2.8

Compliance with the Current Controls

Mapping indicates that the existing city form is, in the main, compliant with the height controls (refer to C_25).

Where there is a non-compliance, it can generally be accounted for by one of the following (refer to C_26):

- It is a tower form constructed prior to introduction of Sun Protection Controls that has not yet redeveloped to conform with the SAP
- It is a Category A or B site (ie – allowed to project above the SAP)
- It is a heritage item or structure attached to a heritage item.

C_25

Existing Structures Breaking the SAP Controls

C_26

Existing Structures Breaking the Height Controls (metres above control)

3
Issues

3.1
City Form / 1971 objective completed

The mapping of existing building heights and compliance with controls outlined in the previous section indicates that, generally, the current controls have been working to shape the city.

A sectional analysis of the city form illustrates the way in which the city form has developed within the definition of that framework (refer to C_27-30 and C_31-34).

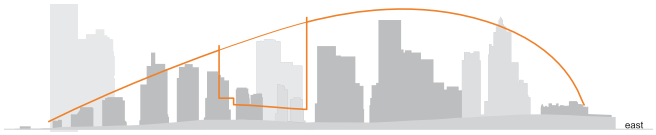
The sectional analysis indicates where the upper limit is shaped by each of the three key form objectives embedded within the framework:

1. Height on the ridges and tapering down to the edges
2. Special Character Areas
3. Sun Protection Controls

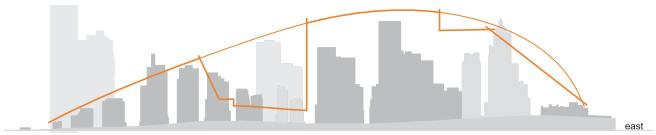
Development at Barangaroo, Haymarket and the western side of Darling Harbour has radically changed the scale of the western edge of the city.

C_27
1971 Skyline

C_28
Special Character Areas



C_29
Sun Access Planes



C_30
Current Condition

C_31
1971 Skyline

C_32
Special Character Areas

C_33
Sun Access Planes

C_34
Current Conditions

The lines shown in these sections are diagrammatic

3.2

Sunlight to Important Public Parks and Places

The efficacy of the Sun Protection Controls in maintaining or improving sunlight to protected parks and places has been measured on performance.

The spaces protected for sun access have been reviewed against the following criteria:

- Public accessibility and use
- Period and extent of solar access through the control period (Appendix F)
- Significance within the future landscape of the city

Appendix F: Sun Protected Spaces documents the extent of sun and shade in each park and place during the control times and dates. Note that the shadow studies were generated using the 3D City Model.

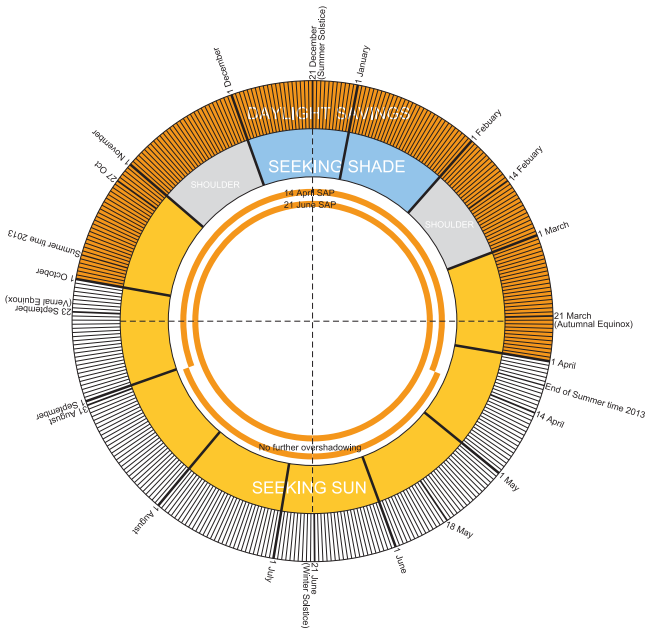
The documentation, survey and observation, clearly shows that direct sunlight in all the protected parks and places is well used by workers, residents and visitors. Direct sunlight supports plant growth in parks and social activity in all places, contributing to a growing, vibrant and exciting public life for Central Sydney.

Maintaining sunlight to important public parks and places is a critical principle underpinning the current planning framework. Survey and analysis indicates that people's use and enjoyment of parks and places has a direct relationship with the extent of direct sunlight. People typically seek out the sun throughout most of the year, only seeking out shade in public places for a short period within summer (refer to C_35).

As Central Sydney continues to grow, there is increasing pressure on height limits by new development. The Sun Protection Controls have been reviewed, below, to ensure their strength and efficacy into the future.

C_35

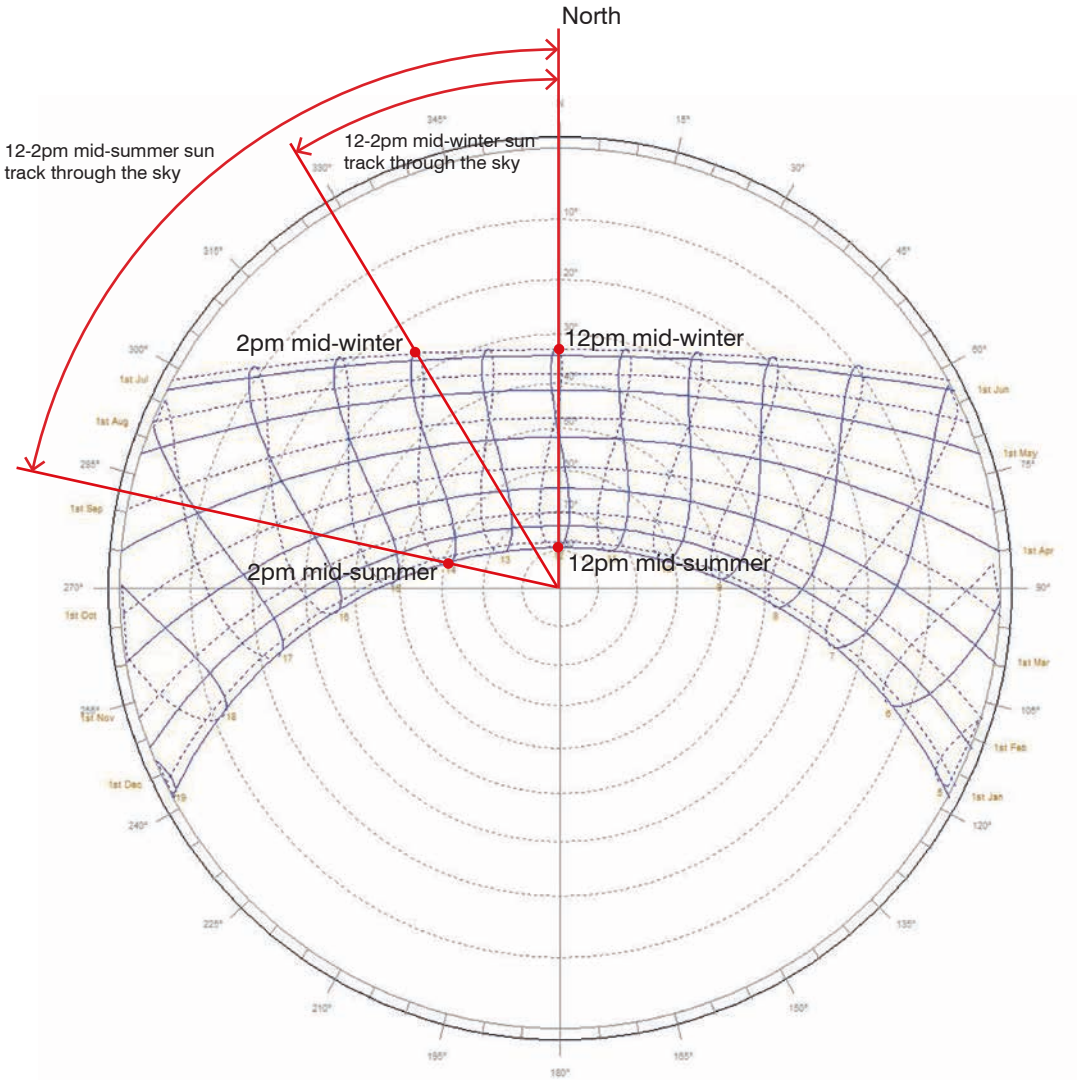
Daylight Calendar



C_36

Sydney Stereographic Diagram

Sun Azimuth (angle from north) at 12pm and 2pm mid-summer and mid-winter



3.3
Sun Access Planes

This section reviews the details of the existing SAP controls and their ability to protect and improve sunlight to protected spaces. It then proposes a new methodology for determining SAPs.

To date, SAPs have been very effective in protecting sunlight to significant open spaces. Definition of the SAPs should be clarified and strengthened if they are to continue to achieve their objectives under growing pressure for tall buildings in Central Sydney.

Separate Planes

Spaces that are protected by SAPs through a period of time are protected by two separate SAPs. For example, most parks have two planes, one set to the north at the 12pm angle, and one to the west at the 2pm angle. The intention is that the planes will protect sunlight access throughout the 12-2pm period.

The solar altitude angle is lower than 12pm at every moment until 2pm. Consequently, in this case, the space is protected at 12pm and at 2pm, not actually at all the moments between those times.

Overlapping Planes

Where two separate planes protect one place, one plane is typically extended beyond the limits of the protected space to create an overlap between the planes. The purpose of this is twofold:

1. Avoid a gap in protection
2. Protect throughout the period between the two times at which the planes are set

The higher plane prevails according to the LEP, though Section 5.1.10 of the DCP includes a series of maps that clarify the height limits where Sun Access Planes may overlap. The DCP maps are largely ineffective because of the LEP clause. This ambiguity in the controls is created where there are multiple planes protecting one place and has proven to be problematic in achieving the intent of the SAPs.

Gaps between Planes

As the height of the planes increases, the individual planes diverge, and a gap is left between the two (refer to C_37). At this point it is assumed that the maximum height controls applying to development within the gap will be sufficient to protect sun access to the space. Any amendment or variance to the maximum height limits applying within the gap may lead to overshadowing of the protected space.

The SAPs should be constructed as a consolidated set of connected planes (refer to C_39-44). In this way, there would be no gaps or overlaps. See Alternative Method of Plane Construction, below.

C_37

Gaps in the Sun Access Planes

The SAP's Described in this map have been projected to RL330

Daylight savings time

Daylight savings time is ignored for the purposes of constructing sun access planes. SAPs are constructed with solar time.

Daylight savings time is applied in spring, whereby the clock shifts forward by one hour so that 1pm 'solar time' is 12pm 'clock time' (daylight savings time). The purpose of this is that the effect of longer days through summer months extends daylight in the evening, rather than both morning and evening equally.

Daylight savings time typically begins on the first Sunday of October, and ends on the first Sunday of April. These dates are not consistent with the solar coincident dates, but are similar to the equinox dates. The clocks change slightly after both the equinox dates (approximately two weeks).

Solar 'tails' – protecting sun throughout the year

In most cases, the angle of the SAP is set at the solar altitude and azimuth on the 21st June, at the latest time the space is protected usually until 2pm. The 2pm planes are constructed to the west side of parks where they seek to protect the winter sun access. 21 June certainly represents the lowest solar altitude angle throughout the year, but it is not the most extensive solar azimuth angle from north. That is, the sun is never at a lower angle at 2pm throughout the year, but it is further to the west at all other times of the year, at 2pm.

The implication of this is that directly to the south of the plane, tall development may overshadow the park before 2pm on other days in the year other than 21 June. In this way, the SAP is unable to fully protect sun access to the space throughout the year during the designated times. This may become more evident as buildings get taller, filling the upper limits of the controls to the south.

This is primarily an issue for parks. Protected places set amongst already very tall development, such as Martin Place, Pitt St Mall and Macquarie Place, have SAPs supplemented by NAOs, which protect sunlight to the space throughout the winter months, not just on the date of the SAP.

The SAPS could be strengthened by adding 'tails' to the southern edge of planes. The 'tails' would be triangular planes defined by an ascending edge set at the solar angles at the equinox date and summer solstice date, for the corresponding time defining the southern edge of the plane. This would ensure that direct sunlight access to the park is protected throughout the year (refer to C_38).

For example, planes protecting afternoon sun until 2pm would kick up from their southern edge to create a triangular plane, or 'tail', the southern ascending edge of which is defined by the solar azimuth and altitude angle at 2pm on 23 September. In order to construct this, the 2pm, 23 September angle should project from the southern-most co-ordinate point to form a triangular plane with the opposite ascending edge of the triangle being defined by the solar angle of the current SAP, set at 21 June at 2pm. A further 'tail', or triangular plane, would be defined by another ascending edge projected at the solar angle of the summer solstice at 2pm.

Note that this would not apply to planes that are projected at the 12pm solar angles, as the azimuth varies only a very marginal amount throughout the year.

Where SAPs are constructed using a time before midday, the autumn equinox date of 21 March should be used. The solar azimuth angle of the autumn equinox is slightly further west than the spring equinox date, and is therefore slightly more extensive. The inverse applies to afternoon solar azimuth angles (refer to C_36).

C_38

Indicative Equinox and Summer Solar Tails

Sun Access Plane

Equinox and Summer Tails

100m

The SAP's Described in this map have been projected to RL330

Alternative Method of Plane Construction

Planes should be constructed by the following method, in order to ensure solar protection through the relevant period of the day, throughout the year. See C_40 to C_44.

As per existing SAP Methodology:

1. The extent of the space to be protected is defined, this will often include surrounding streets and sometimes include building facades.
2. The alignment of the base edge of planes is established as a continuous line. Typically the alignment of the base edge of the plane corresponds with the boundary line of buildings that define extent of overshadowing to the space.
3. The base edge is elevated. Elevation is set according to appropriate Street Frontage Height, which defines an appropriate scale to edge the space, and an acceptable extent of overshadowing. The elevation may be informed by street frontage height of existing buildings.
4. The base edge is projected at the appropriate solar altitude and azimuth angles to create a plane. The appropriate solar angle is the lowest angle during the period of protection.
    - The base plane to the west of the space protects afternoon sun and should be projected at the solar angle of latest time of the period of protection.
    - The base plane to the east of the space protects morning sun and should be projected at the solar angle of earliest time of the period of protection.
    - The base plane to the north of the space protects throughout midday and should be projected at the solar angle of lowest altitude that applies within the time period.

Recommended additional steps:

5. Where the period of protection begins or ends at 12pm, a triangular plane must be created at the north to form a fully connected SAP covering the whole period of protection.
6. Equinox and solstice 'tails' are added to the southern edge of morning or afternoon planes, as described above.

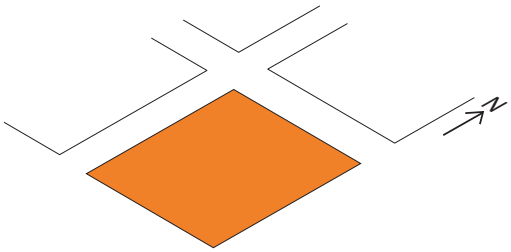
Where a space is protected both to the east and the west (that is, from the morning through to the afternoon), the planes will project in opposite directions and a triangular plane must be constructed from the common vertex. The diverging ascending edges are connected, to complete the plane geometry, thereby maintaining direct sunlight access for the whole protection period.

The exact geometry of the connecting, triangular planes varies according to orientation and alignment of the base edge. In some cases, where the orientation of the base edges is not orthogonal, it may be necessary to connect the morning and afternoon planes with two triangular, connecting planes via an ascending edge at 12pm.

As per existing SAP Methodology

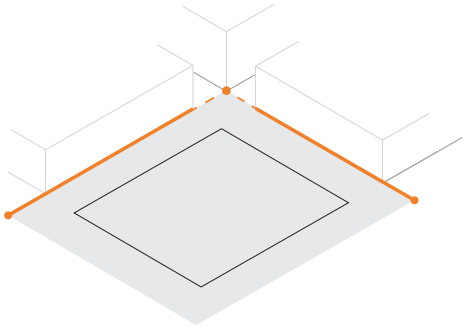
C_39

Step 1 - The extent of the space to be protected is defined



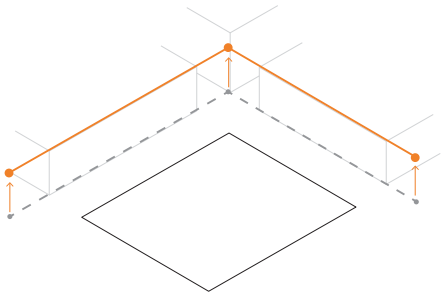
C_40

Step 2 - Alignment of base edge established as a continuous line



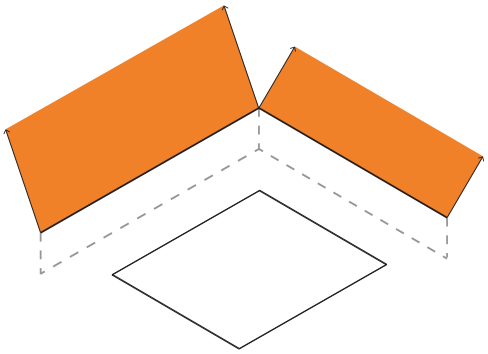
C_41

Step 3 - The base edge is elevated



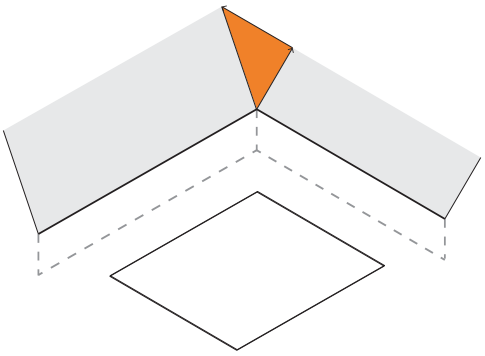
C_42

Step 4 - The base edge is projected at the appropriate solar altitude and azimuth angles to create planes



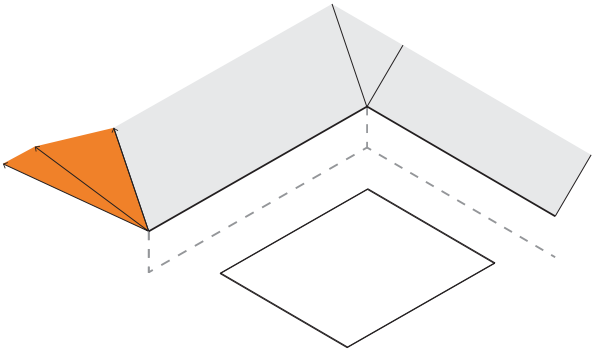
C_43

Step 5 - triangular plane created to generate a fully connected SAP



C_44

Step 6 -Equinox and solstice 'tails' are added



Recommended additional steps:

Category A and B Sites

The Category A and B system accounts for buildings that already significantly broke the Sun Access Plane at the time it was introduced.

It was assumed that the Category A site would be redeveloped to a lower height, though not as low as the SAP.

Category B land aligns with the Category A building and the shadow it casts at the date and time of the plane (refer to C_45). Category B sites are allowed to extend above the SAP, as long as their height does not exceed that of the category A building. This assumes that no additional shadow is created beyond that already cast by the Category A building, so the sun access is not worsened.

Development extending beyond the SAP on Category B land is problematic because of the issues discussed above in relation to solar azimuth. The location of the sun in the sky is furthest to the north on the 21 June at 2pm. At all other times of the year, it is further to the west at 2pm.

The Category B land is defined by the 21 June 2pm angle, and aligned with the existing Category A building. Therefore any building developed in the Category B land may, depending on its height, cast a shadow on the protected space during the protected period at other times of the year.

The impact will vary according to the specific relationship. Generally, Category B land under a 12pm plane will have little effect on the protected place or park.

C_45

Category A and B Sites

Category A Sites

Category B sites

In relation to Category A sites:

- It is very unlikely that most Category A sites will redevelop while they are subject to this control that requires a 50% reduction of overshadowing.
- An economically feasible outcome requires the existing floorspace to be redistributed across the site area, or an amalgamated site area.
- Most of the Category A sites are unable or extremely unlikely to be able to redistribute their floor space within the parameters of their site and satisfy the control.
- One site, at the corner of Elizabeth Street and Park Street, affected by the Hyde Park SAP, could satisfy this clause with redevelopment. Its site area is large enough and underdeveloped enough to afford redistribution of floor space.
- The existing mapping of the tower form as Category A land on the LEP heights map is problematic because it precludes an alternative footprint that may achieve an outcome of reduced overshadowing on the Park.

In relation to Category B sites:

- Most of the sites within the Category B land have already developed or are less constrained by the Sun Access Plane itself.
- The restriction of height on Category B land to the existing Category A building is too arbitrary. It does not necessarily reflect a built form that would fit within the shadow of a future development on the Category A site, throughout the period of protection (refer to C_46). The control applies to any plane and therefore does not account for the different angles of the planes. The control also does not take into account the distance of the new building from the Category A building, and thus potentially restricts development in the shadow of the Category A building more than is necessary.
- A site specific no further overshadowing approach would be more efficient in protecting sun access and achieving the most efficient development outcome.

Each case is different and the analysis is summarised below:

Wynyard Park

- The Category A site here has been developed to 75m. The site area constraints mean that there is not alternative development option that will enable a reprovision of equal floorspace at a reduced height.
- The most significant overshadowing to the park, beyond the shadow cast by the SAP itself, is caused by a break to the 2pm SAP one block north of the park on the corner of Jamieson and York. The site has not been listed as a category A site. This site is a strata residential property, and as such has been discounted from the built form capacity study.

Hyde Park (west)

- The TG building has capacity.

Hyde Park (north – Law Courts):

- This Category A site (the Law Courts Building) is physically constrained and is unlikely to redevelop. It has recently been refurbished. It would not be able redistribute an equal amount of floorspace across the site at a lower height so the ambition of reducing overshadowing to Hyde Park is unlikely to be achieved. Applying a category B height limit to match the Category A site seems arbitrary under these circumstances.

Belmore Park

- Category A sites to the north and west are very unlikely to redevelop, however the extent of the B land needs refinement to avoid additional overshadowing of the Park.

C_46

Category A and B Land

Category A Land

Category B Land

Category B Structures

C_47

NAOs to be Converted to SAPs

NAO Spaces to be converted to SAPs

Other NAO Spaces

3.4
No Additional Overshadowing Controls

Complexity and Efficacy

The NAO controls have been very effective at protecting existing sun access into public spaces within the city. Development has occurred only where it already lies within the shadows cast by existing buildings already blocking sun from the space. They do not have the effect of increasing the extent of sun access, however.

The NAO's are simple to communicate, but they are very complex to model. They cannot be easily expressed as a simple set of elevations. Rather, each site affected by an NAO control must generate a form that, through testing, demonstrates no additional overshadowing to the protected space during the 14 April to 31 August period. This process requires significant survey, modelling and testing.

Martin Place:

Sunlight to this significant ceremonial public space incorporating the cenotaph and the GPO forecourt, throughout the year, remains an important objective.

Note: The Martin Place NAO control is supplementary to the Martin Place SAP that protects sunlight to the façade of the GPO from August to April, but does not protect the space (or the façade) through winter.

No Additional Overshadowing to Parks:

All parks should be protected by Sun Access Planes. Two parks are currently protected by No Additional Overshadowing controls: Lang Park and Prince Alfred Park. Both lie on the periphery of Central Sydney and as yet have not been affected by tall development. Pressures on heights at the edges are likely to increase and as that happens, a more robust control is required to maintain and protect adequate and appropriate extent of direct sunlight to these places.

Lang Park:

This park enjoys good sunlight and supports significant vegetation. The Park would benefit from a better design, which may also increase patronage. This park will become increasingly important with intensification of the north western edge of the City, including Barangaroo.

Prince Alfred Park:

Should be replaced with a Sun Access Plane constructed under the same principles, but with an extended period of protection (10am-2pm).

Carved out by SAPs and NAOs.

Lightwells created by open spaces, heritage items and small street blocks that restrict the scale of development. Those light wells create more daylight in the city centre and create outlook and amenity for the development surrounding them.

Conclusions:

1. Maintaining the existing amenity as a minimum standard is a priority. The SAPs have been largely effective at preventing a worsening of overshadowing on important public spaces.
2. There are a number of buildings that continue to break the sun access planes. These sites are unlikely to redevelop to a lower level.
3. There have been no new buildings approved that create additional breaks to the SAPs, however, as a result of the sun's angle in the shoulder periods of the year, the category B sites effectively undermine the intent of the SAPs.
4. In relation to a maximum height limit of 235m, new state developments (ie the casino) have already challenged the 235m maximum height control on the western edge. Achieving heights greater than 235m is more difficult on the eastern side of Central Sydney where SAPs and NAOs are in place.

3.5
Private and public views

There are a number of key views within Central Sydney, to and through parks and other well-used public spaces, that help define Sydney.

Example significant views include:

- Views toward Central Station clock tower: significant due to its historically physical prominence in the city's landscape;
- Views along Martin Place: important due to its significance as a gathering place; and
- Views to and from Observatory Hill: significant due to its strategic role in the city's history - milling, defence, communications, astronomy, time keeping. These functions have required surrounding views and visual alignments to remain open. Its physical prominence relative to city development should be maintained.

New development must be designed to make a positive contribution to the characteristics and composition of designated public views.

These public views should be preserved and have priority over private views.

The following Figures C_48 to C_71 identify key significant views to be maintained, as well as a methodology for identifying the extent of the angle of view protection.

It is noted that Figure C_48 does not identify every significant view within Central Sydney. A contextual analysis of the impact of any new development on its surrounding views and vistas must be submitted with any development application.

The objectives relating to views in Central Sydney are:

- To identify and preserve significant views from public places.
- To ensure that new development is not impeded by the preservation private views.
- To promote the sharing of private views, where appropriate.

The changes required to the planning framework to achieve the objectives are:

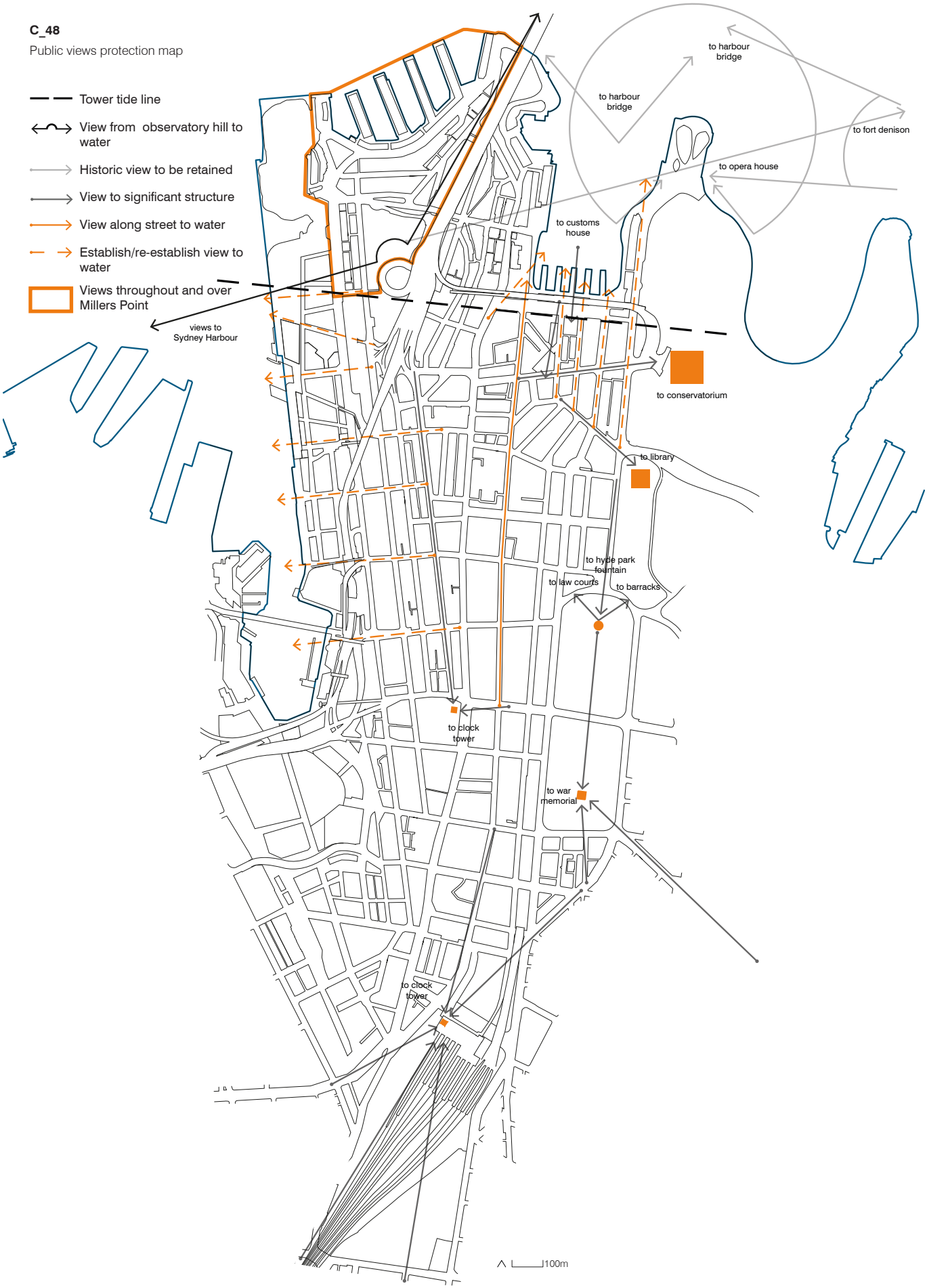
- Remove protection of private views as a development consent consideration.
- Identify significant views from public places and construct view planes to preserve these views.

Potential provisions that could be included in the planning framework are:

- Ensure development does not encroach on any of the views nominated on the Public Views Protection Map
- Limit heights to the northern edge of Central Sydney to a 'tower tide line' aligned with the southern side of Alfred Street. Towers are not permitted north of this line in order to protect views of and between Millers Point, The Rocks, Observatory Hill, Bennelong Point and Circular Quay.
- Ensure future development is of a scale and form that will ensure views and vistas to and from Observatory Hill, Millers Point and adjoining areas are conserved.
- Ensure development does not breach view protection planes described by a triangular plane extending from a view point (A) through two or more related control points (B, C). Specific view protection planes include:
    a. View and silhouette of Central Station Clock Tower
    b. View of western sky looking from Martin Place
    c. View and silhouette of Sydney GPO clock tower looking from Martin Place
    d. View and silhouette of Sydney Hospital looking from Martin Place
    e. View of Macquarie Lighthouse looking from Observatory Hill
    f. View of the horizon between Thompson's Corner and Observatory Park, Pennant Hills, looking from Observatory Hill
- Ensure development does not encroach on views from defined view points on Observatory Hill (Figure 4_62) to any point on the surface of the water of Sydney Harbour that lies within specified bounding points

C_48

Public views protection map



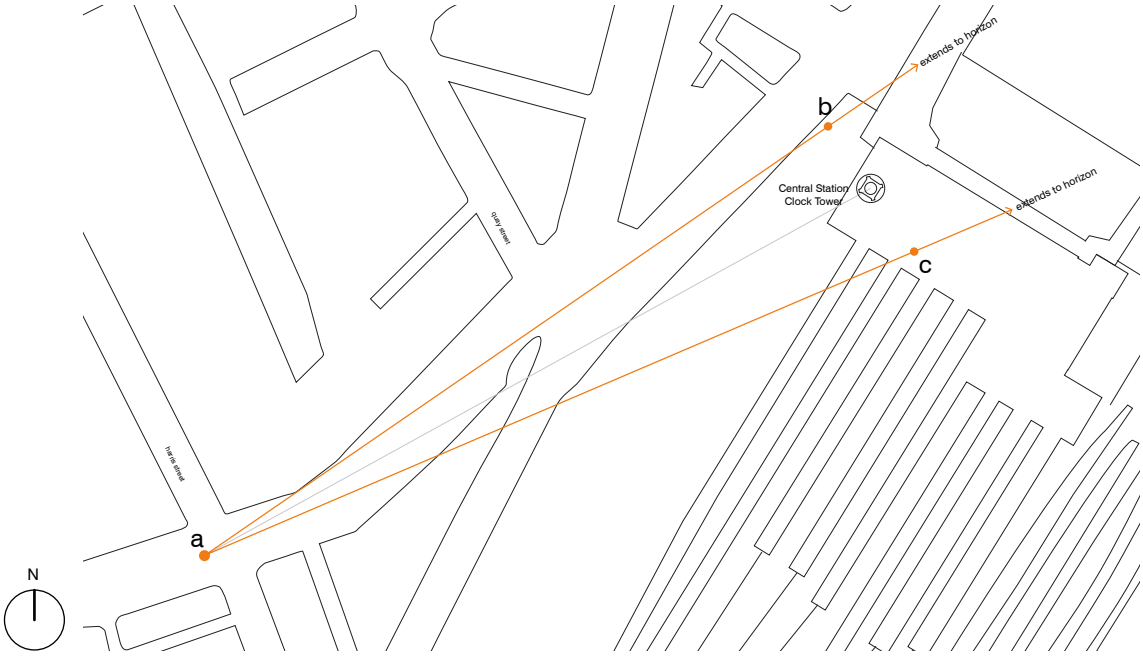

C_49
View protection planes
and Sydney Harbour views
clear to horizon
Sydney Harbour
views to Sydney Harbour
clear to horizon
clear to horizon
clear to horizon
clear to horizon
clear to horizon
100m

C_50
Protected sky silhouette
Central Station Clock Tower
Photograph of protected view

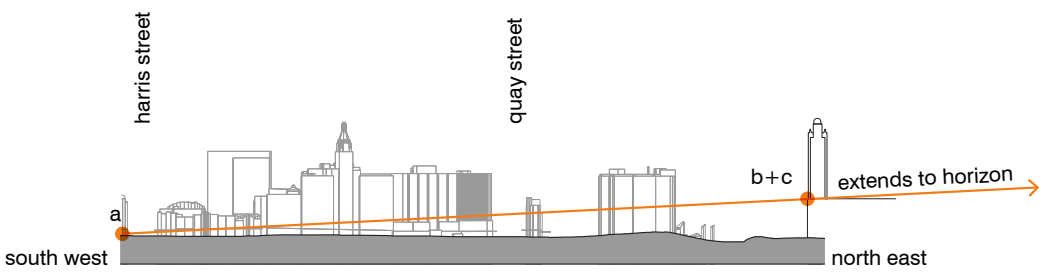
C_51
Protected sky silhouette
Central Station Clock Tower
Point Co-Ordinates

Point	X	Y	Z (RL)
A (View Point)	333731.1	6249246.8	17.5
B (Left edge of view)	334066.7	6249477.8	38.1
C (Right edge of view)	334105.7	6249407.2	38.1

C_52
Protected sky silhouette
Central Station Clock Tower
Plan



C_53
Protected sky silhouette
Central Station Clock Tower
Section

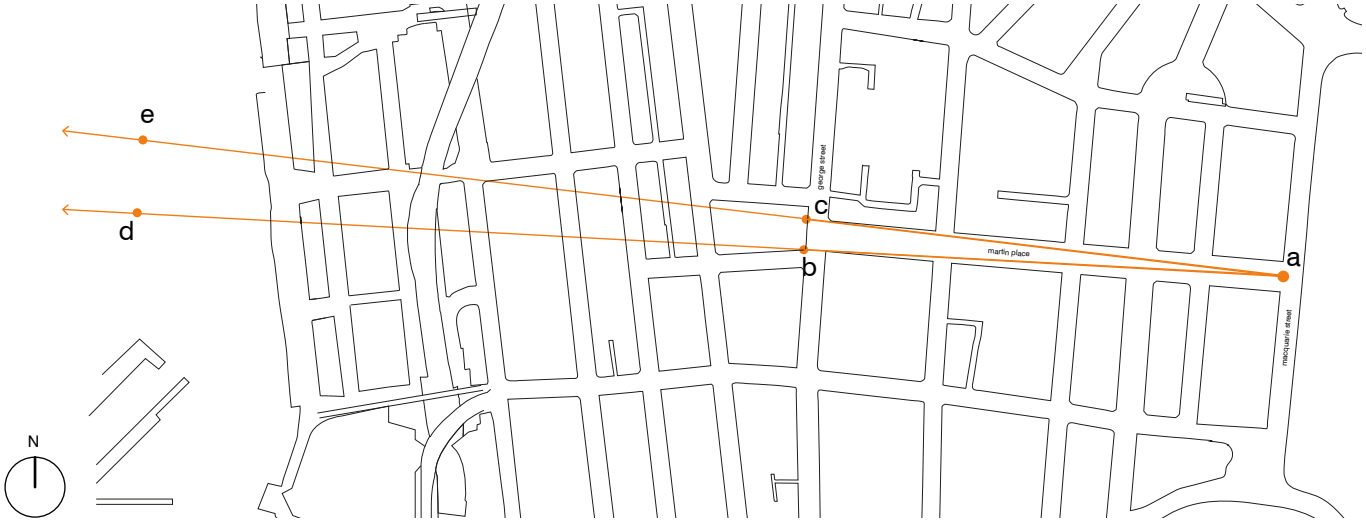


C_54
Protected sky silhouette
Martin Place
Photograph of protected view

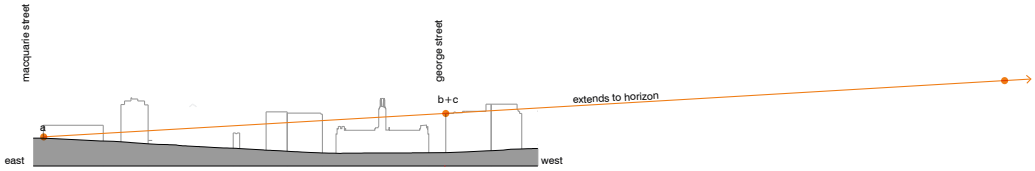
C_55
Protected sky silhouette
Martin Place
Point Co-Ordinates

Point	X	Y	Z (RL)
A (View Point)	334625.4	6251054.8	34.5
B (Left edge of view)	334147.9	6251080.0	65.1
C (Right edge of view)	334150.2	6251112.8	65.1
D (Left extension)	333493.0	6251114.7	107.0
E (Right extension)	333497.1	6251192.4	107.1

C_56
Protected sky silhouette
Martin Place
Plan



C_57
Protected sky silhouette
Martin Place
Section

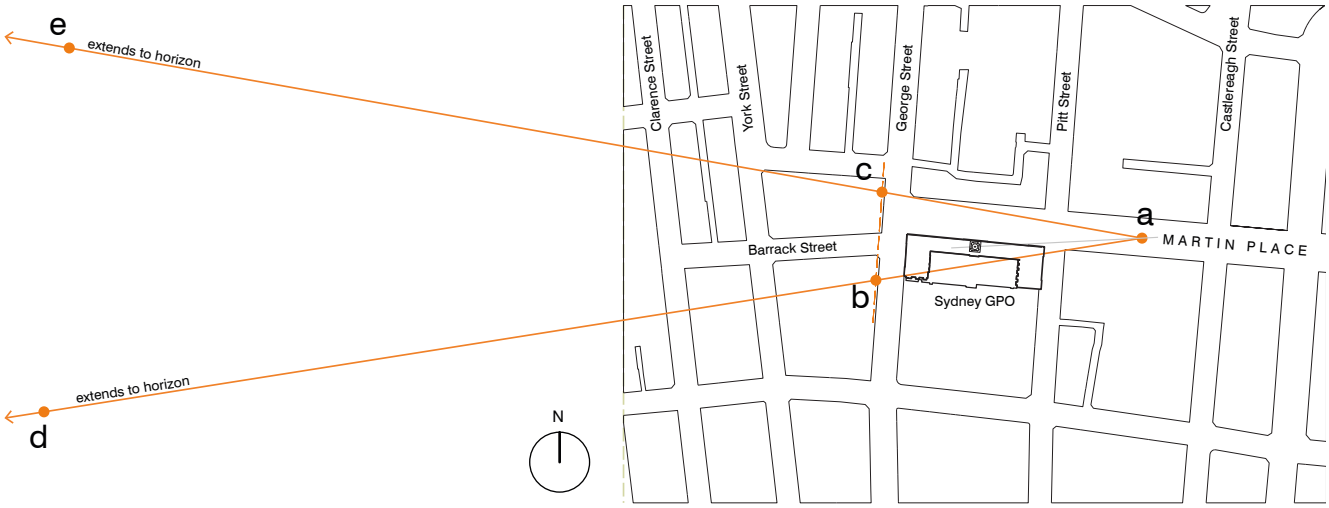


C_58
Protected sky silhouette
GPO Clock Tower
Photograph of protected view

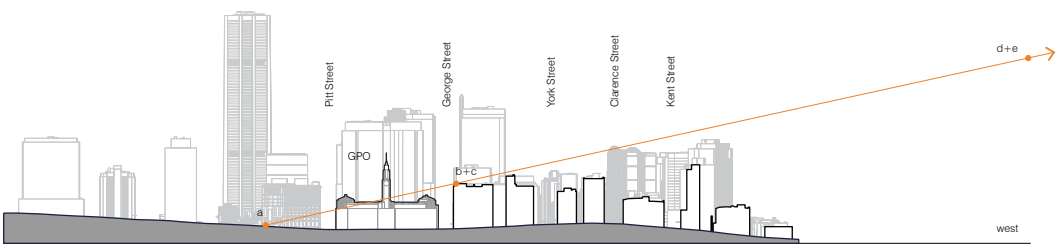
C_59
Protected sky silhouette
GPO Clock Tower
Point Co-Ordinates

Point	X	Y	Z (RL)
A (View Point)	334356.2	6251076.2	19.3
B (Left edge of view)	334145.3	6251042.9	65.1
C (Right edge of view)	334150.2	6251112.7	65.1
D (Left extension)	333482.7	6250938.0	208.7
E (Right extension)	333502.9	6251227.4	208.7

C_60
Protected sky silhouette
GPO Clock Tower
Plan



C_61
Protected sky silhouette
GPO Clock Tower
Section

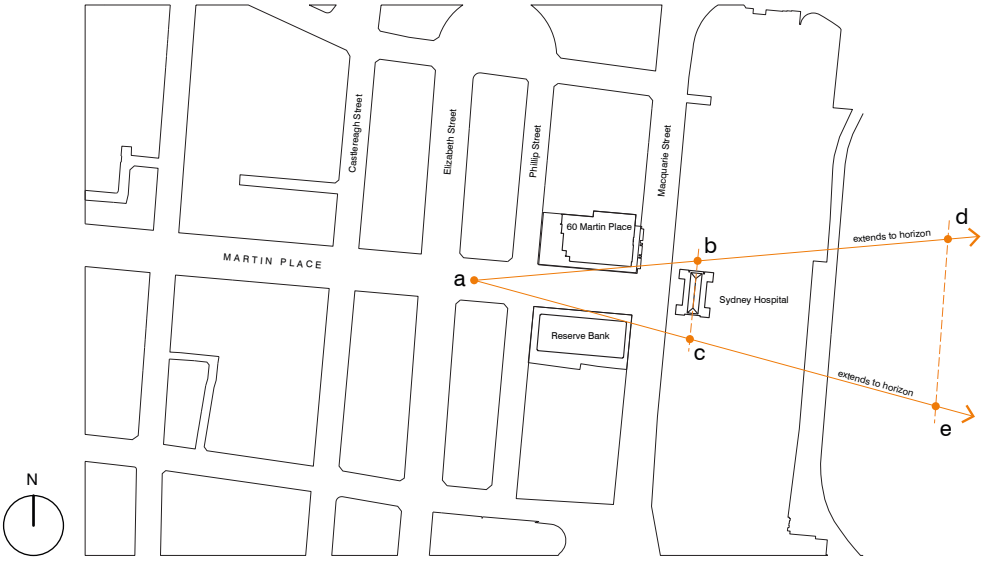


C_62
Protected sky silhouette
Sydney Hospital
Photograph of protected view

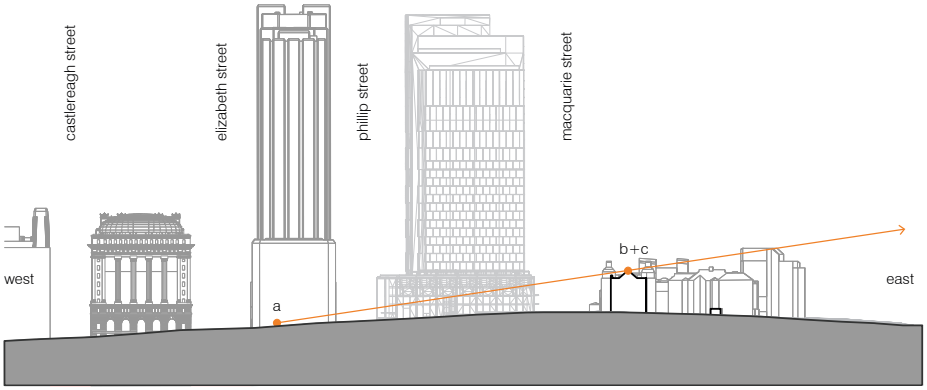
C_63
Protected sky silhouette
Sydney Hospital
Point Co-Ordinates

Point	X	Y	Z (RL)
A (View Point)	334509.5	6251063.4	28.2
B (Left edge of view)	334670.1	6251077.4	51.9
C (Right edge of view)	334664.6	6251021.1	51.7
D (Left extension)	334850.1	6251093.0	78.5
E (Right extension)	334841.3	6250972.9	78.5

C_64
Protected sky silhouette
Sydney Hospital
Plan



C_65
Protected sky silhouette
Sydney Hospital
Section

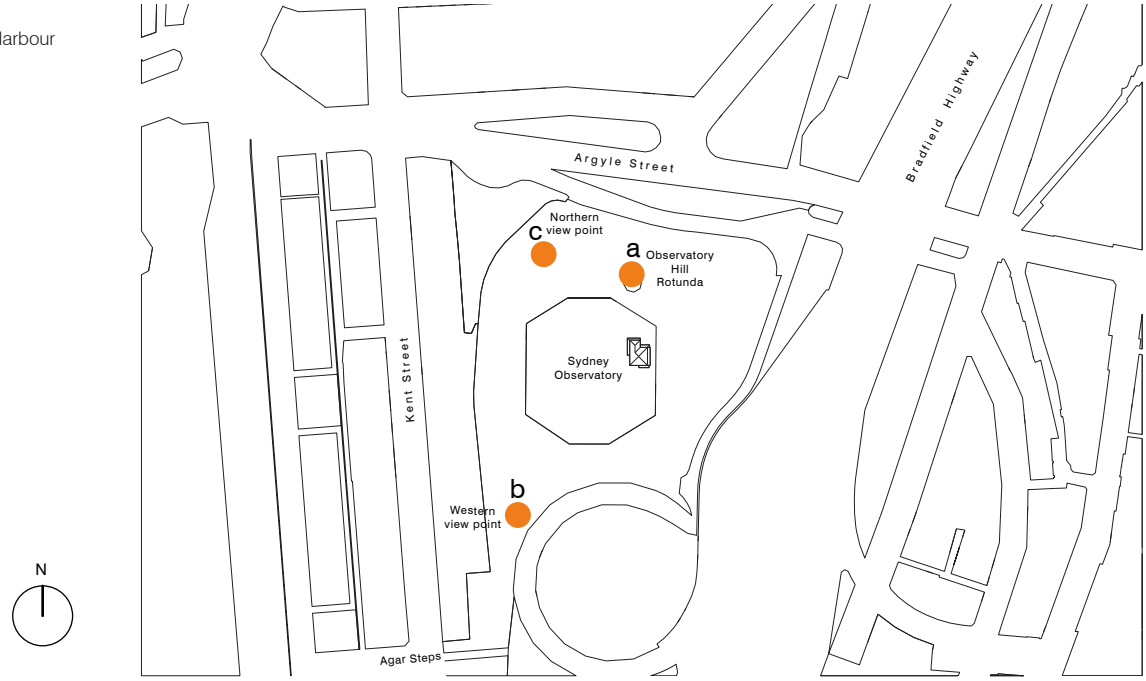


C_66
Protected view of Sydney Harbour
seen from Observatory Hill Rotunda

C_67
Protected view of Sydney Harbour
seen from Observatory Hill Rotunda
Point Co-Ordinates

Point	X	Y	Z (RL)
A (View Point)	333951.1	6252019.0	41.6
B (View Point)	333887.4	6251884.4	39.8
C (View Point)	333902.0	6252030.0	40.7

C_68
Protected view of Sydney Harbour
Plan of viewpoints



C_69

Protected view of Sydney Harbour

seen from western side of Observatory Hill

C_70

Water expanse included in definition of Sydney Harbour

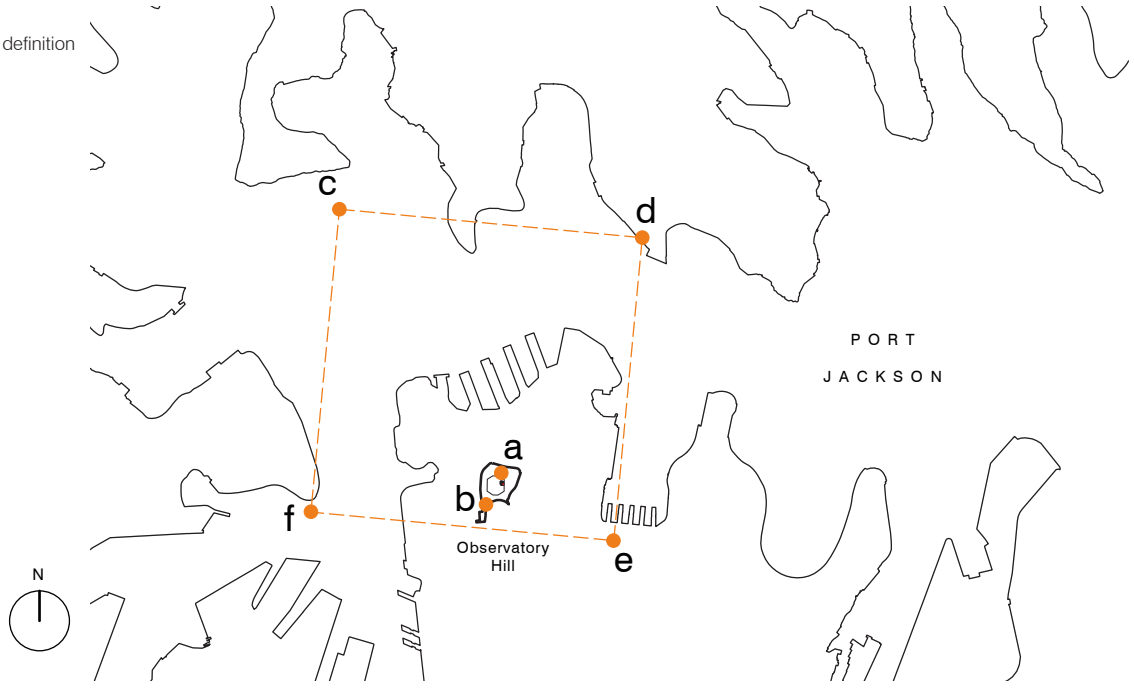
Point Co-Ordinates

Point	X	Y	Z (RL)
C (Bounding Point)	333260.4	6253145.6	-
D (Bounding Point)	334554.6	6253023.7	-
E (Bounding Point)	334432.9	6251729.4	-
F (Bounding Point)	331138.7	6251851.1	-

C_71

Water expance included in definition of Sydney Harbourl

Plan



3.5

Analysis of the capacity for future growth within the existing controls

Mapping and analysis of existing building heights has indicated that most properties are developed at, or very close to the current maximum permissible building height.

Analysis mapping (refer to C_72 and C_73) indicates that there is some height capacity under the current controls in the northern and southern business districts (as per 1971 strategic plan). In these locations the current LEP height controls are at their maximum, allowing 235m. The northern area is reduced when overlaid with extent affected by No Further Overshadowing controls.

C_72

Capacity within the City - Lot Basis

-75 - -60	166 - 180
-59 - -45	181 - 195
-44 - -30	196 - 210
-29 - -15	211 - 225
-14 - 0	226 - 240
1 - 15	241 - 255
16 - 30	256 - 270
31 - 45	271 - 285
46 - 60	286 - 300
61 - 75	301 - 315
76 - 90	316 - 330
91 - 105	331 - 345
106 - 120	346 - 360
121 - 135	361 - 375
136 - 150	376 - 390
151 - 165	

620

C_73

Capacity under the current LEP Controls

By existing buildings top structure Above Ground Level

- -195 - -180
- -180 - -165
- -165 - -150
- -150 - -135
- -135 - -120
- -120 - -105
- -105 - -90
- -90 - -75
- -75 - -60
- -60 - -45
- -45 - -30
- -30 - -15
- -15 - 0
- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 75
- 75 - 90
- 90 - 105
- 100 - 120
- 120 - 135
- 135 - 150
- 150 - 165
- 160 - 180
- 180 - 195
- 195 - 210
- 210 - 225
- 225 - 240
- 240 - 255
- 250 - 270
- 270 - 285
- 285 - 300
- 300 - 315
- 315 - 330
- 330 - 345
- 345 - 360
- 360 - 375
- 375 - 390

3.6

Considerations in determining an appropriate upward growth strategy

The preferred strategy for achieving additional floorspace involves an increase in permissible building heights.

Considerations in relation to a change in heights:

1. The intended 'shape' of the city derived from the 1971 plan will be disrupted by very tall buildings on state development sites to the west. The overall form of the city's skyline is affected by development sites outside the Council's control: Barangaroo and Haymarket. Current and future development on these sites significantly varies from the lower form on the western edge of the city and is not consistent with the City's height strategy.
2. It may be possible to allow tower development that incorporates heritage buildings without compromising their values.
3. It may be possible to manage amenity concerns of light, scale and heritage, through specific built form controls, whilst still achieving tall buildings.

A blanket change to any of the planning controls across the whole Central Sydney area will not deliver an effective increase in capacity to meet future demand, without compromising amenity. There remains a need for public open spaces and streets within the Central Sydney area that are of high amenity to service the activities of a global city. SAP and NAO controls continue to maintain good amenity and seek to improve it. They are the highest order height control.

Given the extent of SAPs and NAOs affecting the City Core and Midtown precincts, the potential to increase height capacity in these precincts is more constrained than elsewhere. The presence of those controls overrides the maximum height limit, so simply increasing the height limit will yield only a modest amount of capacity.

The Southern Precinct is not attractive for commercial development at this stage and the pattern of amalgamation required to increase heights in this precinct would herald a significant change in this Special Character Area. This is currently unsupported, as well as impractical.

It is possible that heights on the Western Edge Precinct could be lifted on some blocks without significantly compromising the Special Character Area qualities or public open spaces protected by SAPs and NAOs (refer to C_50 and C_51). Considerations in reviewing height controls on the western edge:

- Heights currently step down on the western edge to support the 1971 objective of a skyline responsive to the topography of the city. This is already compromised by developments at Darling Walk, Barangaroo and Haymarket/Darling Harbour.
- Lower heights on the western edge help to mitigate impact of strong winds experienced from the west. Again, existing and proposed developments is changing this condition and built form controls other than overall height, such as street frontage height and setback, could be strengthened to mitigate the wind impacts at street level.
- Heights are similar to the existing heritage buildings in the special character area. The narrow street blocks around Clarence and York Streets would be unable to accommodate building envelopes required for tall commercial towers. These areas could be left largely unchanged. The sites west of Kent Street, and north of Erskine offer the most likely amalgamation opportunities and would affect only the edges of the York Street Special Character Area.
- Maximum heights could be capped at the projected SAP or NAO to existing protected spaces, and offer an increase in capacity without compromising this amenity.
- Sun Access Planes are Council's highest order of height control. Their intent is to protect important public places from further overshadowing by development, and to reduce existing levels of overshadowing as sites redevelop.
- The intent of SAPs is still current. SAP controls should not be lifted or reviewed in any part of the city unless there was demand for commercial floor space capacity that could not be found by first reviewing other, lower order, controls.
- There are alternative areas in the city which are less constrained by SAPs and NAOs. These could meet more immediate demand for commercial floor space without compromising the amenity of the city.

C_74
Current Controls and impact on city form

C_75
Possible growth strategy and impact on form

3.7

Options for releasing height in Central Sydney

1. Retain existing height controls.
   - In this scenario, additional floor space will generally lead to developments with larger floor plates. Likely impacts of this include:
   - Increased pressure for sites to amalgamate and reduced separation between buildings. Additional pressure on setbacks from primary street frontages reduces separations and worsens dark and windy conditions in streets.
   - An overall intensification of development at lower levels, leading to reduced daylight in streets, and reduced amenity for public and internal space. This would also intensify wind impacts in streets.
2. Remove maximum upper height controls in the LEP, and extend the Sun Access Planes. Likely impacts of this include:
   - The shape of the City skyline would significantly change from the currently desired form (as carried on from 1971).
   - This approach could also lead to some poor amenity outcomes in spaces not protected by SAPs, such as streets, particularly a reduction in daylight levels and skyview factor.
   - Wind conditions experienced at the edge of the city would worsen.
3. Remove Special Character Area height controls and refine requirements for built form at the lower levels. Likely impacts of this include:
   - The scale and character of the street may change significantly.
   - There may be impacts on daylight levels and skyview factor in the street.
4. Remove or redefine NAO controls (OCPP, LEP 2012 Cl. 6.19).Likely impacts of this include:
   - Reduction in number and period of sunny public open spaces in Central Sydney during midwinter. If the controls are removed or reduced, sunny public spaces for people to gather and meet would be reduced, or disappear.
5. Remove Sun Access Planes (rely on a very simple maximum height control framework across the city). Likely impacts of this include:
   - The amenity of the City's significant vegetated open spaces will be reduced. Sunny, green, recreational open spaces will be located further from the Central Sydney area.
   - Significant trees and grassed recreation spaces may not be sustainable with reduced sunlight.

An increase in floorspace capacity of Central Sydney through amendment of height controls would possibly require a combination of more than one of these strategies.

Issues for consideration in determining an appropriate solution:

- Airport control height cap (PANS-OPS)
- Wind effects of towers (and other amenity considerations)
- Economic and financing implications of super development (absorbs demand from the market)
- Amalgamation opportunities required
- Lift in height controls (ie above 235m)
- Energy consumption of very tall buildings

3.8

Preferred Height Strategy for Central Sydney

Key Considerations for the preferred strategy

- Extend SAPs and lift other height controls
- Close gaps
- Equinox tails
- New spaces at edges
- Remove Category A/B sites
- Protection extended to 10am for eastern parks
- Maintain airports cap

A new height strategy is proposed that can be implemented incrementally, in line with demand and strategic objectives.

The strategy is based on the following key city form objectives:

1. Maintain the amenity of the City's streets, parks and public spaces
2. Support opportunities for high quality tall buildings for different uses

The built form principles to achieve these objectives include:

3. Strengthen Sun Access Planes and No Additional Overshadowing controls (SAPs and NAOs).
4. Lift maximum building heights up to these levels where the street block pattern will accommodate high quality development.

Details of the strategy:

- Extend SAPs and NAOs to upper limit of airport's safety requirements.
- Implement new SAPs and NAOs to cover edge areas where heights are currently low.
- Close the gaps in SAPs (gap between 12 and 2pm planes at Wynyard Park, Belmore Park above 130m, Hyde Park)
- Expand SAPs to cover the sun angle at 2pm on the equinox and summer (Hyde park, Wynyard park, Belmore park)
- Expand SAPs to eastern parks to protect from 10am (Belmore Park, Hyde Park, Harmony Park, Prince Alfred Park). Note that Wynyard Park remains controlled from 12noon on 21 June. 12noon at earlier dates is less conservative, 1 degree west of 21 June angle.
- Redefine SAP altitude and azimuth using a 4 year average
- Define protected times using Australian Eastern Standard Time.

This Height Strategy will release new capacity, but represents a significant change to the existing and traditional shape of Central Sydney. Implications of the preferred height strategy include:

a. new capacity will be released, primarily on western edge and in the south.

b. significant change in city form on the western edge in line with approved development at Barangaroo and Darling Harbour.

c. increased wind speeds in streets.

d. reduced daylight in streets.

e. a reliance on built form controls to manage daylight, wind and outlook.

f. new capacity which may be released in Chinatown subject to further study. Further work needs to be undertaken to resolve issues of heritage, small block sizes and strategies to ensure that fine grain economic activity is not disrupted.

4
Results and Recommendations

Results and Recommendations

Immediate amendments to the Sun Access Protection controls should be made to ensure that the intention of the controls is realised. Amendments include:

Mapping

- There is an inconsistency between the mapping of the SAP affected land on the LEP heights map and the coordinates and angles described in the LEP clause.
- The map should be amended to more accurately reflect the written controls, as these take precedence.

Strengthen the Sun Access Planes

- Extend SAPs and NAOs to upper limit of airport's safety requirements.
- Provide new SAPs and NAOs to cover edge areas where heights are currently low.
- Close the gaps in SAPs (gap between 12 and 2pm planes at Wynyard Park, Belmore Park above 130m, Hyde Park)
- Expand SAPs to cover the sun angle at 2pm on the equinox and summer (Hyde park, Wynyard park, Belmore park)
- Expand SAPs to eastern parks to protect from 10am (Belmore Park, Hyde Park, Harmony Park, Prince Alfred Park). Note that Wynyard Park remains controlled from 12noon on 21 June. 12noon at earlier dates is less conservative, 1 degree west of 21 June angle.
- Redefine SAP altitude and azimuth using a 4 year average
- Define protected times using Australian Eastern Standard Time.

New Places for Sun Protection

It is necessary to formalise protection to parks and places around the edges of Central Sydney, in order to provide continued protection under the growth strategy or any changes to existing height controls. Additional parks and places are:

- The harbour foreshore, from the Opera House to Darling Harbour
- Observatory Hill
- Tumbalong Park
- Darling Harbour Live
- Central Park
- Railway Square
- Harmony Park
- Cook and Phillip Park
- The Domain (east)

Where possible, protection to these spaces should be formalised as a Sun Access Plane.

New SAPs

Provide new SAPs as follows:

- Lang Park: 12-2pm including equinox and summer dates
- Prince Alfred Park: 10-2pm
- Central Park (CUB site) as per original control from 25m SFH: 12noon to 2pm.
- Railway Square
- Barangaroo Waterfront promenade
- King Street Wharf
- Darling Harbour
- Tumbalong Park and the Chinese Gardens
- Darling Harbour promenade

Refine the Category A and B sites control.

Create a new No Additional Overshadowing framework to allow penetration of SAPs only where protected places will not be affected at any time throughout the entire year. Allow existing penetrations to be renewed for strategic use purposes if additional overshadowing is minimised.

Refinements to No Additional Overshadowing Controls

New spaces to be protected by NAOs:

- Future Town Hall Square
- Observatory Hill
- Circular Quay and the foreshore from Opera House to Dawes Point
- Foreshore from Dawes Point to Barangaroo Central, including Walsh Bay wharf promenades
- Develop digital model to complement controls written in LEP.

New NAO Controls

- Future Town Hall Square: At all times
- Harbour Foreshore (Dawes Point to Opera House): At all times.
- Harbour Foreshore (Western Edge): 11-5pm.

NAO Controls to be amended

- Sydney Square: Reduce control period to 11am – 2pm. This better reflects the existing pattern of sunlight into the space. This adjustment to the afternoon protection time will be balanced by protection to the future Town Hall Square (see above).

NAO Controls to be removed

- Chifley Square: This space currently experiences little sun access during the protected period. Sun access to the space falls mostly on the roof of the existing café and appears between 12-1pm. As an alternative, the control period could be reduced.
- Consider whether private open spaces should be protected in the long term e.g. Australia Square. The intent of the controls is not to protect amenity of privately owned land at the expense of development opportunities on other privately owned land.

Private and Public Views

- Remove protection of private views as a development consent consideration.
- Identify significant views from public places and construct view planes and view protection corridors to preserve these views.