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SECURITY - IN - CONFIDENCE

3 December 2007

Mr Craig Marler
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Dear Craig,

Crime Risk and Security Design Review

We have pleasure in submitting our Final Report for the Trinity Point Marina and Mixed Use Tourist Development.

Yours sincerely,

Leon L. Harris Dip.Sec.Studs.,CPP
Principal Consultant

Executive Summary
Crime Risk and Security Design Review

Marina and Mixed Use Tourist Development

Trinity Point NSW

On behalf of

Johnson Property Group (JPG)

December 2007

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EXECUTIVE SUMMARY

The following is an Executive Summary of the Security Consultancy Report submitted to the Johnson Property Group (JPG), by Harris Crime Prevention Services. The Executive Summary covers the scope, security objectives and main recommendations detailed in our full report.

1.1 SCOPE OF THE REVIEW

The crime risk and security design review (**the review**) was commissioned by the Johnson Property Group.

The proposal represents a mixed use proposal incorporating a marina, 'permanent' residential, 'holiday' residential, retail, and recreational space located at Trinity Point, NSW. The Trinity Point project is approximately 8 km from the township of Morisset (serviced by road and rail) and covers 17.3 hectares. It is in close proximity to a number of small townships and Morisset (Psychiatric) Hospital.

The scope reviewed the proposed project (**the development**) as part of Project Application documentation. Scope outcomes may be summarised as:

- ensuring compliance with the security requirements State and Council planning instruments, specifically the requirements of Section 79C of the Environmental Planning and Assessment Act (EPA Act). In addition, the project should comply with Lake Macquarie City Council's (the Council) Development Control Plan N0 1 (DCP1) which specifies safety and security requirements in Section 2.7.9.;

- assessing neighbouring and wider local environments in terms of antisocial behaviour, criminal activity or potential crime risks and their likely impact on the commercial goals of the developer and associated stakeholders;

- affirming appropriate security design strategies, and/or recommend possible changes to aspects of the development's architecture and/or engineering, likely to enhance the project's security objectives;

- identifying potentially vulnerable or sensitive aspects of the development requiring specific security design input aimed at reducing the likelihood of antisocial behaviour and preventing opportunities to commit crime;

- promoting the development of post-construction security awareness and security management plans to profile the completed project as a 'safe and welcoming space', in line with the security vision and expectations of the relevant stakeholders.

In the context of this review, we define '*security design*' as "*an environmental crime prevention strategy; applying aspects of architecture, engineering and technology to all urban development proposals.*"

The principles of 'security design' are underpinned by Crime Prevention Through Environmental Design (**CPTED**); a mainstream crime prevention strategy applied to medium and large scale

urban development projects. Local and State authorities throughout Australia have adopted CPTED principles as part of planning instruments relating to the security of built environment DAs.

1.2 REVIEW OUTCOMES:

We have identified four security objectives.

- compliance with regulatory and/or planning instruments;
- minimising broader community crime risks;
- creating 'safe space' (design) and,
- future security management objectives and outcomes.

1.3 Security Objective 1: Regulatory Requirements

Conclusions and/or Recommendations

With respect to regulatory and/or planning instrument considerations, the project's documentation conceptually incorporates aspects of design which, when developed, should comply with the Director General's requirements, pursuant to Section 75F and the interpretive guidelines pursuant to Section 79C of the EPA Act. The reviewed documentation also conceptually meets security requirements under Section 2.7.9 of Council's DCP 1.

1.4 Security Objective 2: Minimising Crime Risk

Conclusions and/or Recommendations

There appear to be no design aspects of the concept plan that could negatively impact on current antisocial or criminal activity in the local community.

Our review of the concept plan indicates that the project will not constitute an increased crime risk to the immediate foreshore site, nor from activity generated by the marina, village, conference facility, retail outlets, workshop or associated infrastructure. Further, it is our understanding that the developer will ensure that 'security design' is incorporated into relevant aspects of design development documentation. (Refer Security Objective 3)

Post-commissioning (operational) crime risks are best identified through a whole-of-site security management plan (Refer Objective 4); thereby sustaining the project's 'safe space' reputation.

1.5 Security Objective 3: Security Design

Conclusions and Recommendations

We are of the view that the project's concept documentation reflects the intent of the Director General's requirements pursuant to Section 75F of the EPA Act, as expressed in Part B, 2.3 of those requirements. The documentation also reflects the intent of Section 79 C of the Act and is consistent with Council's DCP 1 guidelines.

The concept plans provide scope for 'security design' to evolve as architectural or engineering features of design development stages. These features should be based on CPTED (or similar) principles and should relate to specific sub-precinct security challenges.

The incorporation of security design to meet specific security challenges is a matter for inter-disciplinary consideration, particularly in relation to site-wide external lighting and landscaping, car parking, roadways, walk or share ways, differentiation of public and private space, access validation to site facilities including the marina, conference centre, accommodation village, eating and retail outlets.

1.6 Security Objective 4: Security Management

Conclusions and Recommendations

The project's ultimate marketability and reputation will depend, in part, on the implementation of a security management strategy. We acknowledge that this strategy will require consultation between all client-stakeholders, including the local council, adjacent residential communities and local police.

We recommend that a security management plan be formally implemented across the site's footprint, but specifically to cover the perimeter, waterfront, shoreline, public spaces, the marina and all other venues/ facilities, utilities and associated infrastructure, with a view to promoting and maintaining whole-of-site 'zero tolerance' and 'safe space' policies.

Final Report
Crime Risk and Security Design Review

Marina and Mixed Use Tourist Development

Trinity Point NSW

On behalf of

Johnson Property Group (JPG)

December 2007

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1. BACKGROUND

Trinity Point (the project) is a mixed-use "*quality of life*"[1] peninsular development, as a shared tourist, retail and recreational space. The aim of the project is to "*create…a successful, viable and vibrant place*…"[2]. The project seamlessly connects with the residential precinct, thereby providing public and private access over the entire permissible land and water footprint.

Security (inter-alia community safety) is fundamental to the project's success, viability and vibrancy. In the Australian context at least, a development's security reputation is critical to its marketability. This is particularly so in the case of Trinity Point.

From a security perspective the project presents six interconnected challenges, specifically:

- defining the project's perimeter;
- identifying precinct purposes and separation;
- protecting buildings and associated structures;
- encouraging and/or limiting access to the marina and vehicle parking;
- securing utilities and communications infrastructure;
- profiling the project as a 'welcoming and safe space';

The 'welcoming and safe space' challenge is the overarching one which is critical to the project's viability and, more importantly, its post-construction marketability. In terms of this project, welcoming and safe space may be defined as:

'*an environment where security has been considered as part of the master-planning, design and construction processes and where the security objectives and outcomes enhance the project's marketability and reputation.*'

Each of the precincts should reflect seamless security as part of the aesthetics. There is an opportunity for the total development to present a 'security model' for similar mixed use developments especially where there is a need to protect a sensitive and vulnerable environment from criminal damage. In this context, we believe that the project's architecture becomes a foundational security design platform.

By 'security design' we mean: '*an environmental crime prevention strategy, applying aspects of architecture, engineering and technology to urban development proposals*'.

This definition, and our approach, recognises that architecture and associated disciplines can, through collective and cooperative design, significantly influence the creation of secure (safe) environments. Crime Prevention Through Environment Design[3] (CPTED) is the theoretical model for this assertion. (Refer Appendix 2)

The above security challenges inform, and are informed by, the security scope and objectives (outcomes). Meeting and managing them is critical to the project's on-going reputation. They are integral to all aspects of the project, from the concept planning stages to design development

[1] Johnson Property Group Corporate Profile 2007
[2] Johnson Property Group Project Vision, 2007
[3] CPTED is explained in Appendix 2.

staging. The earlier security issues and challenges are incorporated into form and function considerations, the more likely are cost-effective outcomes.
Our approach to security is therefore 'holistic' identifying and prioritising solutions for the project's total environment footprint.

2. STAKEHOLDERS

The security challenges, objectives and outcomes are contextualised in large part by the stakeholders. Key stakeholders in the Trinity Point project include:

- State and local governments;
- NSW Police;
- JPG;
- the project design and development team;
- adjacent residential communities;
- tourists occupying the village;
- casual site participants in marina, retail, function, meeting and recreational activities;
- staff and contractors servicing all aspects of the development.

Each of these sub-groups will have different security expectations, pertinent to regulatory compliance and specific working, visiting or living environments. However, the broad expectations will be similar in that personal and property safety will be a 'given' of the project's success.

3. SECURITY SCOPE, OBJECTIVES AND OUTCOMES

The scope of this report sought solutions to the above (security) challenges. Much of the scope revolves around a review of the concept design and the likely evolution of that design into detailed design development. The consultants have also reviewed the design in relation to integration with JPG's master plan incorporating the existing and future residential development.

Our report is underpinned by compliance with legislative and/or regulatory requirements of State and local planning instruments and by key principles of security design.

There are four security objectives or outcomes for the project, namely:

- compliance with regulatory and/or planning instruments;
- minimising broader community crime risks;
- creating 'safe space' (design) and,
- future security management objectives and outcomes.

3.1 Security Objective 1: Regulatory Requirements

The regulatory requirements are those of the Director-General, NSW Department of Planning, pursuant to Section 75F of the Environmental Planning and Assessment (EPA) Act, 1979, in

particular, requirements for this project, specified in Part B. 2.3 "*Demonstrate that the design provides for personal safety and crime prevention for future residents and visitors.*"[4]

Security (safety) requirements for developments are more broadly governed by Section 79 of the EPA Act which considers certain impacts.

Section 79C (1) states: "*In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development, the subject of the development application*".

Section 79 (1) (b) adds: "…*the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality*".

Section 79 (1) (e) adds: "... *the public interest*".

The 2001 amendments to the interpretive guidelines for this Section state: "…*Crime prevention falls under these subsections of 79C.*[5] *Councils have an obligation to ensure that a development provides safety and security to users and the community. If a development presents a crime risk, these guidelines can be used to justify:*

- *modification of the development to minimise the risk of crime, or*
- *refusal of the development on the grounds that crime risk cannot be appropriately minimised*"

In addition, the project should comply with Lake Macquarie City Council's (the Council) Development Control Plan N0 1 (DCP1) which specifies safety and security requirements in Section 2.7.9.[6;] specifically, a development complies when it "…*maximises actual and perceived safety within the community through design; encourages the public and private use of all spaces to maximise their safety; provides for surveillance of public spaces and private entries adjoining public spaces.*"

1. Analysis and Commentary

With regard to Section 79C, the interpretive guidelines provide that "*the public interest*" includes reduction and/or prevention of crime in relation to urban development. In this case, the JPG is concerned to prevent any site-based or project-caused antisocial or criminal behaviour that might impact upon persons accessing or occupying the site and the residents and property of adjoining or neighbouring communities.

The public interest is therefore broad in relation to this project as it will be a new destination and focus of the Lake Macquarie shoreline. It will become a local community talking point and will quickly gain a reputation in relation to many aspects of its operation including its reputation for 'community safety' (security).

Hence the public interest arguably extends to such behaviour occurring at or beyond the perimeters of the site, although legally, the developer has no responsibility for neighbouring any off-site behaviour. Eventually however, the final residential stages of the development will create a

[4] NSW Department of Planning 2007
[5] EPA Act Interpretive Guidelines 2001
[6] Lake Macquarie City Council DCP1

broader 'public interest', as these residential precincts blend with older established neighbourhoods.

While this review has concentrated on State planning requirements, it is important to note that Lake Macquarie City Council's DCP 1 requirements are, in essence, similar to those of the State instrument. We note that there is regulatory accord between State and local authorities in applying design to a community security (crime prevention) agenda.

Documents provided for project application purposes have therefore been reviewed in relation to the broad State and local compliance requirements. We are satisfied that the project's concept documentation has taken a whole-of-site approach to security; the intention of which is to showcase the prevention of crime and the curbing of antisocial behaviour, within each of the designated precincts.

It is our view that the whole-of-site security proposed for the project will attempt to dissuade or displace behaviour that might otherwise (negatively) impact on the overall success of the venture. However, the client recognises the need to detail security design specifics throughout the design-and-construct documentation. This is addressed under Security Objective 3.

3.1.2 Security Objective 1: Conclusions and/or Recommendations

With respect to regulatory and/or planning instrument considerations, the project's documentation conceptually incorporates aspects of design which, when developed, should comply with the Director General's requirements, pursuant to Section 75F and the interpretive guidelines pursuant to Section 79C of the EPA Act. The reviewed documentation also conceptually meets security requirements under Section 2.7.9 of Council's DCP 1.

3.2 Security Objective 2: Minimising Crime Risk

Our reviews of mixed use urban development proposals continually emphasise that the likelihood of targeted antisocial behaviour and criminal activity in new and desirable environments is almost certainly without strategic design and management counter intervention.

Identifying crime risks and crime trends can be fairly subjective. Statistics only relate to reported crime. The subjectivity arises when a crime risk analysis tries to second-guess total crime and crime trends by linking reported crime to anecdotal 'evidence' of unreported crime; sometimes said to be equal to, or more than, the reported crime in the more common property categories.

It is therefore assumed that there will be crime risks, that those risks should be identified using anecdotal or experiential intelligence and reported crime data. We have applied the three methods. Managing (and reducing or eliminating) crime risks is an operational factor of intelligence and data. Determining levels of crime risk however remains elusive.

Crime risks are usually categorised hierarchically as extreme, high, medium, low or insignificant.

Local police intelligence and New South Wales Bureau of Crime Statistics and Research (BOCSAR) data places communities within and around the Lake Macquarie Local Government

Area, among the 'low to medium' crime categories and incidents. (Refer Appendix 1 for a detailed BOCSAR crime occurrence analysis.) For example, property and person-related crime is less frequent and less serious when compared to other areas of the State.

One factor likely to increase antisocial or criminal behaviour concerns new and potentially attractive targets. Random or planned criminal activity targets recently completed shopping centres, cinema complexes, office blocks, business parks and residential sub-divisions. A new development is a challenge simply because it is there and it is new.

We understand that the first residential stages of Trinity Point have already attracted minor opportunistic vandalism in relation to newly planted flora. Every such 'new' environment is vulnerable to 'testing' criminality. The current proposal will be no different. Its sub-precincts are all potential targets, particularly the marina, a highly visible and highly vulnerable space.

Therefore the security design and security management of the total development (residential and mixed use) must assume that random (opportunistic) antisocial behaviour and/or crime will occur, unless effective counter measures are put in place.

3.2.1 Analysis and Commentary

The 20th Century settlement history of Morisset was typically characterised by residential precincts focussed on week-end, holiday, passive recreation and retirement goals. Much of the natural environment was undisturbed. Foreshore grasslands and tree clustering remained intact, mostly free from vandalising activity.

While Morisset has retained something of its former character, it has increasingly become a desirable 'first families' destination, given its location to road and rail commuter corridors. In recent decades, built environment development has overridden natural habitats, with the loss or degradation of some bushland and lake front areas.

Unfettered access to these environments by increases in, and varieties of, populations often prompt some police concerns about bushland surrounding residential areas becoming the dumping grounds for stolen or abandoned vehicles. The bushland can also be subject to acts of environmental vandalism. Other forms of opportunistic crime such as illegally accessing dwellings where they are known to be occupied intermittently, could be expected.

However, as mentioned above, crime risks and incidents usually increase as developments proliferate and development densities increase. There is more property to damage or steal, there are more people occupying public and private space and there are more retail, commercial and recreational outlets. In this case, an expanding Morisset population is becoming increasingly 'fixated' on lake-front and associated land ownership or activity.

In busy holiday times activity on Lake Macquarie's waterways may lead to inappropriate, antisocial behaviour and/or offending behaviour - a not uncommon phenomenon on other similarly popular rivers, lakes and beaches around the country.

The main antisocial behaviour and crime risk categories likely to impact upon the project relate to:

- alcohol related noise, threats and incidents against people and property;
- assaults;

- damage to the marina and/or boats moored therein;
- damage to the foreshore precinct including vegetation, boardwalks, icons and lighting;
- damage to other buildings and structures, including graffiti;
- stealing of, stealing from, and/or damage to, motor vehicles;
- illegal entry into, and theft from, restricted areas including the club, restaurants, tourist units, gymnasium, workshop and boat storage area;
- damage to equipment and infrastructure, including utilities kiosks.

The security design principles referred to in (1) above and in Appendix 2, together with strategies outlined in Security Objectives 3 and 4, foreshadow appropriate design and management measures to contain and counter the above crime risks.

As a major mixed-use development, the design must aim to provide a vibrant and inter-connecting safe environment. Hence there is a need to pay close attention to the way in which all functional aspects of the development interrelate and to understand how the entire development relates to the neighbouring communities.

In particular, the security design of public space, boardwalks, share ways and interconnecting walkways is critical in terms of sight lines and way-finding.

Design of the project's perimeters, vehicle and pedestrian access points should minimise opportunities for antisocial or unlawful behaviour, which if allowed to gain any tolerance or momentum, could 'spill' across to neighbouring residential environments.

Obviously design is not the only way to counter the fear and reality of crime. It is one well-recognised approach aimed at complementing other social, environmental and policing measures that already exist in the broader Morisset community. However, while the project's documentation indicates a potential through design development, to facilitate the containment and/or reduction of crime, it is prudent to consider how the project's approach to crime risks can positively impact on neighbouring communities.

Mitigation of project based and broader (local) crime risks will depend on the relationship between Trinity Point and its 'neighbours'. Land access and egress will place 'pressures' on local residents and their streets. Neighbourly relations will be enhanced if there is a common approach to containing and countering antisocial and criminal behaviour in the short and long term.

3.2.2 Security Objective 2: Conclusions and/or Recommendations

There appear to be no design aspects of the concept plan that could negatively impact on current antisocial or criminal activity in the local community.

Our review of the concept plan indicates that the project will not constitute an increased crime risk to the immediate foreshore site, nor from activity generated by the marina, village, conference facility, retail outlets, workshop or associated infrastructure. Further, it is our understanding that the developer will ensure that 'security design' is incorporated into relevant aspects of design development documentation. (Refer Security Objective 3)

Post-commissioning (operational) crime risks are best identified through a whole-of-site security management plan (Refer Objective 4); thereby sustaining the project's 'safe space' reputation.

3.3 Security Objective 3: Security Design

The project's desired security (safety) outcomes in part are achieved by interior and exterior design features that reflect CPTED principles. Reference is again made to The Director General's 'Key Issues' Part B 2.3 requirements[7] that…"*the design provides for personal safety and crime prevention for future residents and visitors*".

Interior security design relates to obvious features related to the occupation of internal spaces that will prevent criminal activity. This includes the usual attention to locking, alarming and being able to monitor, rooms, corridors and doorways.

Technical specifications will address these aspects, although the surveillance monitoring (CCTV) of pedestrian and vehicle movement throughout the site requires special mention.

External security design is the main focus of crime prevention architecture and engineering. External security design seeks to maintain 'levels of comfort' for whole-of-site access and for the safe vehicle and/or pedestrian movement throughout each of the site's precincts. The site is different from comparable developments in that access will be by air, land and water. Crime prevention design issues relate to this difference.

3.3.1 Analysis and Commentary

The following considers the application of CPTED or security design principles, tools and techniques to the project's security challenges. The seven tools and/or techniques are:

- external lighting,
- definitional signage,
- surveillance technology,
- sight line surveillance,
- activity separation;
- fencing, and
- landscaping.

In the design development stages, one or more of these tools (options) should then be applied to the six (earlier referred to) security challenges, namely:

- defining the project's perimeter;
- identifying precinct purposes and separation;
- protecting buildings and associated structures;
- encouraging and/or limiting access to the marina and vehicle parking;
- securing utilities and communications infrastructure;
- profiling the project as 'welcoming and safe space';

- **Perimeter Definition**

Defining and securing the project's perimeter is critical. Much of the perimeter is self-defining, for example the eastern and northern shorelines. The neighbouring residential developments, once completed, will define the project's western boundary.

[7] NSW Department of Planning op.cit.

The self-defining shoreline perimeter will be supplemented by structures that are part of the development including the helipad, the marina 'spokes', kayak launching facility and the to-be-restored public swimming pool.

The goal should be to blend both and to define the overall perimeter indicatively, clearly but unobtrusively to avoid any suggestion of a fenced fortress.

Obviously, residential and road boundaries will require some fencing. In these cases, our advice is to opt for a consistent, appropriately coloured, open metal picket fencing (for example palisade style) to minimise the opportunity for graffiti or other damage, while maximising sight line (passive) surveillance.

From a security perspective it is desirable that perimeter surveillance, even at night, be possible from different 'vantage' points along the shoreline, from a central point at the marina, from within the conference facility, from the eastern side of the tourist accommodation precinct and eventually, from the waterfront-facing residential development.

Lighting will play a key role in night-time perimeter definition. External lighting, when applied to security design should eliminate glare and minimise shadows. Overhead and/or down lighting is preferred, while bollard and spherical lighting should be avoided. Bollards are prone to damage, they 'block' point-to-point vision and are often dwarfed once surrounding flora reaches maturity. Spherical (ball) lighting often unwittingly 'promotes' glare and tends to shed, rather than focus, light.

It is assumed that a whole-of-site lighting master plan will be developed, part of which would be devoted to locating definitional and way-finding clusters at strategic perimeter-defining locations, for example at the marina hub, shoreline picnic areas and at the swimming pool. Street lighting would eventually define the western residential road boundary.

Landscaping is also critical to perimeter definition (and to precinct separation), the aim being to complement the defining natural vegetation with low level (at maturity) planting where appropriate. Foreshore pedestrian corridors should retain a 0.5 to 1.0 metre (minimum) clear space either side of each corridor, regardless of its design and purpose. Plantings along all corridors (throughout the site) should eliminate opportunities for concealment.

It is important not to permit high or low level flora to:

(a) conceal persons intent on criminal activity;
(b) aid persons to scale walls, roofs, ledges or balconies;
(c) create night time shadows in corridor areas;
(d) conceal signage.

The best-practice (security) rule-of-thumb designates low level planting at 1.0 to 1.2 metres on maturity, mid canopy planting foliage should be transparent and high level tree under-canopies should be 1.5 to 2.0 metres above ground.

Given the vulnerability of the marina, helipad and swimming pool, consideration should be given to 'creatively' installing surveillance cameras (CCTV).

- **Precinct Purposes and Separation**

In security design terms, all connecting and welcoming space should provide 'on-approach' certainty and should eliminate any fear or perception of likely antisocial or criminal behaviour. Each of the sub-precincts should, in terms of personal safety, reflect that certainty to prevent inadvertent or deliberate 'wandering'.

While the concept documentation establishes precinct separation and purpose, the intention is to permit a free-flowing movement between facilities and buildings, both for those seeking access and those 'casually' observing.

Separated welcoming space should increase expectations of safety at approach, access, occupation and egress. The main precincts of this project will variously attract high or low movement and/or congregating pedestrian, boat and or vehicular traffic.

It is noted that the proposed operating time of the marina, chandlery, boat workshop and offices will be on a seven day basis mainly between the hours of 8.00am and 6.00pm. However, the function centre/restaurant will be extending 'operating activity' to the late evening hours.

There will be peak times when the marina has 'busy' land and water traffic. The car park will ordinarily have low to mid volume activity at arrival times and mid to high volume activity at the conclusion of the function centre and restaurant operations. The facilities will experience high volume activity at meal, break-out or closing times. The public picnic and swimming precincts will experience seasonal high level and high energy activity. In contrast, the accommodation precinct will be generally characterised by the ordered movement of guests.

The nature of security design for each precinct will factor in activity and energy levels. The management of these precincts will require continuous attention in order to prevent risk prone or threatening behaviour. (Refer Security Objective 4).

The reviewed concept plans do not impede the options for good security design and management within or between each of the precincts. With appropriate lighting, landscaping and way-finding or access-limiting signage (including warning), the opportunity for antisocial or illegal activity should be minimal.

Tourist accommodation clusters and courtyards should feature landscaping and lighting that complement directional approach and interconnecting pathways.

- **Buildings and Associated Structures**

Security issues associated with the project's building architecture mainly relate to external defacing and illegal entry. Graffiti is not commonly found in projects of this nature, particularly where there is a sense of 'security ownership'.

Ideally, there will be a constant security management presence once the site becomes operational. (Refer Security Objective 4). There will be a fairly constant flow of visitors, boat owners and village guests. Non-security site staff will be on duty for critical times. This should translate into 'eyes and ears' surveillance which, when complemented by strategic CCTV installation, will minimise if not entirely prevent any targeting of buildings, boats, vehicles or external public space furniture.

However, in relation to the proposed multi-storey and hotel style tourist accommodation, it is recommended that building facades be constructed of materials capable of resisting graffiti or other superficial damage.

The accommodation blocks should have secured access and again, some consideration should be given to limited CCTV surveillance, at least within and around the various accommodation clusters. No landscaping should restrict at-ground outlook and no planting likely to mature above 1.00 to 1.50 metre(s) should occur alongside ground floor building walls or windows. This prevents opportunities for 'wall scaling' and concealment.

Uniform lighting design will act as a damage deterrent to buildings and associated structures. The use of under-eve down lighting or aesthetically positioned wall mounted overhead lighting could become a feature where, for example, the walls are adjacent to open space or washing into the under-croft parking area, thus providing a pleasing but consistent (shadowless) lighting effect.

There are no obvious security concerns in relation to concept floor plans and layouts for the function centre, restaurant and tourist accommodation. We re-iterate however that, the detailed design of all buildings should maximise passive surveillance opportunities particularly where glazed areas overlook adjoining public or private space.

- **The Marina and Vehicle Parking**

The marina is a highly vulnerable area. The major security concerns relate to:

(a) damage to or destruction of, boats;
(b) illegal access and damage to the jetty structures and pontoons;
(c) damage to the helipad and/or parked helicopter;
(d) damage to fuel and associated waste pump-out facilities.

Access to the marina is via a connecting elevated boardwalk. We note, and agree with, the proposed secure gated gangway to prevent unlawful access. As for other restricted areas, there should be key card or keypad access for boat owners and marina staff.

Pole mounted overhead lighting is recommended to illuminate all vessels and jetty walkways. CCTV is also recommended to monitor the outer perimeter and the boardwalk approaches.

The proposed supporting utilities infrastructure pedestals should be kept under CCTV surveillance. However, where possible all utilities conduits should be 'concealed'.

Two vehicle parking precincts require (security) design attention; the under-croft village car park and the underground car park linked to the multi-storey tourist accommodation.

There are seven critical security aspects related to both – general lighting, way-finding lighting, designated vehicle separation, structural support columns, vehicle surveillance and signage.

- General Lighting: We encourage the client to maximise the lighting effect by painting all (enclosed) car park ceilings white to better reflect lighting which should be housed in anti-glare fittings and located at points where (support) column shadowing cannot occur.

- Way-Finding Lighting: Overhead (down) lighting, preferably of greater intensity than the minimum Standard should illuminate pedestrian access points and corridors throughout both parking precincts.

- Designated Vehicle Separation: A critical security point is to quickly identify the location of parked vehicles and to be in a position to observe along (rather than across) parked vehicle lines, particularly when emerging from lifts in the case of the basement parking.

- Vehicle Surveillance: CCTV vehicle surveillance should be positioned to enable cameras to view along lines of parked cars, in much the same way as vehicle owners are able to observe as they move to and from both parking precincts.

- Signage: Clear way-finding signage is obviously beneficial in vehicle location. There is an added security bonus if the signage is well lit, even with under-croft parking. Directional signage and pathways are critical even within the single level basement, in 'guiding' casual users, visitors and contractors to specific bays. In extreme cases, uncertainty can cause aggression, hesitancy, even panic, when way-finding is vague or is poorly lit.

Desirably, graduated 'down' lighting should feature at the basement parking entry to maximise visual adjustment from the external to internal environment and vice-versa. Similarly the access/egress ramp should be consistently lit to at least minimum recommended lux and separation standards. Bollard lighting should be avoided along or near any vehicle access points or ramps, as should wall (eye level) panel lighting.

We also recommend that ramp walls be coated with anti-graffiti paint and that CCTV cameras be installed to track vehicles at arrival and departure points. Surveillance tracking is especially critical for contractor vehicles accessing locked-off areas of the basement after hours.

Notwithstanding the structural implications, again from a security perspective, it is advisable to avoid square or rectangular support columns in both the under-croft and basement precincts, in favour of elliptical or round shaped structures to minimise opportunities for 'column concealment'. Where square or rectangular support columns are specified, these should be encased in a circular or elliptical façade.

Basement parking lobbies should be clearly visible on approach and should afford as much of a 'panoramic' view of the parking area as structural engineering will allow. The lobby area and exit doors (stairways, etc) should be well lit and 'open' to passive and CCTV surveillance.

Electronic access control, for example proximity reader technology for after-hours and/or specific level access to all accommodation floors, should be installed. Security access and separation is particularly important for residents, staff and contractors.

It is recommended that the specifications of vehicle parking area lifts, lobbies and lobby access be addressed during design development to ensure uniform treatment, particularly in relation to installing glass panels in lift doors.

In summary, it is important that the 'welcoming and safe space' philosophy be extended to both the parking precincts. The security features of both are designed to promote this philosophy.

- **Utilities and Communications Infrastructure**

Trinity Point is no different from any other urban mixed-use project in relation to the protection of utilities infrastructure.

Therefore all utilities and communications infrastructure should be considered vulnerable at connection and feeder points. We recommend that they (a) be protected from general view, not just caged, and (b) that they be monitored via CCTV if that is considered appropriate, particularly if CCTV is simultaneously monitoring car parking areas.

Delivery and waste removal areas should be capable of day-night electronic or passive surveillance at all times. Surrounding areas should be clear of clutter and should provide contractors and security personnel with clear site lines to doorways.

Waste storage can be intentionally or accidentally set alight therefore, combustible waste materials should be stored where its location and collection may be observed by human resources and technology, e.g. CCTV. Fire detection and fire suppression systems should be installed.

Access to IT servers should be electronically access controlled. It is important that there be state of the art communication technology between security staff, other staff, residents and tenants.

There should be a security control room, preferably located within the function centre offices precinct and, if possible, allocated prominent floor space. The room should be a design feature where the role of security staff can include passive surveillance of pedestrian and vehicular traffic and as a point of reference.

A secure parking area should be set aside within the loading docks for armoured (cash transport) vehicles with clear unobstructed routes of travel within the developments for the delivery and pick up of cash.

- **Profiling the Project as 'Welcoming and Safe Space'**

The purpose of the security design commentary has been to profile the project as a preferred destination; a destination that is sensitive to creating a crime free environment. This environment can and should extend to the adjoining residential stages, which, if approved and completed will embrace the security design and security management principles outlined in this review.

Security design for lighting, landscaping and signage in particular should be complementary so as to ensure a seamless intra-precinct security regime. The operational security management plan for the project would also provide integrated 'coverage' for all stages of the completed JPG master plan.

We recognise that there are often tensions between meeting security (crime prevention) requirements and meeting the requirements of other planning instruments. The intent of all security design commentary, conclusions and recommendations is to integrate with the requirements and creativity of other disciplines to ensure that all objectives are realised.

3.3.2 Conclusions and Recommendations

We are of the view that the project's concept documentation reflects the intent of the Director General's requirements pursuant to Section 75F of the EPA Act, as expressed in Part B, 2.3 of those requirements. The documentation also reflects the intent of Section 79 C of the Act and is consistent with Council's DCP 1 guidelines.

The concept plans provide scope for 'security design' to evolve as architectural or engineering features of design development stages. These features should be based on CPTED (or similar) principles and should relate to specific sub-precinct security challenges.

The incorporation of security design to meet specific security challenges is a matter for inter-disciplinary consideration, particularly in relation to site-wide external lighting and landscaping, car parking, roadways, walk or share ways, differentiation of public and private space, access validation to site facilities including the marina, conference centre, accommodation village, eating and retail outlets.

3.4 Security Objective 4: Security Management

Note. This objective relates to the project's post construction operations. While not immediately relevant to this report, the objective completes the security (on going crime prevention) picture; hence its inclusion.

The project's appeal as a …"*successful, viable and vibrant place…*"[8] will certainly depend, from a security perspective, on promoting and maintaining 'safe space' reality, (as opposed to safe space rhetoric). Security oriented marketability assumes a well developed but cost effective security management plan, one that engages the key stakeholders.

3.4.1 Analysis and Commentary

The project's concept documentation implies an understanding of the criticality of a 'welcoming and safe environment' as one of the key attributes to maximising marketability and reputation. As mentioned above, we are confident that the design-and-construct documentation will explicitly reflect this understanding.

Retaining the project's security reputation will depend on how security and safety are positively or negatively impacting upon all stakeholders. This means that perceptions and reality will need to be understood and monitored from the moment of commissioning. While the architecture and systems will be in place to provide a sound platform for 'safe space' realisation, the day-to-day management of that platform will be essential.

There are four elements to implementing a cost-effective security management regime:

- security design and security technology maintenance,
- a responsive and skilled security team,

[8] JPG op.cit.

- implementation of security procedures and practice,
- building reputation by managing security risks.

- **Security Design and Technology Maintenance**

There are three issues here – design maintenance, systems failure and systems redundancy.

Design Maintenance: Ensure that security purposed plantings are controlled and/or are replaced to avoid over-growth and or inconsistencies of definition. Lighting and/or signage maintenance to test purpose and effectiveness should be routine.

Systems Failure: It is our experience that security technology, once installed, fails for lack of comprehensive maintenance scheduling. Failures occur in systems relating to security communications, CCTV surveillance, access control and alarms.

Systems Redundancy: It is also our experience that redundancy is often not part of security budget planning. There are two types of redundancy, a use-by date and the roll out of new technologies. In both cases, technologies need to be constantly reviewed and realigned to meet contemporary (risk) challenges and conditions and in order to ensure that the hardware and software interfaces continue to complement (support) the human resource and security procedures/practice strategies. Capabilities must match specifications at all times.

Therefore technologies recommended for design development documentation (Objective 3) will require continuous review as new technologies emerge. Budgeting for redundancy and replacement should form part of the management plan.

- **A Responsive and Skilled Security Team**

It is important that a skilled and visible security team be appointed to ensure consistency of safe space reputation. Guests, casual visitors, conference participants and contractors should be aware of, and have confidence in, an unobtrusive security presence; that is personnel appointed to protect people and place.

While we make no specific comment as to the nature and terms of employment, there are advantages in this critical setting of hiring an 'in-house' team over contractors. The advantages relate to intelligence gathering and local knowledge-building from familiarity and contacts with regular visitors or guests, boat owners and the adjoining residential communities. They are also able to relate more meaningfully to Council staff and police. This promotes security 'ownership'.

In our experience, it is counterproductive to simply contract the cheapest provider whose staff are rotated, whose environmental knowledge is usually limited and whose loyalties are usually divided. 'In-house' security staff are more likely to 'own' a security plan and can offer additional meet-and-greet services.

We believe that the establishment of a coordinated security management plan is essential; a plan that demonstrates a commitment to reputation and a plan that could become a model for a more integrated security regime throughout the Lake Macquarie LGA.

During peak operational times, for example simultaneous conferencing, marina activity, casual visitor movements and high village occupancy, it is advisable to engage two (at least) security staff

with complementary and rotating responsibilities. This arrangement allows for shared duties around patrolling, greeting, monitoring and responding to alerts. As indicated under Objective 3, there should be a visible main security office/control room, one that faces high volume movement or activity corridors.

The security team should be skilled in environmental observation, in interpersonal communication, in providing information (guiding and way-finding), while also directing, restricting and challenging where necessary.

Ideally, in the eyes of those accessing the site, the team will have more of a concierge or meet-and-greet role, one which is always underscored by an alertness and readiness to report on, or intervene in, threats or incidents.

Security for this prestigious site should therefore itself be prestigious. In order to maintain high levels of 'safe and welcoming space', the traditional static security guard is not recommended. This project provides an opportunity to showcase a 'new security' model, with staff profiled as competent, communicative, courteous, well trained and, therefore, well paid.

The security team would also need to be appropriately trained in relation to the use and value of access control and CCTV technology. All too often we are made aware of the tenuous connection between security staff and (their) technology. Legislation defines the appropriate use of this technology. What it does not do, in our view, is mandate the understanding and application of technology in ways that can both prevent crime and detect crime. It is anticipated that the security team will therefore be well trained and held accountable in this regard.

- **Implementation of Security Procedures and Practices**

A security awareness (procedures and practices) profile is necessary to complete the overall goal of a welcoming and safe environment.

Security awareness and management programs are often resisted by owner/occupiers who would rather leave all crime related matters to the employed professionals. In one sense this is appropriate. In another it is not. While professional management of security is part of a holistic regime, in today's security conscious environment, all 'members' of built environment space have an obligation to accept some responsibility to contribute to the collective well-being of communities; hence our commentary on these aspects.

Security awareness is the point of connection with the development's security design characteristics. Although the security emphasis should be 'low key' and largely unobtrusive through architecture, technology and a professional security team, there is every reason to encourage a security awareness mind-set, particularly among owner-occupiers.

The next step is to develop more formal security procedures and practices – again 'targeting' owner-occupier clients. In much the same way as there are automatic safety evacuation procedures, so might there be merit in developing security reporting of a-typical occurrences and security emergency procedures. This strategy should be developed (post construction) by the Projects management in conjunction with relevant stakeholders.

- **Building Reputation by Managing Security Risks**

Shared security goals should lead to shared security expertise and a shared approach to security and emergency risk management, the final element in achieving the fourth objective.

Lasting security outcomes are usually jeopardised if there is no clear plan to budget for and appropriately manage security; that is, to manage the technology, manage the security team and manage emerging crime risks.

We would encourage the operational management team to allocate resources to developing a formal crime risk management strategy including a continuous improvement training policy to ensure a 'best practice' maintenance regime for security design, security technology, security personnel and security procedures. We see security management as having the same status as every other management responsibility.

3.4.2 Conclusions and/or Recommendations

The project's ultimate marketability and reputation will depend, in part, on the implementation of a security management strategy. We acknowledge that this strategy will require consultation between all client-stakeholders including the local council, adjacent residential communities and local police.

We recommend that a security management plan be formally implemented across the site's footprint, but specifically to cover the perimeter, waterfront, shoreline, public spaces, the marina and all other venues/ facilities, utilities and associated infrastructure, with a view to promoting and maintaining whole-of-site 'zero tolerance' and 'safe space' policies.

REVIEW METHODOLOGY

The methodology indicates the perspective taken by the consultants in undertaking our analysis and making recommendations. The consultants have:

(a) reviewed the drawings in order to understand the commercial and architectural goals of the development;
(b) received input from the development's planning and design representatives;
(c) explored the crime risk backdrop;
(d) visited the site;
(e) obtained information in relation to local crime risks and statistics;
(f) obtained information in relation to (security focussed) planning instruments.

APPENDIX 1:

Lake Macquarie LGA Crime Statistics

The following crime statistics are relevant to the environment and locality of the Trinity Point development. They are issued by the NSW Bureau of Crime Statistics and Research.

Recorded victims within the Lake Macquarie Local Government Area.	2002	2003	2004	2005	2006
Murder	1	0	0	3	1
Assault (non domestic related)	902	962	1051	1117	1023
Sexual assault	129	144	121	134	113
Indecent assault/act of indecency/other sexual offences	193	155	128	153	124
Robbery without a weapon	66	60	53	50	41
Robbery with a firearm	5	11	2	6	2
Robbery with a weapon not a firearm	50	37	48	27	40
Break & enter – dwelling	2519	1755	1536	1343	1046
Break & enter non dwelling	1069	962	823	833	977
Motor vehicle theft	1011	890	878	891	819
Steal from motor vehicle	1488	1390	1415	1569	1490
Steal from retail store	634	513	442	453	447
Steal from dwelling	939	913	862	830	800
Steal from person	157	184	161	136	101
Arson	153	132	126	130	271
Malicious damage to property	2608	2630	2497	2983	3245

Note: The statistics need to be treated with caution as they represent only reported crime, therefore, a number of categories may also show lower than actual incidents. They do not statistics or trends in relation to victims or victimisation.

Further, it is important to note that changes in reported crime are also significantly affected by factors other than changes in victimisation, including (i) changes in the willingness of the public to report crimes to police, and (ii) changes in policing policy and practice. The second factor particularly affects trends in recorded drug and weapons offences, and trends in offensive behaviour, so changes in the number of incidents for these offences may reflect shifts in policing, rather than in actual crime rates.

Where the number of recorded incidents is low, a very small change in the actual number of incidents may result in a disproportionately large change in derived ratios such as the rate per resident population or the percentage change over time.

The purpose of this statistical review is to note any upward crime trends. Such trends may be relevant in developing security design and/or security management plans for the redevelopment.

APPENDIX 2:

Crime Prevention as a Design Strategy

A 2.1 Rationale

Crime prevention has been linked to urban design since the late 1970s. The concept originated in the United States and Canada when sociologists, criminologists and architects began to link criminal behaviour in public spaces with poor design and layout of those spaces.

Today, there are four broadly defined models of crime prevention. They may be implemented individually, although ideally initiatives derived from each will overlap. The four models are:

Crime Prevention By Social Intervention – a model that sustains the integrity and safety of (often disadvantaged) communities through government and corporate and local support for programs, development initiatives and improvements to infrastructure.

Crime Prevention By Community Development – a model that encourages settled communities to develop partnerships in accepting responsibility for protecting personal and neighbourhood assets through a commitment to networking and sharing responsibility for community development goals.

Situational Crime Prevention – a model that focuses of place-specific crimes, targeting offences and offenders by pro-active and responsive security or law enforcement strategies.

Crime Prevention By Environmental Design – a model that incorporates aspects of architecture, engineering and technology to enhance the form, function and reputation of the built environment as “safe space”.

Crime Prevention Through Environmental Design (CPTED) is a coined version of the Crime Prevention By Design model; one that is takes a specific approach to reducing and preventing crime by applying architectural design principles to urban developments which focus on territoriality, surveillance and access control. CPTED and the other models have largely been adopted throughout the developed world as legitimate crime prevention strategies.

Throughout the 1980s and 1990s, State and local authorities within Australia, responsible for urban development approvals, have been gradually adopting the CPTED or similar crime prevention (design) concepts when approving both large and small scale development applications.

Within Australia, there is recognition by all stakeholders involved in urban development, (however the term is defined) that designing out crime should form part of *mandated* development application criteria.

In 2001-2, the New South Wales Parliament assented to changes in guidelines under Section 79C of the EPA Act to include crime prevention as one of the “matters of public interest” which must be considered in approving development applications.

Increasingly, local authorities are introducing instruments and/or guidelines requiring ‘security’ to form part of DA documentation.

Notwithstanding local and State based regulatory requirements, it would seem prudent that developers seek to incorporate crime prevention-by-design guidelines to all projects, especially given the marketing and legal emphases on personal and community safety (security) Australia.

It is conceivable that, if built environments can be "secured" by adopting agreed crime prevention design guidelines, (protocols, etc.), then such guidelines will in time become mandatory in much the same way as Building Codes and Occupational Health and Safety standards have been adopted.

Incorporation of crime prevention architecture and engineering into relevant planning documentation throughout the design-and-construct stages is the ideal way to ensure compliance with local and State requirements.

A 2.2 Aims: Crime Prevention By Design

The broad aim of crime prevention design principles is to create and sustain safer communities by incorporating crime prevention design initiatives into all urban development.

From the literature, it is possible to identify two specific aims:

- To promote the legitimate and safe use of all natural and built environments by incorporating crime prevention or security design codes or guidelines into all development planning and approval processes.

- To enhance the reputation of developed environments by ensuring that crime prevention or security design criteria are integral to all architectural and engineering documentation submitted for review and approval by relevant authorities.

A 2.3 The Concept of "Defensible Space"

Oscar Newman (1972)[9] coined the term. He developed the concept in relation to significant crime problems in high-rise ghetto type housing developments of New York City in the 1960s. Newman suggested that the urban design of inner city precincts was directly attributable to anti social behaviour and high crime rates.

Newman recognised that there were three spatial issues that should be addressed in all future urban planning – territoriality, surveillance and access control. Each can be linked with architectural and/or engineering documentation in a coordinated approach towards making public and private spaces relatively crime free.

[9] Newman O, *Defensible Space*, Macmillan, New York, 1972

A 2.4 The Concept of Territoriality

It is essential to provide a sense of territorial definition and boundary limits from the first point of contact with any built environment design. That point of contact may be the front door of a building. It may be the off-road set back of an industrial estate, or it may be the main street – boulevard, divided road and/or entry statement – of a new sub-division. "On approach", the sense of definition of access and use should be evident.

Crowe (2000:37)[10] suggests that the right physical design contributes to a positive sense of territorial use and ownership – a sense of territorial influence. In urban developments, territory may be defined or classified as public space, semi-private or communal space, restricted space and private or secure space.

Mixed use sub-divisions are particular cases in point. Each such development concept should flag spatial use and spatial hierarchy. This hierarchy should be evident as concepts, principles and foreshadowed specifics at the DA stage, to be followed by detail submitted throughout relevant aspects of design documentation.

The DA stage and design documentation architecture (and engineering) of vehicle or pedestrian corridors, commercial, retail, recreational, institutional, and residential precincts is as important as the architecture of the buildings that will eventually occupy those precincts. One without the other contributes to a sense of territorial confusion where territorial clarity is required.

Geason and Wilson (1989:5)[11] claim that well designed housing projects make it clear which spaces belong to whom – some being completely private, some being shared and some public. Architects and developers of course claim that these aspects are always part of concept design, master-planning and detailed documentation. The difference is that they are seldom designed to standards or principles aimed at repelling crime.

A 2.5 The Concept of Surveillance

Spatial design should maximise opportunities for surveillance – formal and informal. The design principle here is to increase the number and length of sight lines; the capacity of people and technology to observe movement and activity at distance.

The location, mass, height, proximity and form of buildings therefore become critical design features. The relationship of buildings to all open spaces and to roads, pathways, cycle-ways, parks and other streetscape forms is equally critical.

There are three agreed forms of surveillance that should be encouraged: *natural, social and technological.*

Natural surveillance encourages casual observation and monitoring of all users and owners of known and defined urban space.

[10] Crowe T, *Crime Prevention Through Environmental Design* Second Ed Butterworth-Heineman, Boston, 2000.
[11] Geason S and Wilson P, Designing out Crime: Crime Prevention Through Environmental Design Australian Institute of Criminology, Canberra1989

Social surveillance encourages casual observers, through natural surveillance, to routinely monitor, challenge or report suspicious pedestrian and vehicle movements through precincts or into buildings.

Technological surveillance employs CCTV and other monitoring devices to alarm premises or spaces to deter/detect and respond to unlawful access or unlawful behaviour. In the past, analogue CCTV surveillance technology consumed personnel resources including managing the recording, e.g. replace tapes of these early systems. Network cameras and network video recording (NVR's) offers a more cost-effective alternative. Modern fast moving 'dome' cameras, which respond to alarm pre-set positions can be utilised. The 'alarm' may be a help call button being activated, a

secured door being opened (using a door contact) or movement (using a passive infrared detector) and transmitted real time to wireless hand held technology.

A 2.6 The Concept of Access Control

Debate continues about ways to control, restrict or prevent access to buildings and to open precincts. The deployment of technology has been the recent favoured design strategy. This (in our view) over-reliance on technology has tended to limit creative physical design alternatives.

In the mid-1980s a significant study was carried out in the UK into some of England's (often referred to as) notorious or infamous housing estates – high and medium rise ghettos where crimes against property and people has been running rife.

The study by Coleman (1985)[12] showed in part that there were numerous building and precinct design flaws which encouraged uncontrolled access to ill-defined spaces. Coleman suggested that gates, gaps, fences, landscaping, lighting, doorways, stairwells, steps, paths, seats, power poles coupled to ad hoc building design and poor definition of territory, not only attracted unauthorised access, but once access was gained, the various design flaws encouraged graffiti, vandalism, theft and assault.

The point of all physical (built environment) design from a crime perspective is to define and indicate purpose. For example a gate to a property must be positioned to indicate whether or not it is a main entry and, if so by signage, mechanical, electronic or other means, entry is generally allowed or is by permission only. A gate's design and integration with a fence or adjoining building gives some indication of who and how entry is to be gained.

Gates are usually the most common definers of territory, separating private and public space in industrial, commercial, institutional and residential precincts. There are some precincts without gates at their points of entry, thus inviting crossover to the next point of territory definition; ie a building, parking area etc.

While gates (and similar barriers) present as recognised objects for territorial definition and separation, crime prevention-by-design principles encourage broader and less intrusive definitional architecture; architecture which not only restricts or halts access, but which encourages entry, access and movement. Lighting, pathways, landscaping, low-line fencing, steps and doorways are obvious examples.

12 Coleman A, *Utopian Trial: Vision and Reality in Planned Housing* H. Shipman, London, 1985.

Coleman's study, highlights the need for developers to think holistically about distinguishing between legitimate (legal) access and users and occupiers of urban space and those seeking access illegally.

By applying crime prevention design principles to housing estates, to commercial, institutional and industrial complexes, to retail and recreational outlets and to transport infrastructure, there is more than one opportunity to clearly define appropriate entry and movement corridors.

REFERENCES

Coleman A, *Utopia on Trial*: *Vision and Reality in Planned Housing* H. Shipman, London, 1985.

Crowe T, *Crime Prevention Through Environmental Design* Second Ed Butterworth-Heineman, Boston, 2000.

Geason S and Wilson P, *Designing Out Crime: Crime Prevention Through Environmental Design,* Australian Institute of Criminology, Canberra, 1989.

Johnson Property Group *Corporate Profile,* Sydney 2007.

Johnson Property Group *Project Vision*, Sydney 2007.

Lake Macquarie City Council, *Development Control Plan No 1*, Lake Macquarie, 2007.

Newman O, *Defensible Space* Macmillan, New York, 1972.

NSW Bureau of Crime Statistics, *Crime Statistics for the Lake Macquarie Local Government Area,* NSWBCS, Sydney, 2007.

NSW Department of Planning 2007.

NSW Environmental Protection Assessment Act, *Interpretive Guideline*s 2001.

NSW Government, *Environmental Planning and Assessment Act, 1979*, (2001) Government Printer, Sydney, 1980.

