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>> REPORT

>> RESPONSE TO SUBMISSIONS

>> PORT COMPATIBILITY – IMPACT OF PROPOSED TOWNSVILLE OCEAN TERMINAL AND BREAKWATER COVE RESIDENTIAL PRECINCT ON THE FUTURE ACTIVITIES AND EXPANSION OF TOWNSVILLE PORT

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Transpac Consulting Contact: Warwick Powell 0411 628 084
Client Contact: Peter Trathen

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1 INTRODUCTION

This report presents a considered response to issues raised in relation to the impact of the proposed Townsville Ocean Terminal and Breakwater Cove precinct on the future operations and growth of the Port of Townsville.

Comments in relation to the broad category of issues described under the umbrella term 'port compatibility' were raised by the following submitters:

- Department of Local Government and Planning;
- Department of Primary Industries and Fisheries;
- Townsville City Council.
- Townsville Port Authority;
- Townsville Port Users (via Maunsells);
- Townsville Enterprise Limited;
- Nigel Foster;
- Gail Harrower; and
- Felicity Smith.

1.1 ISSUES

Broadly speaking, the core issue from submissions on impact on port compatibility go to the risk that the proposed TOT and residential development poses to the future development/expansion and operations of the Port, as a result of proximate location of 'incompatible land uses'. Concerns were raised about the possible impediment to the Port in the future and/or imposition of additional costs to the Port in relation to stricter environmental compliance requirements.

For ease of responding to this umbrella of issues, these concerns have been distilled to the following series of four propositions:

- *Proposition 1:* The location of residents in the Breakwater Cove development proximate to the Port will expose them to unacceptable disamenities (noise, odour and air quality emissions);
- *Proposition 2:* Exposure to these disamenities will give rise to increased residential complaints about the Port and user operations;
- *Proposition 3:* These complaints will in the short-term result in increased costs to the Port in handling complaints; and
- *Proposition 4:* In the longer term, vocal complaints will cause a political response in the form of increased environmental compliance requirements through legislative, regulatory and policy change.

Ultimately the cumulative impact of this series of effects is to jeopardise the future of the Port.

1.2 RESPONSE RATIONALE AND APPROACH

The Port of Townsville is an important economic contributor to the North Queensland region. It is understandable that a range of stakeholders have expressed concerns about proposals that may have a bearing on the future expansion and/or viability of the Port.

To evaluate the series of propositions the Consultants have sought to assess available relevant evidence.

The relevant evidence is detailed in Table 1.

TABLE 1: PROPOSITIONS AND RELEVANT EVIDENCE

Proposition	Relevant Evidence
Proposition 1: The location of residents in the Breakwater Cove development proximate to the Port will expose them to unacceptable disamenities (noise, odour and air quality emissions)	• Proximity measures • Noise monitoring and modelling results • Air Quality emission monitoring and modelling results • Odour emission monitoring
Proposition 2: Exposure to these disamenities will give rise to increased residential complaints about the Port and user operations	• Historical evidence on residential complaint activity about the Port • Modelled future complaint activity • Evidence on stated amenity preferences • Evidence on turnover rates measured through re-sales activity of nearby residences • Property prices achieved (absolute change and relativities to market) in nearby residences
Proposition 3: These complaints will in the short-term result in increased costs to the Port in handling complaints	• Historical evidence on residential complaint activity about the Port • Estimate of costs incurred to handle complaints
Proposition 4: In the longer term, vocal complaints will cause a political response in the form of increased environmental compliance requirements through legislative, regulatory and policy change	• Historical evidence on relationship between emission levels, complaint activity and Port activity measured in terms of tonnage and capital works expenditure • Other factors impacting on potential political risk

2 ASSESSMENT OF ISSUES

2.1 PROPOSITION 1: THE LOCATION OF RESIDENTS IN THE BREAKWATER COVE DEVELOPMENT PROXIMATE TO THE PORT WILL EXPOSE THEM TO UNACCEPTABLE DISAMENITIES (NOISE, ODOUR AND AIR QUALITY EMISSIONS)

Discussion

The risk or likelihood of residential complaints about disamenities is a function of the intensity of disamenity plus duration, frequency and temporal distribution of emissions, having due regard to mitigations realised through distance effects and physical interventions. The intensity of emissions at the source together with possible mitigations (distance, climatic and physical interventions) impact on the actual level of disamenity experience at the receptor.

The proposed Breakwater Cove development has some residences located ~400m to ~450m from Berth 10. These are 5-level apartment buildings located at the south-westerly perimeter of the FDA, with direct exposure to the Berth over the proposed 500-space carpark. Other apartment buildings then fan northwards to a distance of ~1,200m from Berth 10. Detached residential dwelling sites are located between ~600m to ~1,750m from Berth 10, and are buffered from that Berth by the proposed 6m acoustic berm and wall [see Figure 1].

FIGURE 1: PROXIMITY OF BREAKWATER COVE RESIDENTIAL BUILDINGS TO BERTH 10

It is evident that approximately:

- 9.5% of detached residential dwellings (or 19) are located within ~600m of Berth 10 (but more than 500m);
- 38.7% (or 77) are located between ~600m and ~800m from Berth 10;
- 41.7% (or 83) are located between ~800m and ~1,000m from Berth 10; and
- 10% (or 20) are located in excess of 1,000m from Berth 10.

No dwellings are located within 800m of Berth 11. Forty-six (46) detached dwellings are located between 800m and 1,000m from Berth 11, with the remainder in excess of 1,000m from this Berth.

Similarly, five and part of one other of the twelve proposed multi-dwelling apartment structures are located at least 600m from Berth 10, two of which are located further than 1,000m from that Berth. Two and part of one are located between 400m and 600m, with three being slightly within 400m from the Berth.

Of note, for direct comparative purposes is the fact that:

- Breakwater Villas and Breakwater Quays on Sir Leslie Thiess Drive are located ~750-800m away from Berth 10;
- Existing dwellings at No. 1 and No. 3 the Strand are ~1,000m from the Berth;

- The proposed Mariner's Peninsula development comprising 90+ apartments is located a little more than ~1,000m away; and
- The proposed residential developments on the Surplus Casino Land site (Resort Corp), to the west of the Jupiters Complex, are between ~800m and ~1,000m from the Berth.

Threshold Issues

A number of Australian Standards have been developed that prescribe appropriate or acceptable nuisance levels for noise, air quality and odour emissions. Port users are also required to achieve certain levels of environmental performance compliance as part of their licensing arrangements. The critical threshold issue for Proposition 1 is whether the measured emissions levels:

1. Exceed accepted Standards; and
2. If so, whether they are amenable to effective mitigations *at the receptor*.[1]

Evidence – Emission Levels

A number of studies were undertaken as part of the EIS into current and forecast noise, air quality and odour emissions from the Port of Townsville.

These studies have found that:

1. On air quality, acceptable EPA nuisance standards for dust are being met and are expected to be met into the future (Air Noise Environment Pty Ltd, 2007 and 2008 various). Specifically:
    a. The *Supplementary Report on Deposited Dust* concludes that the "results of the monitoring of deposited dust levels indicates that, while dust is a feature of the Townsville area, the levels of dust deposition likely to be experienced at the Project Site are comparable to other areas in Townsville and parts of Queensland with no exceedances of the criteria observed" (p. 14);
    b. The *Supplementary Report on Suspended Particulates* concluded that "the monitoring of suspended particulate levels indicates that the levels of both fine (PM_{10}) and total (TSP) particulate concentrations likely to be experienced at the Project Site are within both the national and state goals and criteria" (p. 10);
    c. The *Supplementary Report on Gaseous Emissions* concluded that "[o]verall, the results of the monitoring undertaken at the Berth 10 monitoring station are within the relevant air quality goals and criteria" (p. 10);
2. In terms of potential residential exposure to elevated lead levels, the *Supplementary Report: Metals Emissions* concludes that "the most recently available monitoring data indicate levels of lead deposition within the World Health Organisation indicator level", and that further modelling found that "even at maximum export capacity, maximum predicted ground level lead concentrations are likely to be well below both the annual average and 3 monthly average goals" (p. 12);
3. On noise emissions, acceptable nuisance standards are being met and are expected to be met, with the exception of (a) the loading and unloading of motor vehicles and (b) ship's horns, which are expected to be infrequent (Hyder, 2007; Rumble, 2008). Further based on data contained in the original acoustic reports (Hyder, 2007), Rumble has

[1] It is assumed that mitigations at the emission source are ruled out in-principle as this would represent an unwarranted cost to the emitter, provided that the emitter is operating in compliance with relevant standards and/or licensing conditions.

estimated that scrap metal loading at Berth 10 would produce noise emissions some 16dBA lower than the ship's horn, or 63dBA (p. 2). Rumble (2008, p. 3) notes that "achieving adequate protection for future residents of Breakwater Cove against noise intrusion would be readily achievable" and therefore, "the residents of Breakwater Cove and the Port can co-exist" (p. 6); and

4. On odour, exceedances are anticipated particularly in relation to live cattle exporting (Air Noise Environment Pty Ltd, 2007 and 2008). However, these conclusions are based on conservative assumptions about cattle shipping activities, meteorological conditions and potential durations of impacts. The upshot of the original assessment was that any odour impacts would need to be mitigated through a series of design measures for each of the dwellings.

Therefore, without mitigation, the evidence is that on the whole the Port has and is expected to continue to achieve acceptable levels of environmental compliance, but that exceedance of nuisance standards can be expected in a small number of instances. This conclusion reflects positively on the Port of Townsville and its users, who have made significant investments in recent years to improve environmental management (see Port of Townsville Annual Reports).

A series of mitigation measures have been proposed to address the three identified exceedances:

1. On noise emissions, detailed construction design code requirements are being proposed to achieve appropriate internal performance outcomes that effectively mitigate the noise disamenity of the loading and unloading of motor vehicles, and possible noise impacts of scrap metal loading, at the nearest receptor (~400m). Rumble (2008) makes clear that such mitigations are both practical and achievable without adding substantially to the cost of dwellings; and
2. On odour emissions, proposed design requirements including the requirement of all dwellings to have installed reverse cycle air conditioning (thereby enabling residents to close all doors and windows in the event of odour nuisances), as well as provision of notice to residents of impending live cattle shipping activities (by the Body Corporate) will go towards mitigating the nuisance associated with cattle odours. In this regard, it can be noted that the effective management of expectations is considered to be an important action in relation to achieving satisfactory mitigation.

The Consultants are advised that contemplation may be given to exempting ship's horns from disamenities over which residents have a right to voice complaint. This remedy would effectively prioritise the safety needs of ship's horns for navigation purposes, and remove this emission source as a basis for future residential complaint.

In any regard, as Rumble (2008) has noted, noise mitigation measures are likely to be achievable given known disamenities. In addition to design-based mitigations, it will be necessary to manage people's expectations about the noise environment of Breakwater Cove particularly in relation to potential exceedances such as ship's horns. Full disclosure of possible exceedances to purchasers and residents will contribute to a robust 'buyer beware' environment where potential residents are fully aware of the possibility of ship's horns.

Evidence – Over Pressure

In addition to emission issues, potential incompatibilities between existing Port activities and residences relates to risks associated with the loading and unloading of explosives at the Port. These have been addressed in an updated report on over-pressure by Hyder Consulting and Lloyd's Register. This analysis and clarification of the situation with the Chief Inspector of Explosives provides the following findings:

- That the port may need to reconsider the risk profile at berth 10 in its general duty of care;
- That the port would be less likely to gain a "special berth" licence if there is a future proposal to import >400t of AN.

It is further understood that the FDA scheme has been revised to remove permanent residences within the 400m exclusion zone from Berth 10, a requirement during handling of explosives by Department of Defence. The clarification provided by the Chief Inspector of Explosives and the removal of permanent residences from the 400m exclusion zone, provide resolution for the overpressure issues identified for the Townsville FDA (Hyder, 2008).

2.2 PROPOSITION 2: EXPOSURE TO THESE DISAMENITIES WILL GIVE RISE TO INCREASED RESIDENTIAL COMPLAINTS ABOUT THE PORT AND USER OPERATIONS

Discussion

When residents are exposed to sustained unacceptable levels of disamenity, it is reasonable to expect a certain level of complaint activity. Indeed, even when emissions levels are within appropriate standards it is likely that some residents (for example, those that are more sensitive than others to particular nuisances) will make complaints.

Typically the driver of complaint activity is a function of both the intensity and duration of emission impacts taking into account the mitigation effects of distance and physical interventions (e.g. design mitigations, physical barriers etc.). As noted above, evidence on actual emission intensity and duration indicates that on the whole, emission levels from the Port are at acceptable levels.

The extent to which a disamenity is considered to be unacceptable is also affected by expectations, tastes and other amenity effects. The issue of expectations will be discussed in more detail below.

Threshold Issues

The threshold issues for Proposition 2 are:

1. Whether the known historical record of complaint activity about the Port indicates a significant adverse reaction from nearby residents towards the relevant emission impacts of noise, air quality and odour. This is because known historical complaint activity provides an evidence base as to the likelihood of future complaint activity given existing community expectations and preferences, and emission levels[2]; and
2. The extent to which future emission-related disamenities are anticipated to give rise to complaint activity from nearby residents, and in particular from residents of high socio-economic status.

Evidence

Historic Complaints

The original *Economic Impact Assessment Report* (referred to hereinafter as *EIA: TOT Project Report*, p. 131) considered available complaint evidence. This has been updated by the consultants since the EIS public consultation. Four sources of evidence on complaint activity were examined. These were:

1. The *survey of local residents* undertaken by Transpac Consulting;
2. Data on *registered complaints* presented in *Annual Reports of the Townsville Port Authority*;
3. *Data provided by Townsville Port Authority* (correspondence dated 21st August 2007); and

[2] We note Townsville Port Authority's concern that "a comparison with past complaints … would be potentially misleading" (Correspondence 13 May 2008). However, our preference is where possible to begin analysis of any issue from a known base of evidence, and in this regard data on the number and type of complaints is a reasonable starting position.

4. Data provided to the consultants by the *EPA* which covered complaint activity for the past 24 months.

The EPA data showed that in the past 24 months there were:

- 5 noise complaints from residents in the South Townsville and CBD areas;
- 4 odour complaints form the South Townsville area; and
- About 20 dust complaints from the areas of South Townville, CBD, North Ward, West End and Castle Hill/Yarrawonga.

The TPA data on Registered Complaints appears to be the most comprehensive dataset available, and has now been updated to account for complaints in 2006/07. The Consultants have also requested complaints data from all State Agencies, the Port Users Group and Townsville City Council. To date, the Consultants have received some responses but none provided any additional data.

Table 2 lists the Registered Complaints received over the financial years 2001/02 to 2006/07. Figure 2 shows the composition of complaint types received over the six years.

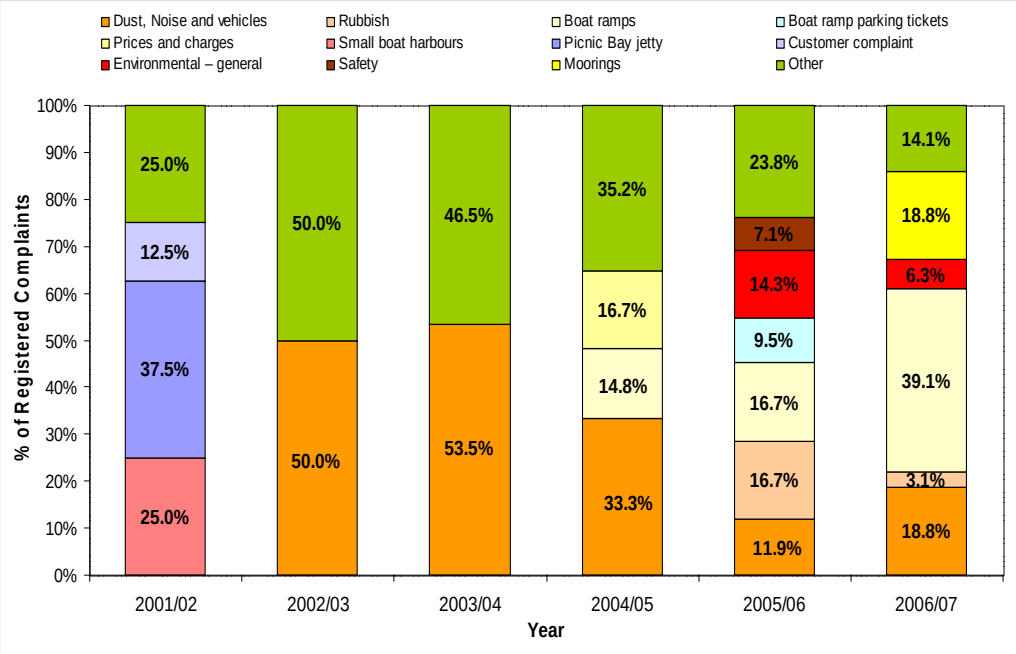
On the basis of data in Table 2, the annual average number of complaints over the entire period in question is calculated to have been 36. However, it is also clear that there was a significant increase in the number of Registered Complaints from 2003/04 onwards. (What this spike was caused by has not been analysed; it could simply be a function of changes to registration methods though it is also evident that the number of complaints regarding boat ramps and related issues and dust/noise/vehicles has increased dramatically.) The annual average number of complaints since 2003/04 was 50.75.

TABLE 2: REGISTERED COMPLAINTS (TOWNSVILLE PORT AUTHORITY)

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Total
Dust, Noise and vehicles		3	23	18	5	12	**61**
Rubbish					7	2	**9**
Boat ramps				8	7	25	**40**
Boat ramp parking tickets					4		**4**
Prices and charges				9			**9**
Small boat harbours	2						**2**
Picnic Bay jetty	3						**3**
Customer complaint	1						**1**
Environmental – general					6	4	**10**
Safety					3		**3**
Moorings						12	**12**
Other	2	3	20	19	10	9	**63**
TOTAL	**8**	**6**	**43**	**54**	**42**	**64**	**217**
Addressed and Resolved	7	4	39	51	42	61	**204**

Source: Townsville Port Authority, Annual Reports (various years)

FIGURE 2: REGISTERED COMPLAINTS BY TYPE



The historical record shows annual fluctuations in complaint activity about the Port.

In relation to relevant emissions, there were 61 Registered Complaints about 'dust, noise and traffic' between 2001 and 2007, with a peak of 23 in 2003/04. A significant and growing proportion of complaints related to boat ramps (40 in total and 25 in 2006/07). Some of this spike in complaints about 'dust, noise and traffic' may have been related to the emergence of public discussion about the so-called 'black dust'. However, the data cannot be broken down to this level to allow more confidence in this interpretation.

Separate data provided by TPA in correspondence dated 21st August 2007 indicated that of the 84 complaints made since 2000 about amenity issues, 8 (15.6% of total) were from the Strand precinct (north of Ross Creek) and 51 were from South Townsville. Of those made from the Strand precinct, three related to noise (5.9% of total), two to rubbish, and the others concerned "trees growing near their land", light from a research vessel and *red* dust. The overwhelming majority of complaints made to TPA have been from residents of South Townsville.

Complaints and Standards – the case of the 'black dust'

As noted, a number of Australian Standards and State policies have been developed over time to determine appropriate or acceptable nuisance emissions from varying sources. These Standards effectively establish a baseline against which actual emission levels are assessed. They provide a transparent and consistent public policy regime, so as to provide all stakeholders with certainty in decision-making.

However, the existence of Standards does not by itself prohibit complaints even when relevant

Standards are being met. This is likely to have been the case in relation to public complaints about so-called 'black dust' in Townsville, which has occasioned further monitoring and analysis by the EPA since the issue first came to public attention. Over the past two to three years, public discussion via the media has increased in relation to the so-called 'black dust'. A small number of residents have actively campaigned in relation to the matter, going so far as to commission 'independent' testing of dust samples when they were not satisfied with the original EPA conclusions that the dust was unlikely to be industrial in origin as it had a high mould (organic matter) content.

In response to ongoing uncertainties about the contents of the 'black dust' and therefore its origins, the Queensland Government initiated a 12 month monitoring and analysis program beginning in 2007. The results from the first monitoring period have recently been published.

This experience is informative in that it shows that there is, regardless of what the Standards provide for, a potential for some residents to make complaints. However, it should be noted that this capacity to make complaints does not entail or imply any credibility of the complaint; merely that some residents are annoyed by a particular emission level or observed emission at receptor and are willing to vocalise this annoyance.

The 'black dust' is highly visible and therefore has drawn the attention of some residents. However, notwithstanding the visibility of the dust, the prominent media coverage given to the issue and the active championing of the issue by a small number of residents, there has been negligible numbers of recorded complaints about the dust which would suggest that a large number of residents are not sufficiently motivated to express their annoyance (if any) in relation to the issue.

The key point emerging from this experience is that a responsible public policy response to such complaints is to address them through rigorous examination of evidence and manage (the emotive side of) complaints and future likelihood of same through ongoing monitoring, dissemination of information, awareness raising and ongoing public relations.

Complaints and Population

It is worth placing this complaint activity into some form of context, by considering it against the permanent resident population of the most likely areas from which complaint activity seems to emanate. The relevant spatial catchment for this consideration comprises the Primary and Secondary Catchments, as defined in the *Social Impact Assessment Report* (Volume 1, p. 31). In particular, we focus on the suburbs of South Townsville, Castle Hill/North Ward, Townsville CBD and Belgian Gardens/Rowes Bay and to a lesser extent West End and Railway Estate.

Census data (2001 and 2006) shows that since 2001, the Townsville CBD and its environs (including the aforementioned suburbs) have experienced rapid population growth reflecting growing consumer preferences for inner-city living opportunities [Refer Table 3].

TABLE 3: TOWNSVILLE CBD AND ENVIRONS POPULATION TRENDS, 2001 AND 2006

Suburb	2001	2006	Change	Change %
South Townsville	2,017	2,228	211	10.5
Castle Hill/North Ward	5,511	5,948	437	7.9
Townsville City (CBD)	1,627	2,778	1,151	70.7
Belgian Gardens/Rowes Bay	2,507	2,364	143	-5.7
West End	3,750	3,662	-88	-2.3
Railway Estate	2,774	2,809	-35	1.3
Total	**18,186**	**19,789**	**1,819**	**10.0**

Source: ABS

Comparing the *total* number of registered complaints against the population base of the complaints catchment, we find that on average, *there are 3.28 complaints per 1,000 residents (based on average annual population).* When comparing the total number of relevant environmental nuisance complaints (Dust/Noise/Vehicles and Environment-general), *there are on average 0.54 environmental nuisance complaints per 1,000 persons.*

The conclusion on the basis of the historical evidence is that residents' complaints have been relatively few and that according to the Port Authority's own records, the vast majority were resolved. More significantly, the evidence indicates that residents to the north of Ross Creek do not have a record of active complaint activity.

These outcomes are not surprising, however, given that emission monitoring results (referred to above) all point to overall positive environmental performance compliance by the Port and its users.

The consultants have also undertaken a detailed analysis of complaints activity in the context of:

1. Port activity, measured in terms of tonnage trade throughput;
2. Port activity, measured in terms of reported capital expenditure;
3. Port activity, measured in terms of live cattle export performance; and
4. Measured air quality emissions.

As well, we have sought to observe the relationship (if any) between measured air quality emissions and the three measures of port activity.[3] The underlying objective was to seek to identify whether there was any relationship (possibly causal) between emission levels and port activity. These criteria are now considered.

[3] Unfortunately there was insufficient time-series *noise* data relevant to this study for detailed examination. However, we note that the number of noise-related complaints over time is comparatively low (they are lumped together with complaints on dust and vehicles suggesting that any possible noise complaints tended to relate to truck movements mainly through South Townsville. Further, it should be noted that the discussion below is based on visual observation of datasets, rather than the results of data reduction statistical techniques that seek to establish the existence or otherwise of a correlation between two variables. There was insufficient data for this kind of exercise.

Complaints and Trade Throughout

Have complaints hampered trade activity and growth?

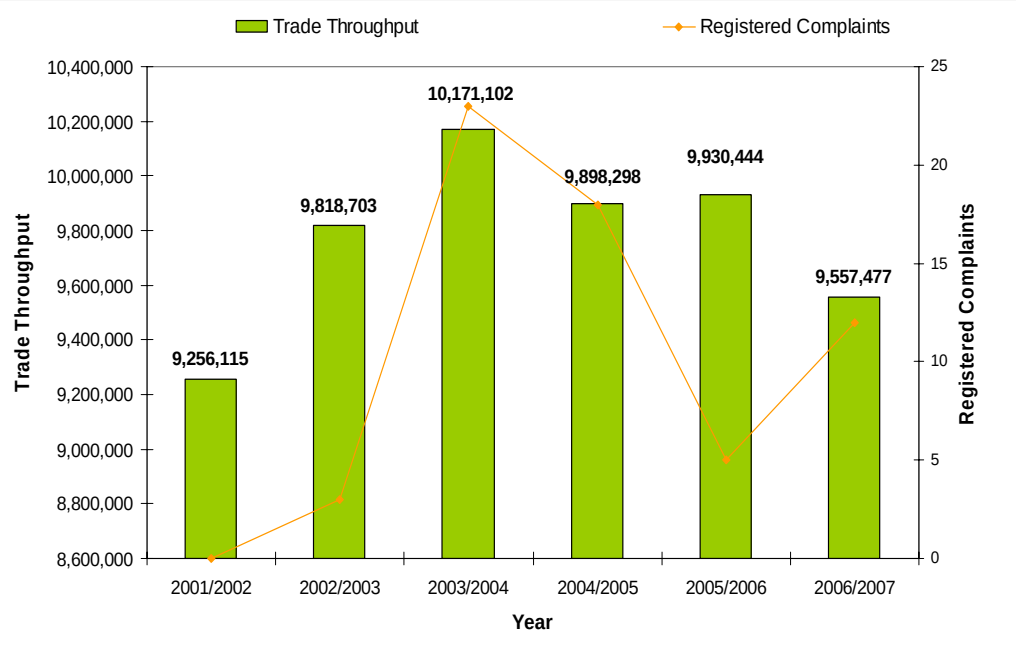
From the period 2001/02 to 2003/04 the Port experienced growth of 9.9% but has since declined by 6.0% after reaching its peak in 2003/04.

Registered complaints over this period have not exactly mirrored the trends of trade throughput [Figure 3 below].

From 2001/02 to 2004/05, they have both moved in the same directions; however, when trade throughput increased in 2005/06, complaints decreased significantly (by 72.2%). Further, when trade throughput decreased in 2006/07 from 2005/06, complaints increased.

A closer examination of the complaints data show that almost 40% of complaints received for the year 2006/07 were for 'Boat ramps'. Further, in 2001/02, half of all complaints related to 'Customer Complaints' and 'Picnic Bay jetty'.

FIGURE 3: REGISTERED COMPLAINTS (ENVIRONMETNAL NUISANCE) AGAINST TRADE THROUGHPUT



Without larger datasets on complaint activity, it is not possible to draw statistically robust conclusions about the relationship between the number of registered complaints and port activity, measured in terms of trade throughout. However, it is possible to prima facie observe the extent to which a definite relationship may be present. Based on available data, the conclusion is that there is no simple uni-directional relationship between complaints and trade activity.

Complaints and Live Cattle Activity

An important issue relates to the potential for complaints to arise in relation to odours emanating from live cattle export activity.

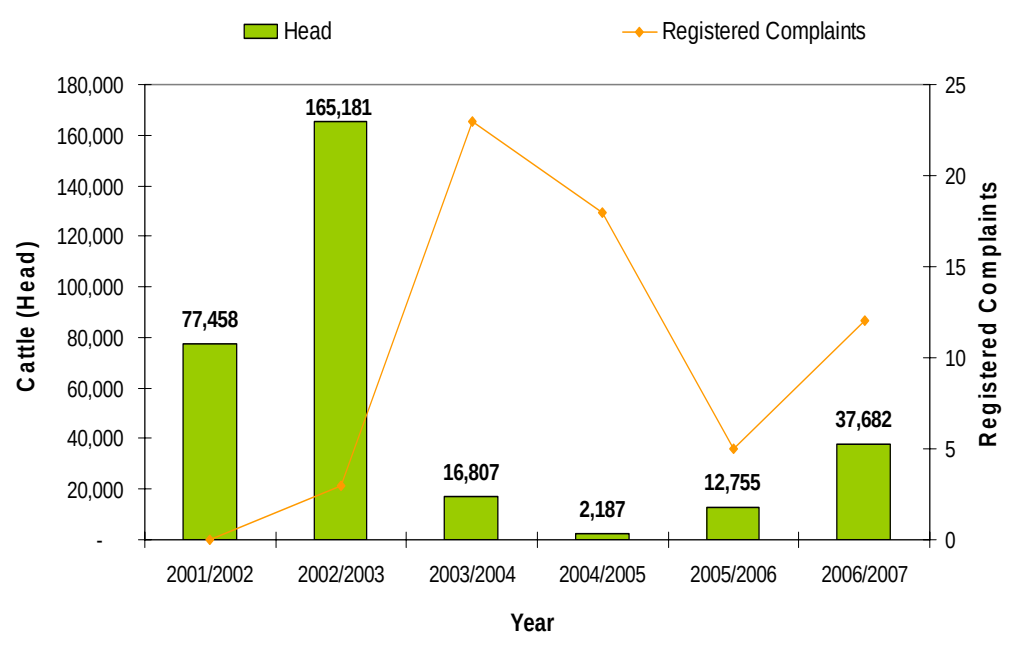
Figure 4 displays registered complaints of 'Dust, Noise and Vehicles' against data on cattle exports (heads). As it can be seen no correlation is graphically evident between these two sets of data.

Where cattle exports have remained substantially lower in recent years in comparison to the peak experienced in 2003/2004, registered complaints reached their peak a year later in 2003/04 and although they have since deceased by 47.8%, they have remained higher compared to the registered complaints received in the financial years 2001/2002 and 2002/03. Conversely, cattle exports in this period were substantially higher to any other financial year.

It can also be noted that the registered complaint data captured by the Port Authority provides no specific references to complaints about odours. However, the EPA correspondence does note that in the past two years there have been less than five complaints made to the Agency about odour.

Again, while the datasets are small and statistically robust tests were not as such able to be conducted, casual observation would suggest that there is little likely correlation between live cattle export activity and complaint activity. More significantly, it can be observed that despite growth in live cattle exporting in 2005/06 and 2006/07, no more than five odour complaints were made to the EPA.

FIGURE 4: REGISTERED COMPLAINTS AND LIVE CATTLE EXPORT ACTIVITY (# OF HEAD)



Prima facie, no causal links have been observed between odour-related complaints and the level of live cattle export activity (measured in terms of heads shipped). In part this can be explained by reference to prevailing expectations about the odour impacts of live cattle trading activities, whereby Townsville residents are accustomed to the presence of such odours during shipments.

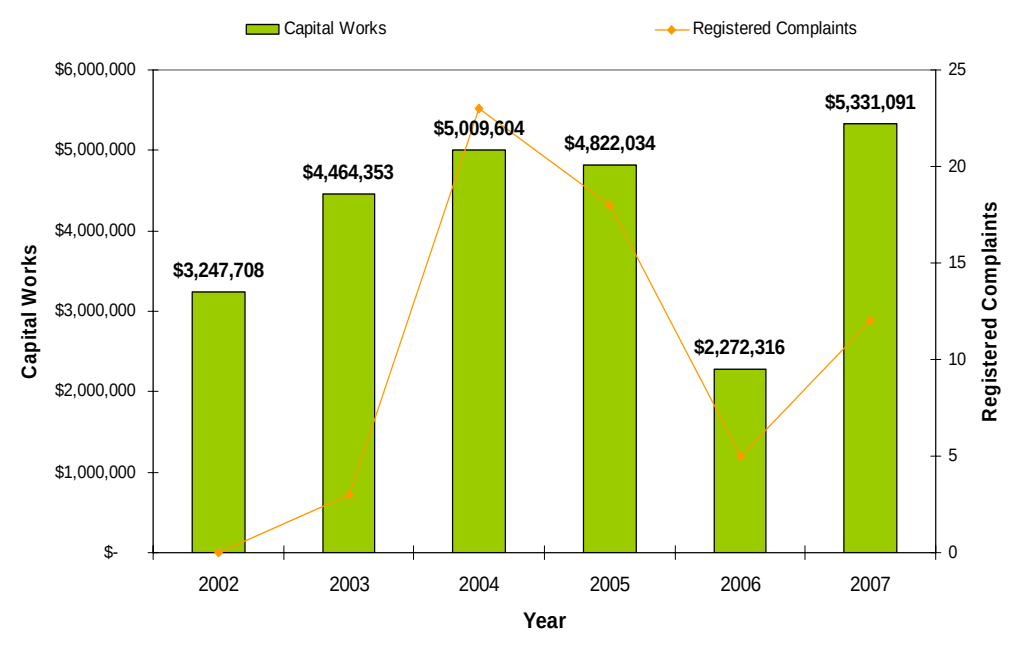
Registered Complaints (Dust, Noise and Vehicles) and Capital Works

Is there a link (causal or otherwise) between complaint activity and port activity measured in terms of capital works expenditure?

The Consultants have sourced total capital works expenditure data from the Townsville Port Authority Annual Reports, and have graphically placed this against data on registered complaints [Figure 5]. It appears from the Figure that a relationship does exist between capital works expenditure and registered complaints. The strength of this relationship is not known; however it can be seen in the Figure that both types of data have mirrored each other's movements.

Interestingly, however, when capital works expenditure reached its peak in 2007 registered complaints did not increase significantly unlike the movements experienced in 2004 where there was a similar amount of capital works expenditure. This would suggest that while there is likely to be some relationship, the strength of that correlation will depend on the kinds of activities that are being undertaken, as different capital works activities will give rise to varying types of amenity impacts.

FIGURE 5: REGISTERED COMPLAINTS AGAINST CAPITAL WORKS*



**Important Note: Capital Works Data is presented in the standard calendar year format whereas Registered Complaints is presented in the Financial year format. Capital Works lags behind Registered Complaints (commencing at 2001/2002).*

Registered Complaints compared to Air Quality

Emissions from export operations are generally related to odour from the cattle and waste materials on the ships and transport vehicles.

The Port of Townsville's long term dust monitoring program has been developed in conjunction with the Environmental Protection Agency, QNI Billiton, BHP Billiton, MIM and WMC Fertilizers. The program was developed to assist the Port in managing the impact of dust generated by the port on the environment. The program aims to monitor particulate matter (PM_{10} dust particles smaller than 10μm size), which is harmful to human health. It also aims to detect sources of elevated dust emissions and to assist in the development of appropriate management techniques to alleviate any potential problems of elevated dust emissions.

Airborne particulate matter is produced through natural processes and as a result of human activity. As Australia is a dry continent, its atmosphere contains a significant amount of particulate matter in the form on windblown dust. Bushfires, hazard-reduction burning in forests and agricultural practices also introduce particles into the atmosphere. In industrial and urban areas, the combustion of fossil fuels, industrial operations, incinerators and earth moving activities all contribute to airborne particulate matter levels. Also, in coastal areas, the atmosphere can contain a significant level of sea-salt particles (EPA, 2008).

Table 3 shows the annual average PM_{10} levels reported from the Townsville Port site from 1994 to 2005. Two data sources were accessed to compile this data. For the years 1994 to 1998, the data was in the *TPA Annual Report* for 1998/99 presented the data in a chart and for the years 2000 to 2005, the data was made publicly available online by the EPA. Data for the year 1999 was not available or unable to be located.

TABLE 3: AIR QUALITY

Year	$PM_{10}(\mu g/m^3)$	Year	$PM_{10}(\mu g/m^3)$
1994*	16.5	2000	21.1
1995*	17.5	2001	19.7
1996*	18.0	2002	25.1
1997*	15.5	2003	24.3
1998*	9.0	2004	22.7
1999	n/a	2005	24.6

**Approximates only, interpreted from a graph displayed in TPA Annual Report 1998/99 page 37.*

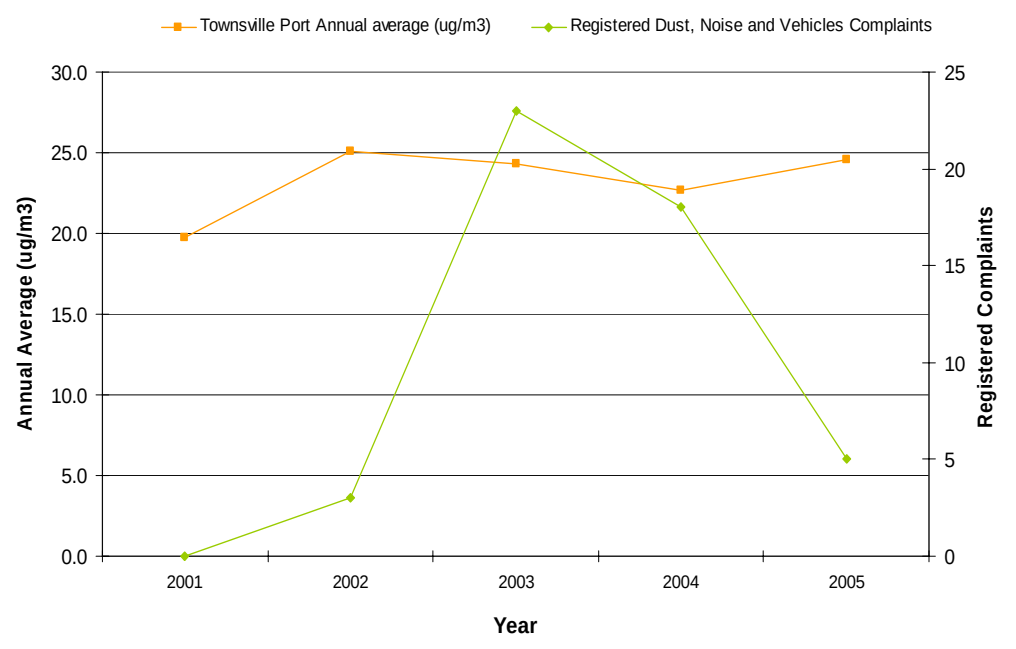
Figures 6 to 9 below display annual average PM_{10} levels recorded at the Townsville Port site against the following data sets:

- Registered Complaints relating to 'Dust, Noise and Vehicle' complaints only;
- Trade Throughput;
- Capital Works expenditure; and
- Cattle shipped (number of head).

Registered complaints relating to 'Dust, Noise and Vehicles' are displayed against PM_{10} emissions in Figure 6. There appears to be no relationship between recorded average PM_{10} emissions and registered complaints for 'Dust, Noise and Vehicle'. A possible explanation for this apparent lack of a relationship would be that complaints are occasioned when emission levels are exceptionally high; therefore, the key indicator is not the average PM_{10} measure but the measured peaks. Unfortunately data on variations from the mean was not available.

On the basis of the available data, it can be tentatively concluded that given levels of experienced air quality impacts arising from the Port, complaint activity cannot be simply predicted on the back of known averages for PM_{10} emissions.

FIGURE 6: REGISTERED COMPLAINTS AGAINST AIR QUALITY

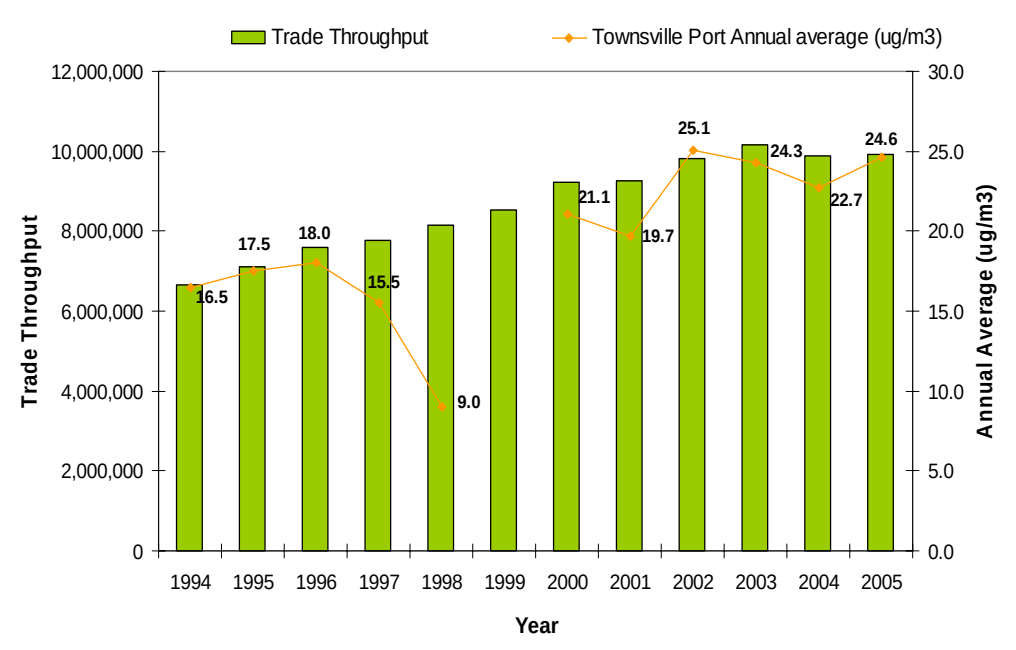


Further, no obvious relationship is evident between Trade Throughput and PM_{10} emissions and Capital Works and PM_{10} emissions.

As Figure 7 shows, between 1994 and 1998, while trade throughput grew consistently, measured average PM_{10} levels declined, particularly from 1996 to 1998. The Port's Annual Report for 1997/98 specifically draws attention to this reduction as evidence of the benefits of concerted effort to improve environmental management practices.

No publicly accessible data on air quality is available for 1999 or was unable to be located. However, the data was again reported in subsequent TPA Annual Reports from 2000 onwards. Interestingly, from 2000 onwards, there does appear to be some indication of a slight positive correlation between trade activity and dust emissions, which would indicate that dust emisisons grew as trade increased. However, the observed experiences for 2001 through to 2003 would caution against this simplistic observation, as despite trade throughout growing between 2001 and 2003, average emission levels actually declined over that period. A similar negative relationship was also evident in 2000 and 2001.

FIGURE 7: AIR QUALITY COMPARED TO TRADE THROUGHPUT



It is also not possible to make definitive conclusions about the extent of a relationship between capital works activity measured in terms of capital works expenditure and average dust emissions. As Figure 8 shows, while a positive relationship appears evident between 2001 and 2002 and between 2004 and 2005, the intervening years of 2002 to 2004 suggests a negative relationship.

Simply put, the available evidence is not sufficiently roubst to substantiate the proposition that dust emissions increase as a result of increased capital works activity. The negative relationships observed could be explained by reference to the nature of the capital works undertaken (which were of comparatively limited impact as far as dust emissions was concerned) or improvements in capital works environmental management that delivered reduced dust emissions despite higher levels of capital works activity.

FIGURE 8: AIR QUALITY COMPARED TO CAPITAL WORKS EXPENDITURE

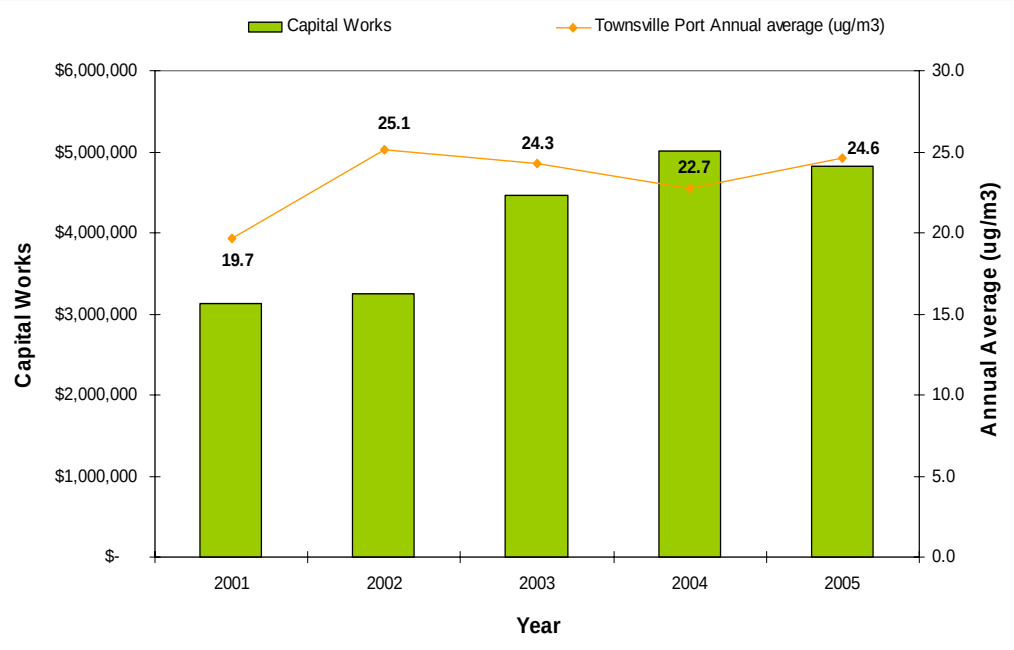
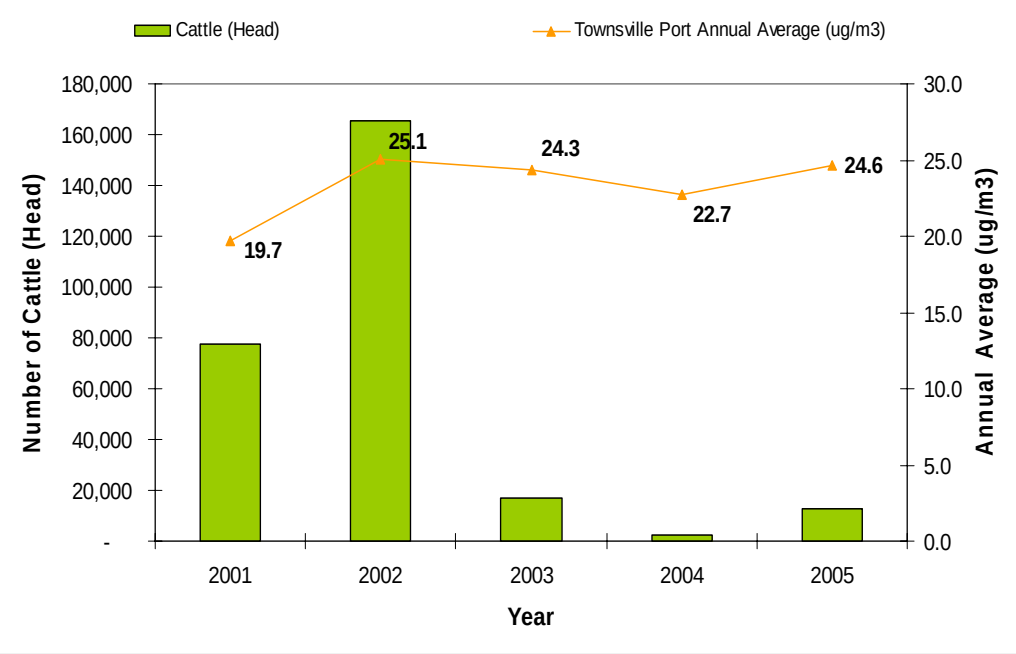


Figure 9 displays cattle exports and PM_{10} emissions. As can be seen recent cattle exports have been declined considerably since peaking in 2002. An explanation for this decline can be attributed to higher Australian cattle prices due to an appreciation of the Australian dollar and strong competition from lower priced buffalo meat in South East Asian markets. It appears from the Figure that movements in PM_{10} emissions and cattle exports over the years have moved in the same direction. That is, as Cattle exports increase, so have PM_{10} levels (vice versa).

However, given the drop in heads exported from 2003 onwards, one would have expected a similar drop in emissions (all other things being equal). This did not take place. Of course, all other things are rarely equal, and the observed dust emission levels for the period described in the Figure would have resulted from the entirety of Port activities, not just live cattle exporting.

FIGURE 9: AIR QUALITY AGAINST CATTLE (HEAD)



Based on the information considered above and from the graphical presentation of available variables, the following observations can be made:

- No strong relationships are graphically evident between port activity and dust emission levels. In other words, at times growth in port activity has actually been associated with periods of decline in emission levels. This could be function of a number of possible factors including:
    - A change in the mix of trade (from 'high' to 'low' emission activities). The data on cattle exports and dust levels tend to support this conclusion;

- An improvement in technology or change in technology; and
- An improvement in management or change in management practices.

- No observed (graphical) relationship is identified between increased amenity emissions and increased residential complaint activity. A likely reason for this is that emission levels remain at levels below the acceptable EPA thresholds.

In other words, historical evidence indicates that while the Port can increase its activity (either in terms of trade throughout or capital works expenditure), this does not necessarily result in an increase in dust emissions (disamenities); and further, that complaints activity is also not evidently correlated with measured average dust emission levels.

Demographic of Complaints

A review of international research on demographic drivers of complaints about disamenities indicates that a broad consensus exists that socio-economic status is a poor predictor of complaint activity.

This is generally because people of relatively high socio-economic status have the means to choose to move away from sources of relative disamenity if it is considered unacceptable to them (in light of other amenity trade-offs); and those people that cannot exercise such a choice tend to be constrained in their willingness/ability to raise complaints (that is, exhibit a higher willingness to accept the existent amenity/disamenity conditions). The socio-economic status of residents is, as such, unlikely to be a useful predictor of likely complaints into the future (see Kingsley et al., 2001 for example).

That there have been so few complaints arising from the Strand precinct is evidence that these general findings also hold in the case of Townsville and the Port in particular. This is because the Strand precinct is characterised by persons of relatively high socio-economic status who have actively chosen to reside in the location having made an active amenity/disamenity trade-off.

This does not necessarily mean that there will be no complaints emanating from future residents of Breakwater Cove. However, it does provide assessors with some broader context as to the likelihood of complaint activity given the likely demographic make-up of future residents in the precinct.

Amenity Preferences and Residential Prices

The amenity/disamenity trade-offs that residents make are ultimately reflected in the price people are prepared to pay for living in a particular dwelling and location. The extent to which there are re-sales also reflects the relative desirability of such dwellings and locations; the lower the re-sales rate, the more likely the residents are satisfied with their location (reluctance to sell).

The *EIA: TOT Project Report* presented detailed evidence on the property values of apartments in close proximity to the Port (and the proposed development site) between 2001 and 2006 (refer Section 10.8 pp. 128-130). The evidence shows that apartments in relative proximity to the Port (and to the Strand and CBD) are relatively desirable, and sales values have increased significantly in all properties in both absolute and relative terms [Table 4].

Since 2001, the average median sales value of the four properties in question has increased by 161% to $436,000. For Townsville apartments in general, the corresponding increase was 81.5% to an average of $245,000.

TABLE 4: STRAND PRECINCT PROPERTIES, PRICE CHANGE (2001-2007) AND MEDIAN PRICE

Property	Median Sales Price Change (2001-2007)	Median Price
Townsville Apartments	81.5%	$245,000
Breakwater Quays	121%	$420,000 (2006)
Breakwater Villa	~118%	$400,000 (2003 - last recorded sale)
No. 1 The Strand	94%	$491,000 (2007)
No. 3 The Strand	71%	$445,000 (2006)
Average Strand Precinct Properties	161%	$436,000
Mariners Peninsula*	Not Applicable	$860,000

*Proposed Mirvac residential development located on northern side of existing marina – 93 units

A significant body of econometric analysis has been undertaken globally on the relative impact of disamenities (and amenities) on property values, using applied hedonic pricing techniques and other approaches (see Streeting, 1999). Specific consideration on the impacts of proximity to noise disamenities is evident in the literature dealing with the impact of aircraft and heavy freight transportation noise on property values. The international and domestic literature tends to point to a statistically significant negative relationship between (aircraft) noise and property values.

A meta-analysis of 20 studies in the USA and Canada concludes that the cumulative noise discount in the USA is between 0.5% and 0.6% per decibel at noise exposure levels of 75dB (Nelson, 2004). In Canada, the correspondent noise depreciation index (NDI) is between 0.8% and 0.9% per decibel. In separate studies of the impact of Sydney airport on property values, the NDI is between 0.2% and 0.44% (depending on how noise is measured).

Given measured external noise levels of <65dB at the Breakwater, it would be expected that the

sales prices achieved at Strand precinct properties would not be significantly adversely affected by noise-related disamenities. The price evidence considered above confirms that the relative amenity of the location outweighs (perceived) disamenity.

A recent Australian study (Burns et al., 2001) extends previous research into the impact of aircraft noise upon residential property values (e.g. Burns et al., 1989; Walters, 1975) by investigating how these impacts have changed over time. The recent Burns study developed a modelling framework that takes into account the need to differentiate between "true" taste change effects and household responses to general price and income effects. Preliminary results support the notion that tastes do change, in the manner that behaviouralists sometimes suggest that individuals may become accustomed to various stimuli, such as noise.

These conclusions are likely to resonate with the activity within the residential market of the Townsville CBD and environs, including property in the Strand precinct near to the Port (as well as that in South Townsville). In these areas, there has been significant population growth, and demographic change, over the past decade which has been reflected in significant increases in property values; and both of these areas are within close proximity to the Port and associated transportation routes.

The above-average rise in apartment prices in the Strand precinct [Table 4 above] is complemented by similarly dramatic increases in house prices in South Townsville. As shown in Table 5 below, the median house price in South Townsville has increased by 143.8% between 2003 and 2007, compared to growth of 113.7% for houses in Townsville generally. This has occurred notwithstanding recorded complaint activity about the Port.

TABLE 5: TOWNSVILLE AND SOUTH TOWNSVILLE HOUSE PRICE CHANGE (2001-2007) AND MEDIAN PRICE

Year	Townsville	South Townsville
2003	$170,000	$ 162,000
2004	$220,000	$ 242,000
2005	$265,000	$ 257,500
2006	$280,000	$ 280,000
2007	$363,250	$ 395,000
2007 - 2003	*$193,250*	*$ 233,000*
% change	*113.7%*	*143.8%*

The observed rapid population growth in these areas proximate to the Port has occurred at the same time as the Port has experienced a period of significant growth and development. Again, this reinforces the conclusion that residents have made explicit preference trade-offs that favour the locality notwithstanding proximity to a growing Port facility.

The *EIA: TOT Project Report* also presented evidence on re-sales rates in Strand precinct apartments compared to overall residential turnover rates in Townsville. The evidence considered indicated that the annual re-sales rate for the four properties averaged 13.6% compared to an annual churn of address rate of 26% for Townsville as a whole. As the Report concluded: "From this, it can be inferred to some extent that the residential population in properties near to the Port is comparatively stable" (p. 127).

Not surprisingly, the propensity for residents in these four properties to complain about the Port and its users is low (see above).

One final observation is that the market price data in these areas in and around the CBD (including in places relatively close to the Port) suggest that they are perceived to offer higher relative amenity and are, therefore, comparatively more desirable – certainly for a section of the community.

Forecast Complaints

As to the future possibilities, the Consultants have estimated the potential increase in complaint activity emanating from the proposed Breakwater Cove residential precinct by extrapolating historical behaviour and patterns to the future environment. The Consultants note TPA's stated expectation that "the number and nature of complaints likely from Breakwater Cove residential area would be significantly different to those received in the past" (Correspondence 13 May 2008). Taking this on board, we have adopted a cautious evidence-based approach to provide insights into future possibilities.

In order to estimate what impact the increased population will have on environmental complaints as a result of the Breakwater Cove precinct development, past registered complaints are analysed. Specifically, registered complaints per capita are calculated and then extrapolated to estimate the additional complaints that will arise due to the population increase.

It is projected that there will be an increase of 1,750 persons as a result of the proposed Breakwater Cove development (average 2.5 persons per dwelling).

In terms of complaints data, we refer to both the material provided by EPA as well as registered complaints data recorded by Port of Townsville. The Townsville Port data is summarised at Table 6. Registered complaint data supplied by the EPA is presented at Table 7 below.

TABLE 6: SUMMARY OF RELEVANT REGISTERED COMPLAINTS TO TOWNSVILLE PORT AUTHORITY (OVER 6 YEARS)

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	Total
Dust, Noise and vehicles		3	23	18	5	12	**61**
Rubbish					7	2	**9**
Environmental – general					6	4	**10**
SUB TOTAL	**0**	**3**	**23**	**18**	**18**	**18**	**80**
% of Total Complaints	**0.0%**	**50.0%**	**53.5%**	**33.3%**	**42.9%**	**28.1%**	**36.9%**

Source: TPA Annual Reports, Various Years

On the basis of population data considered above, ABS census population statistics show that over the 6 years, the relevant suburbs had an average population of 19,230. During this time there was on average 13.3 complaints made in relation to environmental nuisance per year. Calculations of per capita complaints show that there were 0.54 complaints per 1,000 residents in these suburbs.

Therefore, with an increase of 1,750 residents Breakwater Cove, a linear extrapolation on per capita terms would indicate that there would be an extra 1 complaint annually coming from Breakwater Cove residents.

In addition, as we have access to some spatial complaint by type data (EPA), use of that dataset to estimate complaint activity has also been undertaken. Table 7 below displays the types of complaints received by the EPA and the location of the residents which registered these complaints, for the years 2005-2007. This data and the ABS census population data were used to calculate the annual per capita complaints received. As Table 7 shows these were tabulated by location and type. As a result of the extra 1,750 residents, complaints for Noise, Odour and Dust are forecast to increase by an additional 1.0, 2.1 and 1.2 annual, respectively resulting in total annual forecast of less than 5 *unique* complaints.

TABLE 7: REGISTERED COMPLAINTS TO EPA (PAST 24 MONTHS) AND FORECAST FOR BREAKWATER COVE

Types of Complaints	Location	Number (over 24 months)	Population (Average)	Annual Complaints Per 1,000 persons	Anticipated Increase (Extra 1,750 Persons)
Noise	South Townsville and CBD areas	5	4, 232	0.6	1.0
Odour	South Townsville Area	5	1,022	1.2	2.1
Dust	South Townsville CBD Northward West End Castle Hill/Yarrawonga	20	14,198	0.7	1.2
Total				**2.5**	**4.3**

Source: EPA email correspondence; Transpac Consulting

Should a complaint multiplier be applied to likelihood of complaints from Breakwater Cove residents? Such a multiplier could be considered if it was reasonably expected that Breakwater Cove residents are more likely to be exposed to emission levels that exceed appropriate nuisance standards. On the basis of the assessments of environmental impacts (e.g. noise, dust and odour), the present Consultants do not believe a multiplier is warranted to estimate the potential for complaint activity emanating from Breakwater Cove.

This conclusion is further reinforced by the role of expectations in mitigating the likelihood of complaint activity, insofar as all future Breakwater Cove residents are provided with detailed disclosures concerning their living environment including details on potential nuisance impacts arising from the Port of Townsville.

2.3 PROPOSITION 3: THESE COMPLAINTS WILL IN THE SHORT-TERM RESULT IN INCREASED COSTS TO THE PORT IN HANDLING COMPLAINTS

Discussion

When residents are exposed to sustained unacceptable levels of disamenity, it is reasonable to expect a certain level of complaint activity. As noted above, the driver of complaint activity is a function of both the intensity and duration of emission impacts taking into account the mitigation effects of distance and physical interventions. Evidence on actual emission intensity and duration indicates that on the whole, emission levels from the Port are at acceptable levels.

Nonetheless, evidence from the Port Authority indicates that it deals with, and resolves, the vast majority of complaints received. This involves a commitment of resources to managing this process.

Threshold Issue

The threshold issue on Proposition 3 is:

1. The extent to which the additional levels of complaint activity that can be reasonably anticipated from Breakwater Cove will add to the cost the Port Authority incurs each year in handling/managing/responding to complaints; and
2. The extent to which these costs can be offset or mitigated through the establishment of alternative complaints management procedures that involve not the Port Authority at first call, but the Body Corporate.

Evidence

Complaints

As noted above, according to TPA records 143 of 153 Registered Complaints made between 2001 and 2006 were addressed and resolved, representing a success rate of 93%.

Consultations with TPA have indicated that complaints require the commitment of personnel and resources to receive, investigate and generally 'deal' with complaints.

To assist in evaluating potential costs impacts on TPA as a result of manage of Port Protection Measures, and specifically in dealing with residential complaints, the Consultants sought information from TPA on resources that are typically deployed to address complaints about noise, dust and air quality issues (14th April 2008).

In response, TPA (Correspondence 13th May 2008) advised that such detailed data was not maintained by the Authority but that the "Corporation has expended significant funds on consulting and legal fees in addition to employee resources [to resolve] some cases … and yet surprisingly other complaints have been readily addressed relatively easily". TPA also indicated that historical complaints were diverse in nature, and were as such not a relevant baseline for assessing the potential impacts on TPA resources of future complaints from residents, particularly those of Breakwater Cove.

Given the absence of actual data on present resource impacts, the Consultants have estimated potential resource and cost impacts on an activity-based basis, taking into consideration TPA's complaints handling process and the typical timelines involved in resolving complaints.

TPA aims to ensure that any complaints received are addressed promptly and effectively, in

accordance with their Complaints Handling Process (see http://www.townsville-port.com.au/content/view/171/158/). This process has proven successful over the years. Over six years (from 2001/02 to 2006/07) the Port has received 217 registered complaints of which 204 have been addressed and resolved (93%). On average, the Port has been able to resolve 89% of the complaints it has received annually.

TPA's complaints handling procedure is as follows:

- Step 1: complaints are made in writing to the Public Affairs Officer (PAO);
- Step 2: All complaints received are entered into an official complaints database;
- Step 3: Complaints follow up is directed to PAO to the appropriate manager/officer;
- Step 4: Officer/Manager investigates and reports on the matter. Investigations may involve meeting with organisations, monitoring a site or referring the matter to an appropriate agency; and
- Step 5: Complainant is kept informed of all developments, the investigation and any follow up action that may occur.

A typical complaint is expected to be handled within 15 business days, from receipt of original complaint through to the preparation of an investigations report from officer/manager to the PAO.

The *direct* financial costs to TPA for administering the complaints handling procedure is the amount of labour hours required by the PAO and the relevant manager/officer to address each individual complaint and any external consulting or legal costs that would be consumed. It could also be argued that there are *indirect* costs involved with administering the procedure, namely the time (labour hours) forgone on attending to other business transactions. However, as the involvement of employees in complaints handling is embedded within the complaints handling procedures, it is reasonable to expect that a certain commitment of time to addressing complaints is inherent within a position's responsibilities and an ascription of foregone time on other matters as a results of handling complaints would be misleading. To do so would imply that the handling of complaints was not part of the duties of the position in the first place.

Table 8 presents our preliminary estimates of likely direct internal cost impacts for a typical complaint. The Consultants have not estimated possible legal or external consulting costs, as doing so without some form of baseline would be excessively speculative. Note that this estimate does not represent the *marginal* cost to TPA, which would be a more realistic or accurate estimate. The marginal cost would be considerably less than the typical transaction cost outlined in the Table, as fixed resource costs would be spread over a larger number of transactions (reflecting the realities of economies of scale and diminishing marginal costs).

TABLE 8: ACTIVITY-BASED ESTIMATE OF RESOURCES UTILISED TO HANDLE TYPICAL COMPLAINT

Step	Complaints Procedure Activity	Time (hour)		Time Cost ($/hour)		Total Cost
		PAO	Manager/Officer	PAO*	Manager/Officer**	
1	Complaints are made in writing to PAO	1.0	0.0	$ 80.00	$ -	$80.00
2	All complaints received are entered into an official complaints database.	0.5	0.5	$ 40.00	$ 55.00	$95.00
3	Complaint follow up is directed by PAO to the appropriate manager/officer.	0.5	1.0	$ 40.00	$ 110.00	$150.00
4	Officer/Manager investigates and reports on the matter. Investigations may involve meeting with organisations, monitoring a site, or referring the matter to an appropriate agency.	1.0	2.0	$ 80.00	$ 220.00	$300.00
5	Complainant is kept informed of all developments, the investigation and any follow up action that might occur.	1.0	2.0	$ 80.00	$ 220.00	$300.00
		4.0	**5.5**	**$ 320.00**	**$ 605.00**	**$895.00**

*Estimated per hour cost = $80

**Estimated per hour cost = $110

On the basis of the forecast increase in the number of individual complaints emanating from the Breakwater Cove residential development of 4.3 complaints per year (see Table 7 above), the total cost to TPA of handling these complaints would be approximately $3,980 per year in total. In terms of time, our estimate of impact of these complaints is at most an additional total of 17.2 hours for the POA and 23.1 hours for a subsequent officer/manager over the course of a year.

The marginal cost impact of complaints emanating from Breakwater Cove is likely to be lower than this, as a result of the complaints management protocols embedded in the Port Protection Measures. Here, multiple complaints on the same event/incident are effectively aggregated so that TPA in effect is dealing with a single transaction per event/incident rather than with a number of discrete (yet identical) complaints. Thus, even if the actual number of unique *complainants* from Breakwater Cove was higher than the forecast number of complaints, the aggregation of these multiple complainants' into a single complaint event would effectively minimise the likely number of complaint matters or transactions that TPA would be involved with.

On this basis, the Consultants conclude that:

- Cost impacts are likely to be small in the overall context of the Authority's budgetary position; and
- It is unlikely that TPA would need to retain additional full-time resources solely for the purposes of handling Breakwater Cove complaints.

Administering the PPMs

As for cost impacts in relation to managing the PPMs, the most likely area of resource demand is in relation to involvement in the Architectural Review Committee (ARC) processes. Again, an activity-based approach has been taken to estimate potential costs.

The most intensive impact is likely to arise in relation to the design of detached dwellings. Multi-unit structures are likely to be handled 'in bulk' whereas the detached dwellings, of which there are 200 in total, will likely:

- Vary considerably from one to the other in terms of design elements and features and proposed mitigations vis-à-vis achieving amenity criteria; and
- Come in over a prolonged and spasmodic period.

Two main activities in this regard would incur costs. These are:

- Direct TPA resources to achieve active participation in the ARC processes; and
- Indirect costs of retaining independent expert consultants to evaluate the submitted plans/designs to determine compliance with required Code criteria on amenity mitigations among other things.

The cost of direct TPA resourcing will obviously depend on the seniority of the resource involved. We would expect that a relatively senior resource would require no more than an average of one (1) hour per dwelling application. On the basis that there are 200 detached dwellings, this amounts to 200 hours of resourcing. This resourcing is likely to be spread over at least five (5) years, requiring commitments on a probably monthly or bi-monthly basis.

Assuming 40 applications are received each year for five (5) years, and assuming that the ARC meets 8 times a year, each ARC is responsible for evaluating no more than 5 applications

requiring a commitment of 5 hours of resourcing. This would cover both pre-meeting preparation and ARC attendance.

As for independent consulting advice, the present Consultants sought indicative estimates from a professional amenities consulting firm. The feedback indicated a per-dwelling fee of $300 would be reasonably charged under a 'bulk' contract arrangement. However, it should be noted that the costs can be passed on to the landowner in the form of an application fee (say in the order of $400-500 per application), which would allow the ARC to operate on a cost-neutral basis.

As such, our conclusion is that:

- Complaints are not likely to give rise to significant increases in the marginal cost to TPA of handling complaints in general (which they likely to continue to do into the future); and
- Costs of involvement in the ARC can be recovered from Breakwater Cove residents and, therefore, TPA involvement in these processes can be achieved on a cost-neutral basis.

2.4 PROPOSITION 4: IN THE LONGER TERM, VOCAL COMPLAINTS WILL CAUSE A POLITICAL RESPONSE IN THE FORM OF INCREASED ENVIRONMENTAL COMPLIANCE REQUIREMENTS THROUGH LEGISLATIVE, REGULATORY AND POLICY CHANGE

Discussion

At the heart of the issues raised on port compatibility is the concern that the proposed Breakwater Cove residential precinct will at worse jeopardise the future of the Port of Townsville and at best, impose significantly greater costs on the Port through more stringent environmental compliance requirements.

The implicit proposition is that elected politicians will 'waver' in the face of sustained residential complaints to such an extent that the legislative, regulatory and policy environment will shift in ways that will result in increased compliance costs to the Port and its users. This proposition can be described as the existence of 'political risk' (see *EIA: TOT Project* p. 119).

Threshold Issue

The threshold issues on Proposition 4 are:

1. The extent to which the historical record indicates existence of a positive relationship between change in emission levels, change in complaint activity and negative change in Port activity measured by tonnage traded and capital works expenditure ($); and
2. Whether there are other drivers of political risk that could impact the Port and its users *regardless* of whether the proposed TOT and Breakwater Cove precinct proceed.

Evidence

The evidence considered in relation to Proposition 2 above indicates that there is not a simple, positive relationship between changes in emission levels (dust), complaint activity and port activity levels. In fact, the Port of Townsville has experienced significant growth over the past decade (with some tailing off in recent years), which does not appear to have been constrained by local residential complaint activity.

Indeed, despite the rates of growth in activity, the levels of complaint activity remain extremely low – especially when considered on a per capita basis.

As for the broader drivers of political risk, the original Economic Impact Assessment report presented a detailed examination of relevant issues. As noted in that report (p. 119), political risk relating to the possibility that residential complaints about industrial activities will cause changes in operational or environmental regulations and/or legislations that would impose additional costs on the port and/or port users have two dimensions:

- The risk of complaints itself; and
- The risk that complaints will result in regulatory or legislative changes.

That report also noted that existence of risks associated with less formal interventions from civic and political representatives who react to community or residential complaints.

The previous sections of this Report have dealt with the risk of complaints and its drivers. The assessment, based on available evidence, concluded that there was limited risk of significant

growth in complaint activity from residents living at Breakwater Cove given known conditions related to:

- Residential expectations, particularly in the context of the amenity/disamenity trade-off environment that characterises Townsville's ocean front;
- Measured nuisance impacts from dust, noise and odour; and
- The availability of mitigation measures in the event that nuisance levels were to exceed acceptable standards.

The original Report noted that:

> *Environmental laws have tended to emerge as a response to risks posed by industrial societies, emerging from a combination of public fears, as reflected through political movements and institutions, science, ethics and established legal practices. Any changes to environmental laws governing port and port user activities are likely to be driven by broader factors, rather than a narrow band of residential complaints in the local environment* (p. 133).

Should the operational and regulatory environment tighten for TPA and port users, this is likely to be a function of concerns driven by changes to the parameters of public policy as they relate to public health and impacts on environmental performance viz. climate change and protection of the marine eco-system with relevance to the welfare of the Great Barrier Reef.

Concerns about public health impacts of metalliferous industries have recently been placed in the public spotlight as a result of legal action taken against Xstrata, the owner and operator of Mount Isa mines. The outcomes of this action is likely to have a far greater impact on public policy considerations towards emission levels and control thereof from industrial activities than small numbers of residential complaints from within the Townsville environment.

Similarly, Queensland Health has been investigating the health impacts of the Gladstone Port operations on the local population, in response to community concerns. These activities are reasonable and responsible responses to emerging circumstances, from a public policy perspective. However, to date the studies have not conclusively identified any causal linkage between the emission from the Port and a higher than predicted incidence of certain cancers within the local population.

The Central Queensland Port Authority (Gladstone) has also instigated a benchmarking study of the air quality impacts arising from coal loading at the RG Tanna Coal Terminal in response to community concerns. The upshot of this study was a recognition that dust emissions were not at acceptable levels, and a series of short- and long-term recommendations have been made to reduce dust emissions from the facility over time (Connell Hatch, March 2008).

The extent to which firms and public institutions are responsive to their local environment (including the surrounding community) reflects the extent to which they can be considered to be reputation sensitive. Reputation sensitive firms tend to proactively establish voluntary regimes to govern environmental practice and impacts because sustaining community goodwill towards the firm in question is recognised as an important consideration in enabling to firm to achieve sustained performance and growth into the future.

From a social impact perspective, gone are the days when corporations and industry could simply assert their economic contributions as a rationale for limiting their social and environmental responsibilities. Over the past century, environmental and social impact regulations have been increasing – not decreasing – and there is little to suggest that a reversal of this pattern is either imminent or likely in the foreseeable future.

TPA and its users are, in this context, likely to face progressively tighter community expectations about environmental performance and compliance – *regardless of the whether Breakwater Cove proceeded or not*. The extent to which this specific development proposal exacerbates the underlying drivers of increased environmental compliance expectations is debateable; however, on the basis of the evidence considered in both the original *EIA: TOT Project Report* and in this supplementary response report, the present Consultants are of the opinion that these expectations exist independently of the proposed development and that Breakwater Cove is unlikely to significantly impact further on these expectations.

The most likely catalyst for more stringent environmental constraints on the Port and its users would be if there was demonstrable evidence that either the Port or its users have consistently exceeded their operating license conditions and have, therefore, breached the trust with the community and the regulatory bodies.

3 CONCLUSION

3.1 CONCEPTUAL CONSIDERATIONS

The claims about increased likelihood of residential complaints emanating from the Breakwater Cove residential precinct are premised on a model of complaints behaviour where the likelihood of complaint is a function of proximity to sources of disamenity at a given level of disamenity regardless of amenity trade-offs and associated expectations, residential preferences/tastes and actual levels of experienced disamenity.

This model is limited in a number of important respects. The limits relate to the following:

1. Expectations about residential amenity/disamenity are not universal or static. What would be considered highly desirable for some may be considerably less desirable for others. Further, as discussed above, there is evidence to indicate that a given population also becomes accustomed to certain forms and levels of disamenity over time, which results in changes to the risk equation over time;
2. Actual experienced nuisance levels are a far more significant factor driving complaint likelihood (notwithstanding variations of taste/preferences etc. as just noted) than proximity per se. The capacity for mitigation measures to be put into place reduces the risk of complaint activity arising from a given level of nuisance emission;
3. Mitigations to address infrequent exceedance of relevant nuisance standards are likely to be an acceptable cost trade-off (willingness to pay and willingness to accept) for Breakwater Cove residents given the countervailing amenity benefits of the location;
4. Some concerns have been raised about the risk of complaints as a result of the likely high socio-economic status of future Breakwater Cove residents. Extensive international research over 3-4 decades on complaint activity finds that socio-economic status is a poor predictor of disamenity-related complaints. This is not to say that there will be no complaints, simply that there are other factors are work other than demography; and
5. There is an inevitability that some residents are highly likely, even certain, to complain from time to time. The issue is whether the factors that most likely underpin complaint likelihood are disproportionately present at the Breakwater Cove precinct thereby suggesting a highly likelihood of complaints against the Port and/or its users. The evidence does not support this.

3.2 SPECIFIC CONCLUSIONS (EVIDENCE)

This report has taken seriously the concerns raised about the compatibility of the proposed TOT and Breakwater Cove residential precinct and the Port of Townsville. It has reviewed the submissions, the material considered in the original *EIA: TOT Project Report*, undertaken work to update data where possible and expanded the assessment to evaluate relevant evidence in response to specific concerns raised by various stakeholders.

On the basis of available evidence, the conclusions in relation to port compatibility are that:

1. Current and expected emission levels from the Port and its users are within acceptable nuisance standards with no more than three exceptions, which are likely to be infrequent events in any case;

2. Mitigations can be effective in achieving acceptable performance levels where exceedances are expected in relation to noise and odour;
3. A slight increase in complaint activity can be reasonably expected as a result of growth in population in the Strand precinct (including from the proposed TOT and Breakwater Cove project), but that the marginal cost of handling these is not considerable;
4. The likelihood of complaints increasing dramatically (in volume and intensity) vis-à-vis the Port and its users as a result of the proposed TOT development is extremely low under known and forecast amenity emission conditions and present community expectations; and
5. Assuming that the Port and its users continue to comply with their existing regulatory and license conditions and obligations, the political risks associated with the TOT and Breakwater Cove precinct of increased legislative, regulatory and policy burdens driving up costs to the Port and its users in the future (and even jeopardising the Port's very future) are extremely low under present and likely future conditions.

Under these conditions, the critical issues go to how the likelihood of complaints – however low – can be further mitigated, and in the event of complaints effectively managed. Provision of disclosure information to all potential purchasers and residents of Breakwater Cove will go a long way towards managing expectations, which often underpin people's trade-off between perceived amenities and perceived dis-amenities.

Should there be complaints, the proposed PPM regimes effectively aggregate complaint activity and channel them via the Body Corporate. This has a number of practical effects. Firstly, it creates a culture or habit amongst residents that reduce the likelihood that they will contact the Port first (reduced nuisance impacts on the Port) but will instead contact the Body Corporate. Secondly, it allows the Body Corporate to aggregate complaints, and follow them up with the Port as a single complaint where this is possible. Again, this has the effect of creating economies of scale so that the impact of a series of individual complaints is effectively reduced as they become a single complaint to which responses are required.

3.3 CONCLUSION

The Port of Townsville is an important economic contributor to the region. That there are concerns about proposed developed that could adversely impact on the Port's viability going forward is understandable. A critical aspect of these concerns relate to the potential for additional residential developments within relatively close proximity to the Port to increase complaint activity with the end result being a curtailment of Port activity and growth.

This report evaluated in detail recent historical data on residential complaints towards the Port and found that these are extremely low in number. Given expected levels of emissions, the Consultants do not anticipate a dramatic increase in either the number or the nature of complaints emanating from Breakwater Cove residents. Such risks can be further mitigated by managing residential expectations as well as by providing aggregating processes via the PPM to manage how complaints are processed and responded to.

Complaints, no matter how small in number, are inevitable and will need to be managed by minimising the likelihood of irrational and emotional responses through monitoring and information dissemination, awareness raising and ongoing public relations.

4 REFERENCES

Air Noise Environment Pty Ltd (2007) *Air Quality Impacts Report – Proposed Townsville Ocean Terminal*

Air Noise Environment Pty Ltd (2008a) *Townsville Ocean Terminal: Supplementary Report: Deposited Dust*

Air Noise Environment Pty Ltd (2008b) *Townsville Ocean Terminal: Supplementary Report: Gaseous Emissions*

Air Noise Environment Pty Ltd (2008c) *Townsville Ocean Terminal: Supplementary Report: Suspended Particulates*

Air Noise Environment Pty Ltd (2008d) *Townsville Ocean Terminal: Supplementary Report: Metals Emissions Report*

Burns, M., et al., (1989) *The Socio Economic Impact of Adelaide International Airport*

Burns, M., Kupke, V., Marano, W., and Rossini, P., (2001) *The Changing Impact of Noise and Airport Proximity on Residential Property Values*

Connell Hatch (March 2008) *RG Tanna Dust Benchmarking Study Gladstone Port Coal Losses and Air Quality Central Queensland Ports Authority*

Hyder Consulting Pty Ltd (2007) *Acoustic and Vibrations Impact Report – Proposed Townsville Ocean Terminal*

Hyder Consulting Pty Ltd (2007) *Supplementary Acoustic and Vibrations Impact Report – Proposed Townsville Ocean Terminal*

Hyder Consulting Pty Ltd (2008) *Explosive Overpressure at Townsville Port – Situational Analysis and Recommendations* (incorporating Lloyd's Register – Background Report)

Kingsley, E., et al., (2001) *Spatial issues in environmental equity*, *International Journal of Environmental Technology and Management, Vol. 1, No. 1/2*

Nelson, J.P. (2004) Meta-Analysis of Airport Noise and Hedonic Property Values: Problems and Prospects', *Journal of Transport Economics and Policy*

Ron Rumble Pty Ltd (2008) *Review of Submissions (May 2008)*

Streeting, M., (1990) *A Survey of the Hedonic Price Technique*

Townsville Port Authority (various years) *Annual Report*

Transpac Consulting (2007) *Economic Impact Assessment: Townsville Ocean Terminal Project*

Transpac Consulting (2007) *Social Impact Assessment: Townsville Ocean Terminal Project Volumes 1 and 2*

Walters, A., (1975) *Nose and Prices*