

Infrastructure for New South Wales

Walsh Bay Arts Precinct

Crime Prevention Through Environmental Design Report

251710-SE-CPTED-03

Revision 3 SSDA | 14 November 2016

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Contents

	Page
1 Executive Summary	1
1.1 Security reports document list	2
2 Introduction	3
2.1 Overview	3
2.2 Aim of this Report	3
2.3 Methodology	3
2.4 Recommendations	3
3 Project Context	5
3.1 The Site and Surrounds	5
3.2 The Project	6
4 Policy Context	10
4.1 Overview	10
4.2 Local Council Requirements	10
4.3 SSDA Requirements	11
5 Underlying Principles	12
5.1 Overview	12
5.2 Natural Access Control	12
5.3 Natural Surveillance	13
6 Crime Profile	15
6.1 Overview	15
6.2 NSW Crime Profile	15
6.3 Local Crime Profile	16
6.4 Five year trend	17
7 CPTED Analysis	19
7.1 Overview	19
7.2 Vegetation and Landscaping Impacts	19
7.3 Lighting Impacts	20
7.4 Mixed Use Activation	20
8 Design Assessment	21
8.1 Precinct	21
8.2 Wharf 4/5	22
8.3 Pier 2/3	25
8.4 Waterfront Square	26

9 Recommendations

28

1 Executive Summary

Walsh Bay Arts Precinct (WBAP) aims to create a sustainable and activated arts and culture precinct that supports and nurtures Sydney's home-grown culture and creativity. The WBAP project is focussed on uplifting and improving Pier 2/3 and Wharf 4/5 to provide increased amenity and develop Walsh Bay as one of the premium cultural and arts precincts in Sydney.

Arup has been engaged to provide security consulting services to the WBAP project including Crime Prevention through Environmental Design (CPTED) advice.

Overall, the proposed design for the WBAP provides good natural surveillance, natural access control, and territoriality. The design of space is generally open and visible from several angles, and public spaces are readily accessible, clearly defined, and will activate the space at different times of day.

There are however several opportunities for improving CPTED security measures such as natural surveillance, natural access control, and territoriality within the WBAP designs. These opportunities include:

- Ensure adequate lighting is provided throughout the precinct, particularly at the ends of Wharf 4/5 and Pier 2/3, the precinct and building entry/exit points, and within the waterfront square;
 - Adequate lighting attracts legitimate people to the area at night, facilitates the precincts use at night, and deters illegitimate users and crime;
- Provide way finding signage throughout the precinct to assist natural access control, and reinforce boundaries;
- Provide security signage throughout the precinct, particularly at precinct and building entry/exit points, to notify people of the security measures in place, and to provide a deterrence;
- Maintain precinct image and repair vandalism or remove graffiti as quickly as possible;
- Activate the precinct and waterfront square as much as possible, to attract legitimate users to the area, and to deter illegitimate users and crime;
- Use as much glazing as possible to assist natural and electronic surveillance;
 - Glazing should be particularly used at ground level, and at function, and hospitality spaces;
- Support gatherings of community groups throughout the precinct to further activate the space;

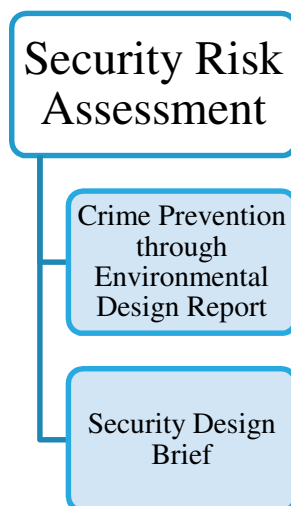
- Minimise areas of possible concealment of people, actions, or packages, particularly at the ends of Wharf 4/5 and Pier 2/3, staircases, lifts and the northern most and southern most boardwalks.

By implementing these recommendations, CPTED principles will be further reinforced in the current design, and the opportunity for illegitimate use of the space and crime will be reduced.

1.1 Security reports document list

This document forms part of a developing family of security reports that Arup are producing as part of our professional services to the Walsh Bay Arts Precinct Project. The Security Risk Assessment is the overarching security document supported by more detailed advice provided in Crime Prevention through Environmental Design Report and Security Design Brief.

The Security Risk Assessment provides a broad identification of the threat and risk profile facing the WBAP, and outlines possible treatments. These treatments are then detailed in the underlying reports.



2 Introduction

2.1 Overview

Arup has been commissioned to provide an initial assessment of opportunities where Crime Prevention through Environmental Design (CPTED) may be incorporated into the designs for the Walsh Bay Arts Precinct project (WBAP).

2.2 Aim of this Report

This report is an outcome of the Security Risk Assessment, and aims to ensure that the WBAP is designed in accordance with best security practices, including crime prevention through environmental design. This report also aims to meet the SEARs requirement for CPTED principles to be adhered to in the design.

2.3 Methodology

In preparing this report, Arup has undertaken the following:

- Review of CPTED theory and how this can be typically applied to arts and cultural facilities;
- Perform a review of the current architectural designs, and relevant reports, with an emphasis on the external site wide areas;
- Collection and analysis of local and state crime statistics, obtained from open sources such as the Bureau of Crime Statistics and Research (BOCSAR), in order to better understand the external security environment;
- Collection and analysis of local demographic statistics, obtained from open sources from the Australian Bureau of Statistics, in order to better understand the external environment;
- Attend site inspection of the existing WBAP facilities, and liaise with the relevant stakeholders to collaboratively review and discuss the architectural designs, CPTED strategies and stakeholder requirements; and
- Conduct a CPTED review and detail the CPTED strategies, findings and recommendations.

2.4 Recommendations

Recommendations made herein aim to enhance the preventative crime characteristics of the precinct by:

- Increasing the perception of risk to criminals by increasing the presence of deter, detect, delay and response characteristics;
- Increasing the effort required to commit crime by increasing the time, energy or resources which need to be expended by the offender in order for the offence to be successful;

- Reducing the potential rewards of crime by minimising, removing and concealing rewards; and
- Advertising the proper use of space, and making it clear on the types of people permitted throughout the precinct under various operating conditions.

3 Project Context

3.1 The Site and Surrounds

The Walsh Bay Arts Precinct (WBAP) (the “site”) generally comprises Pier 2/3, Pier 4/5 and its shore sheds which make up Wharf 4/5, as well as the adjoining waterway. The site has a street frontage to Hickson Road. The site is shown in Figures 1 and 2. The site is part of the Walsh Bay area which is located adjacent to Sydney Harbour within the suburb of Dawes Point. The site is located within the City of Sydney Local Government Area.

Walsh Bay is strategically located to the north of Sydney’s CBD in the vicinity of major tourist destinations including the Sydney Harbour Bridge, the historic areas of Millers Point and The Rocks, Circular Quay and the Sydney Opera House. The Barangaroo redevelopment precinct is located immediately to the south-west.

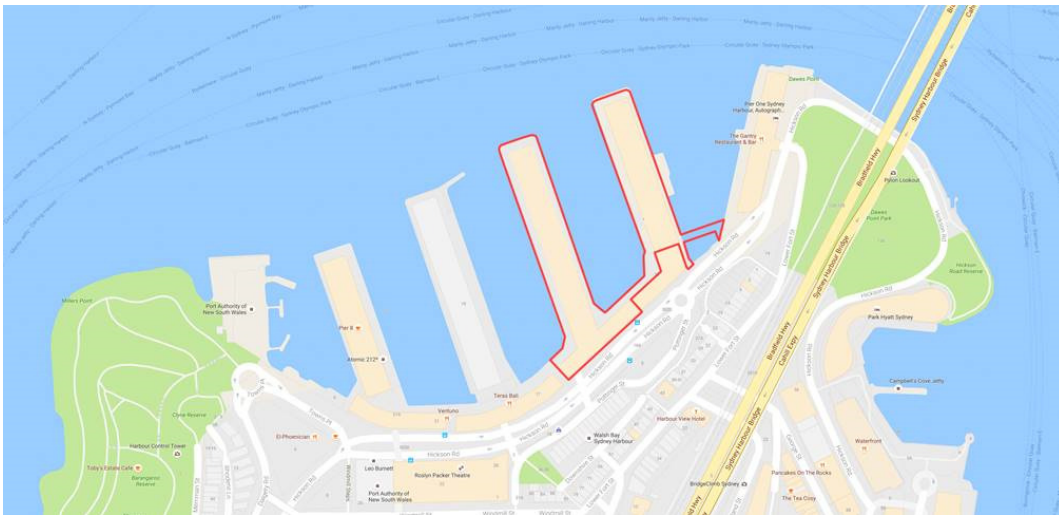


Figure 1. Site Location (Source: Google Maps)

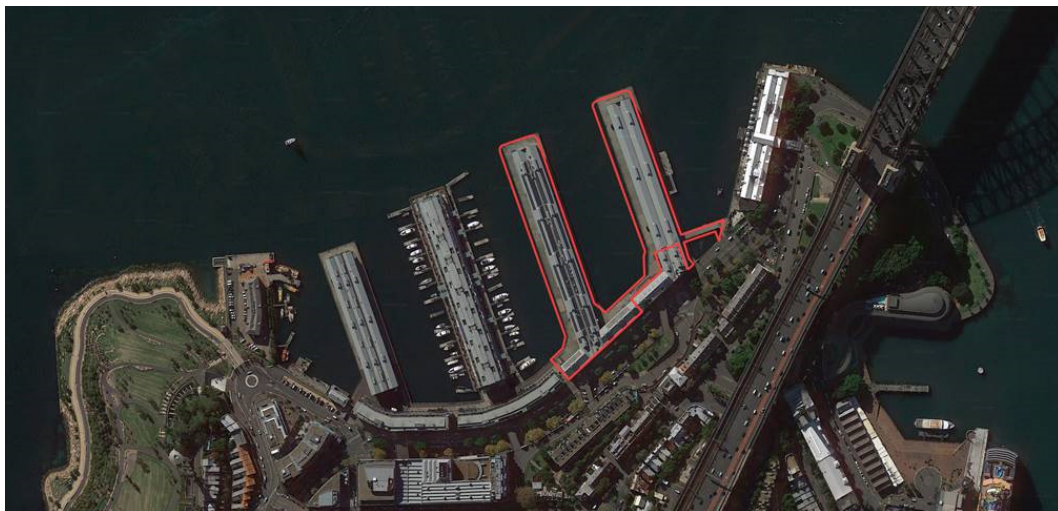


Figure 2. Aerial view (Source: www.nearmap.com)

Pier 2/3 is legally described as Lot 11 in DP 1138931 and Wharf 4/5 is legally described as Lot 65 in DP 1048377. The total area for these lots is 18,090sqm.

The land owner of the site is the Roads and Maritime Services (RMS). Both Pier 2/3 and Wharf 4/5 are occupied under various lease arrangements with Arts NSW, Department of Justice, primarily for arts and cultural uses.

The area of water that the project proposes to build over is also owned by RMS. Its land title description is Lot 12 in DP 1138931.

Walsh Bay comprises ten berths constructed between 1908 and 1922 for international and interstate shipping. These are collectively known as the Walsh Bay Wharves. The Walsh Bay Wharves Precinct is listed as an item on the State Heritage Register.

The Walsh Bay Wharves comprise the following:

- Pier One which contains the Sebel Pier One Sydney Hotel;
- Pier 2/3 the last remaining undeveloped pier (has previously received approval for cultural uses, temporary arts events and some commercial events);
- Wharf 4/5 which is occupied by the Sydney Theatre Company (STC), the Australian Theatre for Youth Program (ATYP), Sydney Dance Company (SDC), Bangarra Dance Theatre and the choirs comprising Gondwana, the Song Company and Sydney Philharmonia;
- Pier 6/7 which has been redeveloped for residential apartments and associated boat marina;
- Pier 8/9 which has been redeveloped for office uses; and,
- Shore sheds aligning Hickson Road which contain a range of commercial activities, including restaurants, bars, shops and offices.

3.2 The Project

The approved Stage 1 development application comprised:

- A new waterfront public square between Pier 2/3 and Wharf 4/5;
- A series of new lifts, stairs, and balconies on Pier 2/3 and Wharf 4/5 and modification to the roof of Pier 2/3;
- The inclusion of new tenancy spaces in Pier 2/3 and Wharf 4/5 for arts and cultural activities; and,
- The use of the precinct for arts festivals, events and pop-ups and associated uses, including restaurants, cafes and bars.

The WBAP Stage 2 State Significant Development Application seeks consent for construction works for the above to realise the WBAP project, as well as the proposed external alterations and additions to all of Wharf 4/5. It also seeks consent for new commercial and event uses in the precinct. Key aspects of the proposed development are outlined below:

Early works

- Early construction works comprising infrastructure upgrades, demolition, hazmat removal and sub structure works.

Pier 2/3

- Internal alterations and reconfiguration to provide for the following:
 - o Performance venues;
 - o Rehearsal rooms, production workshops, back of house facilities and offices;
 - o Function spaces, bars, cafes and foyer spaces extending onto external gantry platforms (balconies) providing breakout space for internal foyers and allowing views of outdoor performances;
 - o Mezzanine spaces for offices and back of house facilities;
 - o Upgrades to meet compliance with current BCA, DDA and fire codes;
 - o New lifts and stairs;
 - o Creation of new commercial tenancies and public toilets;
 - o Removal of some storey posts and beams to facilitate internal reconfiguration and new uses; and
 - o Retention of a large proportion of the ground floor in its existing 'raw' heritage state for events and festivals including Sydney Writers' Festival and Biennale including venue and commercial hire.
- External alterations and additions comprising:
 - o New balconies and external stairs for fire egress;
 - o New external lift for access;
 - o Installation of glazing in existing cargo sliding door openings and other solid panels on the eastern, western and northern elevations to allow for views into and out of the building;
 - o Roof penetrations within the central valley at the southern and northern end to accommodate new performance spaces and associated structural modifications including truss strengthening;
 - o Installation of ESD elements, such as photovoltaic panels and seawater heat exchange systems; and
 - o Raising of the external floor level on the eastern side by introducing a new raised deck and continuous set of stairs beyond the existing column line.

Wharf 4/5

- Internal alterations and reconfiguration to the Bangarra Dance Theatre (BDT) tenancy to provide for the following:
 - o Upgrade of the main rehearsal and performance spaces;
 - o Upgraded foyer and exhibition space along the eastern frontage;
 - o Improved office space at mezzanine level including a new lift and stairs;
 - o Provision of a function space at ground level of the northern end of wharf with associated kitchen facilities; and
 - o New entrance and new glazing in bays of sliding cargo doors, opening up the foyer and main studio to the Pier 4 apron.
- Minor internal alterations and additions to the SDC tenancy comprising:
 - o Reducing the existing workshop space to create a fifth dance studio; and
 - o Upgrading office and reception areas.
- External alterations and additions to SDC tenancy comprising:
 - o Raising of the timber wharf deck adjoining the SDC café and opening of the facade with new glazing to activate the waterfront square.
- Creation of new commercial tenancies and public toilets;
- External fabric alterations around the Sydney Theatre Company (STC) tenancy comprising:
 - o Improved street entry at Hickson Road involving relocation of the stairs to allow for an improved landing and point of arrival to the STC;
 - o New 'gantry' balconies, stairs and lifts mid-wharf and at the end of the wharf to provide for improved accessibility and compliance with fire engineering solutions;
 - o Minor amendments to the existing façade to accommodate new entries and exits along the wharf;
 - o Roof penetrations within the central valley at two locations to accommodate theatre and workshop spaces and associated structural modifications including truss strengthening; and
 - o Reinstallation of existing photovoltaic panels where applicable.

Wharf 4/5 Shore Sheds

- Internal alterations to reconfigure the choir spaces, including provision of a mezzanine for choir administration;
- Creation of new commercial tenancies at ground and mezzanine levels; and

- Provision of office space at ground level.

Public Domain

- Construction of a new waterfront square comprising a deck on piled structure;
- Shaded informal performance space on piled structure; and
- Changes to existing levels and steps down to facilitate access between the existing apron and new waterfront square.

New Uses

- Use of the precinct for arts festivals, events and pop ups as well as a range of activating uses such as retail, restaurants, cafes and bars.

4 Policy Context

4.1 Overview

As a major development within the City of Sydney (CoS) and the state of NSW, the requirements detailed in the sections that follow have been considered in the WBAP project.

4.2 Local Council Requirements

The WBAP development should meet the security and crime prevention requirements of the Safe City Strategy. As WBAP is a development within the CoS, meeting the requirements outlined in the Safe City Strategy would be considered best practice.

The City of Sydney Safe City Strategy is a multi-faceted strategy, combining a number of different types of approaches to crime prevention based on ‘best practice’. The key objectives of the strategy are to:

- Reduce crime and anti-social behaviour – including addressing domestic and non-domestic assaults, targeting steal from motor vehicle offences, reducing steal from person offences, reducing fraud, tackling victimisation of international students and visitors and providing crime prevention information to residents and business;
- Tackle complex crime and safety issues in areas of public housing – including delivering the Creating a Safer Community Project aimed at addressing fear of crime and social exclusion, Council representation at relevant forums and creating a Public Housing Liaison Officer position;
- Improve the look and feel of the built environment – by delivering good urban design, on-going CPTED Protocol Referral with NSW Police, extending the CCTV Street Safety Camera Network, initiating community safety audits, rapid graffiti removal, delivering high quality cleansing services, improved street lighting and the reactivation of laneways and public parks;
- Deliver primary prevention and early intervention initiatives – including increasing opportunities for recreation and learning and investing in programs which increase the chances of vulnerable children and young people and their families at key transition points in life;
- Target risk factors associated with offending behaviours – including supporting ex-offenders to successfully reintegrate in to the community;
- Strengthen communities and increase opportunities for people to engage in legitimate activities – by recognising the specific needs and developing appropriate responses to key community groups including Aboriginal people, Culturally and Linguistically Diverse Communities (CALD), Older People, Gay, Lesbian, Bisexual and Transgender (GLBT) communities and Women; and

- Advocate to higher levels of Government for more resources aimed at crime prevention – in recognition that the City has an important role to play in ensuring that Federal and State Government continue to support initiatives aimed at reducing and preventing crime at the local level.

4.3 SSDA Requirements

The requirements for the Stage 2 SSDA EIS which are stipulated by the Secretary of the Department of Planning and Environment and which are referred to as the “SEARs” have been addressed.

This report has been prepared in response to the SEARs for Stage two WBAP (SSD7689) item number two: Policies and Guidelines and planning agreements in which the principles of CPTED are required to be addressed.

State Significant Development Applications (DA’s) within NSW typically require a crime prevention through environmental design assessment to be conducted. This is a requirement of the Environmental Planning and Assessment Act 1979, and further detailed in the following Guideline produced by the NSW Department of Urban Affairs and Planning:

- Crime Prevention and the Assessment of Development Applications - Guidelines under Section 79C of the Environmental Planning and Assessment Act 1979.

As detailed in the Guideline specified above, before a decision can be made on a development application, a consent authority must consider the application under Section 79C of the Environmental Planning and Assessment Act 1979. Included in Section 79C are subsections requiring the consent authority to consider:

- The likely impacts of that development, including the environmental impacts on the natural and built environments, and social and economic impacts on the locality; and
- The public interest.

Crime prevention falls under these subsections of 79C.

5 Underlying Principles

5.1 Overview

Crime Prevention through Environmental Design (CPTED) is the use of design and space management principles in order to influence human behaviour. CPTED is a crime prevention strategy based on the proper planning, design and structure of cities, neighbourhoods, precincts or individual sites to create an effective use of the built environment which can lead to a reduction in the fear and incidence of crime, as well as an improvement in quality of life.

The design of a particular space has to ensure that the intended activity can function properly, as well as directly support the control of behaviour, in order to reduce the opportunity for crime. The design of the precinct should strive to incorporate the three overlaying CPTED strategies – Natural Access Control, Natural Surveillance and Territorial Reinforcement (Figure 3).

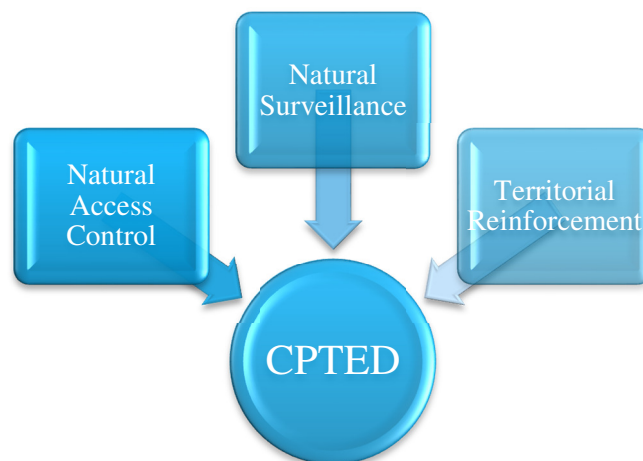


Figure 3. Crime Prevention through Environmental Design (CPTED)

5.2 Natural Access Control

Natural access control involves decreasing opportunities for crime by controlling access to a potential target and by creating a perception of risk to an offender. Physical and symbolic barriers can be used to attract, channel or restrict the movement of people.

Effective natural access control can be achieved by creating:

- Designed landscapes and physical locations e.g. footpaths that direct pedestrians into and throughout target areas;
- Public spaces which attract people into the area and discourage intruders;
- Restrict access to internal areas or high-risk areas like car parks or other rarely visited areas (e.g. by having doors, shrubs, fences and gates); and

- Selectively placed entrances and exits, fencing, lighting and landscaping to control the flow of access or to limit access.

Where practical, the intent of these natural access control measures should be incorporated into the WBAP designs, and on-going Precinct operations.

5.3 Natural Surveillance

Natural surveillance is about creating environments that keep intruders under observation. It aims to provide opportunities for people engaged in their normal daily business to observe the space around them.

Natural surveillance means creating clear sightlines. It works by designing the placement of physical features, activities and people in such a way so that maximum visibility and positive interaction occurs among legitimate users of the space.

Quality surveillance can be achieved or improved by considering the following design principles:

- Streets and public spaces can be observed from nearby buildings;
- Clear sightlines exist between public and private places;
- Open plan and minimalist (clutter-free) designs;
- Effective lighting of public places is adopted;
- Spots that facilitate entrapment are eliminated;
- Attractive and well maintained landscaping, with proper light and clear sight lines, is used to prevent offenders finding a place to hide or entrap victims; and
- Activation of the space or surrounding areas that encourages regular and diverse use of the space.

Where practical, the intent of these natural surveillance measures should be incorporated into the WBAP designs, and on-going Precinct operations.

5.3.1 Territoriality

Territoriality or territorial reinforcement is about clearly defining private space from semi-public and public space, and by attracting legitimate users to an area in order to create a sense of ownership. The created ownership shows that the owner has a vested interest in the location, which increases the actual and perceived risk of detection of offenders.

Fences, change in pavements, signs, lighting and landscaping can be used to define public, semi-public and private space. Care is necessary to ensure that territorial reinforcement is not achieved by making public spaces into private spaces, through gates and enclosures.

Territorial reinforcement can be achieved through:

- Design with a clear distinction between public and private spaces by using physical barriers (e.g. fences) and symbolic barriers (e.g. vegetation);
- Design that encourages people to gather in a public space and to feel some responsibility for its use and condition;
- Environmental markers (e.g. signage, walkways, pavers, lighting, bollards and fencing) which define intended use and ownership; and
- Regular maintenance of vegetation, infrastructure, and prompt removal of graffiti and vandalism.

Where practical, the intent of these territorial reinforcement measures should be incorporated into the WBAP designs, and Precinct operations.

6 Crime Profile

6.1 Overview

The proposed WBAP project is located in the Sydney Local Government Area (LGA). It should be noted that the crime figures included in this section of the report were those crimes recorded by NSW Police. These figures do not necessarily represent all crimes committed in the Sydney LGA as not all crimes get reported to Police.

The offences listed below make up the most prevalent crimes that are relevant to the WBAP. Their five year trend is also included in order to identify if the security risks that they pose is likely to increase or decrease in the future. It is these offences that CPTED and other security measures employed within the WBAP are most likely to have to protect against.

While a snapshot of the crime profile has been included in this report to provide contextual understanding for the CPTED analysis and treatment measures identified, a more detailed assessment of WBAP's crime profile has been conducted in the Security Risk Management Report (251710-SE-SRA-01).

6.2 NSW Crime Profile

According to the Bureau of Crime Statistics and Research (BOCSAR), in the 24 months to June 2016, two of the 17 major offences showed a significant upward trend across NSW, nine were trending downward and the remaining six offences were stable. The offences trending upward were steal from retail store (up 6.3%) and fraud (up 1.7%).

The nine offences which showed a downward trend over the last 24 months were:

- Murder (down 32.1%);
- Robbery without a weapon (down 25.9%);
- Robbery with a firearm (down 41.7%);
- Robbery with a weapon not a firearm (down 22.2%);
- Break and enter dwelling (down 7.2%);
- Motor vehicle theft (down 12.6%);
- Steal from dwelling (down 6.6%);
- Steal from person (down 9.9%); and
- Malicious damage to property (down 3.2%).

Due to these trends, 12 major categories of crime in NSW are now at their lowest level in 20 years.

The 12 categories of crime at their lowest in 20 years are:

- Murder;
- Robbery without a weapon;
- Robbery with a firearm;
- Robbery with a weapon not a firearm;
- Break and enter dwelling;
- Break and enter non-dwelling;
- Motor vehicle theft;
- Steal from motor vehicle;
- Steal from retail store;
- Steal from dwelling;
- Steal from person; and
- Malicious damage to property.

Shootings are also at the lowest level in 20 years.

6.3 Local Crime Profile

The following is a list of the most prevalent crimes to occur in the City of Sydney LGA that are relevant to the WBAP, based on total number of offences. A ranking of how the City of Sydney LGA crime rates compares to the other 141 LGA's cannot be provided because its residential population does not accurately reflect the number of people present in the area each day.

1. Theft (Other) (3,948 offences);
2. Assault – non-domestic violence related (3,121 offences);
3. Possession and/or use of cannabis (3,045 offences);
4. Malicious damage to property (2,691 offences);
5. Steal from motor vehicle (1,686 offences);
6. Steal from person (1,661 offences);
7. Possession/Use of amphetamines (1,265 offences);
8. Offensive conduct (1,126 offences);
9. Possession and/or use of ecstasy (1,055 offences); and
10. Harassment, threatening behaviour and public nuisance (943 offences).

Source: BOCSAR

The top offences to occur within an Outdoor/Public Place setting within the Sydney LGA were:

1. Assault – non-domestic violence related (1,213 offences);
2. Steal from motor vehicle (1,028 offences).
3. Malicious damage to property (753 offences);
4. Steal from person (453 offences);
5. Motor vehicle theft (235 offences);
6. Robbery (225 offences);
7. Assault –domestic violence related (175 offences);
8. Sexual offences (115 offences); and
9. Break and enter non-dwelling (1 offence).

Note: Premises type data is not collected for all offence categories.

The terrorism based security risks relevant to the WBAP include the following:

- Person Borne Improvised Explosive Device (PBIED) / Placed IED;
- Vehicle Borne Improvised Explosive Device (VBIED);
- Hostile Vehicle Attack;
- Active Shooter;
- Knife Attack;
- Hostage / Siege Scenario; and
- Chemical / Biological / Radiological Attack (CBR).

6.4 Five year trend

As can be seen in the five year crime trend table below, seven of the ten most prevalent offences applicable to the WBAP have reduced in occurrence over the previous three and five year periods. Out of the ten most prevalent offences, only drug offences have risen over the three and five year periods.

Based on these trends, the likelihood of these seven offences occurring in the future should generally either remain the same as currently assessed, or reduce.

Five Year Trend Table

Offence	Jan to Dec 11	Jan to Dec 12	Jan to Dec 13	Jan to Dec 14	Jan to Dec 15	3 Year Change	5 Year Change
Other Theft	5110	5379	4880	4692	3948	-19.10%	-22.74%
Assault – non-domestic violence related	3772	3724	3576	3142	3121	-12.72%	-17.26%

Possession and / or use of cannabis	2652	2548	2448	2714	3045	24.39%	14.82%
Malicious damage to property	3599	3332	3343	2876	2691	-19.50%	-25.23%
Steal from motor vehicle	2713	2200	2351	2176	1686	-28.29%	-37.85%
Steal from person	2881	2736	2225	1887	1661	-25.35%	-42.35%
Possession and / or use of amphetamines	2652	2548	2448	2714	3045	24.39%	14.82%
Offensive conduct	1860	1682	1713	1318	1126	-34.27%	-39.46%
Possession and / or use of ecstasy	579	915	929	949	1055	13.56%	82.21%
Harassment, threatening behaviour and public nuisance	973	1023	1025	950	939	-8.39%	-3.49%

Source: BOCSAR

General statistical information related to crime types was sourced from BOCSAR relating to crime incidents that have occurred in the City of Sydney LGA. These statistics are not detailed to suburb or street level and therefore they may not provide a complete representation of historic incidents at the WBAP.

7 CPTED Analysis

7.1 Overview

An analysis of some of the key factors that can impact on the CPTED characteristics of the WBAP are detailed below.

7.2 Vegetation and Landscaping Impacts

7.2.1 Overview

Vegetation can have both a positive and negative impact on crime rates, and therefore needs to be appropriately considered, selected, and be well maintained.

7.2.2 Negative Impact

Overgrown vegetation can negatively impact on natural surveillance by restricting sightlines, or by providing areas of concealment of people and actions.

Dense vegetation is regularly used by criminals to shield many of their activities, including target selection, examination of stolen goods, and disposal of unwanted goods. Dense vegetation have also been found to be a common characteristic of indecent assault sites.

7.2.3 Positive Impact

On the other hand, studies have found that crime has a strong negative association with tree cover, even after controlling for socioeconomic variables such as income, housing age, rural-ness, race, housing type, housing tenure, population density, and amount of protected or agricultural land. Research has found a 10% increase in tree cover would be associated with an 11.8% decrease in crime rate, all else equal.

Well-designed green space may decrease crime by attracting people to spend time outdoors. The presence of more people in public places makes it harder for criminals to go unnoticed, due to additional ‘eyes on the street’ (natural surveillance). Increased outdoor encounters also foster greater social networks and relationships. Having stronger social networks results in a lower likelihood of crime from within the community (territorial reinforcement).

The amount of vegetation in an area also influences the length of time people spend in that area. The more trees and grass present in an area, the longer people are likely to spend in that area.

Areas with well-maintained vegetation might also reduce crime, due to the “territorial marker” or a “cue to care,” signifying to criminals that the users of the area actively care about and are involved with their surroundings. The presumption is that when looking for a place to commit crime, a perpetrator would move on to a neighbourhood where cues suggest a weaker social organisation and

lesser neighbourhood involvement (Broken Window Theory). This theory suggests that neighbourhoods displaying visual cues of neglect or poor maintenance experience higher crime because these cues suggest to criminals a lack of effective law enforcement, and care by residents, while maintained neighbourhoods send the opposite cue.

7.3 Lighting Impacts

Improved street lighting may also cause a reduction in crime. Improved lighting leads to increased surveillance of potential offenders (both by improving visibility and by increasing the number of people on the street) and hence to increased deterrence of potential offenders. Improved lighting also signals community investment in the area and that the area is improving, leading to increased community pride, community cohesiveness, and informal social control.

A meta-analysis on the lighting-crime link has shown that improved lighting led to a significant 21% decrease in crime in experimental areas compared with comparable control areas. Furthermore, other studies have found that the financial savings from reduced crimes greatly exceeded the financial costs of the improved street lighting.

7.4 Mixed Use Activation

Mixed use activation of an area is an effective CPTED strategy that enhances the opportunity for natural surveillance, and encourages territorial reinforcement. A mixed use area increases the chance of the area being used, and lengthens the time that the area is used. Conversely, a single use area, such as a business park, tends to have high use during business hours on week days, but remains largely vacant on the weekends and outside of business hours. These low use times increase security risk, as criminals are less likely to be seen committing offences.

Walsh Bay already incorporates mixed uses to a good effect, and the WBAP project will further improve this. The diverse uses for Walsh Bay include residential areas, office areas, performance and event locations, and hospitality areas, ensuring the precinct is used essentially 24/7, 365 days a year.

8 Design Assessment

8.1 Precinct

The WBAP provides several opportunities for improving CPTED security measures such as natural surveillance, natural access control, and territoriality. These opportunities have been identified and discussed below.

8.1.1 Natural Access Control

The layout of existing structures at the WBAP (Pier 2/3, Wharf 4/5) provides significant natural access control properties, clearly delineating the precinct's space and perimeter boundaries (Figure 4). Entry and egress areas of the precinct are clearly identifiable, with existing structures forming a natural boundary along the length of Hickson Road. Users of the space are naturally funnelled down predictable pathways, reducing terrain-vagueness and improving way-finding.

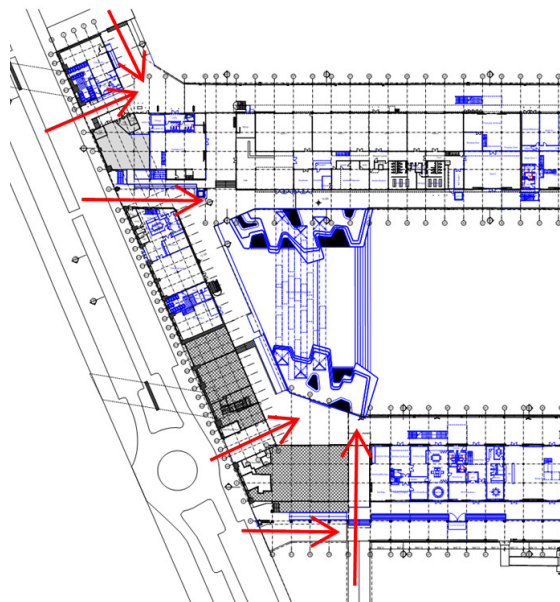


Figure 4. Precinct Access Points

These natural points of access should be reinforced in the design of the precinct, with appropriate signage and other way finding measures (such as visual markers, like lighting) being provided for users. Security signage should be displayed at these natural points of access to deter illegitimate users of the space.

8.1.2 Natural Surveillance

The precinct design facilitates strong natural surveillance properties. Natural surveillance from Hickson Road (Figure 5) along the precinct perimeter is good, with continuous roadside and pedestrian traffic. This visibility from the street reduces the opportunity for loitering, concealment, graffiti, vandalism or other illicit activities from occurring unobserved.

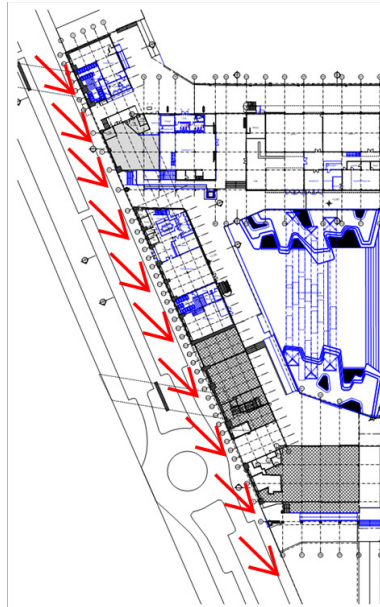


Figure 5. Precinct Road Frontage

To improve this natural surveillance at night, improved lighting should be provided along the perimeter of the precinct where street lighting does not provide sufficient illumination. Improved lighting should look to enhance perimeter CCTV recording where possible to ensure accurate image capture.

8.1.3 Territoriality

Territoriality throughout the precinct should be encouraged and supported. While the precinct will be activated throughout the day and at night, community groups should be encouraged to engage with and use the space outside of normal operating hours. The proposed use of the waterfront Square as a public engagement area that supports the gathering of community groups should be encouraged.

Maintenance of the precinct is important to encouraging community use and the perception that area is cared for and monitored. Clean up of graffiti, vandalism and rubbish is important to curating this image. The provision of security signage and rubbish bins are some examples to improve the perception of a space.

8.2 Wharf 4/5

Wharf 4/5 provides good natural surveillance throughout the public domain, with open and minimalist space design. The provision of a café and scattered seating activates the space and encourages users to interact with the space and surrounding boardwalks. The use of commercial, rehearsal and entertainment spaces throughout the day will encourage a natural flow of individuals and encourage legitimate use of the space.

8.2.1 Café

The café located in Wharf 4/5 provides substantial area activation and encourages continuous pedestrian flow through the space. The location of the café supports natural surveillance (Figure 5) throughout Waterfront Square.

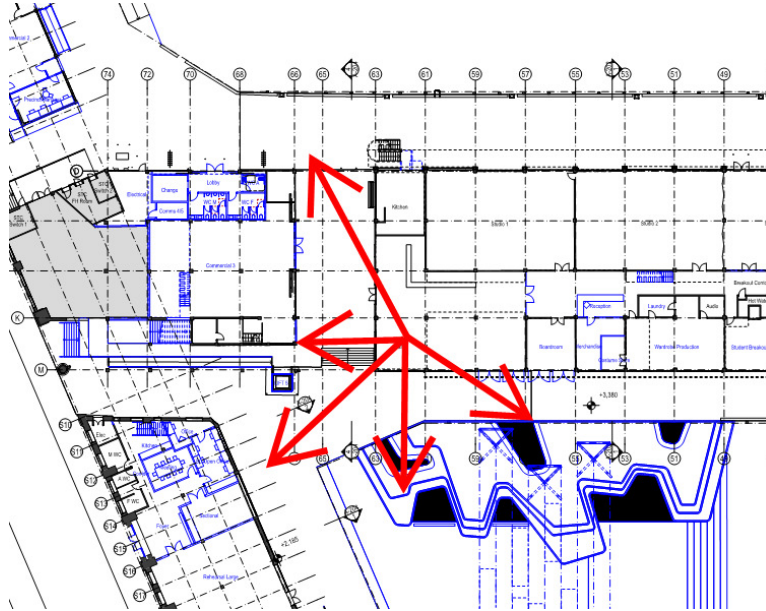


Figure 6. Café location and natural surveillance sight lines

While open for business, the café will provide a central point of focus for visitors to the space, encouraging natural way finding and influencing the use of the space.

Glazing should be used as much as possible to ensure natural surveillance from this location. An open frontage with inside/outside seating should also be considered.

8.2.2 Public Space

The proposed public seating areas (Figure 7) along the apron of Wharf 4/5 provide significant natural surveillance properties for observation of Pier 2/3 and Waterfront Square. These seating arrangements are well placed and should activate the apron areas during event and normal day and night activities.

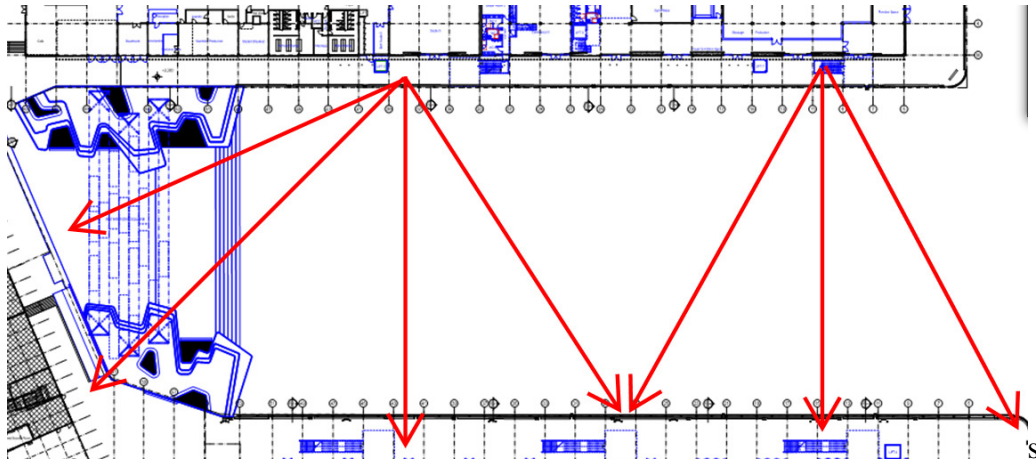


Figure 7. Proposed Seating Areas Pier 2/3

Seating arrangements and lifts at the end of the Wharf (Figure 7) present some opportunity for improvement, specifically during night-time and after-hours. Use of these areas outside of peak periods reduce the opportunity for natural surveillance from surrounding areas, and may facilitate the concealment of illicit activities.

The use of this area as a function space does encourage legitimate use, however when the function space is not in use, the low throughput of individuals may lead to an increase in the opportunity for crime to be committed.

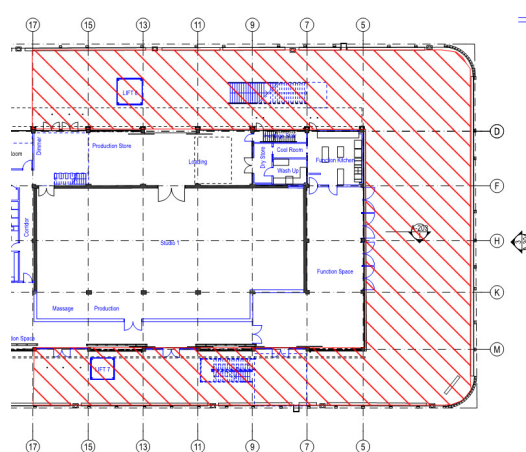


Figure 8. End of Pier 2/3

These areas should be well lit, especially outside of operating hours at night, and electronic surveillance should be provided to reduce the opportunity for concealment or unmonitored activities to occur.

8.3 Pier 2/3

The Pier 2/3 design provides natural surveillance of the precinct due to its open and minimalist design. The use of commercial, rehearsal and entertainment spaces throughout the day will encourage a natural flow of individuals and encourage legitimate use of the space.

8.3.1 Public Space

The proposed public seating areas along the boardwalk of Pier 2/3 provide significant natural surveillance properties for observation of Wharf 4/5 and the waterfront Square. These seating arrangements are well placed and should activate the apron areas during events and normal day and night activities.

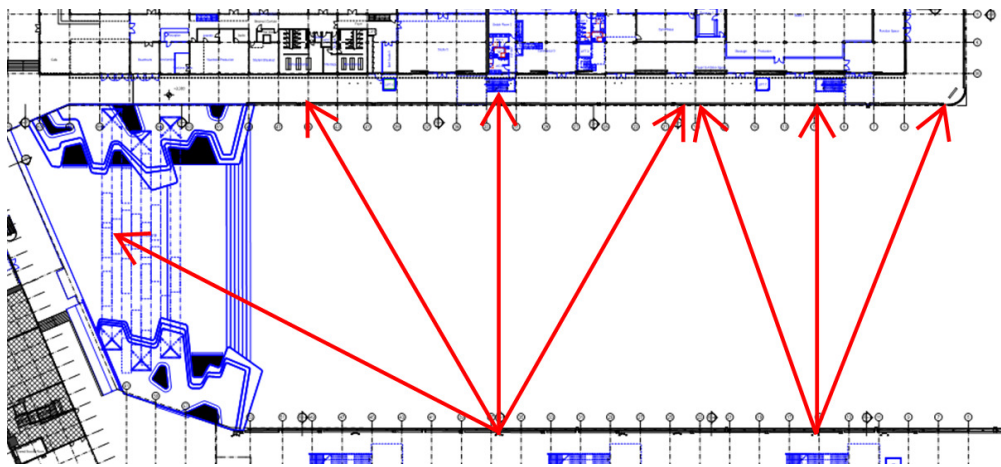


Figure 9. Proposed Seating Areas Pier 2/3

As with Wharf 4/5, seating arrangements and lifts at the end of the Pier (

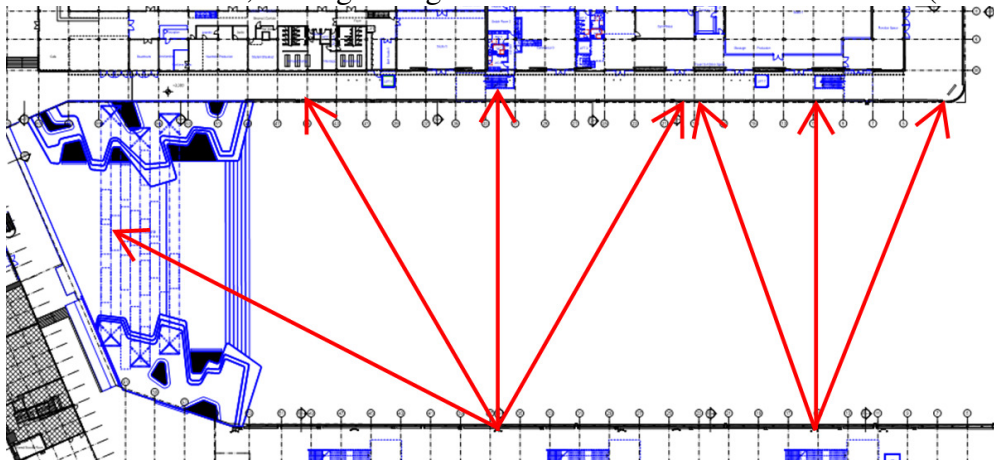


Figure 9) present opportunity for improvement, specifically during night-time and after-hours. The design of these areas due to distance and sightlines from other areas of the precinct, and may facilitate the concealment of illicit activities.

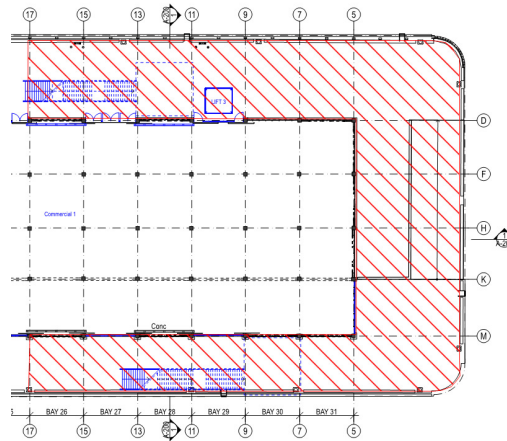


Figure 10. End of Pier 2/3

As this section of the Pier is not activated through function spaces or community points of interest, it may attract opportunistic crime, especially at night. Good lighting is recommended, especially out of operating hours and at night to increase visibility of individuals in this area.

8.4 Waterfront Square

The waterfront square is the main attraction of the precinct and being centrally located will naturally draw users interest and attention. The design provides good natural surveillance characteristics for the entire precinct.

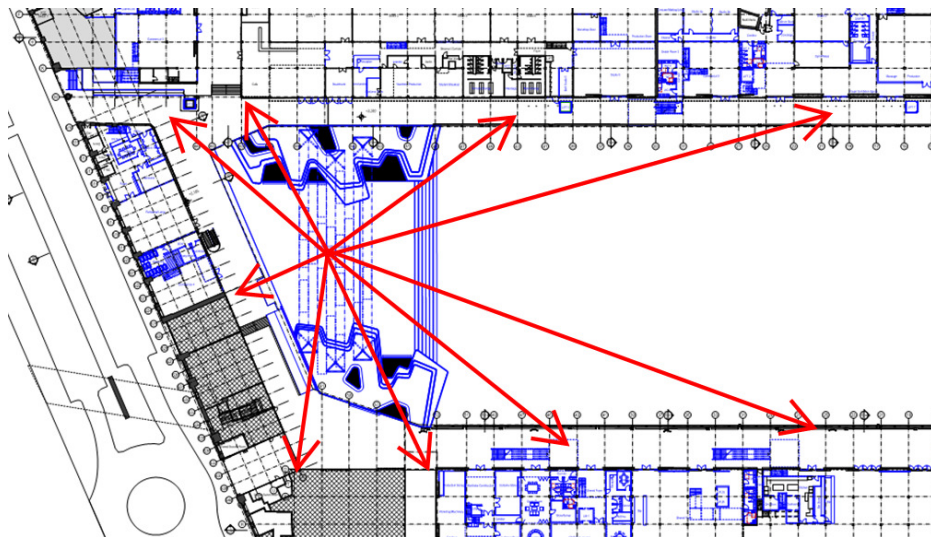


Figure 11. Waterfront Square

The proposed use of this space will attract visitors and encourage pedestrian throughput through the precinct during the day and night reducing the opportunity for illegitimate use of the space (crime, anti-social behaviour).

The proposed shade structures (Figure 12) for the design does not hinder natural surveillance properties of the space, and further encourage users to engage, care for, and activate the space. These structures should be configured in such a way that the supporting structures for the shades (i.e. shade stands) do not create

unobservable areas due to their proximity to each other. Users of the space should be able to clearly observe this area from the surrounding aprons.



Figure 12. Waterfront Square Proposed Shade Structures

9 Recommendations

The proposed design for the WBAP generally provides good natural surveillance, natural access control, and territoriality. The design of space is generally open and visible from several angles, and public spaces are readily accessible, clearly defined, and will activate the space at different times of day.

In consideration of these natural access control, natural surveillance, and territoriality aspects of the proposed design, the following considerations are recommended for WBAP:

- Ensure adequate lighting is provided throughout the precinct, particularly at the ends of Wharf 4/5 and Pier 2/3, the precinct and building entry/exit points, and within the waterfront square;
 - Adequate lighting attracts legitimate people to the area at night, facilitates the precincts use at night, and deters illegitimate users and crime;
- Provide way finding signage throughout the precinct to assist natural access control, and reinforce boundaries;
- Provide security signage throughout the precinct, particularly at precinct and building entry/exit points, to notify people of the security measures in place, and to provide a deterrence;
- Maintain precinct image and repair vandalism or remove graffiti as quickly as possible (including public seating, shades, etc.);
- Activate the precinct and the waterfront square as much as possible, to attract legitimate users to the area, and to deter illegitimate users and crime;
- Use as much glazing as possible to assist natural and electronic surveillance;
 - Glazing should be particularly used at ground level, and at function, and hospitality spaces;
- Support gatherings of community groups throughout the precinct to further activate the space;
- Minimise areas of possible concealment of people, actions, or packages, particularly at the ends of Wharf 4/5 and Pier 2/3, staircases, lifts and the northern most and southern most boardwalks.

By implementing these recommendations, CPTED principles will be further reinforced in the current design, and the opportunity for illegitimate use of the space and crime will be reduced.