national highways

Lower Thames Crossing

9.106 Daylight and Sunlight Analysis: Screening and Scoping

Infrastructure Planning (Examination Procedure) Rules 2010

Volume 9

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Lower Thames Crossing

9.106 Daylight and Sunlight Analysis: Screening and Scoping

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1 Executive summary

1.1.1 This report has been produced in response to a request from the Examining Authority (ExA) in ExQ1_Q13.1.9 of its Written Questions and Requests for Information [**PD-029**]:

'*…The Applicant is requested to review the proposal to identify which residential properties may be affected by tall structures and embankments in close proximity to habitable room windows and to appraise the impacts. This appraisal shall be submitted at Deadline 5 at the latest.*'

1.1.2 The Applicant committed (at Deadline 4) to establishing whether a Daylight and Sunlight Analysis is required under the relevant guidance, Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Littlefair *et al*., 2022), to determine if any residential properties near proposed structures and embankments meet the criteria for this type of assessment, and reporting back to the ExA at Deadline 5.

1.1.3 This report considers which residential properties meet the criteria for analysis set out in the above guidance because of their proximity to proposed structures and embankments. The analysis in the report demonstrates the A122 Lower Thames Crossing (the Project) is consistent with BRE guidance and will not cause adverse impacts on daylight or sunlight to any of the neighbouring residential properties. No further analysis is therefore necessary.

1.1.4 Details of the approach that has been taken to the screening and scoping of the daylight and sunlight effects on residential properties is presented in Section 3 of this report, together with a separate assessment and validation by eb7 (daylight consultants) in Appendix A and supporting drawings in Appendix B.

2 Introduction

2.1 Scope of this report

2.1.1 This report has been produced in response to a request from the Examining Authority (ExA) in ExQ1_Q13.1.9 of its Written Questions and Requests for Information [**PD-029**]:

'*Neither ES Chapter 13 – Population and Human Health [**APP-151**] nor the Planning Statement [**APP-495**] have addressed visual bulk or overshadowing impacts on individual properties as a result of the scale and proximity of new structures and embankments in close proximity to residential properties. For example, some of the properties at Woolings Close, Orsett will have an embankment immediately adjacent and a road above them. A visual bulk and daylight and sunlight assessment on residential properties (which includes care homes) is seemingly absent.*

The Applicant is requested to review the proposal to identify which residential properties may be affected by tall structures and embankments in close proximity to habitable room windows and to appraise the impacts. This appraisal shall be submitted at Deadline 5 at the latest.'

2.1.2 In response to the above question, the Applicant responded at the Deadline 4 submission [**REP4-201**], stating that it did not consider the analysis necessary, as the A122 Lower Thames Crossing (the Project) passes through rural areas and because of the relatively low scale of proposed structures and embankments near residential properties. However, the Applicant committed to establishing whether a Daylight and Sunlight Analysis is required under the relevant guidance, set out in the Building Research Establishment (BRE) Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Littlefair *et al*., 2022), to determine if any residential properties in close proximity to proposed structures and tall embankments meet the criteria for this type of assessment and reporting back to the ExA at Deadline 5.

2.1.3 This report considers whether there are any residential properties that meet the criteria (presented in Section 3.3 of this report) for analysis set out in the above guidance, as a result of their proximity to proposed structures and tall embankments.

2.1.4 Details of the approach that has been taken to the screening and scoping of the daylight and sunlight effects on residential properties is set out below, together with a separate assessment and validation by eb7 (daylight consultants) in Appendix A and supporting drawings in Appendix B.

3 Methodology

3.1 Parameters for identifying impacted properties

3.1.1 Much of the Project route is in cutting, however there are some elements of the project that are above existing ground level and may have the potential to impact on the daylight to existing residential properties.

3.1.2 Vertical elements included in the assessment:

a. Bridges and viaducts (including parapets and acoustic barriers)

b. Retaining walls

c. Embankments (including landscape sculptural mounding and false cuttings)

3.1.3 Vertical elements excluded from the assessment:

a. Lighting columns

b. Gantries and signage

c. Tree planting

d. Security fencing

3.1.4 The height of these elements (bridges and viaducts, retaining walls, and embankments) vary greatly in relation to existing ground level.

3.1.5 Any properties that are to be demolished as part of the construction works were excluded from the assessment.

3.1.6 A three stage process has been adopted to determine any locations where a daylight and sunlight analysis is required. These three stages are set out within the BRE guidance as follows:

a. Stage 1: Initial screening to determine whether there are neighbouring residential properties within sufficient proximity to the Project to have their daylight or sunlight affected. For a precautionary assessment (to ensure all potentially impacted properties were captured), an initial 50m distance was used on the basis that project works will not be taller than 15m from existing ground level. Assuming the highest structures are around 10m high, this is multiplied by three to give ‘3h’ (30m), plus at least 50% (15m), rounded to 50m ensures maximum coverage.

b. Stage 2: Review by a daylight consultant (eb7) to determine whether any of the neighbouring properties within 50m of the Project need detailed consideration using technical analysis. This will be determined using the ‘3h’ and ‘25 degree section’ tests as described within the BRE guidelines.

c. Stage 3: Detailed technical assessment following the guidance and methodology set out in the BRE guidelines.

3.2 Stage 1: Screening by Project Team

'3h' test

3.2.1 The BRE guidance, Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Littlefair *et al*., 2022), sets out the requirements for analysing the impact of a proposed development on nearby existing buildings in order to safeguard their daylight levels, through a '3h' test:

'*2.2.4 Loss of light to existing windows need not be analysed if the distance of each part of the new development from the existing window is three or more times its height above the centre of the existing window. In these cases the loss of light will be small.*'

3.2.2 The initial screening used these rules to identify potentially affected properties, and set out assumptions and definitions:

a. 'h' (height) – the highest point of the proposed embankment/structure relative to the ground level adjacent to the residential property impacted (in metres).

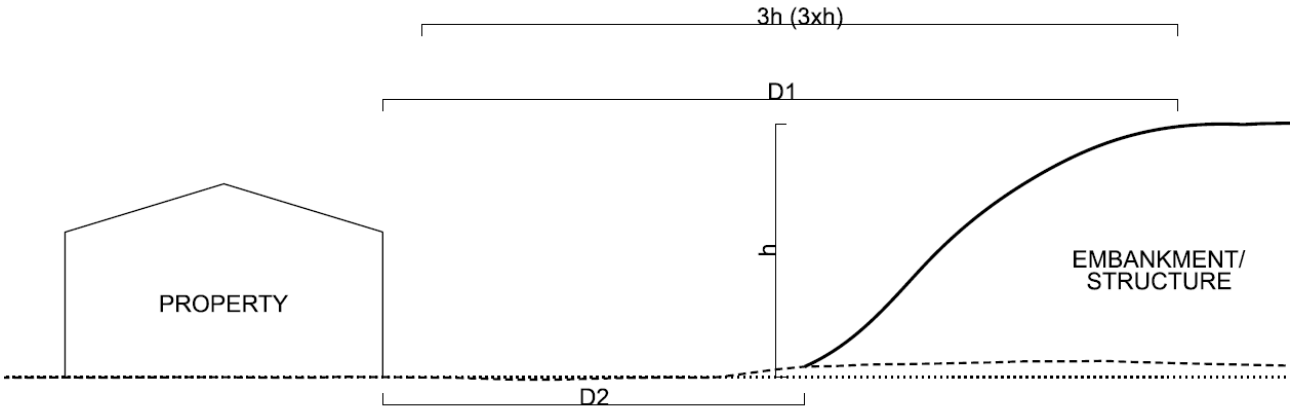
b. '3h' (three times height) – defining the maximum distance in metres, where nearby residential properties that fall within this, should be analysed.

c. 'D1' (distance 1) – the horizontal distance between the highest point of the embankment/structure and the nearest elevation of the residential property impacted.

d. 'D2' (distance 2) – the horizontal distance between the toe of the embankment and the nearest elevation of the residential property impacted.

3.2.3 Plate 3.1 below is based on these assumptions and definitions and shows a non-specific location where, in this instance, the property falls just outside '3h' (as 3h<D1) and therefore would not require further analysis.

Plate 3.1 Diagram showing the assumptions and definitions for the screening process



3.2.4 Two processes were undertaken to identify potentially affected properties using Geographic Information System (GIS) and Computer-Aided Design (CAD). GIS was used to screen the Project route quickly at a large scale and any properties

with the potential to be impacted were then examined in more detail in CAD, utilising sections from the Applicant's 3D coordinated model and Ordnance Survey mapping.

GIS process

3.2.5 GIS was used to identify properties from Ordnance Survey Address Base Premium which may be affected by new proposed structures and embankments and create Excel files listing British National Grid (BNG) x/y coordinates of properties identified and their postcode address where available. At this stage, the extents of embankment were used to provide a greater buffer area, ensuring all possible affected properties were included.

3.2.6 Buffers were created and used to identify properties within the zone of influence. These buffers, used to define the extent of the zone of influence, were as follows:

a. A 50m embankment buffer was created around all proposed embankments in the Project (as described in paragraph 3.1.6a).

b. A bridges buffer was created based on three times the maximum proposed height of the structure from model data. Only bridges with a proposed maximum height above 10m were included.

c. A retaining walls buffer was created based on three times the maximum proposed height of the structure from model data. Only retaining walls with a maximum height above 1.5m were included.

3.2.7 The location of the properties identified from the above GIS buffers data were then reviewed against the height of the above-ground structures and embankments to determine their likely impact, including residential properties within 50m of the extents of the embankment.

CAD process

3.2.8 The properties identified by GIS were further examined to determine inclusion in the assessment, by using CAD software to accurately measure the distance (in plan) of a property from the Project (using the Project 3D CAD model). If a property was within 50m of the Project, it was further assessed against the type of embankment and/or structure it was in proximity to, and measurements taken to determine if the property was potentially within the '3h' rule.

3.2.9 An initial list of residential properties that fell into the '3h' rule was established, as set out in Table 3.1 below.

Table 3.1 Initial list of residential properties

Property number	Property name
1	Oakdene, Watling Street, Gravesend
2	Ashlea Farm, Muckingford Road, Linford
3	Brook Farm, Brentwood Road, Grays

Property number	Property name
4	The Whitecroft Care Home, Stanford Road, Grays
5	Potash Cottages, Stanford Road, Grays
6	3 Woolings Row, Orsett
7	4 Woolings Row, Orsett
8	Latchford Farm, St Marys Lane, Upminster
9	Tyas Stud Farm, St Marys Lane, Upminster (This is a potential Travellers Site, with a current planning application for an official site at this location. Planning reference: P0727.22 (London Borough of Havering, 2022))
10	Franks Farm, St Marys Lane, Upminster

3.3 Stage 2: Review by daylighting specialist

25 degree line test

3.3.1 A workshop was held with the specialist daylight consultants (eb7) to review each property initially listed against the '3h rule' with reference to the Project 3D CAD model and OS mapping data.

3.3.2 Where the property fell within, or came close (+/-10m), of the '3h rule', a cross section was cut perpendicular to the nearest adjacent building corner. This was prepared to confirm whether the building fell within '3h' and whether further analysis, the 25 degree line test, would be required.

3.3.3 The workshop identified 7 out of the 10 properties initially listed where a cross section was required, with the calculations made for 'h', '3h', 'D1' and, where relevant, 'D2', as shown in Table 3.2 below.

Table 3.2 List of cross sections required for residential properties

Property number	Property name	Embankment/ structure highest point (h) in metres	3h (in metres)	Distance from top of embankment / structure to building (D1) in metres	3h>D1 (Building within 3h)	Further assessment required?
3	Brook Farm, Brentwood Road, Grays	5.1	15.3	28.46	N	N
4	The Whitecroft Care Home, Stanford Road, Grays	9.46	28.38	41.76	N	N
5	Potash Cottages, Stanford Road, Grays	9.89*	29.67	29.97	N	N

Property number	Property name	Embankment/ structure highest point (h) in metres	3h (in metres)	Distance from top of embankment / structure to building (D1) in metres	3h>D1 (Building within 3h)	Further assessment required?
6	3 Woolings Row, Orsett	11.36**	34.08	22.61	Y	Y
7	4 Woolings Row, Orsett	11.28**	33.84	14.39	Y	Y
7	4 Woolings Row, Orsett (cross section through window)	11.50**	34.50	22.58	Y	Y
8	Latchford Farm, St Marys Lane, Upminster	8.79	26.37	23.96	Y	Y
9	Tyas Stud Farm, St Marys Lane, Upminster	9.21	27.63	18.09	Y	Y***

**These measurements include allowance for a 0.5m high VRS (vehicle restraint system) on top of the structure.*

***These measurements include allowance for a 1.5m high parapet on top of the structure.*

**** Property number 9 is a potential Travellers site. D1 is taken to the edge of the pitch as chalet bungalows/caravans within the pitch may be moved around.*

3.3.4 Following these calculations, four properties were identified as requiring the 25 degree line test, due to their position within the area defined by '3h', as shown in Table 3.3 below. However, as a precautionary measure, all the seven identified properties had the 25 degree rule test applied.

Table 3.3 Residential properties requiring a 25 degree line test

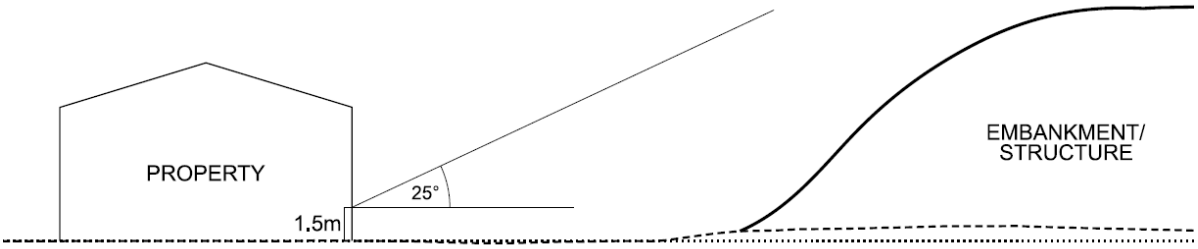
Property number	Property name
6	3 Woolings Row, Orsett
7	4 Woolings Row, Orsett
8	Latchford Farm, St Marys Lane, Upminster
9	Tyas Stud Farm, St Marys Lane, Upminster

3.3.5 The BRE guidance, Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Littlefair *et al*., 2022), sets out this further stage of assessment to determine whether the existing building would receive enough daylight where the building falls within '3h' of the proposed development. It states:

'*2.2.23 If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected.*'

3.3.6 This process involves drawing a line 1.5m above the ground level (at approximately the centre of the window), then creating a 25° angle to determine if this line at 25° intercepts the proposed embankment/structure, as shown in Plate 3.2 below.

Plate 3.2 Cross section showing the affected window wall with 25° angle determining skylight levels



3.3.7 If the embankment/structure falls within the angle of 25°, then it is unlikely to have a substantial effect on the amount of daylight and sunlight to the existing building.

3.3.8 As a precautionary analysis was undertaken, the 25 degree rule was taken from the closest corner of the residential property to the Project, rather than the centre of the window.

3.3.9 Out of the four properties identified above, one property required a more detailed review, as the initial precautionary assessment highlighted a potential impact. Therefore, the location of the windows to this property were identified and a further cross section was produced taken through the centre of the closest window, as per the BRE guidance. This was submitted to eb7 alongside the remaining drawings for final assessment.

3.4 Stage 3: Further work and assessment

3.4.1 The final assessment undertaken by eb7, in accordance with BRE guidance, showed that the Project will not cause adverse impacts on daylight or sunlight to any of the neighbouring residential properties. Their full findings are presented in Appendix A.

4 Conclusion

4.1 Conclusion of assessment

4.1.1 The purpose of this report was to establish whether a Daylight and Sunlight Analysis was required under the relevant BRE guidance, Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Littlefair *et al*., 2022), to determine if any residential properties near proposed structures and embankments meet the criteria for this type of assessment.

4.1.2 The report has considered whether any residential properties meet the criteria for analysis set out in the above guidance because of their proximity to proposed structures and embankments.

4.1.3 The details of the approach that was taken to assess the daylight and sunlight effects on residential properties are presented in Section 3 of this report, together with a separate assessment and validation by eb7 (daylight consultants) in Appendix A and supporting drawings in Appendix B.

4.1.4 The findings of these tests conclude that the proposed development will not intersect a 25 degree line drawn in cross section from the closest neighbouring windows and therefore residential properties will continue to receive good levels of daylight. On this basis, the Project is consistent with BRE guidance and will not cause adverse impacts on daylight or sunlight to any of the neighbouring residential properties.

4.1.5 This has been verified by eb7, and therefore no further analysis is necessary.

References

Littlefair et al (2022). Paul Littlefair, Stephanie King, Gareth Howlett, Cosmin Ticleanu & Adam Longfield, (8 June 2022). Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice, BR209, 2022 edition. Building Research Establishment.

London Borough of Havering (2022). Planning Application Details, Reference P0727.22. Accessed September 2023. https://development.havering.gov.uk/OcellaWeb/planningDetails?reference=P0727.22&from=planningSearch.

Glossary

Term	Abbreviation	Explanation
3h test		A preliminary test described within the BRE guidelines used to establish whether neighbouring properties are likely to be affected by proposed works and need to be analysed.
25 degree line test		A further preliminary test described within the BRE guidelines used to determine whether neighbouring buildings will continue to receive sufficient light or will require more detailed technical assessment. If a proposed development falls beneath a 25° angle when measured perpendicular from the centre point of the relevant neighbour's window, the light is unlikely to be adversely affected and no detailed analysis is required.
A122		The new A122 trunk road to be constructed as part of the Lower Thames Crossing project, including links, as defined in Part 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1)
A122 Lower Thames Crossing	**Project**	A proposed new crossing of the Thames Estuary linking the county of Kent with the county of Essex, at or east of the existing Dartford Crossing.
Application Document		In the context of the Project, a document submitted to the Planning Inspectorate as part of the application for development consent.
BRE guidelines		The Building Research Establishment (BRE) Report 209, 'Site layout planning for daylight and sunlight: A guide to good practice', is the reference document used by most local authorities for assessing daylight and sunlight in relation to new developments. Commonly referred to as 'the BRE guidelines', it provides various testing methodologies to calculate the potential light levels received by neighbours of a development site and provided within proposed new development.
Computer-Aided Design	**CAD**	n/a
Construction		Activity on and/or offsite required to implement the Project. The construction phase is considered to commence with the first activity on site (e.g. creation of site access), and ends with demobilisation.
Daylight		The combined light provided by diffuse skylight and direct sunlight
Development Consent Order	**DCO**	Means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP) under the Planning Act 2008.
Development Consent Order application	**DCO application**	The Project Application Documents, collectively known as the 'DCO application'.
Geographic Information System	**GIS**	An integrated collection of computer software and data used to view and manage information about geographic places, analyse spatial relationships and model spatial processes.
Highways England		Former name of National Highways.
National Highways		A UK government-owned company with responsibility for managing the motorways and major roads in England. Formerly known as Highways England.
Project route		The horizontal and vertical alignment taken by the Project road.

Appendix A eb7 Assessment

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[redacted]

Clare Donnelly
Lower Thames Crossing
National Highways Ltd
National Traffic Operations Centre
3 Ridgeway
Quinton Business Park
Birmingham
B32 1AF

28 September 2023

Dear Clare,

Re: Lower Thames Crossing – Daylight and Sunlight Assessment

Eb7 Ltd has been instructed to provide an assessment of the daylight and sunlight implications for the proposed Lower Thames Crossing project. More particularly, we have been asked to review the report on daylight and sunlight implications produced by National Highways and provide further comment on whether the project is likely to adversely impact the levels of daylight and sunlight currently received by properties neighbouring the proposed works. Our report considers the Daylight and Sunlight Analysis: Screening and scoping report and Daylight and sunlight screening analysis diagrams produced by National Highways dated September 2023.

Company Background

Formed in 2007 eb7 are experts in neighbourly matters specialising in providing Rights of Light, Daylight and Sunlight and Party Wall advice alongside their wider CGI and Visualisation departments.

Services range from initial project feasibility advice to the production of development envelopes and design steering advice, planning reports and rights of light negotiations. Eb7 are also recognised for providing expert input into the daylight effects of major developments requiring environmental impact assessments (EIA) giving cutting edge advice on overshadowing, light pollution and solar glare.

In recent years eb7 have worked alongside a number of Local Authorities and Public Sector Organisations to help deliver a variety of different projects, from the disposal of Government Assets to construction of Offices and Local Authority Housing. The experience gained through involvement with these projects has given eb7 the knowledge and tools to successfully deliver large scale projects with advice that is tailored to the needs of public sector clients. Recent projects include: -

- LB Brent – Four regeneration sites in Kilburn providing c.600 new homes
- LB Lambeth – Homes for Lambeth project delivering 1100 new homes

- Ministry of Justice – Disposal of Public Sector buildings – Assessments for planning application and information for vendors data room
- Government Property Agency - Advising the GPA on rights of light implications of adjoining developments to a number of Government properties and undertaking negotiations for settlement

Guidance

The Building Research Establishment (BRE) Report 209, 'Site layout planning for daylight and sunlight: A guide to good practice', is the reference document used by most local authorities for assessing daylight and sunlight in relation to new developments. Commonly referred to as 'the BRE guidelines', it provides various testing methodologies to calculate the potential light levels received by neighbours of a development site and provided within proposed new development.

Section 2.2 of the BRE guidelines outlines preliminary tests for determining whether effects to surrounding neighbours' light will not be adverse or may require more detailed technical assessment. Section 2.2.4 of the BRE guidance describes an initial scoping exercise to determine whether neighbouring properties are close enough to a proposed development to receive adverse impacts upon daylight or sunlight.

> *"2.2.4 Loss of light to existing windows need not be analysed if the distance of each part of the new development from the existing window is three times its height above the centre of the existing window. In these cases the loss of light will be small."*

Further to this, section 2.2.5 of the guide suggests that if a development is taller than this, a further test using a 25-degree section line can be used to determine whether the neighbouring windows will continue to receive sufficient levels of daylight after the proposed development, or whether further detailed testing will be required.

If a proposed development falls beneath a 25° angle when measured perpendicular from the centre point of the relevant neighbour's window, the light is unlikely to be adversely affected and no detailed analysis is required. An example of this approach extracted from the BRE guidelines is shown on Image 01 below.

> *"2.2.23 If any part of a new building or extension, measured in a vertical section perpendicular to a main window wall of an existing building from the centre of the lowest window, subtends an angle of more than 25° to the horizontal, then the diffuse daylighting of the existing building may be adversely affected."*

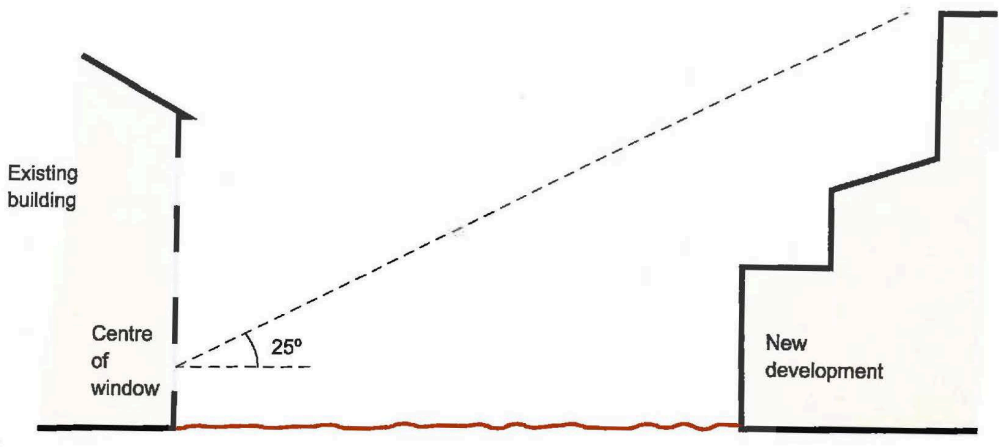


Image 1 - BRE guidelines' preliminary 25° line test (source: BRE, 2022)

Scope of assessment

The BRE guidelines advise that, when assessing any potential effects on surrounding properties, only those windows and rooms that have a 'reasonable expectation' of daylight and sunlight need to be considered. At paragraph 2.2.2 it states: -

> *"The guidelines given here are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas and garages need not be analysed."*

Our assessments of daylight and sunlight impact to neighbouring buildings therefore consider only residential properties, which the BRE recognises have the highest expectation for natural light.

Results

Through initial discussion with the Lower Thames Crossing design team it was established that the tallest elements of the proposed works are unlikely to exceed a height of 15m above the existing ground levels. As such, an initial screening exercise has been undertaken to establish where nearby residential properties are within 50m of the proposed works. These properties are detailed in Table 3.1 of the initial screening report.

Three-Times Height Test

Further assessment has been undertaken on these properties to establish whether they are located within three times the height of the proposed development above the centre of the lowest neighbouring windows. This assessment has shown that seven neighbouring properties are within this distance and therefore require further assessment using the 25-degree section line test. These seven properties are shown in the following table: -

Property	Property no.
Brook Farm	Property 3
The Whitecroft Care Home	Property 4

Potash Cottages	Property 5
3 Woolings Close	Property 6
4 Woolings Close	Property 7
Latchford Farm	Property 8
Tyas Stud Farm	Property 9

25 Degree Line Test

The 25-degree section line test has been applied to each of the seven properties listed in the table above. These sections are shown on drawings HE540039-CJV-SAR-ZZZ000000_-DR-AX-00100_P01 to -00107_P01 attached to the 'National Highways – Lower Thames Crossing Daylight and Sunlight Analysis: Screening and scoping report'.

The results of these tests have shown that the proposed development will not intersect a 25-degree line drawn in section from the centre of the closest neighbouring windows and therefore all will continue to receive good levels of daylight. On this basis the proposed development is consistent with BRE guidance and will not cause adverse impacts on daylight or sunlight to any of the neighbouring residential properties.

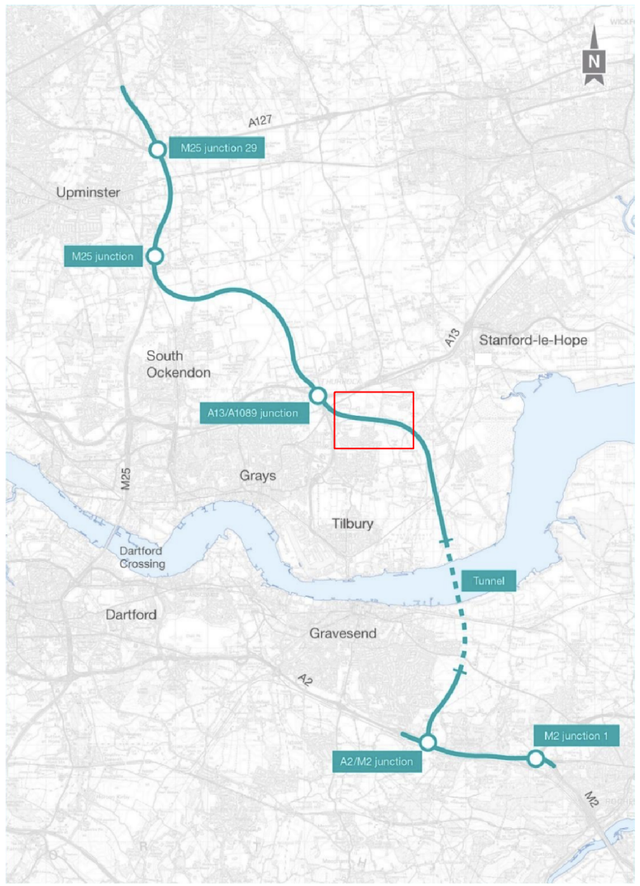
I trust the above provides the information you need at this time, but please feel free to contact me should you need anything further in this regard.

Yours sincerely

[redacted]

Ian Thody
Director
For and on behalf of EB7 Ltd

Appendix B Supporting Drawings



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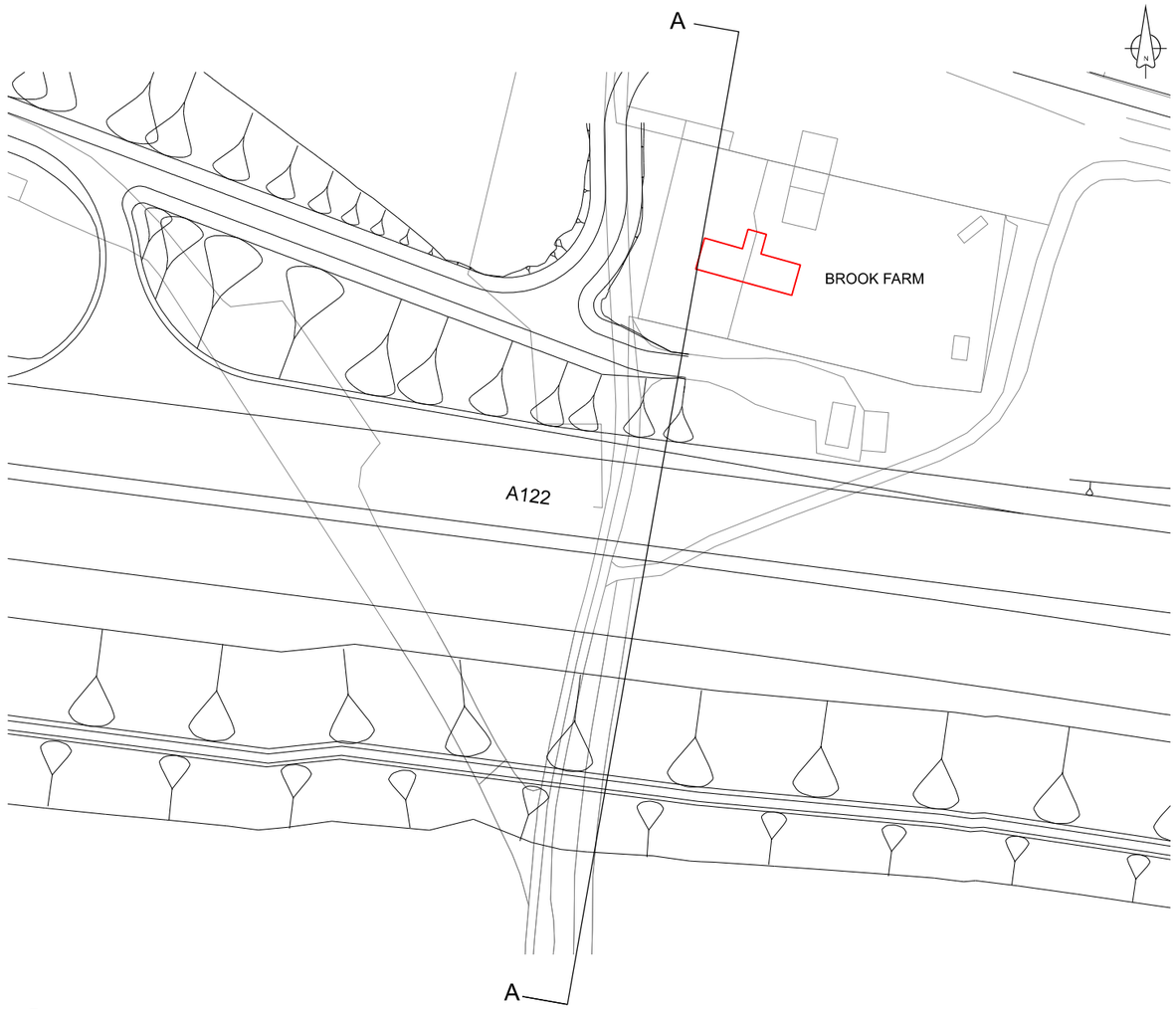

2 PROPOSED PLAN
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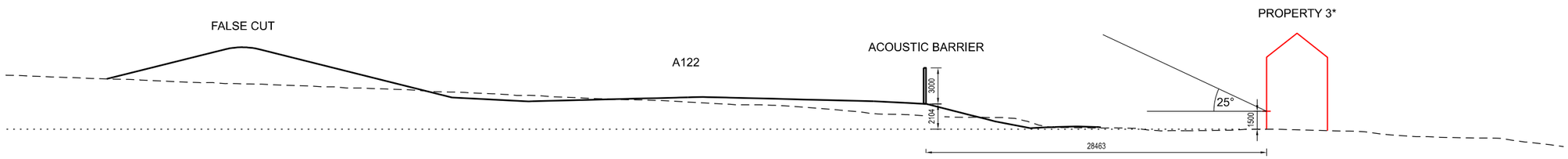


3 PROPOSED SECTION A-A
SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Appr'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY
- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20
SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

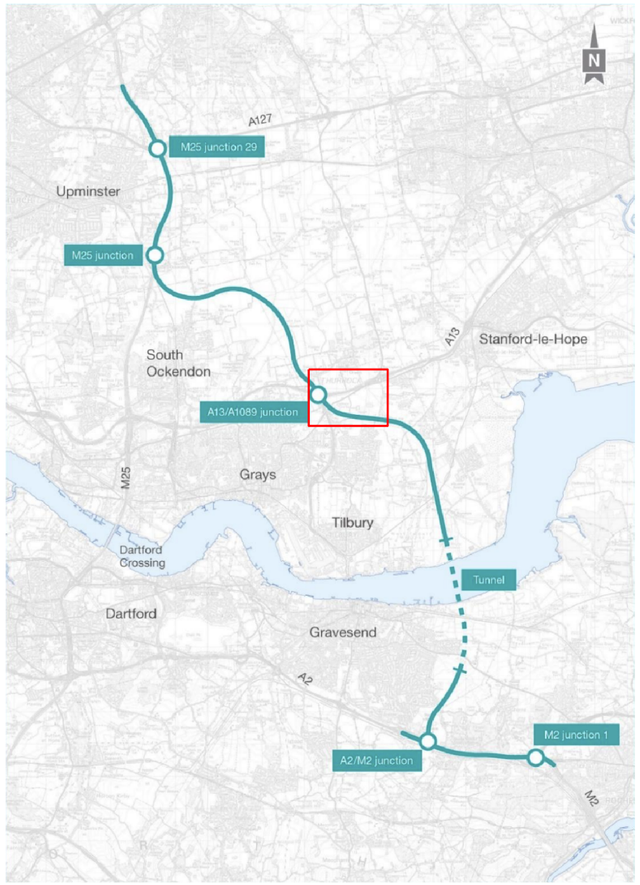
0 10 20 30 40 50
SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways

Project: LOWER THAMES CROSSING

Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 3
Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00100

HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00100.dgn



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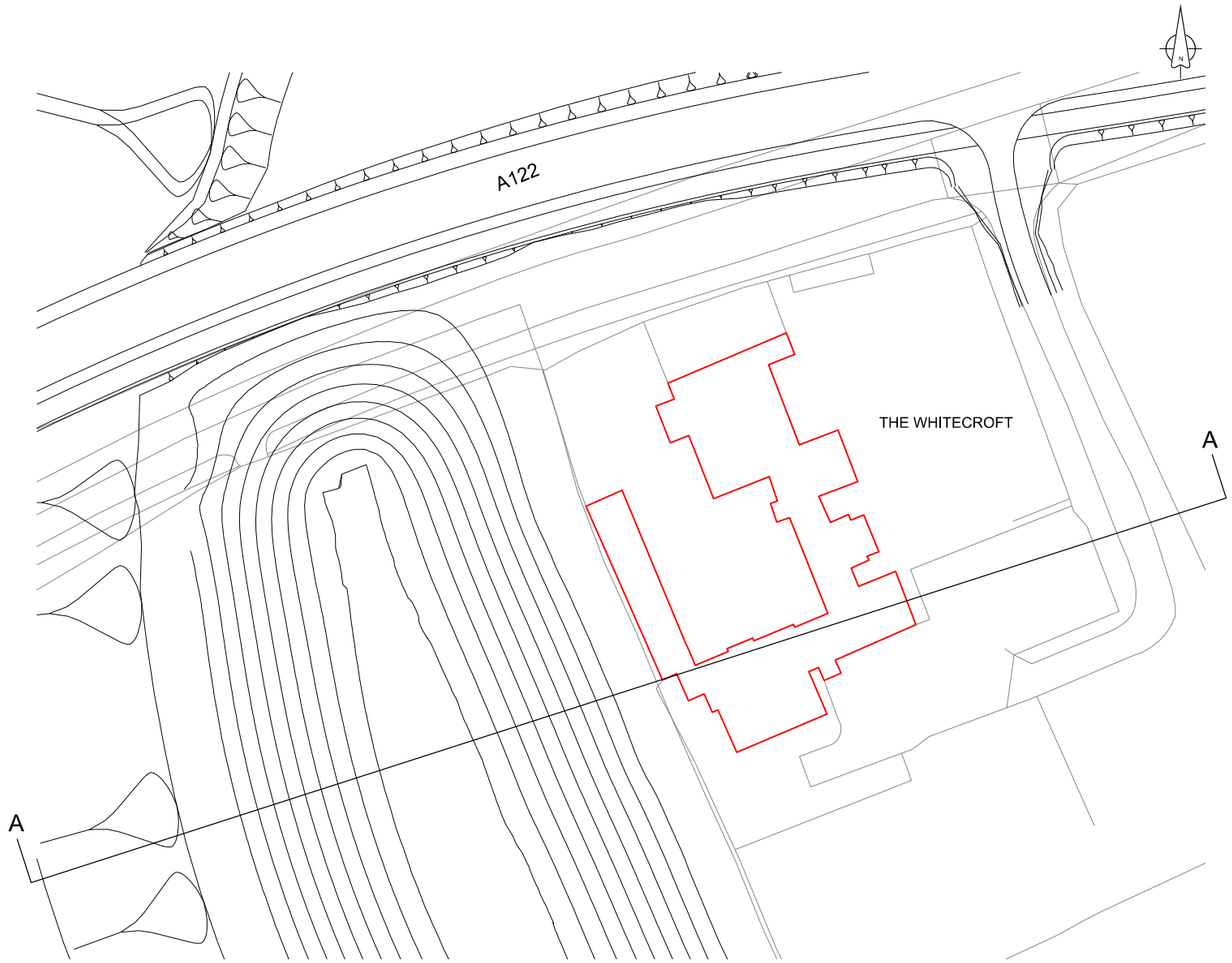

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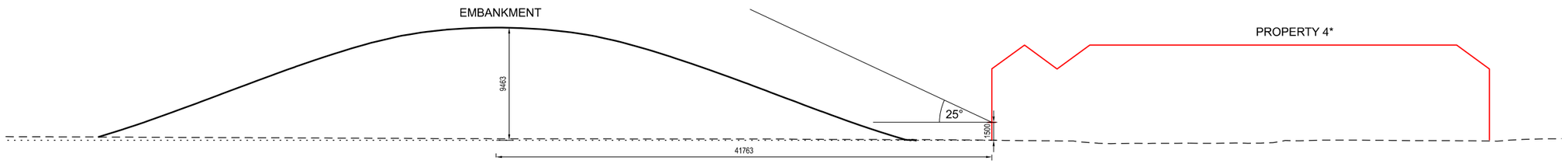


3 PROPOSED SECTION AA
SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY
- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20
SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

0 10 20 30 40 50
SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways

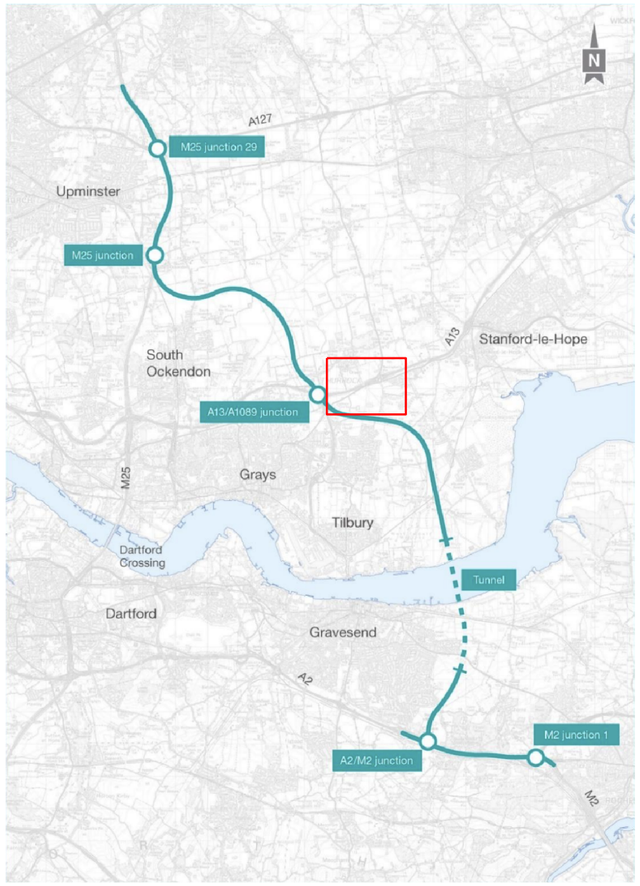
Project: LOWER THAMES CROSSING

Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN

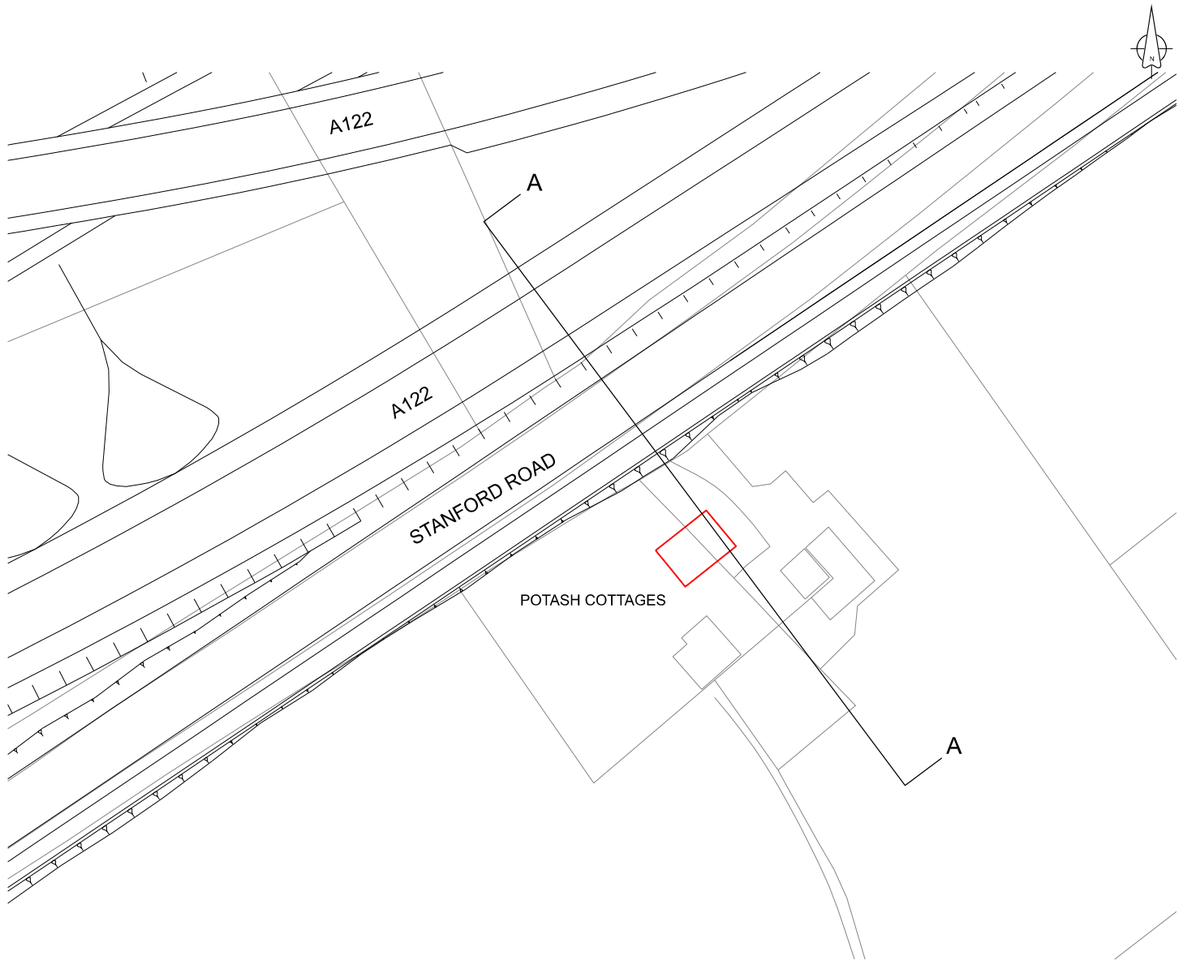
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 4

Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00101

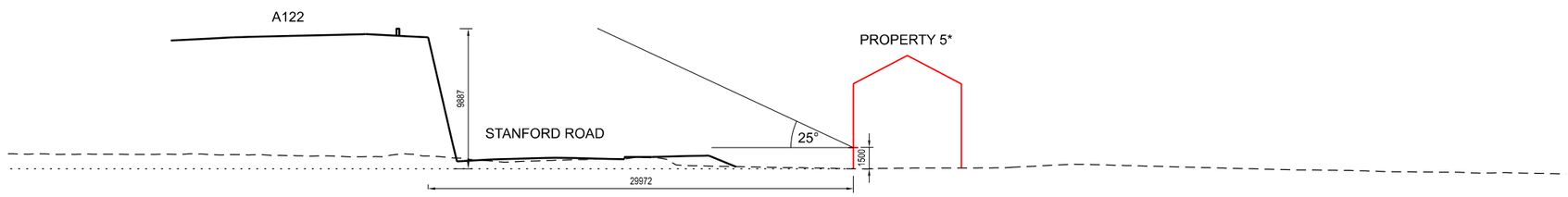
HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00101.dgn



1 KEY PLAN
SCALE: NTS



2 PROPOSED PLAN
SCALE: 1:500 @ A1



3 PROPOSED SECTION AA
SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY
- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20
SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

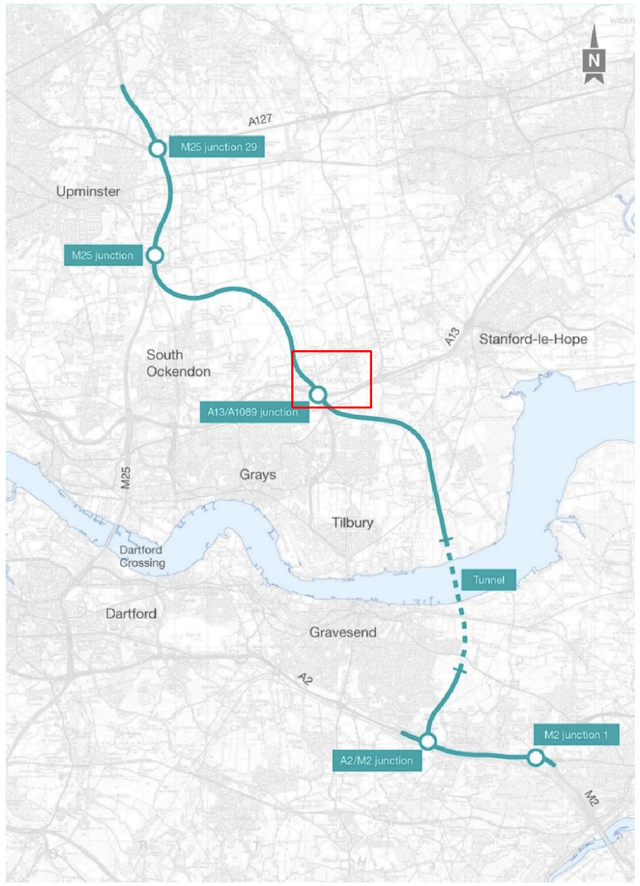
0 10 20 30 40 50
SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways

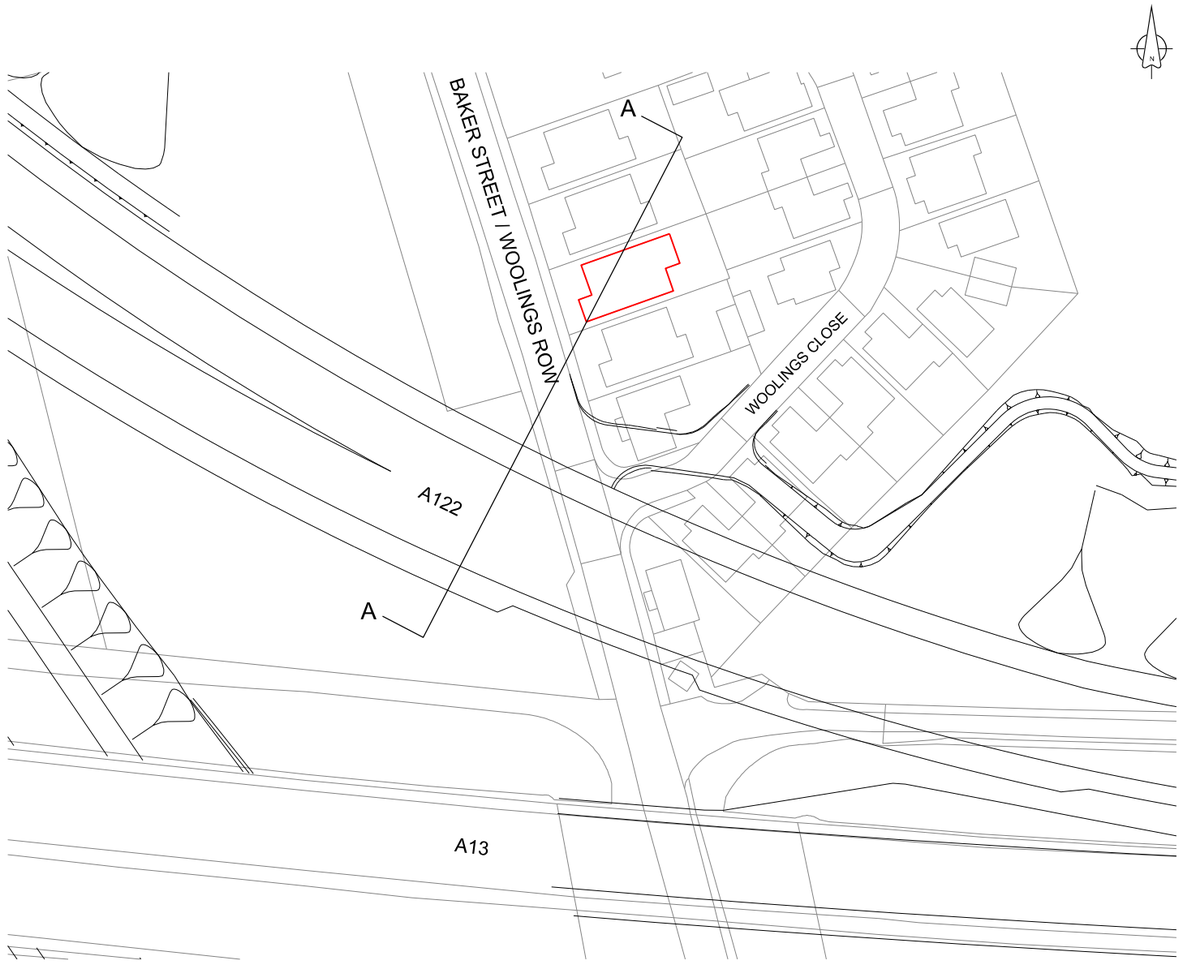
Project: LOWER THAMES CROSSING

Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 5
Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00102

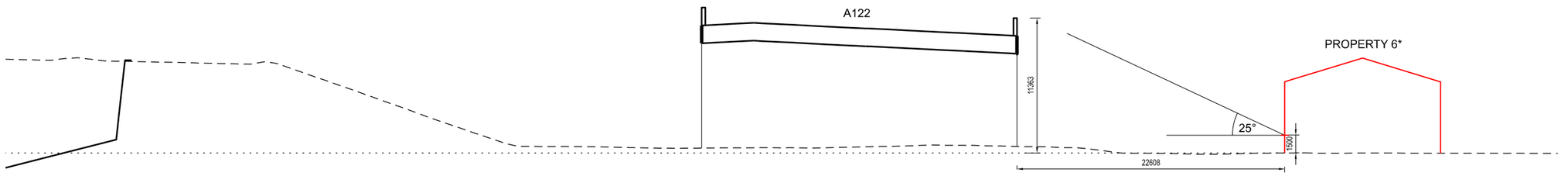
HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00102.dgn



1 KEY PLAN
SCALE: NTS



2 PROPOSED PLAN
SCALE: 1:500 @ A1



3 PROPOSED SECTION AA
SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY
- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20
SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

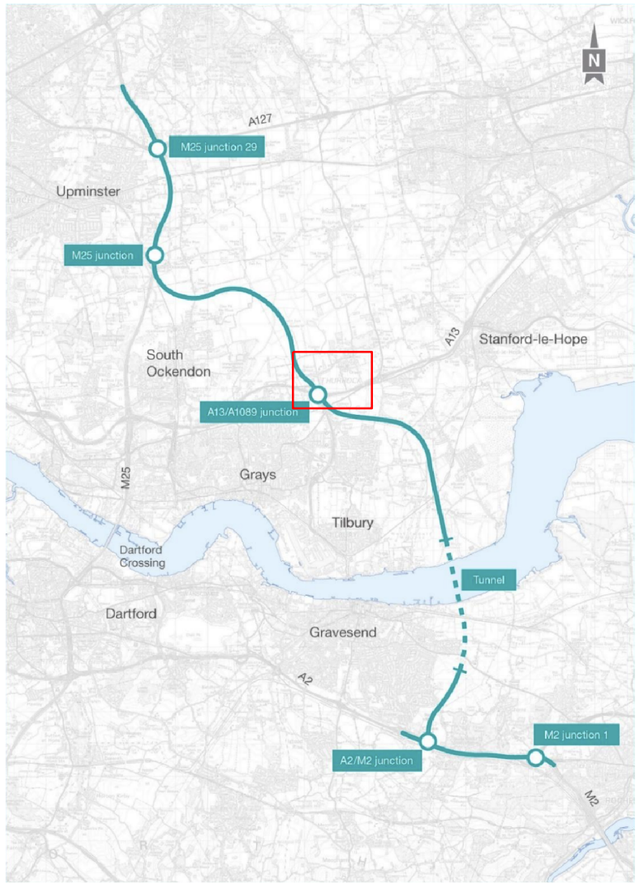
0 10 20 30 40 50
SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways

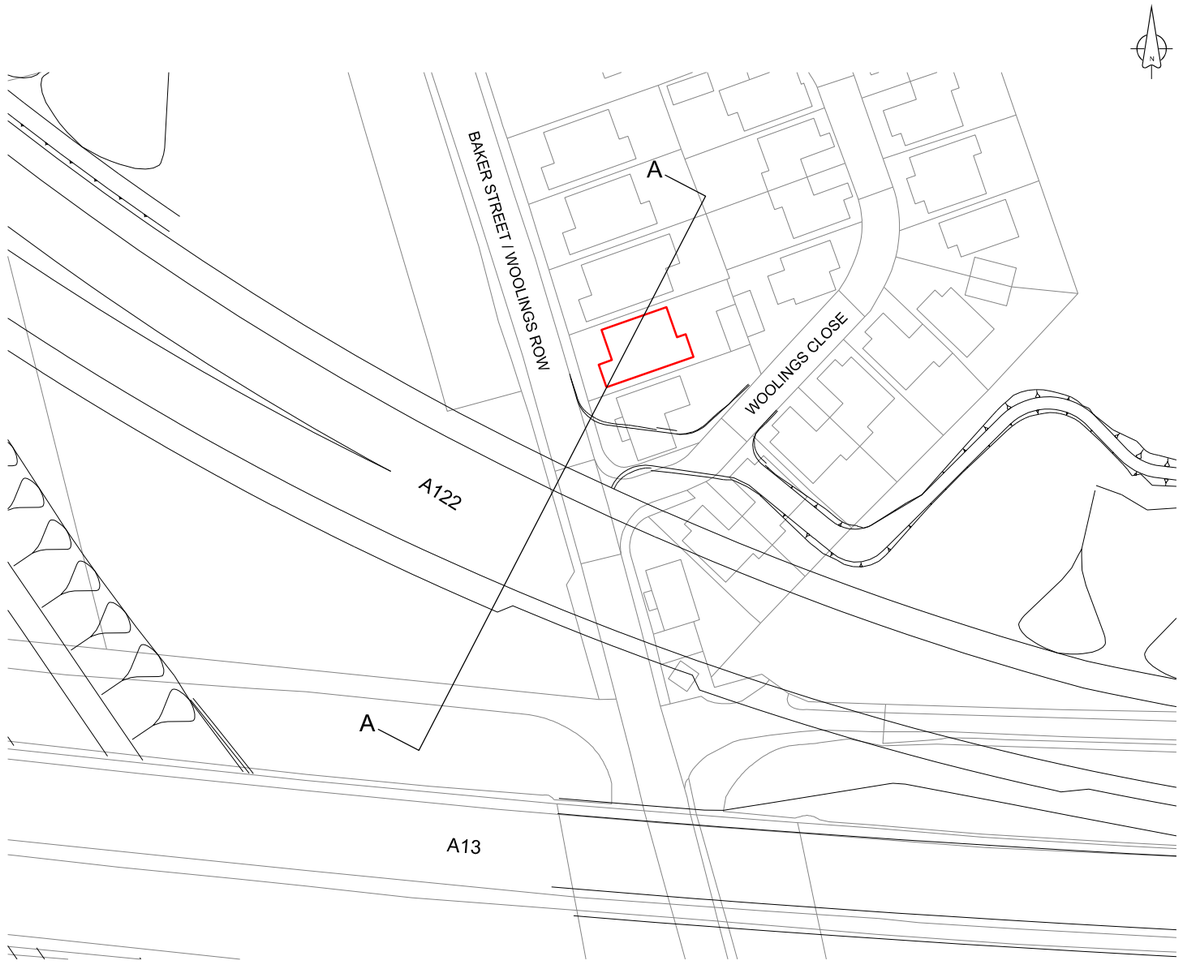
Project: LOWER THAMES CROSSING

Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 6
Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00103

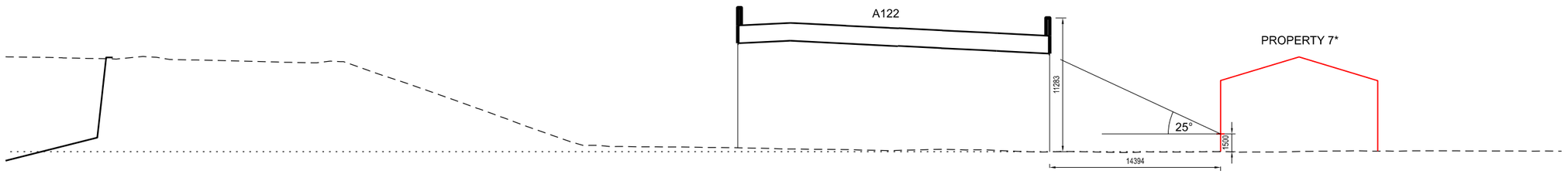
HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00103.dgn



1 KEY PLAN
SCALE: NTS



2 PROPOSED PLAN
SCALE: 1:500 @ A1



3 PROPOSED SECTION AA
SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY
- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20
SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

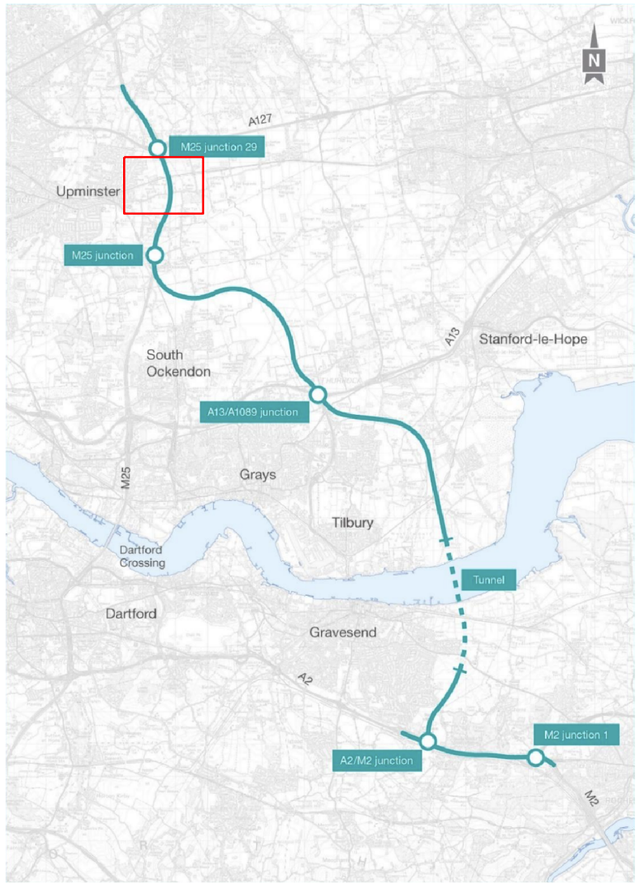
0 10 20 30 40 50
SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways

Project: LOWER THAMES CROSSING

Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 7
Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00104

HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00104.dgn

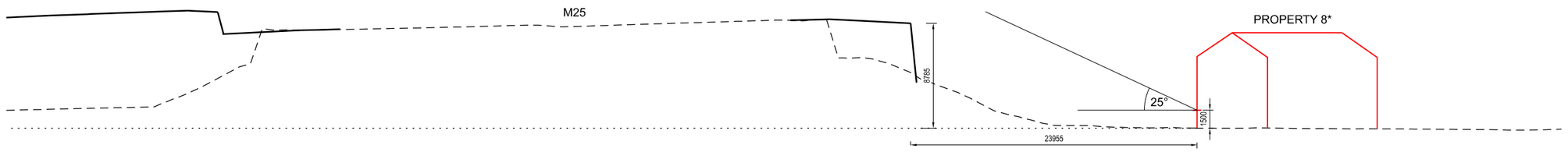


1 KEY PLAN

SCALE: NTS

2 PROPOSED PLAN

SCALE: 1:500 @ A1



3 PROPOSED SECTION AA

SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY

- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20 METRES
SCALE 1:200 (A1)
SCALE 1:400 (A3)

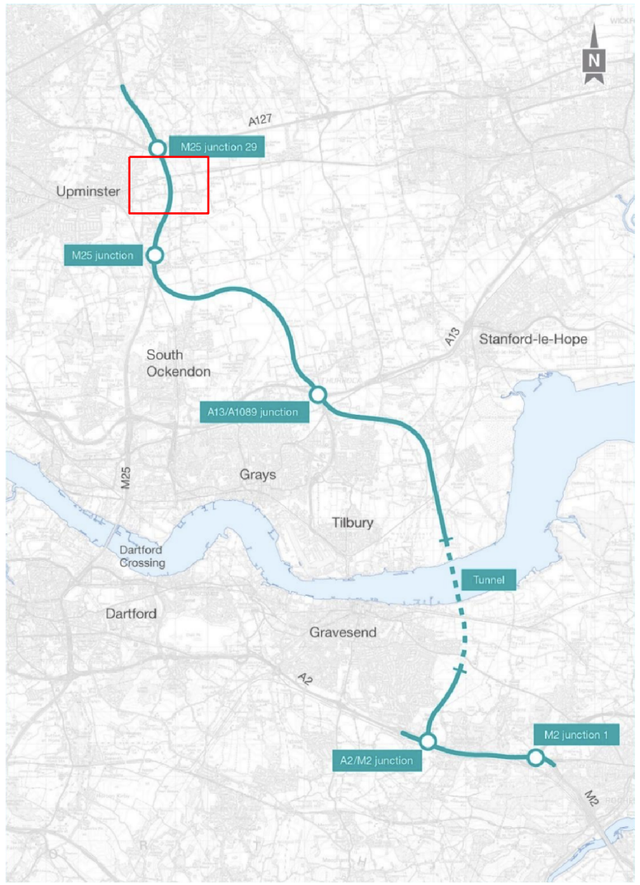
0 10 20 30 40 50 METRES
SCALE 1:500 (A1)
SCALE 1:1000 (A3)

Client: national highways

Project: LOWER THAMES CROSSING

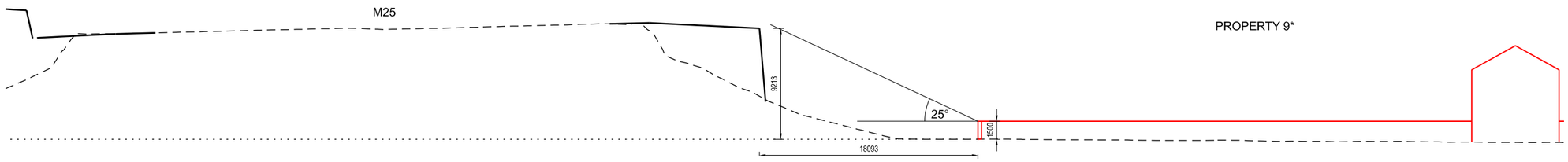
Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 8
Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00105

HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00105.dgn



1 KEY PLAN
SCALE: NTS

2 PROPOSED PLAN
SCALE: 1:500 @ A1



3 PROPOSED SECTION AA
SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY
- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information
Property is a potential Travellers site with possible moveable chalet bungalows/caravans, therefore measurements are taken to the boundary of the pitch.

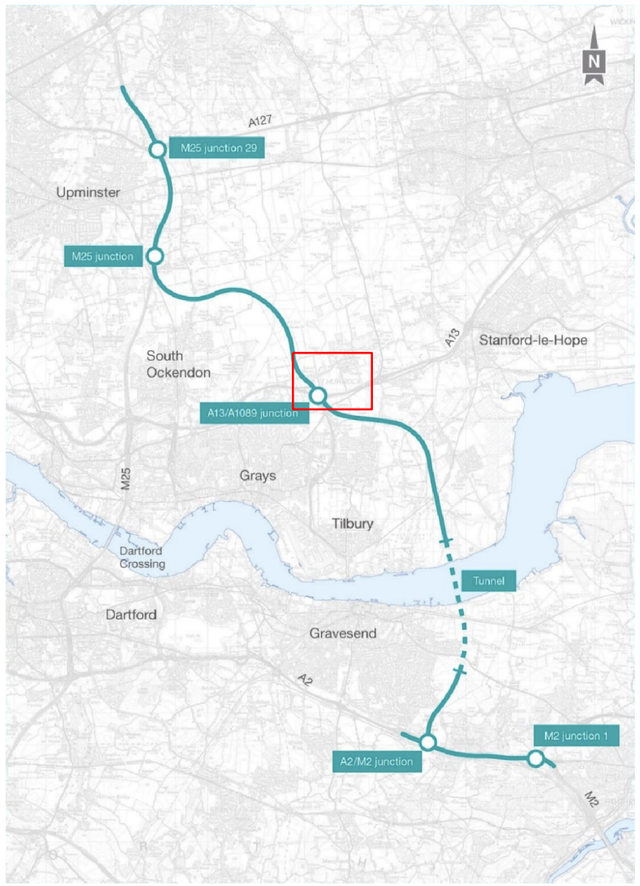
0 5 10 20
SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

0 10 20 30 40 50
SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways
Project: LOWER THAMES CROSSING

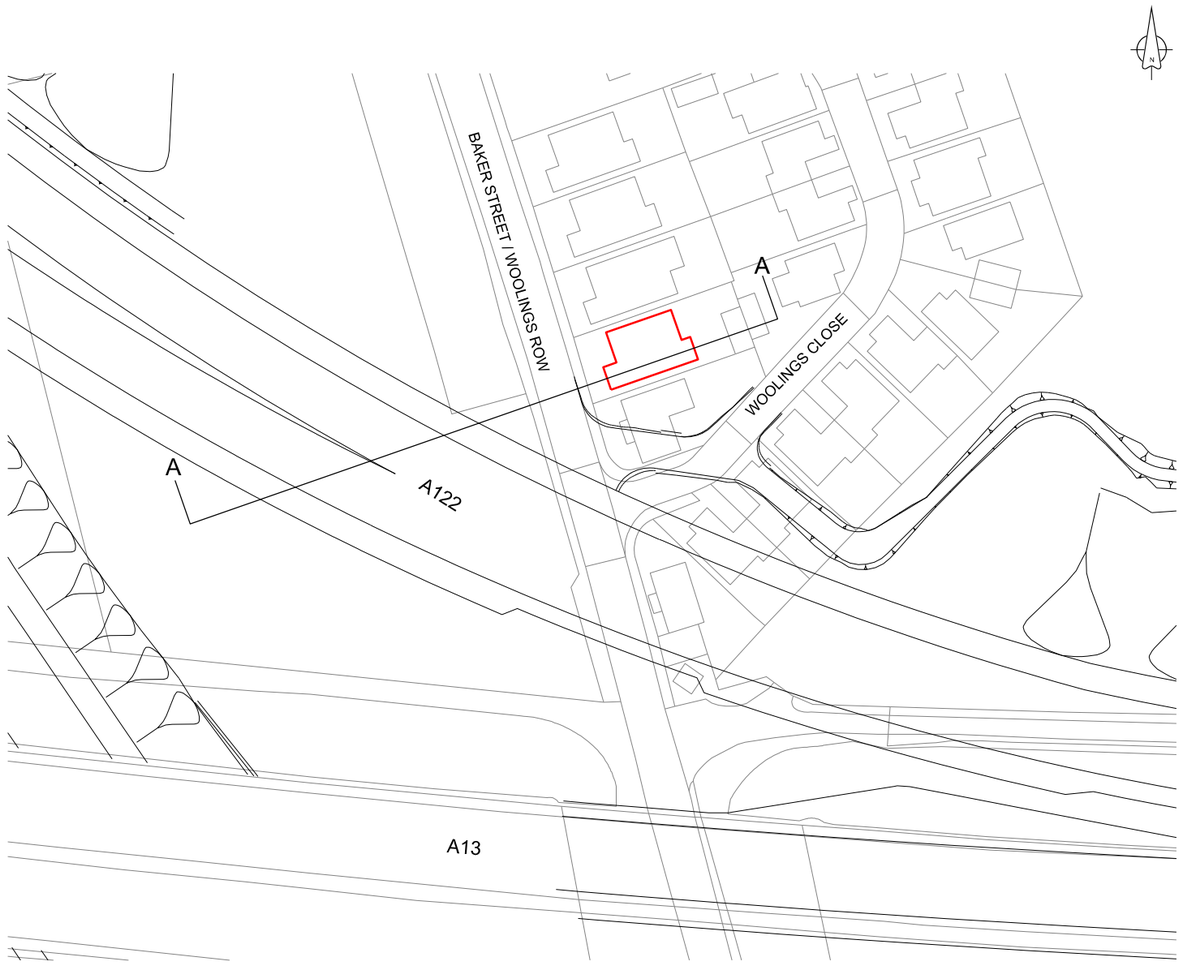
Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN
Drawing title: DAYLIGHT & SUNLIGHT ANALYSIS SCREENING DIAGRAMS PROPERTY 9
Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00106

HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00106.dgn



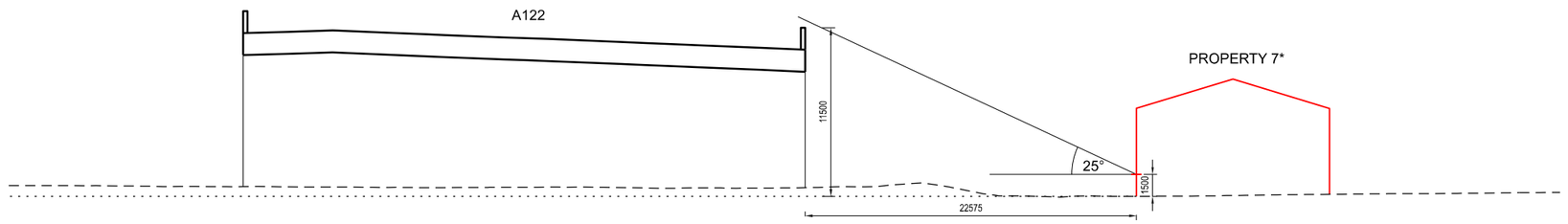
1 KEY PLAN

SCALE: NTS



2 PROPOSED PLAN

SCALE: 1:500 @ A1



3 PROPOSED SECTION AA

SCALE: 1:200 @ A1

Rev	Status	Rev. Date	Purpose of revision	Drawn	Chck'd	Apprv'd
P01	S8	02/10/2023	DEADLINE 5	EB	JBa	CD

KEY

- Existing ground level
- Proposed ground level
- Building extents for analysis
- Building ground level

*Indicative building shape assumed to be 8m high based on OS plan information

0 5 10 20

SCALE 1:200 (A1)
SCALE 1:400 (A3)
METRES

0 10 20 30 40 50

SCALE 1:500 (A1)
SCALE 1:1000 (A3)
METRES

Client: national highways

Project: LOWER THAMES CROSSING

Status: DCO Application
Original Size: A1
Revision: P01
Application Document Number: TR010032/EXAM/9.106
Scale: AS SHOWN

Drawing title:
DAYLIGHT & SUNLIGHT ANALYSIS
SCREENING DIAGRAMS - PROPERTY 7
CROSS SECTION THROUGH WINDOW

Drawing Number: HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00107

HE540039-CJV-SAR-ZZZ_ZZ000000_-DR-AX-00107.dgn

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