

Macquarie Group

Sydney Metro Martin Place Integrated Station Development

Stage 2 SSDA Shadow Study – South Site

CSWSMP-MAC-SMA-UD-REP-000240

2 August 2018

Stage 2 SSDA Shadow Study – South Site

This report supports a State Significant Development (SSD) Development Application (DA) (SSD DA) submitted to the Minister for Planning (Minister) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) on behalf of Macquarie Corporate Holdings Pty Limited (Macquarie), who is seeking to create a world class transport and employment precinct at Martin Place, Sydney.

The SSD DA seeks approval for the detailed design and construction of the South Site Over Station Development (OSD), located above and integrated with Metro Martin Place station (part of the NSW Government's approved Sydney Metro project). The southern entrance to Metro Martin Place station and the South Site OSD above are located at 39-49 Martin Place.

This shadow study has been prepared by Virtual Ideas to assess the overshadowing impacts of the Metro Martin Place station South Site OSD.

The Department of Planning and Environment have provided Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

provide a solar access and overshadowing analysis, comparing the overshadowing impacts of the proposal to the existing situation, the SLEP 2012 - Sun Access Planes and the approved envelopes at hourly intervals in mid-summer, mid-winter, 14 April and 31 August, and having particular regard to the impact of the proposal on solar access to Martin Place, Hyde Park and Pitt Street Mall.

This report has also been prepared having regard to approved Concept Proposal (SSD 17_8351) condition of consent B2 Overshadowing, and as proposed to be amended under the Stage 1 Amending SSD DA (SSD 18_9347):

Overshadowing

B2. Development of buildings pursuant to this consent shall:

- a. not result in additional overshadowing of Hyde Park between the hours of 12 and 2 pm at mid-winter (21 June), when compared to the shadow cast by existing buildings, approved buildings and the DCP/LEP compliant envelope set out in the Shadow Analysis, prepared by Grimshaw, dated August 2018*

Stage 2 SSD DA Shadow Study – South Tower

In response to the SEARs, the enclosed shadow diagrams titled 'Stage 2 SSD DA Shadow Study – South Tower' shows the shadows cast by the proposed South Tower OSD on:

- 21 December – hourly intervals from 9am to 3pm
- 21 June – hourly intervals from 9am to 3pm
- 14 April – hourly intervals from 9am to 3pm
- 31 August – hourly intervals from 9am to 3pm
- 21 September – hourly intervals from 9am to 3pm

These shadow diagrams show:

- the shadows cast by existing buildings (as per the City of Sydney city model)
- the outline of the shadow cast by the approved and as proposed to be amended Concept Proposal envelope for the site; and
- the extent of shadow cast by the proposed South Site Stage 2 SSD DA OSD beyond the shadow cast by existing buildings (building model supplied by Tzannes) and within the approved/proposed to be amended Concept Proposal envelope.

Stage 2 SSD DA Shadow Study – South Tower: Hyde Park

The proposed South Tower OSD is required to comply with Condition B2(a.) of the Concept Proposal (as proposed to be amended). Virtual Ideas has worked closely with Tzannes to develop the design of the South Tower (in particular the crown of the building) to comply with this condition. The enclosed shadow diagrams titled 'Stage 2 SSD DA Shadow Study – South Tower: Hyde Park' demonstrate how the design of the proposed South Site OSD complies with condition B2(a). These shadow diagrams show shadows cast by the proposed South Tower OSD on:

- 21 June – 15 minute intervals from 12pm to 2pm

These shadow diagrams show:

- the shadows cast by existing buildings (as per the City of Sydney city model)
- the shadows cast by approved buildings (in the main capturing 148 King Street)
- the shadow cast by the DCP/LEP compliant envelope set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018 and accompanying the Stage 1 Amending SSD DA;
- the outline of the shadow cast by the proposed South Site Stage 2 SSD DA OSD (building model supplied by Tzannes); and
- the extent of shadow cast by the proposed South Site Stage 2 SSD DA OSD (building model supplied by Tzannes) beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018 and accompanying the Stage 1 Amending SSD DA.

These shadow diagrams demonstrate that the proposed South Site Stage 2 SSD DA OSD does not cast any additional shadows to Hyde Park beyond the extent of additional shadows considered under the Concept Proposal (as proposed to be amended) as being acceptable.



Stage 2 SSD DA Shadow Study - South Tower

14 April, 9:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

14 April, 10:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

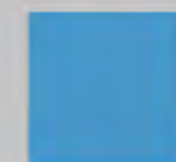
14 April, 11:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

14 April, 12:00 PM





Stage 2 SSD DA Shadow Study - South Tower

14 April, 1:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

14 April, 2:00 PM



Shadows cast by existing buildings



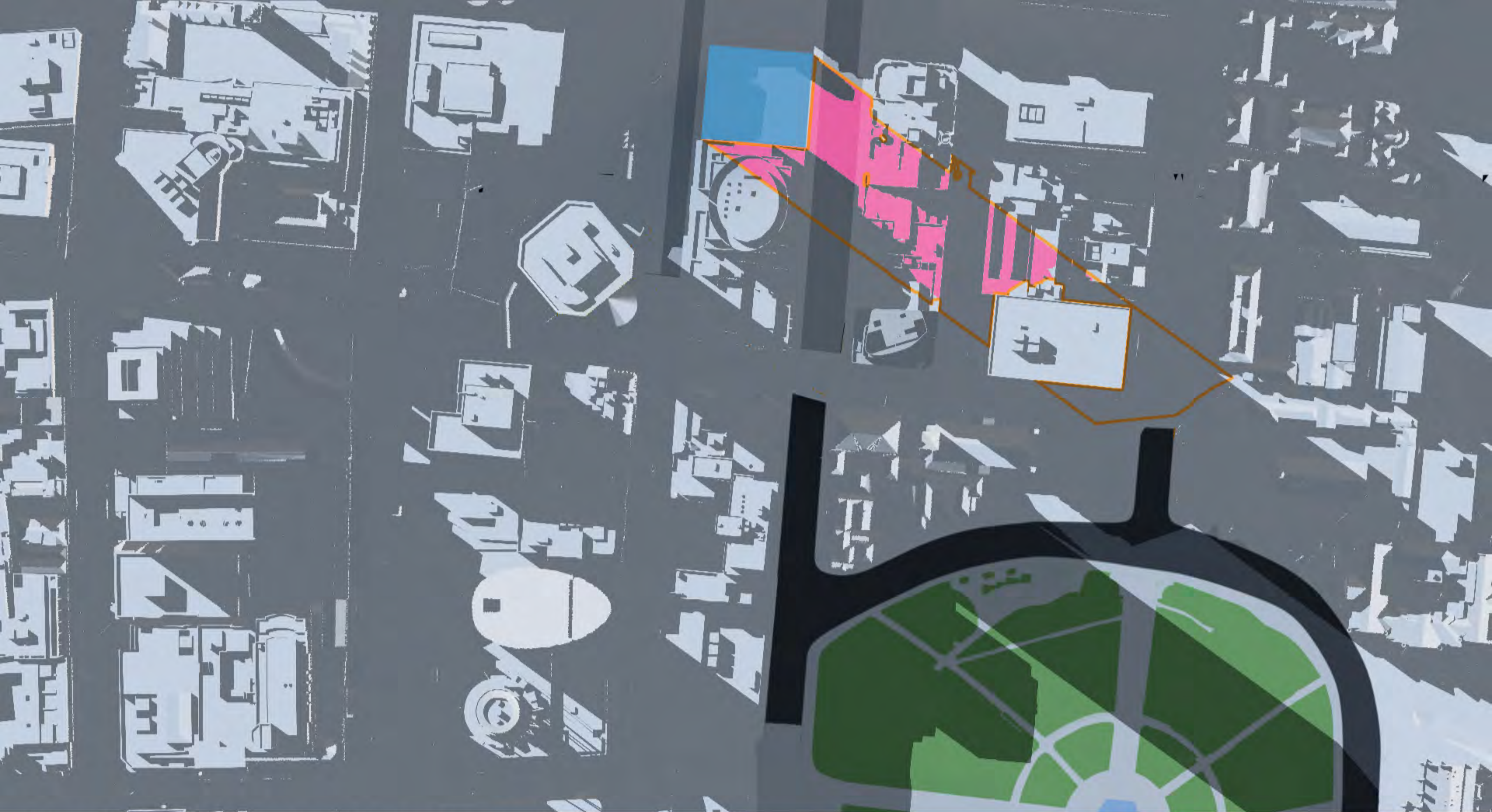
Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

14 April, 3:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 9:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 10:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 11:00 AM



Shadows cast by existing buildings



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building envelope



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beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 12:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 1:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 2:00 PM



Shadows cast by existing buildings



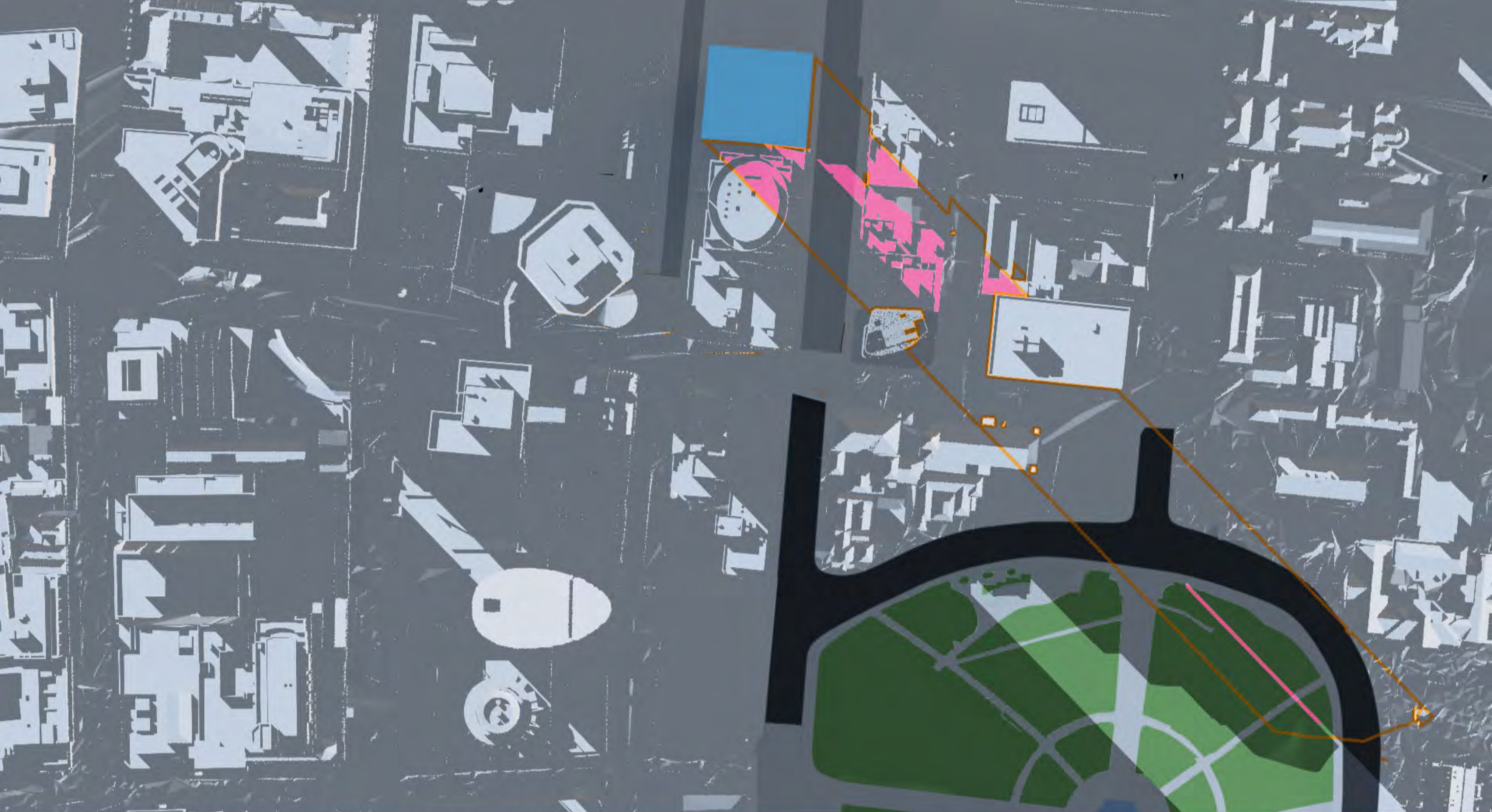
Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 June, 3:00 PM



Shadows cast by existing buildings



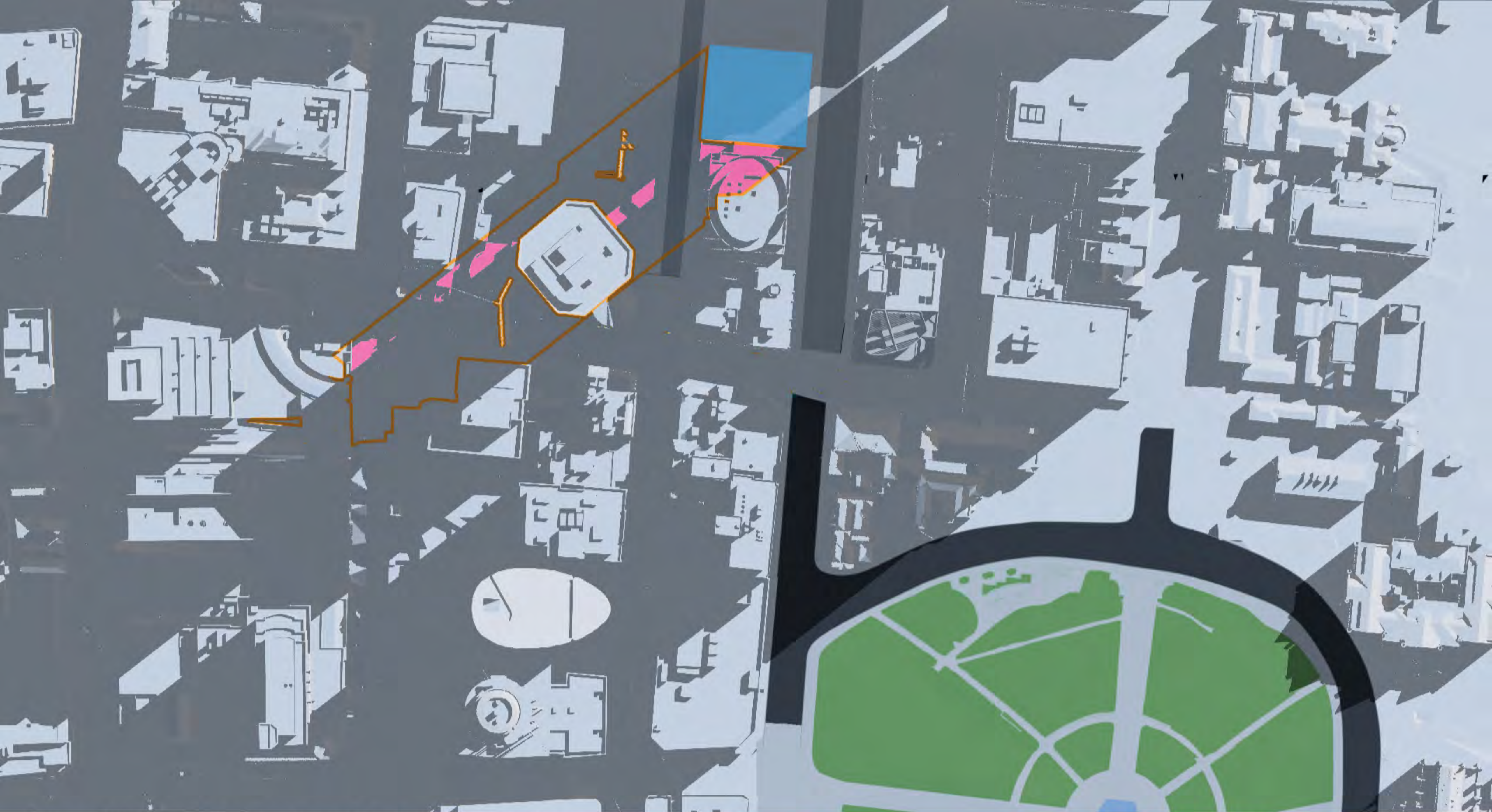
Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

31 August, 9:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

31 August, 10:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

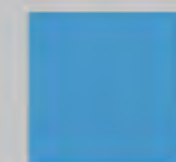
31 August, 11:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

31 August, 12:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347 building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

31 August, 1:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

31 August, 2:00 PM



Shadows cast by existing buildings



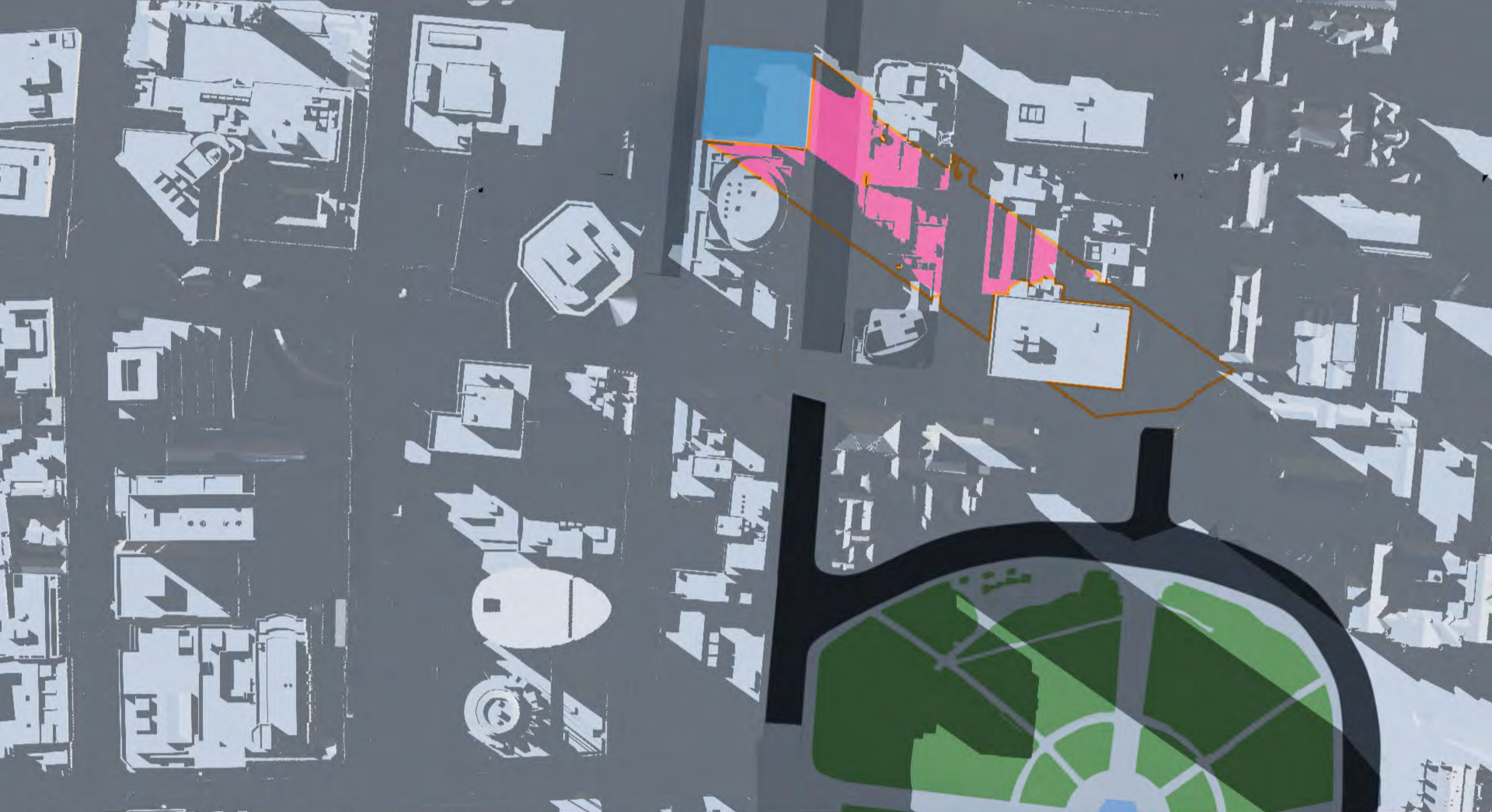
Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

31 August, 3:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



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beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 September, 9:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

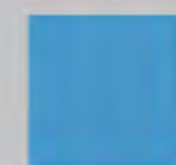
21 September, 10:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 September, 11:00 AM





Stage 2 SSD DA Shadow Study - South Tower

21 September, 12:00 PM





Stage 2 SSD DA Shadow Study - South Tower

21 September, 1:00 PM





Stage 2 SSD DA Shadow Study - South Tower

21 September, 2:00 PM





Stage 2 SSD DA Shadow Study - South Tower

21 September, 3:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

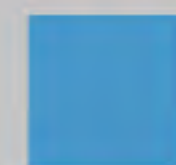
21 December, 9:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



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beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 December, 10:00 AM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



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beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 December, 11:00 AM



Shadows cast by existing buildings



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building envelope



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Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 December, 12:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 December, 1:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347 building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 December, 2:00 PM



Shadows cast by existing buildings



Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower

21 December, 3:00 PM



Shadows cast by existing buildings



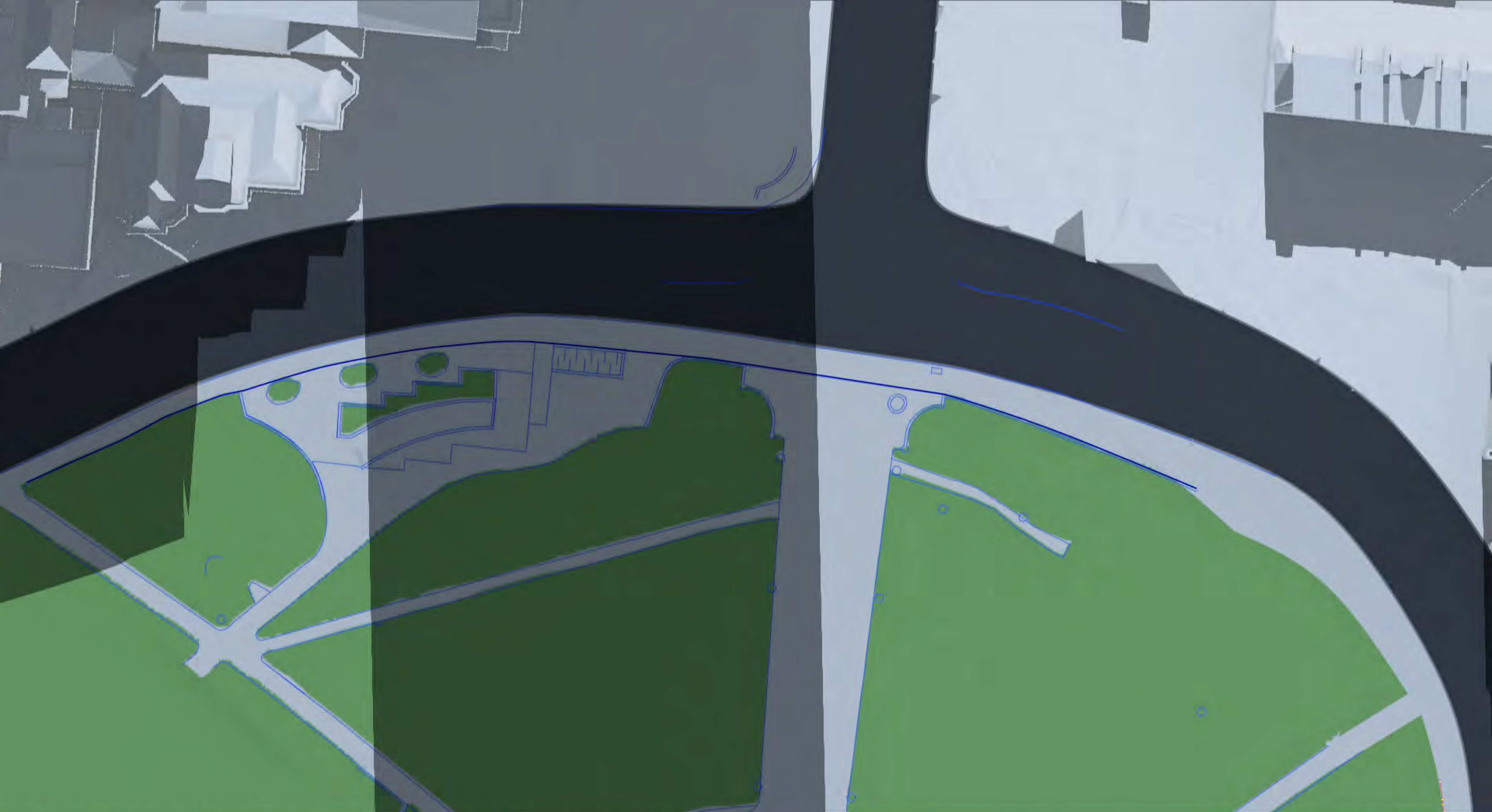
Outline of shadow cast by SSD 9347
building envelope



Stage 2 SSD DA South Tower footprint



Stage 2 SSD DA South Tower extent of shadow
beyond existing buildings



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 12:00 PM



Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



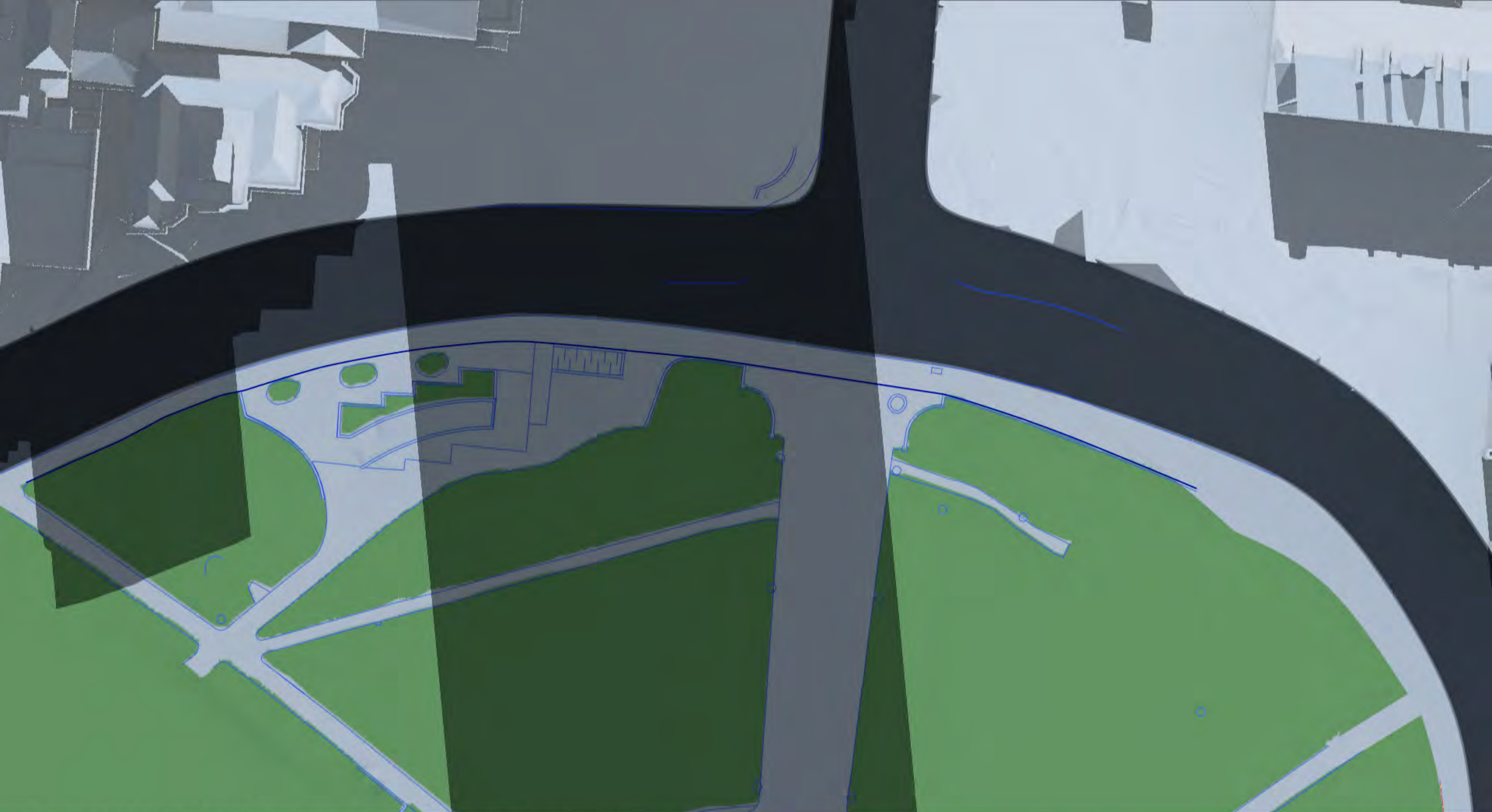
Outline of shadow cast by DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 12:15 PM



Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



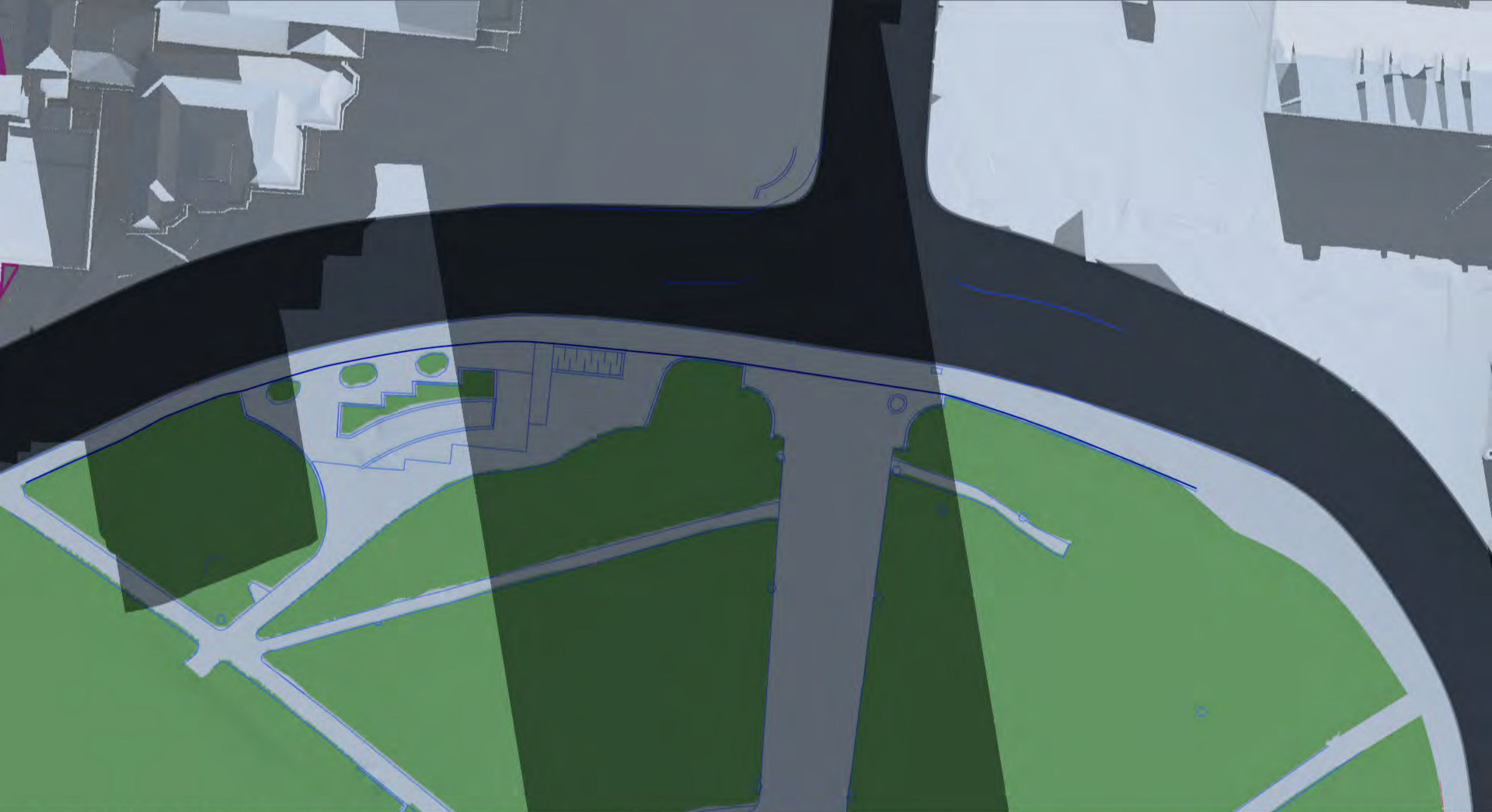
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Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 12:30 PM



Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



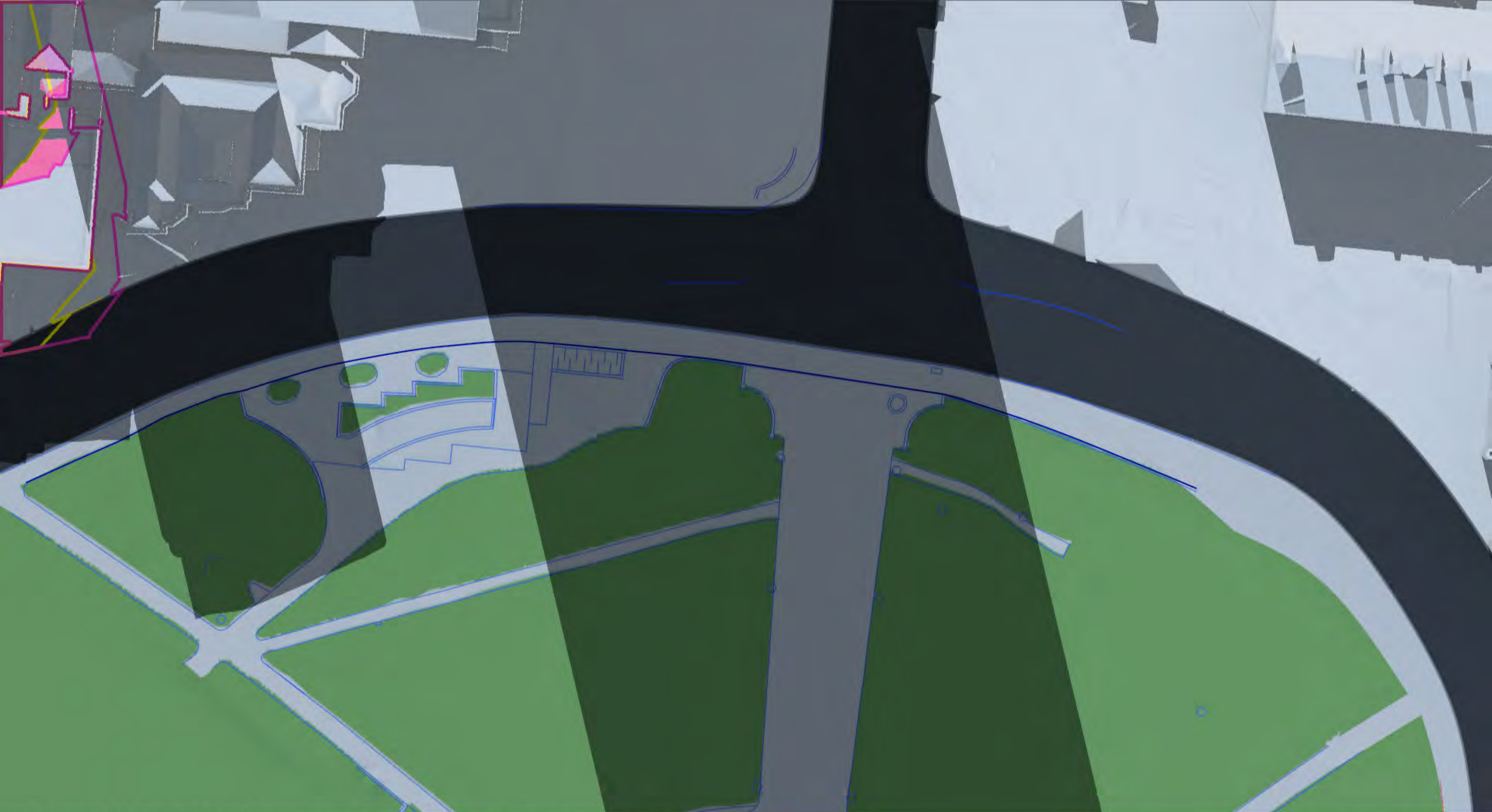
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Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 12:45 PM



Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



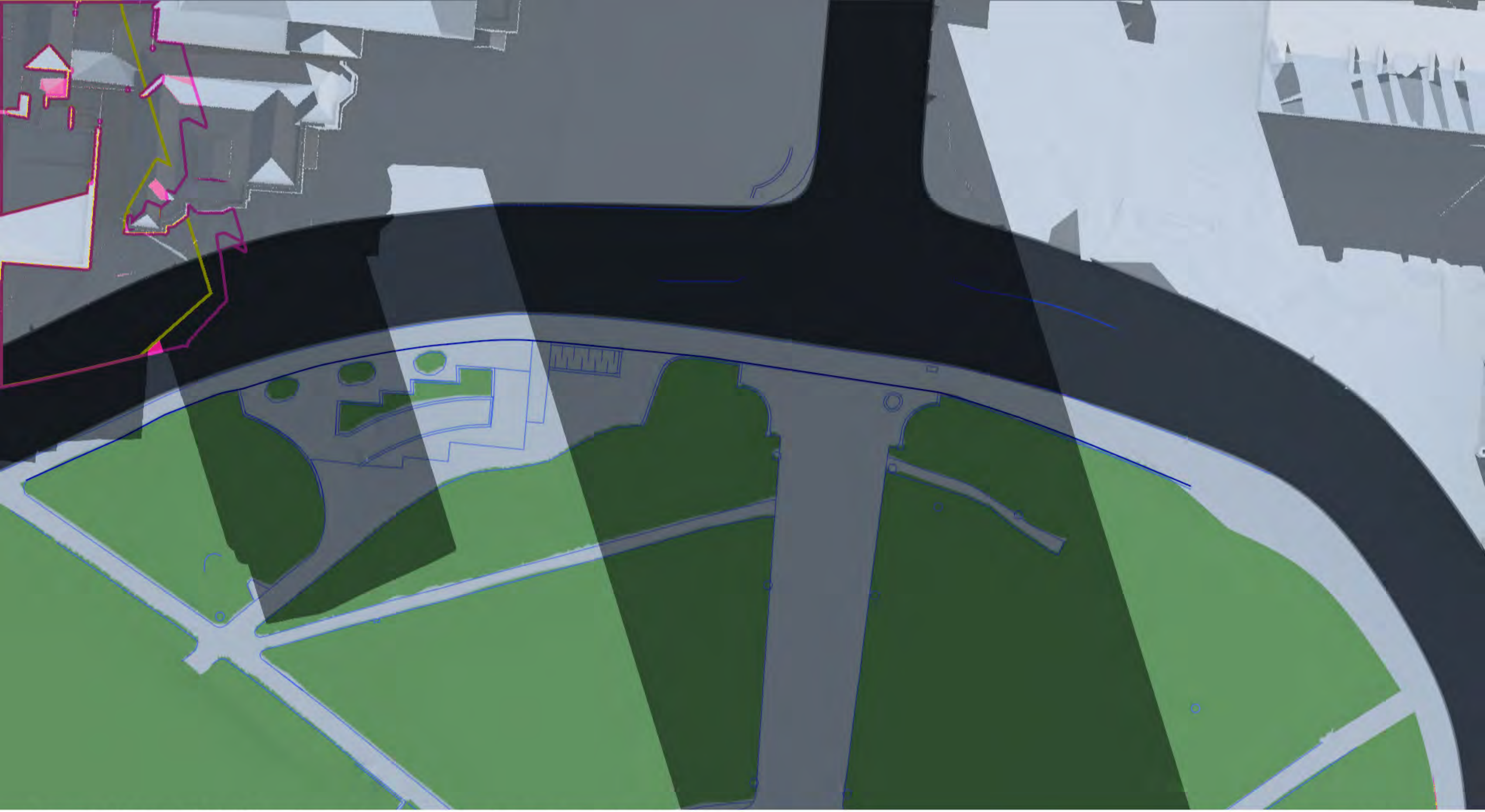
Outline of shadow cast by DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA South Tower outline of shadow



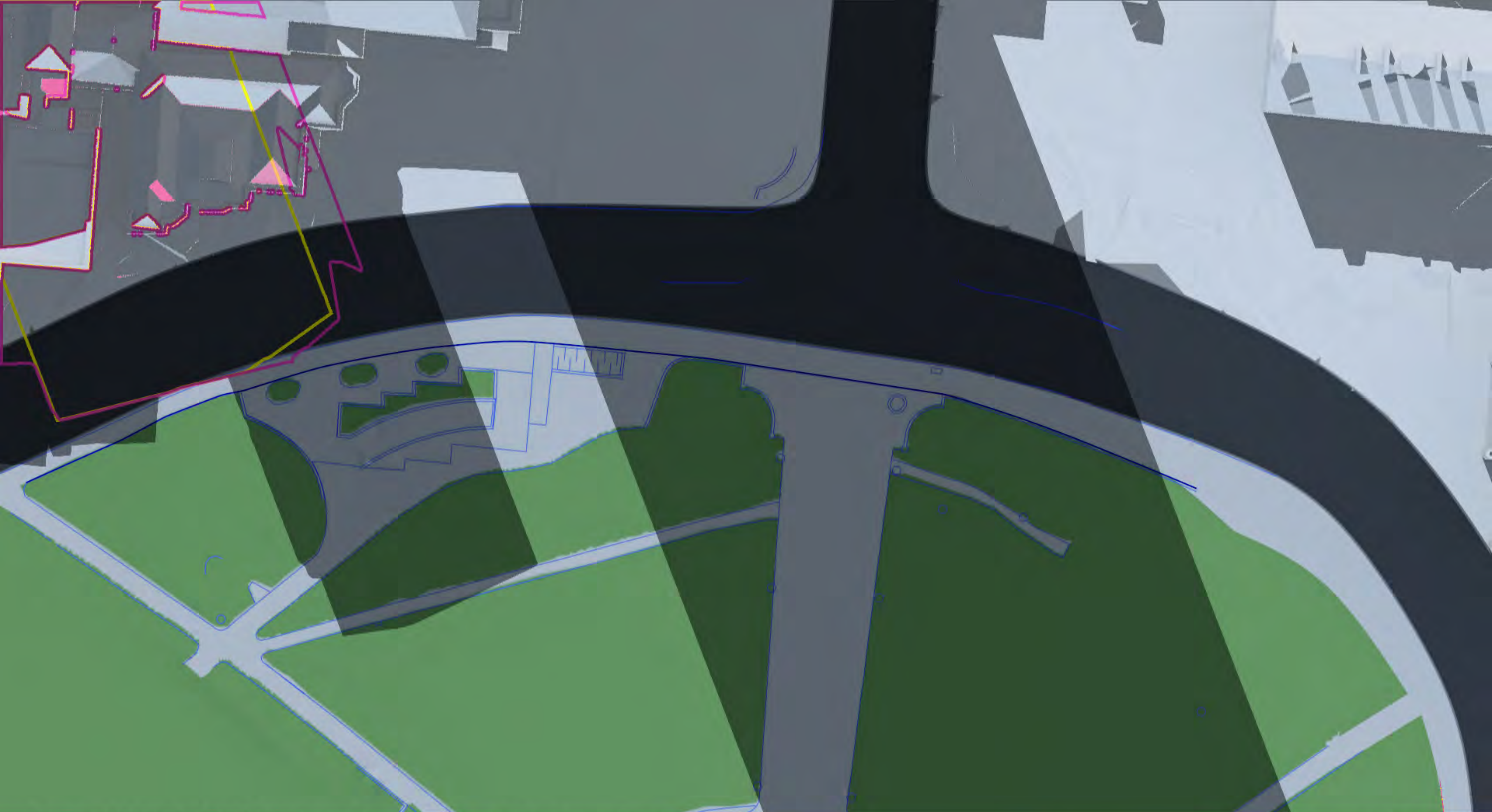
Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 1:00 PM

-  Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018
-  Outline of shadow cast by DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018
-  Stage 2 SSD DA South Tower outline of shadow
-  Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 1:15 PM



Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



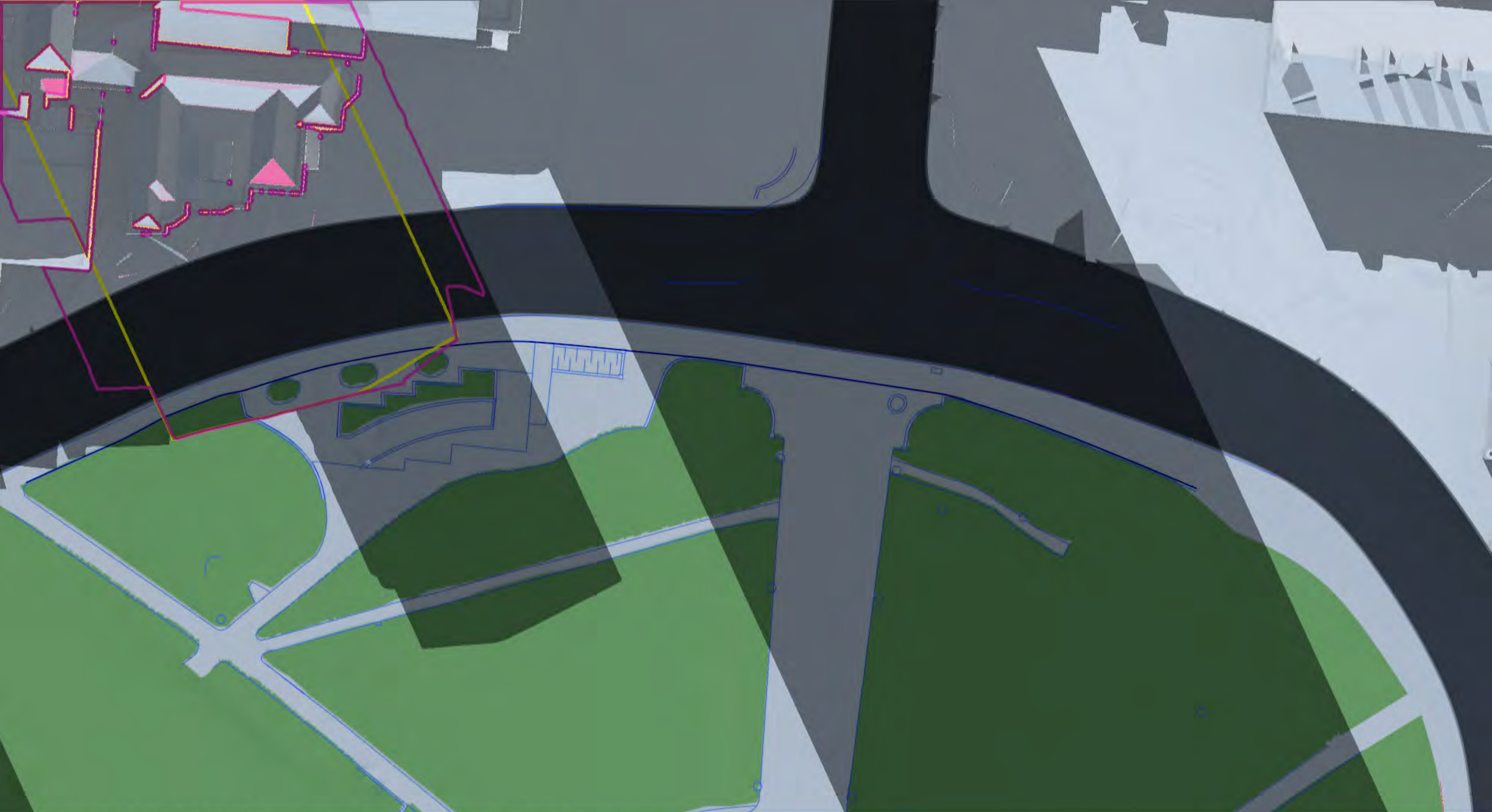
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Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 1:30 PM



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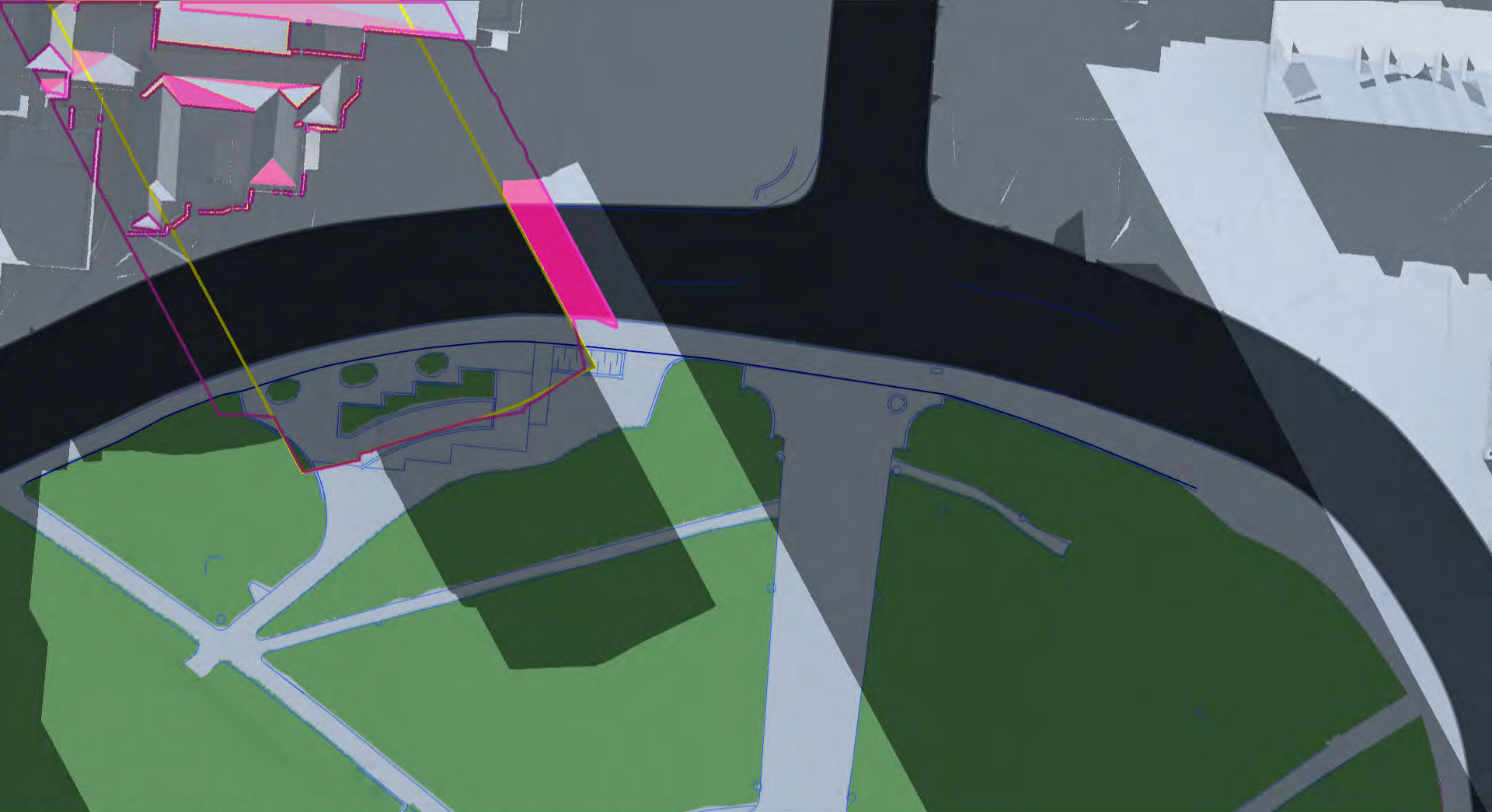
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Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 1:45 PM



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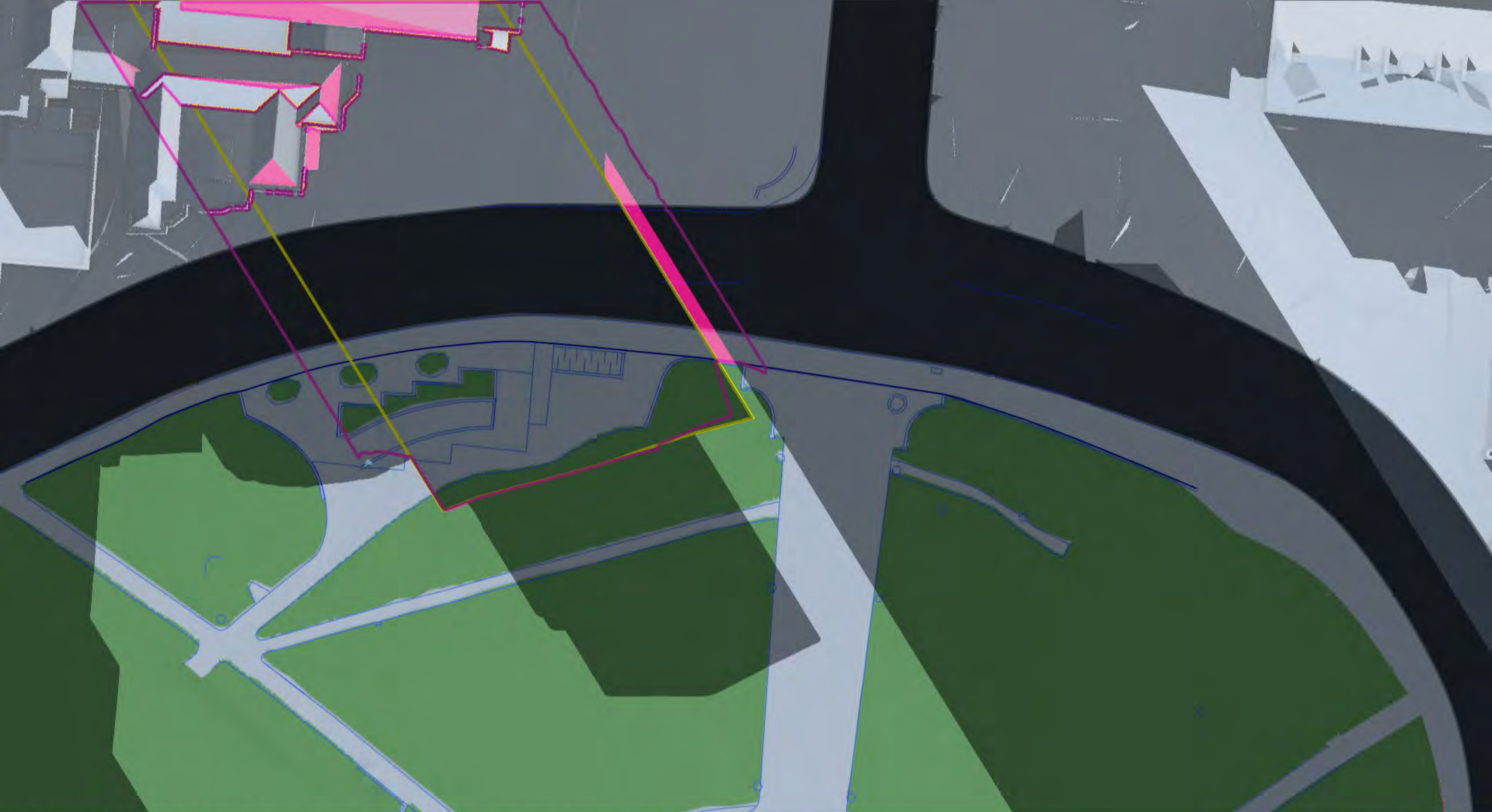
Outline of shadow cast by DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA Shadow Study - South Tower: Hyde Park

21 June, 2:00 PM



Shadow cast by existing buildings, approved buildings, and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Outline of shadow cast by DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018



Stage 2 SSD DA South Tower outline of shadow



Stage 2 SSD DA South Tower extent of shadow beyond existing buildings, approved buildings and the DCP/LEP compliant envelope as set out in the Shadow Analysis, prepared by Grimshaw, dated July 2018