
APPENDIX 2.1

CUMULATIVE IMPACT ASSESSMENT OF PROPOSED U2 TOWER AND PREVIOUSLY PERMITTED DEVELOPMENT ON THE DUNLOE EWART SITE

Introduction

There was a previous application on the subject lands for a mixed use development comprising 231 residential units, offices, retail/restaurant units, leisure centre and crèche. The proposal consisted of four smaller orthogonal blocks within the site. The proposal provided for a part podium at ground floor level and a landmark tower, measuring 95 metres in overall height above street level, on the corner of Sir John Rogerson's Quay and Britain Quay.

The cumulative impact of combining this permission with the proposed 120 metres U2 tower on the quayside is considered in this appendix. Figures 1 and 2 attached prepared by Loci illustrate the two tower options.

A series of photomontages have been commissioned by Arc and are attached. These were reviewed by:

- (1)Indigo: to assess the potential landscape and visual impact of this proposal
- (2)Arc: to assess the potential shadow impact of this proposal.
- (3)RWDI Anemos: to assess the potential wind impacts of this proposal
- (4)Prof. Dermot O' Connell: to assess the daylight and sunlight implications of constructing both towers.
- (5)John Cronin and Associates: to assess the potential architectural heritage implications of developing both towers.

An analysis of these potential impacts is provided below.

Landscape and Visual Impact Assessment

Introduction

In order to determine the cumulative visual impact of two landmark towers on the former Hammond Lane Metalworks / Britain Quay redevelopment site, the visual impact assessment methodology employed is the same as was used for the assessment of the development options considered in Section 9 of the EIS.

For the purposes of this additional assessment, it is assumed that the cumulative built development to be assessed consists of the approved Dunloe Ewart development in its entirety together with the proposed U2 tower and the easternmost block of development in option 1 of the proposed development assessed in the main report.

Proposed Development

In the case of the Dunloe Ewart proposals, these consist predominantly of five to seven storeys of frontage development on to the four surrounding streets (Sir John Rogerson's Quay, Britain Quay, Green Street East and Benson Street and two new internal access roads off the latter two streets) enclosing large internal courtyards. The only exception to this is the tower on this development, the main elements of which are at an angle to the grain of the frontage development on the rest of the site and rise to sixteen and twenty storeys plus roof terraces and roof feature structures (the maximum height being approximately 104m).

As explained in Section 9.2 of the main EIS, the easternmost block of option 1 on Britain Quay rises to between six and nine storeys in height and the U2 tower at the north east corner of the site to a maximum height of approximately 120m.

Description of Existing Environment

The existing surroundings to these particular proposals are as described in Section 9.3 of the EIS.

Predicted Impacts of Proposed Development

The visual impact of the proposed development excluding the two towers is generally as described in Section 9.4 of the main EIS and in table 9.1 (except that landmark towers in the plural would apply), the scale of development being generally similar even though the footprint varies.

The table below sets out the cumulative impact of the two towers on the 18 key viewpoints, the selection criteria for which are the same as set out in 9.3.9 of the main EIS.

Compared with the assessed impacts upon key viewpoints of the U2 tower on its own (see table 9.2), the significance of the impacts of the two towers together is no different. However, the assessment as to whether or not the impact is considered beneficial or neutral does change.

Where the two towers are seen in very close proximity, forming in effect a single focal point (as in views east or west along the south side of the Liffey or from more distant locations to the west on the north side of the Liffey) then the impact is beneficial. However, there are some views, mainly from either north or south of the development, where the two towers are seen as two separate vertical focal elements of significantly different three-dimensional form. This dilutes the focal impact and the visual impact is neutral rather than beneficial as a consequence.

Where seen at a considerable distance (for example from Clontarf or Blackrock) the two towers, even if visually separate, read as a single focal element on the skyline. This reinforces the landmark effect identifying the

location of the East Link river crossing and the seaward limit of the docklands redevelopment along the Liffey.

Intrinsic Landscape Character

As in the case of option 1 considered in the main report, this hybrid option would retain the historic alignment of Britain Quay and so the same comments as made in 9.4.14 apply.

Construction Stage Impacts

The same observations apply as made in 9.4.17 in the main report.

Mitigation Measures

Again, the same observations apply as made in 9.5 in the main report.

Conclusions

In key viewpoints from historically important parts of the city centre, the proposed development, and in particular the two landmark towers, are either not visible or visible in such a partial or undistracting way that they in no instance have an adverse impact. All impacts are either neutral or beneficial.

When the two towers are seen in close proximity forming a single focal element, their visual impact is beneficial, identifying the urban limit of the Liffeside redevelopment and the location of the East Link river crossing.

When seen as two separate vertical elements, the two towers appear as arbitrary elements on the skyline in the same way that Charlotte Tower or Bolands Mill do at present. Occasionally this impact is beneficial in that it reinforces an axial view but generally the impact is neutral.

The significance of visual impacts generally is medium to low and neutral to beneficial. It is only in views from development or public roads immediately adjacent to the site that the unmitigated impacts are high. Even in these circumstances the significance of the impacts can generally be said to be beneficial as views of derelict, vandalised and graffitied land and buildings will be replaced with new high quality development and the re-introduction of daily activity where recently there has been none.

There is little left in the vicinity of the site of what would once have given the area its landscape character, other than the cobble paved quays. Whilst this hybrid option appears to retain the historical alignment of Britain Quay, it is not clear whether the traditional cobbled surface of Britain Quay will be retained and refurbished. This issue needs to be clarified as the cobbled quays/streets are the only historical link with the past and without them the prevailing urban landscape character will be almost entirely set by the recent and future redevelopment of the area.

In general, whilst the cumulative impact of the two towers is never less than neutral and in some cases beneficial, their relatively close proximity to one another creates a less crisp, less coherent focal climax at the eastern limit of the docklands area redevelopment on the south side of the Liffey than does a single landmark tower.

Similarly, the presence of a second tower on the south side of the Liffey as in this hybrid development option, will tend to dilute the gateway effect of two landmark towers, one each on either side of the East Link river crossing on this and the North Lotts redevelopment sites.

Predicted Cumulative Visual Impacts of Proposed Tower Buildings at Grand Canal Dock from Key Viewpoints

View		Visible	Distance to Site	Description of view and ratio of Impact	Significance of Impact
1	Looking north east along the Grand Canal from Baggot Street Bridge, Herbert Place	Yes	1.55km	Dunloe Ewart tower not visible. Top of the U2 tower would barely be visible slightly off axis over unsympathetic recent office development that currently closes the vista. The latter is more intrusive on the view than the top of the tower would be.	Low, neutral
2	Looking north east from the west side of College Park, Trinity College	Yes	1.65km	The top of the U2 tower may be just visible from the western edge of College Park and from the windows of buildings that flank this edge of the Park. However, it would be one of a number of barely visible elements on the skyline along with chimneys and other tops of buildings beyond the buildings that enclose the Park. The Dunlow Ewart tower is unlikely to be visible even from upper floor windows.	Low, neutral
3A to	Looking east from five	Yes	2.4km	Top of the U2 tower would be visible in	Medium, neutral

View		Visible	Distance to Site	Description of view and ratio of Impact	Significance of Impact
3E	different points at the western end of Dame Street in the vicinity of City Hall			four of these views. The Dunloe Ewart tower would be just visible in front of the U2 tower in two of these views and barely visible in one other. Although Trinity College is at end of the vista, it is sufficiently distant not to be a noticeable axial feature and so the visibility of the towers beyond would be neither significant nor adverse, particularly with so much activity and building detail closer to the viewer, drawing the eye.	
4	Looking north east from the south west corner of Merrion Square	No	1.53km	None	-
5	Looking east from Sean Heuston Bridge	No	4.02km	None	-
6	Looking south east from the west end of Blessington Street	No	2.90km	None	-
7	Looking east from Custom House	Yes	1.52km	The extent of intervening low level re-development on either side of the Liffey and a foreground streetscape of lamp standards, etc. is such that, although both towers would be visible, they would be a beneficial focal feature identifying the	Medium, beneficial

View		Visible	Distance to Site	Description of view and ratio of Impact	Significance of Impact
				urban limit of the Liffey.	
8	Looking east along the River Liffey from the entrance to Spencer Dock	Yes	670m	As the former docklands area to the south side of the Liffey is progressively redeveloped and focal elements of the past disappear, the U2 tower will form a positive visual end point to the riverside redevelopment. Although the combination of the U2 and Dunloe Ewart towers would have a similar effect, the massing of the latter in this view detracts somewhat from the crisp focal impact of the U2 tower on its own.	Medium, neutral
9	Looking north west from adjacent to Blackrock railway station	Yes	5.5km	An example of a distant view of the Dublin skyline in which, at this distance, it is difficult to identify any particular city centre features on the skyline. The towers would help to identify the eastern limits of the city and the East Link river crossing.	Low, beneficial
10	Looking south east along Portland Row from its junction with Summerhill	Yes	1.82km	Although off axis, the U2 tower would be a focal element that gives the vista down Portland Row more meaning, restoring and re-enforcing the focal quality that St Laurence O'Toole church spire once	Medium, neutral

View		Visible	Distance to Site	Description of view and ratio of Impact	Significance of Impact
				gave this view and from which recent indifferent intervening development has detracted. The Dunloe Ewart tower is only just visible above this recent intervening development and marginally detracts from the framing impact that the church spire and U2 tower on its own would have.	
11	Looking south east from Clontarf Road at its junction with Vernon Avenue	Yes	2.75km	It is currently difficult to identify the city centre or other key locations on the skyline. Although the towers will not be particularly noticeable, they should help to identify the location of the East Link river crossing.	Low, beneficial
12	Looking north west along the River Dodder from London Bridge	Yes	890m	Typical of views of the landmark tower that will be possible at this distance from the surrounding residential area. Although identifying the eastern end of the urban stretch of the Liffey, the towers also introduce a different scale of development to the view when compared to the small scale residential character of the area. However, the way in which the two towers provide a focal climax to this view along the Dodder is more effective than either on its own would provide, neither being quite on axis.	Medium, neutral
13	Looking north west along	Yes	420m	The height of the towers at such close	High, neutral

View		Visible	Distance to Site	Description of view and ratio of Impact	Significance of Impact
	the River Dodder from Ringsend Bridge			quarters will dominate the immediate surroundings. However, whether together or alone, they become an identifiable geographical focal point for the surrounding district, whilst the towers and their associated development improve the middle ground view compared with the current dereliction.	
14	Looking north along Shelbourne Road from its junction with Pembroke Road	Yes	1.76km	Although each of the towers is visible slightly off axis together they provide an effective focal feature on the axis of this section of Shelbourne Road and are sufficiently distant to be of interest without detracting from the very mixed character of existing development at the south end of Shelbourne Road.	Medium, neutral
15	Looking north west from Irishtown Road in Ringsend village	Yes	780m	Typical of views of the two towers that will be possible at this distance from the surrounding residential area. Although identifying the eastern end of the urban stretch of the Liffey, they do not provide an axial focus. This tends to emphasise the different scale of development when compared to the small scale village character of the area.	Medium, neutral
16	Looking east along Pigeon	Yes	990m	The towers are seen in such close proximity	Medium, beneficial

View		Visible	Distance to Site	Description of view and ratio of Impact	Significance of Impact
	House Road/R131 Toll Road			that they provide a clear focus for the East Link river crossing that the toll road leads to.	
17	Looking east along the Liffey from the north end of Matt Talbot Bridge	Yes	1.39km	As the former docklands area to the south side of the Liffey is progressively redeveloped and focal elements of the past disappear, the towers, seen in such close proximity, will form a positive visual end point to the riverside redevelopment.	Medium, beneficial
18	Looking east along the Liffey from South City Quay in the vicinity of Lime Street	Yes	800m	As in view 17, the two towers, seen in such close proximity, will form a positive visual end point to the riverside redevelopment, much of it currently under construction.	Medium, beneficial

Shadow

A study was carried out by Arc Consultants of the cumulative shadows likely to be cast by

A: A proposed 120 metres landmark tower to be situated just east of the junction of Sir John Rogerson's Quay and Britain Quay, in the Grand Canal Dock area.

Together with:

B: The approved Dunloe Ewart tower located on a site bounded by Sir John Rogerson's Quay and Britain Quay.

In order to carry out the shadow study, the form of a number of existing buildings in the area was electronically surveyed by reflectorless total station. These included buildings on North Wall Quay and a recent development just west of the corner of York Road and Thorncastle Street, Ringsend. These buildings are coloured in yellow in the shadow study attached.

A digital model of the area was constructed; and this model included the surveyed buildings, the quay walls and the proposed landmark tower. The proposed landmark tower and the approved Dunloe Ewart tower are coloured red in the shadow study diagrams. Using the digital model, shadows were cast at several times of the day at the Summer and Winter solstices, and at the equinox. Shadows were cast both with and without the proposed landmark tower. The results are presented in the shadow diagrams.

The shadow analysis showed that at the equinox, shadows from the proposed landmark tower will not reach any of the buildings on North Wall Quay or Ringsend. At the Summer solstice, shadows of the tower will not reach buildings at North Wall Quay and will only reach the recent development at York Road and Thorncastle Street, Ringsend at close to 9pm. This is very late in the evening and close to sunset. Although it was not possible to examine as part of the shadow study, it is thought likely that at this late hour the sun may be obscured by buildings further to the west, close to or within Dublin City centre and in particular large development along North Wall Quay.

In mid Winter, shadows from the proposed landmark tower will reach buildings north across the River Liffey at North Wall Quay. However, because of the slim profile of the proposed tower, its shadow will pass any given location on North Wall Quay in approximately half an hour. It is thought that, at this time of year, shadows from other buildings in the developing Grand Canal Dock area will also reach buildings on North Wall Quay.

Predicted Impacts

For most of the year, shadows from the proposed landmark tower will have no impact on buildings on North Wall Quay or in Ringsend. In high Summer there may be a slight impact, late in the evening, on the recent development at York Road and Thorncastle Street, Ringsend. In mid Winter, there will be slight impacts on some buildings at North Wall Quay.

Wind

The permitted Dunloe Ewart Tower is located due west of the proposed U2 tower and therefore would be expected to shelter the U2 Tower. However, the curvature of the west elevation of the permitted Dunloe Ewart Tower directs prevailing and westerly winds around and toward the proposed U2 tower.

The restriction between the U2 tower and lower rise easterly portion of the permitted Dunloe Ewart Tower channels north-westerly and south easterly winds through this gap. For northerly winds the lower rise eastern portion of the Dunloe Ewart building acts as a podium and therefore mitigates some of the downdraught expected from the taller part of the permitted tower. A similar process is expected for southerly winds. The impact at pedestrian level between the U2 tower and the permitted Dunloe Ewart tower is consequently expected to be similar to that for the U2 tower in isolation for winds from these two directions.

For north easterly winds, the U2 tower is upwind of the permitted Dunloe Ewart building and being a tall slender tower its impact on conditions around the Dunloe Ewart scheme are expected to be small. Corner winds from the north side of the proposed U2 tower blow into the open space west of the U2 tower, whereas corner winds from the south elevation impact upon the east elevation of the permitted Dunloe Ewart scheme. This is expected to increase wind speeds around the north and south corners of the east elevation of the Dunloe scheme.

Overall the above factors increase the general windiness in the open space to the west of the proposed U2 tower and this effect is likely to reinforce the winds that the U2 tower would generate in isolation. As a result the corner winds around the west elevation of the U2 tower are expected to be windier than for that if the U2 tower were constructed in isolation. By similar reasoning the wind conditions around the east elevation of the permitted Dunloe Ewart scheme are expected to be windier than those that would exist in the absence of the U2 tower.

In order to properly and accurately quantify the above a wind tunnel test would be necessary.

Consideration would also need to be given to the impact of wind loading on these substantial buildings on such an exposed site and in such close proximity to one another.

In general there is concern about the potential interactions between these two buildings and these would need to be tested to fully understand and quantify the relative benefit and disbenefit, due to shelter for some wind directions and increase wind speeds for other wind directions, of each tower on its neighbour.

Sunlight and Daylight

Scope

The scope of this Report is to predict and assess in broad terms the environmental conditions (associated with the access to daylight and sunlight) consequent on the carrying out of the development ('Dunloe-Ewart' scheme) authorized on 7 February 2002 by An Bord Pleanála (PL 29S.125825) on Sir John Rogerson's Quay, where the development of the landmark 'U2 Tower' (as described in the proposals issued by Loci Consultants, as part of the Draft Planning Scheme of the Dublin Docklands Development Authority) is also carried out on the adjoining site on Sir John Rogerson's Quay/ Britain Quay.

The Dunloe-Ewart scheme envisages a 19-storey tower close to the corner of Sir John Rogerson's Quay and Britain Quay, where the U2 tower would rise about 90m. The critical issue is the effect of the two towers if they were both built, that is, most importantly, the effect the U2 Tower would have on the residential elements of the Dunloe-Ewart scheme.

Proposals

Complete information is not available for the Dunloe-Ewart scheme but there is a reasonable summary description in the Planning Application. The scheme has a substantial residential element (231 units) with a mixture of one-bed, two-bed and three-bed units, townhouse/apartment units and duplex units, in conjunction with 26,00 sq metres of offices and about 4000 sq metres of retail, restaurant, crèche and miscellaneous accommodation. There are three semi-private amenity areas incorporated in the layout and one public civic plaza.

Blocks A, B and C are of 5 to 7 storeys situated around courtyards: block D has a five-to-seven storey component in conjunction with the public plaza and the 19-storey landmark building.

The landmark building has a large floor-plate compared with that of the U2 Tower.

Assessment

Broadly speaking, the U2 Tower has far less effect on the site and surroundings than might be expected for its height. This is because the tower is located at the northeast corner of the site and because the floor-plate is slender (about 20m by 20m). Its location means that for the tower to have any shadowing effect on the site, the sun must be in an azimuthal position between northeast and just south of east. This is possible only in the summer months close to sunrise. At the Equinox, for example, the tower's shadow will be projected west along Sir John Rogerson's Quay for about half an hour at 6am (solar time). After about 6.30 am, —and that means for the rest of the day, —the shadow will have moved clockwise northwest over the Liffey, and completely away from the site.

The U2 Tower itself has no major effect on restricting access to daylight and sunlight.

The Dunloe-Ewart Tower's impact is somewhat different. Its effect on the U2 Tower itself (and vice versa) is not material. (It produces some obstruction of sunlight to the U2 Tower in mid-afternoon, but this is of little significance since the U2 Tower has exposure on four faces, and is an office building). Its situation is in the centre of the north half of the site.

In the mornings there is considerable sunlight obstruction to the east-facing façade of Block A east. (east-wing of Block A), and to some extent over the south face of A north. The major reason for this effect is the sheer width of the tower (about 60m). Direct effects on Block A cease after mid-day. The east face of Block A east will have poor daylight conditions permanently.

The tower will not have much effect on the site generally (rather than local to block A) until the sun has reached a bearing close to west. That is to say,

there is no significant sunlight obstruction except in the summer and after about 6pm, when the overshadowing of the Plaza will be considerable.

Otherwise the residential blocks A, B, and C are reasonably well disposed to enjoy good access to daylight and sunlight, provided the maximum use of dual-aspect configurations is made, (to ensure that where one façade is obstructed, the opposite face is open to the sun), and that, as far as possible, ground floors are devoted to non residential uses. Daylight conditions will be poor for Block A-East, east-facing, and less than ideal for Block B-East east-facing, and for Block C-West west-facing, all because of proximity to buildings opposite these façades.

The public Plaza will be generally well supplied with sunshine before 6pm (or sunset). The three semi-private courtyards (in Blocks A, B, and C) have the advantage of exposure to the south and will have fairly good exposure to sunshine (ie, sun-on-ground), but depend for this on careful design of the profile of the south wings in each case (i.e., Block A south, Block B south, block C south).

Summary

The existence of the U2 Tower alongside the Ewart-Dunloe Tower does not worsen to any serious degree the impact of the proposed configuration on the amenity of the residential units in the scheme.

Architectural Heritage

Introduction

This section, prepared by John Cronin & Associates, assesses the cumulative impact assessment of the permitted Dunloe Ewart Scheme (including its landmark tower) and the proposed U2 tower on the architectural heritage of the site, its environs and the wider city.

Proposed Development

There are two principle elements to the scheme which are to be considered together as part of this single cumulative impact assessment. The first element is the permitted Dunloe Ewart scheme (Planning Reg. Ref. 3985/99; An Bord Pleanála Ref. PL 29S.125825) and the second element is the proposed U2 tower at the north-east corner of the site. It is proposed to locate the U2 tower at the edge of the River Liffey Quay incorporating the site of the existing Hailing Station (a protected structure).

The proposed development is mixed use (residential and commercial), comprising a number of separate buildings and the creation of a number of new streets through the site. The combined development will create two landmark towers at the north-eastern portion of the site.

Predicted Cumulative Impacts

It is proposed that the U2 tower will be located on the site of the Hailing Station, a protected structure. The construction of the tower will, therefore, involve the demolition of the Hailing Station. This will result in a severe permanent negative impact on this element of the architectural heritage. Apart from this direct impact, it is considered that the only other likely impact of the proposed development of both towers during the construction phase is the damage that could be caused to the stone setts on Sir John Rogerson's Quay, due to the use of heavy construction machinery or the storage of construction materials. However, these setts have already experienced very heavy dockland traffic over the past two centuries and it is likely that they are robust enough to withstand the construction traffic associated with the proposed development. Nevertheless, precautions should be taken during the construction phase to ensure their protection (see Mitigation Section in Chapter 8 of the EIS).

Impact on the Architectural Heritage of the Site

Apart from the direct negative impact of the proposed development on the Hailing Station during the construction phase, it is not anticipated that the proposed development of both towers will have a negative impact on the architectural heritage on the site during the operational phase.

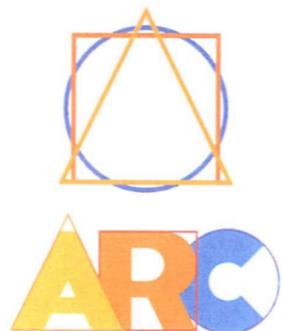
It is considered that the site of the proposed development constitutes an important gateway location being situated at the confluence of the River Liffey, the Dodder River and the Grand Canal Dock. It is considered that the alteration of views from the Custom House as a result of the construction of the two landmark towers will be significant. The principal cumulative impact of the proposed developments is the widening of the bulk of the towers when viewed along an east-west or north-south axis. The bulk of the two towers will appear as a single mass when viewed from certain locations around the city. However, the individualistic design of each tower will serve to reduce this impact as they differ in both height and design, enabling them to be read as separate structures.

Impact of the Architectural Character of the Wider City

It is a policy of the City Development Plan, the Docklands Masterplan and the Grand Canal Dock Planning Scheme to establish the highest standards of contemporary architecture. It is considered that the two proposed landmark buildings will have a significant positive impact on the architectural character and identity of the City, being two of the boldest and most innovative architectural designs proposed for the City in recent years. It is considered appropriate that this site, which is a prominent gateway location in the City, is marked by the proposed landmark structures. It will also serve to draw attention to and open access to the area, which is not presently frequented by many City dwellers or visitors. However, the cumulative impact of the location of two landmark towers side by side in the manner proposed is that an

element of the 'landmark' quality of each will be reduced as a result of the juxtaposition.

CUMULATIVE VISUAL IMPACT ASSESMENT
OF
PREVIOUSLY PERMITTED TOWER AND PROPOSED TOWER (OPTION 1 AND 2)
AT
GRAND CANAL DOCK
AUGUST 2005

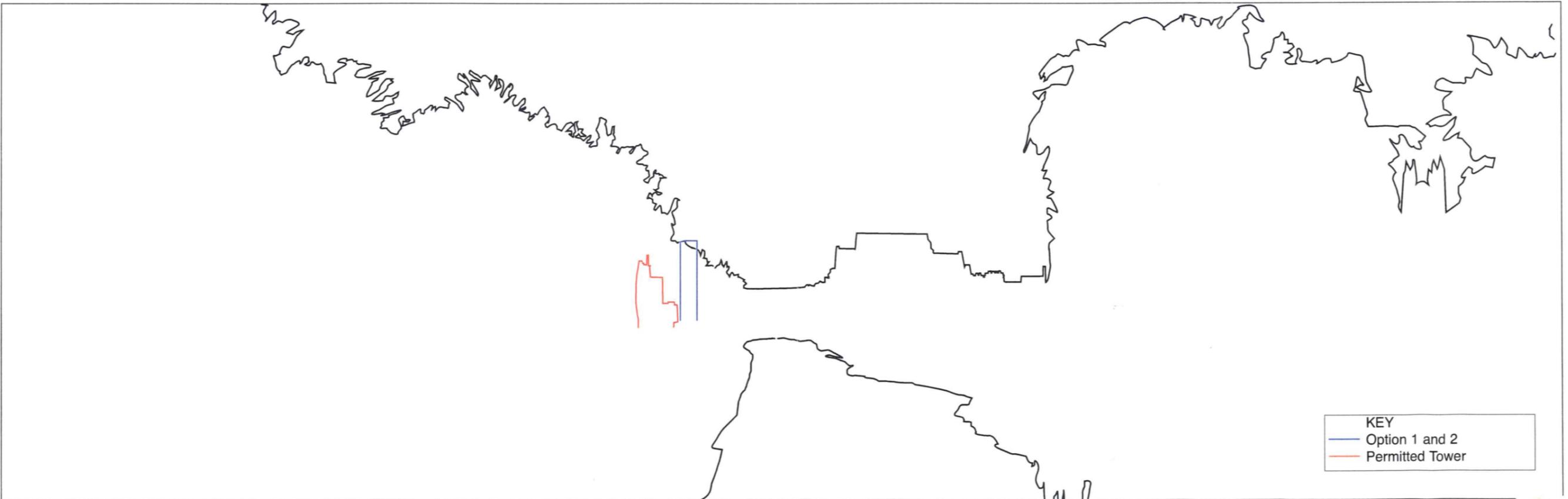


ARC Architectural
Consultants Limited





73.5° | 60° | 57° | 50° | 40° | 30° | ANGLE OF VISION SCALE | 30° | 40° | 50° | 57° | 60° | 73.5°

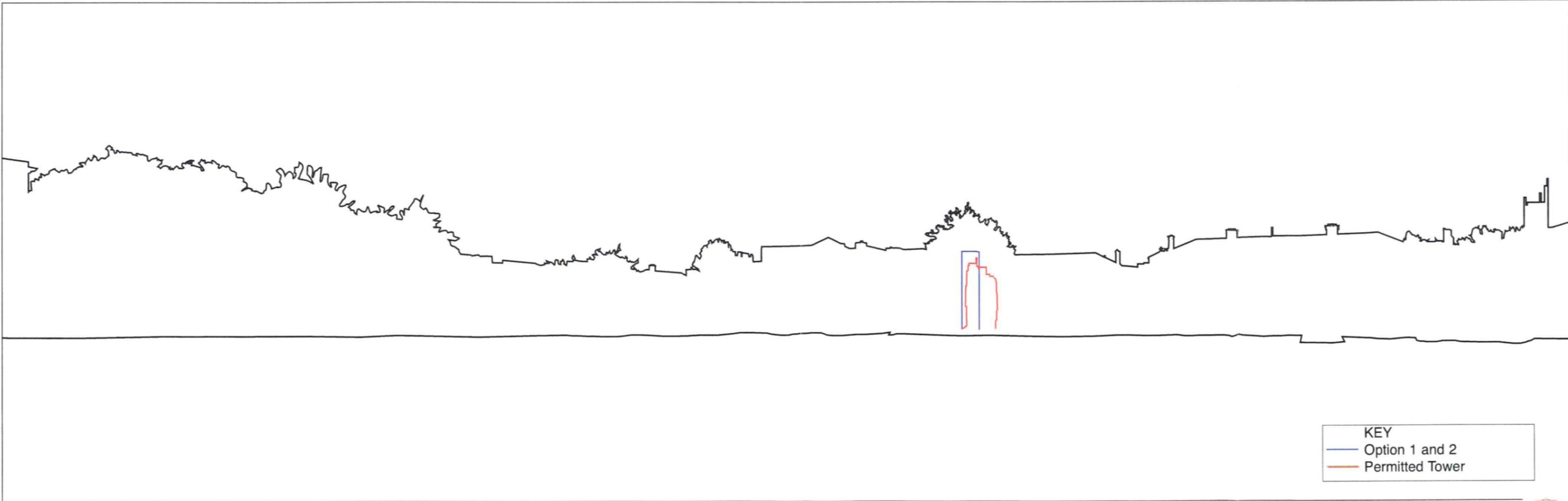


KEY
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 — Permitted Tower





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