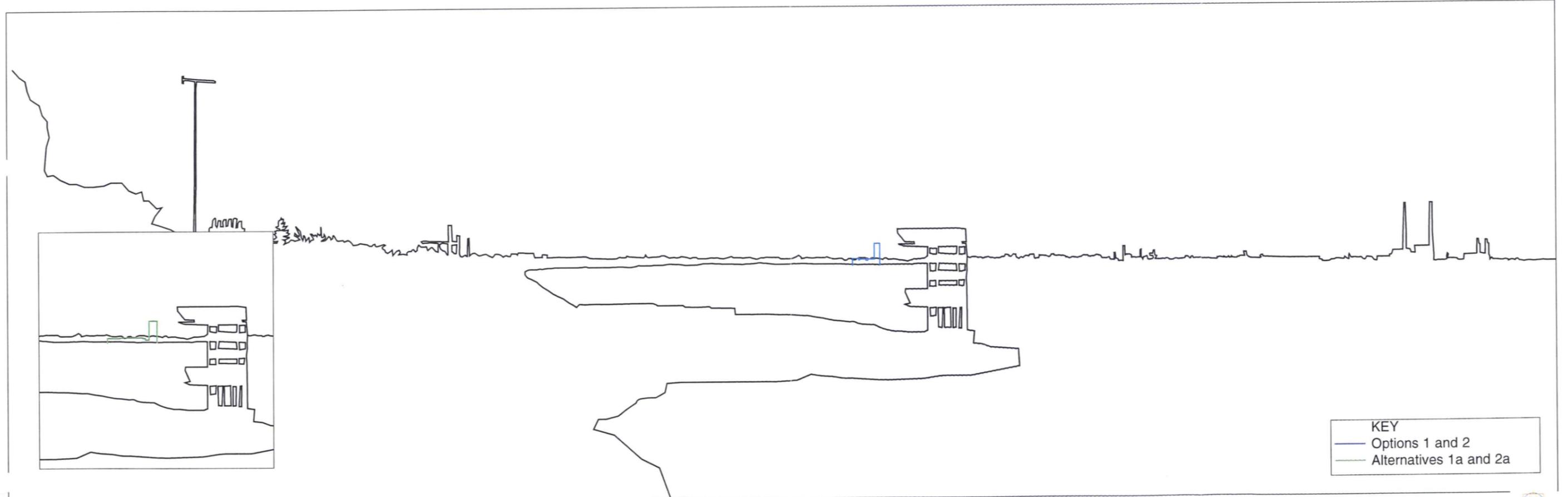




73.5° | 60° | 57° | 50° | 40° | 30° | ANGLE OF VISION SCALE | 30° | 40° | 50° | 57° | 60° | 73.5°

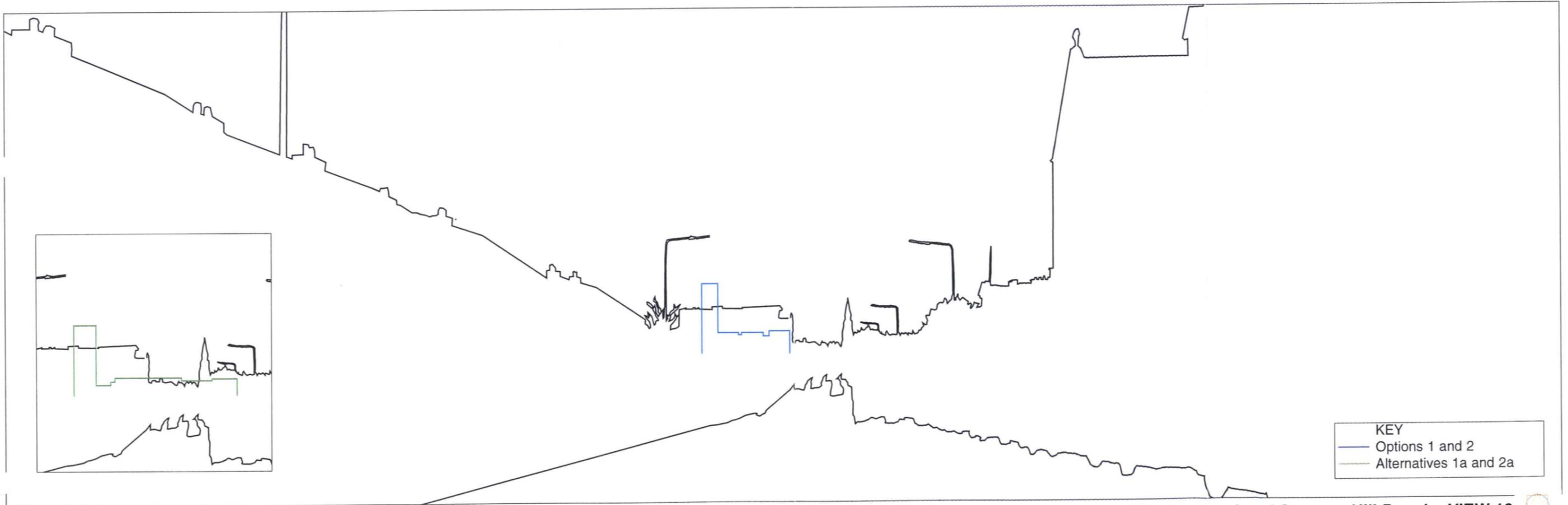


KEY
 — Options 1 and 2
 — Alternatives 1a and 2a





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

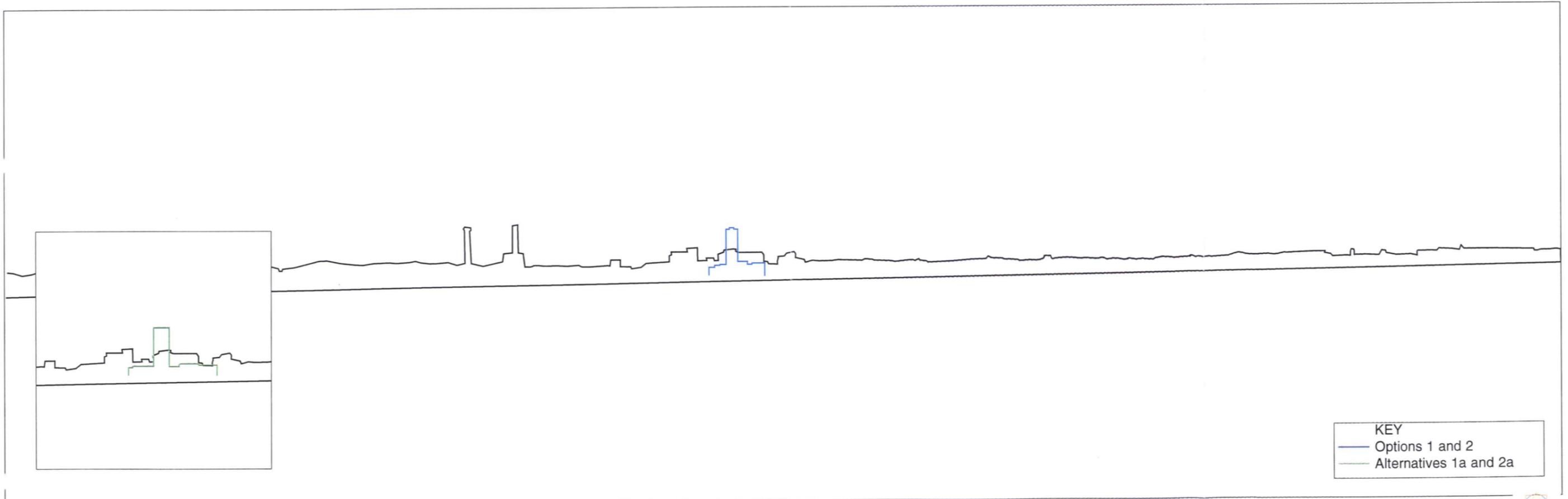


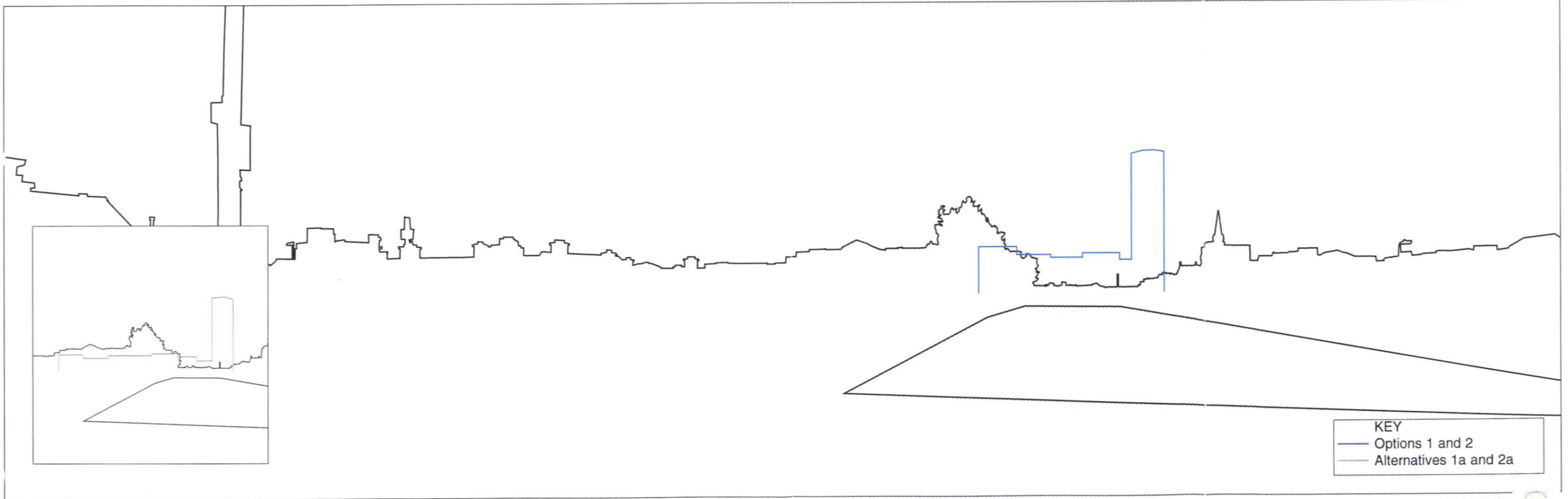
KEY
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 — Alternatives 1a and 2a





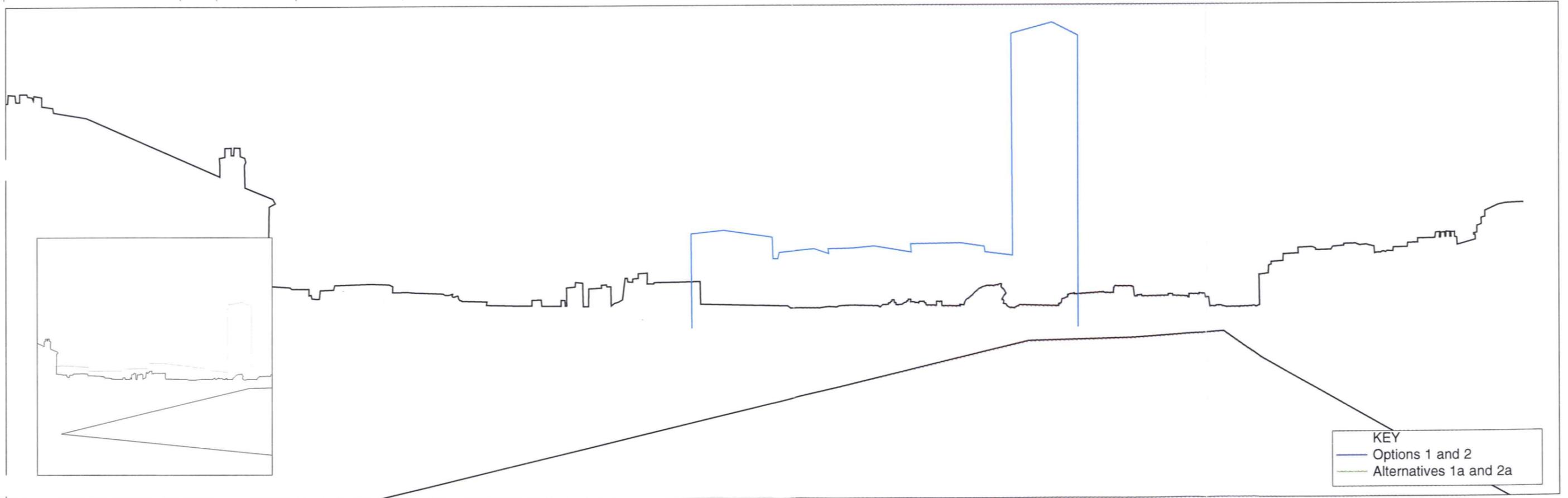
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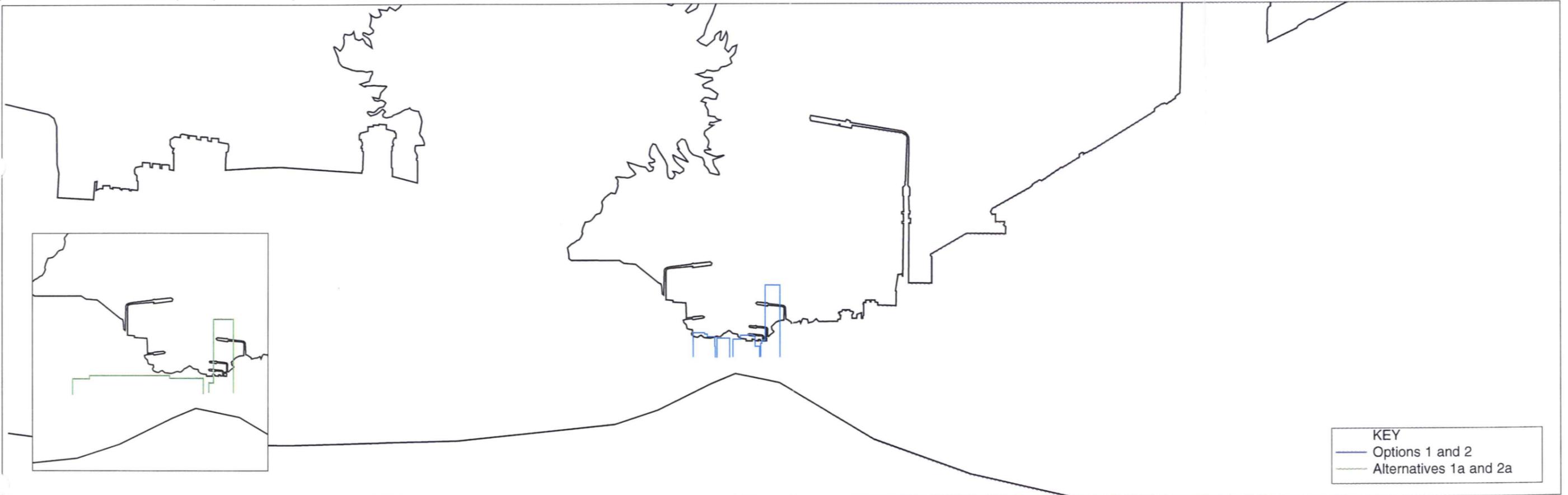
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KEY
 — Options 1 and 2
 — Alternatives 1a and 2a



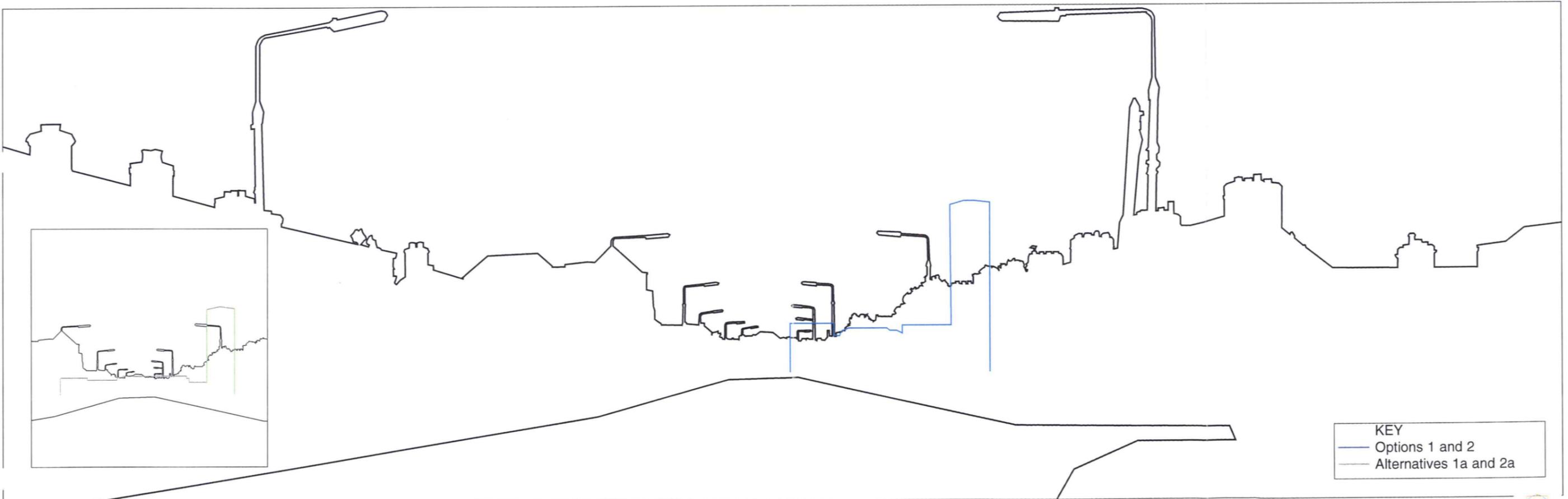
73.5° | 60° | 57° | 50° | 40° | 30° | ANGLE OF VISION SCALE | 30° | 40° | 50° | 57° | 60° | 73.5°



KEY
 — Options 1 and 2
 — Alternatives 1a and 2a

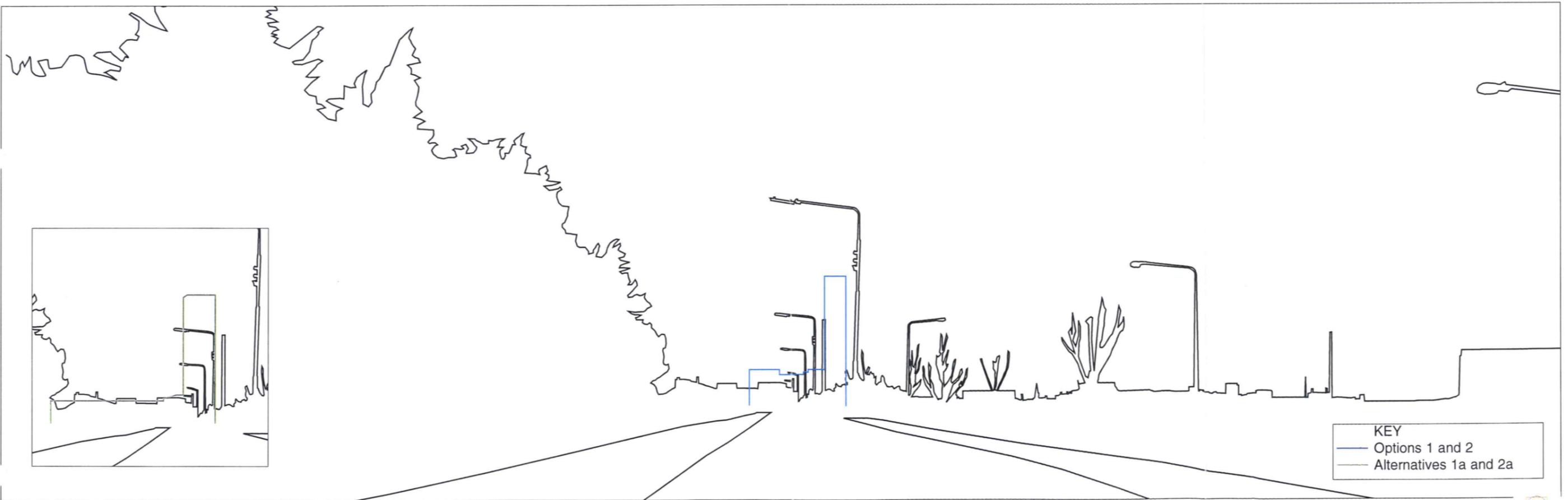


73.5° | 60° | 57° | 50° | 40° | 30° | ANGLE OF VISION SCALE | 30° | 40° | 50° | 57° | 60° | 73.5°





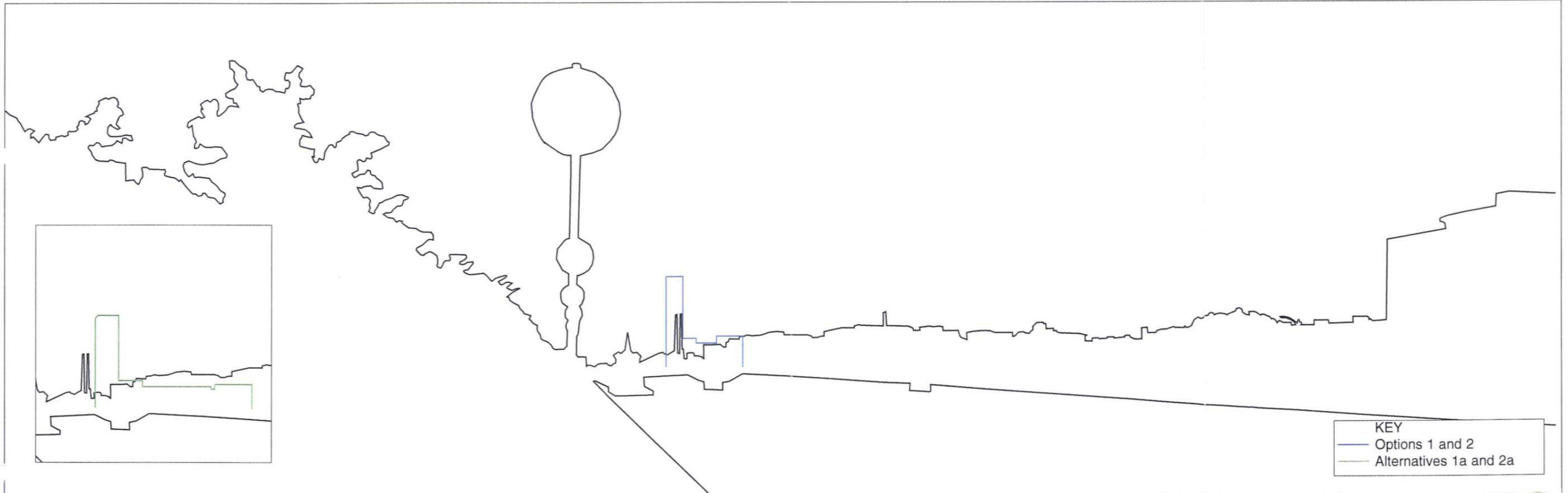
73.5° | 60° | 57° | 50° | 40° | 30° | ANGLE OF VISION SCALE | 30° | 40° | 50° | 57° | 60° | 73.5°



KEY
 — Options 1 and 2
 — Alternatives 1a and 2a

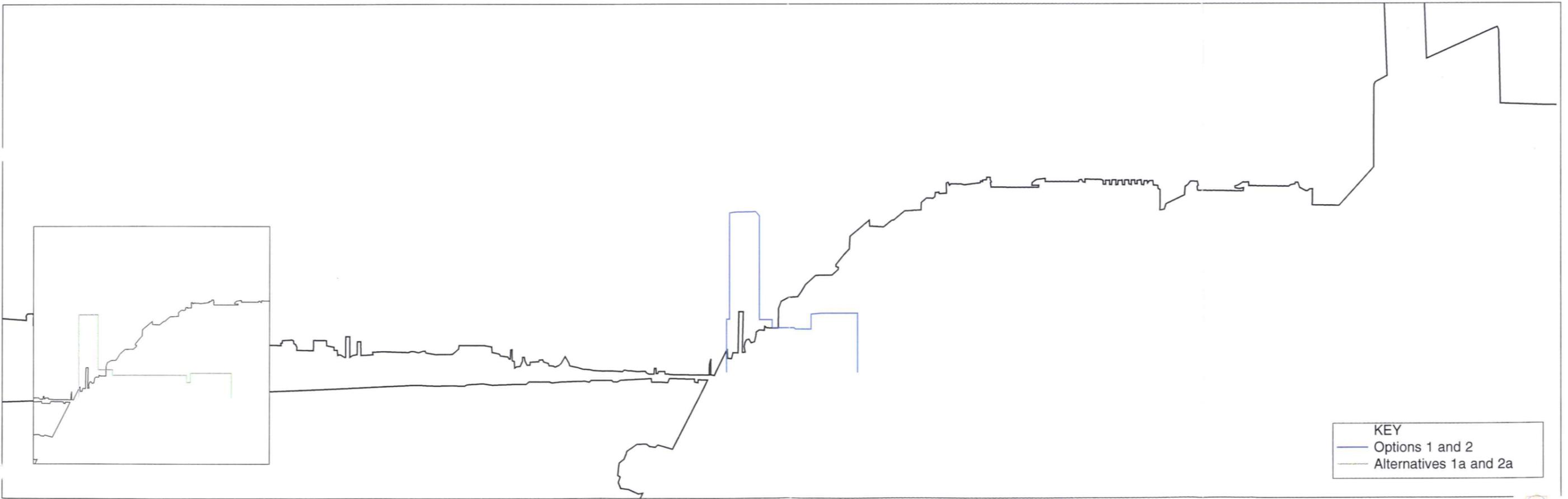


73.5° | 60° | 57° | 50° | 40° | 30° | ANGLE OF VISION SCALE | 30° | 40° | 50° | 57° | 60° | 73.5°





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



APPENDIX 13.1

A study was carried out by ARC Consultants of the shadows likely to be cast by a proposed 120 metre landmark tower to be situated just east of the junction of Sir John Rogerson's Quay and Brittan Quay, in the Grand Canal Dock area.

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 on the just west of the corner of York Road and Thorncastle Street, Ringsend. These buildings are coloured yellow in the shadow study diagrams 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 is 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 study diagrams.

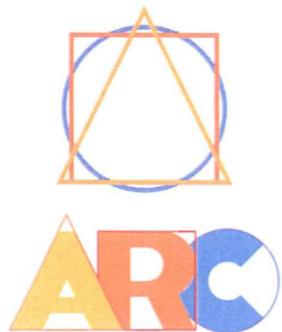
The shadow analysis showed that at the equinox, shadows from the proposed landmark tower will not reach any of the buildings on North Wall Quay or Ringsend. At the summer solstice, shadows of the tower will not reach buildings at North Wall Quay and will only reach the recent development at York Road 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.

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.

SHADOW ANALYSIS
OF
PROPOSED TOWER (OPTION 1 AND 2)
AT
GRAND CANAL DOCK
AUGUST 2005



ARC Architectural
Consultants Limited





GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox

Time: 10:00 hrs



ARC ARCHITECTURAL CONSULTANTS LIMITED
 30 DALKEY PARK DALKEY COUNTY DUBLIN IRELAND



GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox
 Time: 10:00 hrs



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 30 DALKEY PARK DALKEY COUNTY DUBLIN IRELAND



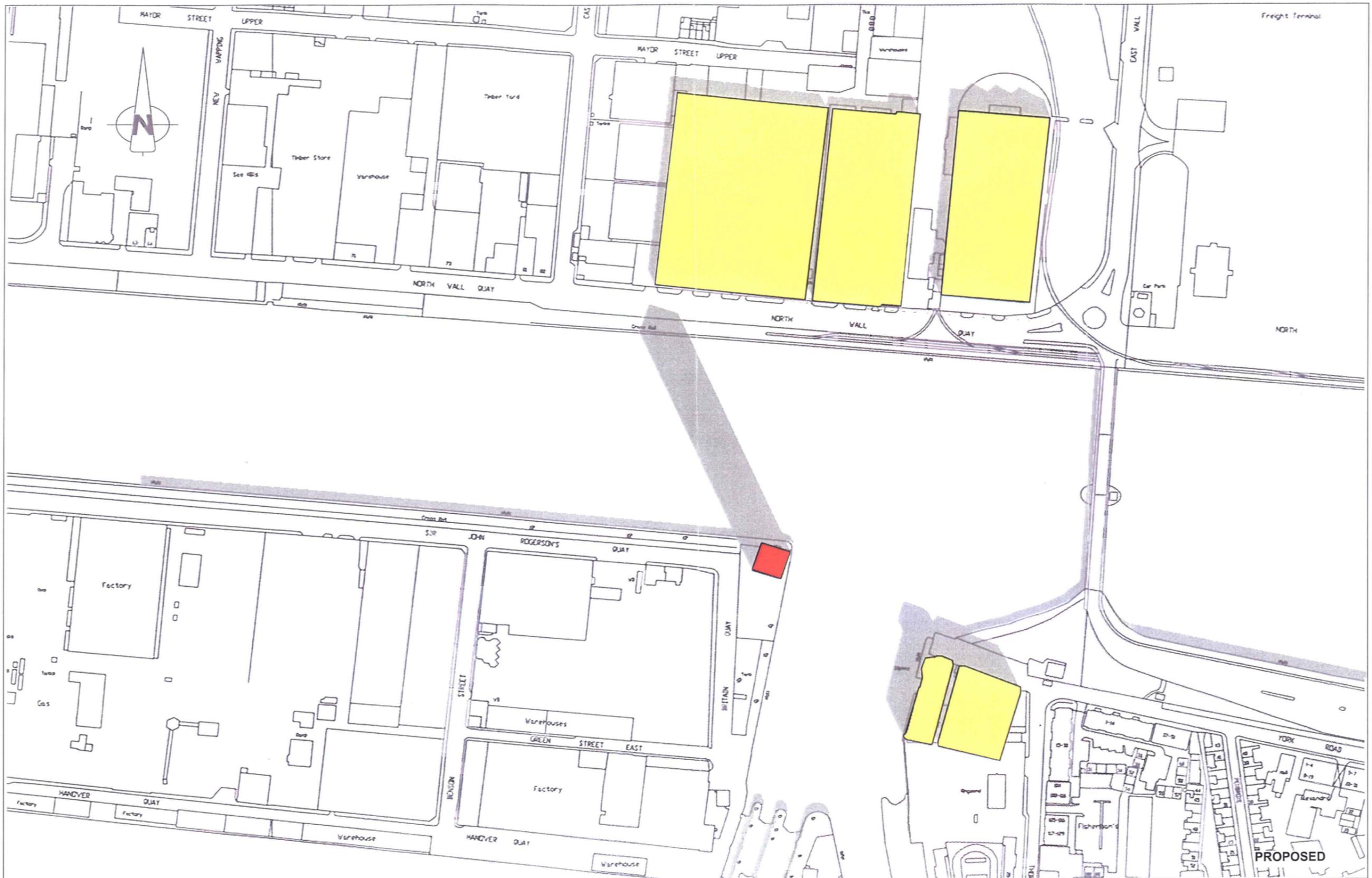
GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox

Time: 12:00 hrs



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GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox

Time: 12:00 hrs



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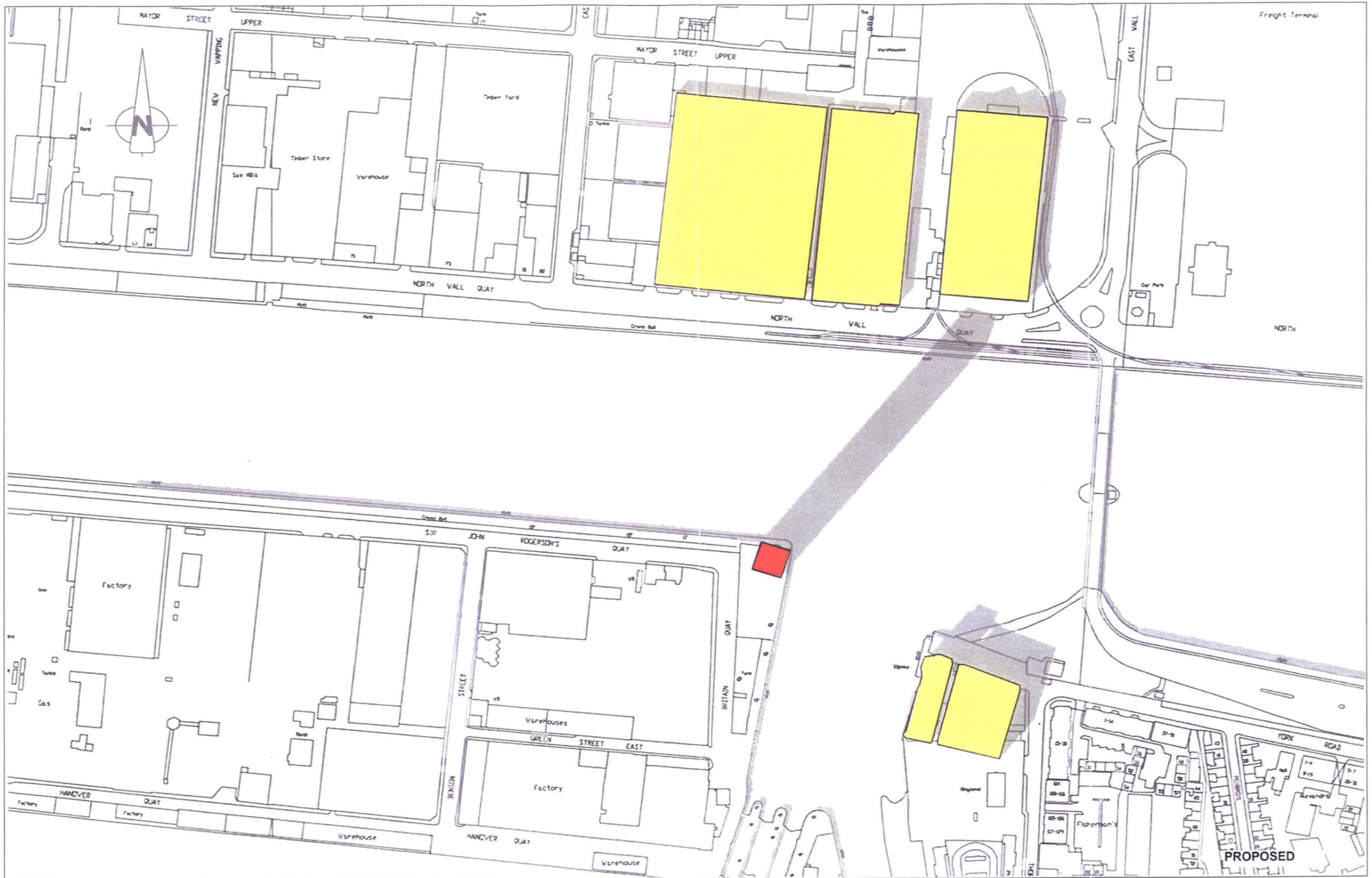
GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox

Time: 15:30 hrs



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GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox

Time: 15:30 hrs



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GRAND CANAL DOCK DEVELOPMENT
 OPTION 1 AND 2
SHADOW CAST STUDY
 AUGUST 2005

Date: 21 March & September
 Equinox

Time: 18.00 hrs



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