of heat, and to attract people outside, and make them less dependent on electricity to live. Living in airconditioning can be bad for health.

The functional design, height, mass, location and frequency of these buildings must be regulated, including for greenhouse purposes. The potential for retro-fitting is very limited. In any case, most of the older buildings, of 5-10 storeys, have better functional tropical design. They are less box-like, more site oriented, and further setback, with more exterior shading. .

Experience has shown that trade-offs in design of new buildings cannot be relied upon to achieve better overall outcomes. There must be clearly quantified mandatory regulation to force approving authorities to make effective decisions. Specific tropical standards are essential for the Top End..

A report from the Urban Development Advisory Panel completed in February, 2008, following the CDB Forum of April 2007 regarding CDB Design is at [www.nt.gov.au/lands/planning/docvuments/Urban Design Advisory Panel](http://www.nt.gov.au/lands/planning/docvuments/Urban%20Design%20Advisory%20Panel).

#### 10. Foreshore and Canal Residential Estates

Rising sea levels from climate change, are a major concern in coastal communities. Greater Darwin is built around a harbour and coastline.

During the last twenty years, harbour side canal estates have been built at Cullen Bay, Bayview , and at Tipperary Waters. Dense multi-storey development is in progress as the Waterfront Project in the old port area. More details are given in my first submission. The creation of estates has involved the destruction of mangroves, dredging, filling to create building lots, marinas, stone walls and locks.

Earlier the Darwin Casino was built in the old Mindil Beach Reserve. It was elevated on an artificial mound, with a protective stone wall in front. The Coconut Grove coast is naturally low, near Nightcliff, including the Minimarina Larrakia community.

In places, mangrove communities, and public foreshores which are natural buffers against storm damage, have been destroyed. to create waterfront lots and marinas, as at Tipperary. Given that Darwin and environs is at risk each wet season from tropical cyclones, these low-lying estates are at risk..

In the Waterfront Project, we are told that the protective wall is at 5.5 metres, and the lock will be at 4.5 metres. Residential towers will have no accommodation at ground level. But how will emergency services evacuate thousands from the site, in the face of a storm surge, with only one efficient exit, on foot, or in waterlogged vehicles ?

#### 11.. Risk of Cyclones and Storm Surge Potential

A risk analysis approach to safety from a storm surge catastrophe does not seem enough protection. Insurances can be expected to be high. The Darwin Cyclone Code is based on Category 4 Cyclones. Some engineers want a Category 5 basis.. Concern has increased since Cyclone Katrina when there was so many deaths, and breached walls.

Destructive cyclones have hit Darwin about every thirty years. One seems overdue now. Cyclone destruction in Darwin could be a second national disaster. We should try to protect people and minimise costs by not taking risks.

Quantified mandatory legal provisions for building in low lying areas must be included in the Planning Act, and in the NT Planning Scheme and not merely be referred to in preambles and broad objectives, or separate documents. Then the provisions must be honoured, not often ignored like Section 51 of the Planning Act (Appendix G).

#### 12. Mangroves, Health, and Catchment Vegetation

The Darwin Harbour Alliance in 2000 stressed the need for buffer zones around

Darwin Harbour, between tidal mangroves and residential areas. It found that 1600 metres from mangroves was a World Health Organisation stipulation on residential development in the tropics. Increased temperatures in our coastal communities will result in more insect borne tropical diseases, increasing prevention and treatment costs.

Mangroves are marine nurseries, rich in biodiversity, acting as coastline buffers in time of storms. Clearing and dredging mangroves exposes acid-sulphate soils which corrode foundations, and give off gases. Similarly catchment vegetation should not be cleared. Cleared ground, and hardstand increase rapid eroding run-off. In contrast, vegetative shade protects against rapid evaporation.

### 13. Impact of gas Industry on Darwin Harbour

In 2001, a petition of 6500 signatures supported having a gas plant, but asked the government to place the proposed ConocoPhillips LNG plant away from Darwin Harbour, at a site chosen by independent assessment. People were concerned about the polluting of the harbour, airborne pollution over populated areas, and the effect of the plant on tourism. This was ignored, and the ConocoPhillips plant was placed on Wickham Point, a low-lying point on Middle Arm Peninsular, opposite Darwin's favourite family outdoor eating spot on Stokes Hill Wharf.

Soon afterwards, the NT Government promised no more industrial development on the Middle Arm Peninsular, and this promise was included as Clause 9.1.2 of the NT Planning Scheme which came into force on 1 February, 2007. However, late in 2007 this promise was suddenly reversed by Delia Lawrie, Minister for Planning. Again the community asks for the independent assessment of the choice of any industrial siting, including the Inpex LNG plant.

The NT has no real Environmental Protection Authority (EPA). The public was promised a functioning EPA in place by the end of the first session of the present ALP government in 2005. The NT has an EPA in name only.

### 14. Proposed second LNG plant on Middle Arm Peninsular

The Inpex LNG processing site is proposed on an uncertain piece of ground at Blaydin Point, Middle Arm Peninsular. Like the ConocoPhillips plant, it is isolated geologically, and could only be approached by a road gouged out of tidal mangroves. It is surrounded by mangroves. A second jetty would need to be built, in the Elizabeth River, cutting off public access to mudcrabbing creeks. The plant would seem very vulnerable. Darwin is subject also to relatively frequent earth tremors. from movements in the Banda Straits. There was one this year.

### 15. NT or WA ? - the climate change implications for Darwin Harbour

The WA has a schedule, finishing in October, 2008. to assess where the new

LNG plant/s should best be located. In the meantime, the NT Government, has, for the last year, been begging the Inpex Company to build its plant on Blaydin Point on Middle Arm. Peninsular. We are told exploratory drilling for pylons is about to commence.

Chief Minister Henderson gave, as the purpose of the recent Northern Territory election, his need to 'give Inpex certainty'. The results indicated this was not popular with the electorate. Indeed, if the 30% who are believed not to have voted, had voted, the present government may not now be making the decisions. The Chief Minister has recognised that the people want to be consulted and heard.

Current Australian policy is to reduce greenhouse gases and thus climate change, destructive weather, and sea level rises. As part of this, the Commonwealth government is developing an Emissions Trading Scheme(ETS). In this context, placing this Inpex LNG plant in Darwin Harbour, instead of at a carefully assessed site in WA, at least leaves doubts in the public mind. Placing it in a gas/oil hub amidst relevant and experienced expertise, with the necessary emergency services seems wiser.. I am informed that Inpex is a partner in two coal burning power stations in Queensland and Victoria, with high ongoing emissions.

16. Direct Climate Change reasons why Inpex is better in WA, not NT

Environmental practices, including monitoring can be expected to be much better established in WA. than in the NT.

#### Comparative length of pipeline to be manufactured, supported and used

A pipeline to bring gas to the WA coast from the Ichthys field in the sea would be about 300 km long. A whole new pipeline to Darwin would be 900km long, or 1100km long if it must avoid an ocean military practice area across the north coast. It is thought this pipeline could not be made in Australia. To reach the plant site, the pipeline would cross about nine km of mangroves in Darwin Harbour. As with the Wickham Point LNG plant, the access road to the plant would cross tidal mangroves. Maps of Darwin Harbour can be very deceptive in that mangrove areas, rather than dry land, appear as coastline. Using Google Earth gives a more accurate picture of the location of the far more limited dry land.

#### Limits on LNG tankers in Darwin Harbour

Darwin Harbour is a large natural harbour, but its deep channels are narrow, and LNG ship movement subject to tides, especially when loaded. LNG vessels are amongst the largest in the world. For safety reasons, each has a 500 metre exclusion zone. The recently resigned Chairman of the Darwin Harbour Advisory Group, John Bailey, confirms the need for dredging at Point Charles, and near harbour near East Arm, to allow the ships to reach a new Blaydin Point jetty, in the Elizabeth River. Laying a pipeline would also cause disturbance under the



harbour. Darwin has World War II wrecks, including American war graves in these areas.

At the time an Inpex plant could be completed, it is estimated that about 420 LNG tankers would be needed to enter and leave Darwin Harbour each year, to transport all the LNG to Tokyo. Given turn around times for loading, the massive tides, the danger of bulk tankers passing (?) in the channel, and disruption to other harbour traffic, this volume of traffic seems impossible.

Tankers also pass the Larrakeyah Military base at Emery Point. All the gas is contracted to Tokyo to generate energy in a city of over 12 million people. There could be constant pressure to avoid delays.

#### Availability of LNG for Australian Domestic Use

We understand that WA agreements provide for 15-30% of LNG remaining in Australia for our own use, meaning less emissions than coal power generation.

In the NT, we fear, from the much vocalised desperate drive by Chief Minister Henderson to attract Inpex to Darwin, that his agreement may be unconditional, being mainly for the purpose of creating jobs. This would be particularly unfortunate, given that the Amadeus Basin gas driving the main Darwin powerhouse at Cnannel Island is now limited. However, the NT has other gas resources at Black Tip, and elsewhere in the Bonaparte Gulf.

#### Floating LNG Plant Option

Another alternative would be a floating LNG plant. Inpex is spending over \$100 million to develop a generic offshore floating LNG plant, first in association with ABADI offshore location just inside Indonesian territory. As the present Inpex gas (est. 10 trillion cubic metres) has an average 8.6% CO<sub>2</sub> content, it would seem of benefit to immediately separate and dispose of ithe CO<sub>2</sub> content under the sea, rather than releasing it into the atmosphere..

#### 17. Other heavy industries proposed for Middle Arm Peninsular

The NT government is a determined promoter of industry in the NT, The NTICN Newsletter lists foreshadowed major projects. Since late 2007, Middle Arm Peninsular has been a focus for potential heavy industries, adding to the East Arm hinterland which mostly has industrial storage and transport-related industries. All areas are low lying, often created by over-filling mangrove areas..These areas are now subject only to Planning Minister approval. for industrial uses.

Proposed industries include aluminium processng, producing phosphate fertiliser, ammonia and urea, polyethylene and manganese, biodiesel, and condensate processing. Most recently the emphasis for Middle Arm Peninsular, apart from Inpex LNG, has been on refining 'rare earth' ores from Nolan's Bore in Central Australia, and a Dow Chemical factory., which are probaby interdependent. These are causing particular concern because of the possible

polluting of Darwin Harbour, and the air over Greater Darwin populations.

In previous years, wind-borne pollution from iron ore stockpiles awaiting export was a problem in Darwin. If ores are transported long distances, there is a danger of contamination, as recently occurred in Esperance, WA. By-products of rare earth company, Arafura Resources would include about nine barrels of uranium material each week. Dow Chemicals, reportedly the producer of 'agent orange', is associated with dioxin pollution in its head office state Michigan, USA, and has a questionable record in Bhopal, India.

The issue in this submission, however, is that the site would be on very lowlying land, or even land reclaimed from /and adjoining mangroves. In normal times, this would increase the potential for harbour pollution, given our heavy, prolonged wet season rains causing wet season inundation. However, given the present period of climate change, rougher weathers, perhaps with cyclones, and rising sea levels, with risk of storm surge, Darwin Harbour would be even more susceptible to pollution from hazardous materials. The sites are in the midst of capital city populations. Darwin is advertised as a tourist destination where recreational fishing is a favoured activity. In addition Middle Arm is a traditional source of bush foods such as mud crabs.

#### 18. Use of Mangroves for Industrial Development

Several times in the last twenty years, environmental and residential groups have combined their expertise and community strength successfully to fight government initiatives by both the Country Liberal Party (CLP) and the Australian Labour Party (ALP) to use the mangroves for residential or industrial development. There was the Darwin Harbour Alliance, and since about 1999, the Save the Darwin Harbour Group. In the meantime the ALP government's Darwin Harbour Advisory Committee which had departmental support has come and gone, key membership and Chair having in recent days resigned in disgust, for lack of use of its recommendations.

Generally, people across Australia now know how important mangroves are. Guarantees about mangroves preservation were expressed in terms of a percentage of the total mangroves in Darwin Harbour to be saved. Uncertain though that might have been, now this has been swept aside in favour of only mangroves zoned for conservation being protected. As in the case of the Middle Arm Peninsular late in 2007, promises can be broken, and huge areas simply rezoned at a stroke of the Planning Minister's pen.

Industrial plants often roster workers around the clock. The World Health Organisation recognises that living and/or working in low lying tropical areas is a health risk.

Many assume that Darwin Harbour flushes itself daily. As this is not so, the pollution potential is increased with industries so near the water.

On ABC Morning Radio on 22 August, 2008, Minister Delia Lawrie said that the area on the Middle Arm Peninsular available for industrial development, was as large as the whole of Darwin's Northern suburbs. Reference to Google Earth shows that about half of this whole area is tidal mangroves between the areas of low solid ground. These are believed to be small islands. Climate change implications add to the hazards of using this area for heavy industry.

#### 19. Other possible sites for gas and downstream industries.

It is alarming, even in terms of potential pollution, to have an industrial zone as large as our northern suburbs, We always ask that possible sites be properly assessed before one is selected.

Suggestions include Point Margaret at the entrance to Bynoe Harbour (the next bay west of Darwin); the large unused area on the Gunn Point Peninsular between Glyde Point and populated areas to the south; areas in the hinterland of Southport; and areas in the Bonaparte Gulf near Black Tip. gas. Using any of these sites would give populations greater safety..

#### 19. Overall Capacity of Darwin Harbour

Given the list of industries the NT government wants to attract, and the fact it has decided not to create a second port at Glyde Point, it is very doubtful that the harbour has sufficient deep water to physically cope with the future accumulation of of cargo traffic. There is no point in increasing industry, on Middle Arm Peninsular, and extending the East Arm port if this is the case. Both new LNG plants and downstream industries would best be placed outside Darwin harbour at a new deepwater port.

#### 20. Who benefits from multinational industrialisation ?

It is desirable that the Top End's growth be sustainable environmentally, socially, culturally and in a long term economic way.

The recent ABC 4 Corners program, 'The Money Pit' - viewed on 18/8/2008, showed how Port Hedland has suffered, instead of prospered since the iron ore boom. Few families have been attracted, and there was no affordable housing. Many 'single' men live in company compounds, work hard, and spend their money on alcohol and nightclubs, and/or work in a fly in, fly out basis.

Darwin families have been attracted here by the open tropical way of life, and because it is a healthy, fresh air place to raise children. Many will leave if there is industrial pollution. This will not permanently grow the population. Too rapid industrial growth in Darwin, particularly with large multinational companies, unless on very stringent terms, could lead to a similar social fracturing.

People do not want an industrialised harbour. They remark that they do not know what good the ConocoPhillips LNG plant has done them. Careful wording of contracts between big firms and NT governments is important to ensure our expectations are fulfilled. We have already heard the example of Xstrata (Mcarthur River) which for years seemed not to be earning a profit, and therefore not generating income for the NT government. Neither do we wish to subsidise these companies by paying for infrastructure, such as sites and road access, or short change Aboriginal residents.

There is little community benefit from development when overseas companies send profits overseas, and when the products all go overseas as well. Without a slowing of the boom, there will be not time for governments to gain expertise in managing development.

#### 21. Application of Emissions Trading Scheme

It is noticeable that Darwin's industrial boom is proposed just as Australia is planning how to reduce CO2 emissions, and meet its Kyoto obligations. Proposed industrialization includes fertilizer and cement manufacturing, and aluminium smelting. These industries are problems ones .creating heavy omissions. Dirty industries should not be permitted within harbours, or next to centres of population. Unless properly controlled, emissions impost may become another excuse for minimising profit/revenue returns to governments.

#### 22. Climate Change Report

The NT Government issued a 'Discussion Paper on NT Climate Change', prepared by consultants Deloitte, Touch, Tohmatsu in early June, 2008, with comments invited until 24 August, 2008. This report, to be used as a basis of Climate Change legislation has disappointed. ([www.nt.gov.au/dcm/legislation/climatechange/discussion.html](http://www.nt.gov.au/dcm/legislation/climatechange/discussion.html).) Comments received on the report can be read on the same website. There are also submissions from other Territorians on this Committee's own website.

#### 23. Summary and Recommendations.

The essential points to remember are that Darwin is a small capital city with an attractive natural tropical lifestyle, much valued by its residents. It clings to both sides of Darwin Harbour, and its major employment industry is tourism. When there is economic development, as well as protecting our environment, we need our community to be socially and culturally sustainable. The government may not 'Ride over the bastards'. The people must be consulted. The NT government must tbehave responsibly in managing climate change. within Australia.

Implications of climate change for Darwin are:

1. There should be no gas plants or industry on Middle Arm Peninsular in Darwin harbour, where proposed sites are low, and interspersed with mangroves.

2. The foreshores permanently dedicated for public recreation, and serve as natural buffer zones. Beaches and foreshores traditionally belong to the public and should not be built upon.
3. Legislation should include quantifiable clauses for tropical design for both low and multistorey buildings, so as to minimise any need for constant airconditioning.
4. More green open vegetated spaces should be provided in the CDB and in new suburbs, with house lots at least 800sm, to provide for cooling gardens and outside tropical living. All this will break up heat generation. Large paved surfaces should be avoided.
5. A Darwin Harbour Management Authority should be established to manage the harbour as a multipurpose national park similar to the Great Barrier Reef National Park.
6. All areas of Darwin, including the Waterfront Precinct, should be provided with emergency service proedures and shelters.
7. Existing canal estates, and foreshore developments should not be expanded, and no more created.
8. The Environment Protection Authority should be properly established, as a free and independent assessing agency using as its basis environmental, social, cultural and long term economic sustainability in its decision making.
9. Implementation of EPA processes should be monitored for the public interest, and the results published and available at all times. Agreements should be public and not 'commercial and in confidence.
10. Committed long term planning is required for proper land use, community facilities, and infrastructure of all types using climate change principles.
11. Public transport should be improved to minimise private vehicle omissions. 'Park and ride' should be adopted as a model., especially for greater Darwin. Rail goods transport should be maximised, taking long haul diesel transports off the roads where feasible.
12. All gas and heavy industries in the Northern Territory should be subject to the Commonwealth's Emissions Trading Schemeregardless of company ownership.
13. The NT Government should make renewed efforts to engage with, and implement climate change protocols, using knowledge already in its departments, Commonwealth government expertise, and in consultation with the community.

Please acknowledge receipt of this submission.

Yours sincerely,

M A CLINCH  
Darwin

9/09/2008