Culham Transformer Access –

Abnormal Indivisible Load Swept Path Assessment Considerate of 112 te 160 MVA Transformer Delivery for Culham Site Access

Prepared for Statera

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Approved by:	Andy Pearce		09.06.23

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DOCUMENT REVISIONS

Issue	Date	Details
0	09.06.23	SPA Summary Report
1		
2		

Drawing Summary

Wynns have been commissioned to undertake a negotiability study of the proposed site access associated with Abnormal Indivisible Load (AIL) access for the delivery of a 160MVA Transformer to the proposed compound at Culham.

Please note, two site access road options have been considered within this summary. SPA04, SPA05 and SPA06 show the configuration traveling along the original route via access from the main gate at approximate OS grid reference SU 532 953. SPA07, SPA08, SPA09 and SPA10 are the second route variant where access is given via an access road at approximate OS grid reference SU 532 952.

The drawings showing the Swept Path Assessment (SPA) of the 112 te Transformer delivery vehicle have been constructed using client supplied details regarding the transformer, master map data and aerial imagery.

Introduction

The drawings showing the Swept Path Assessment (SPA) of the 112 te SGT delivery vehicle have been constructed using client supplied site and proposed site design drawings, and aerial imagery.

To aid clarification of the following terminology explanations are shown here:

SPA	Swept Path Assessment. An assessment of space requirement needed to permit unrestricted passage of a particular vehicle.
Road	The paved area within the site ownership that is constructed to allow the overrun of vehicles.
Overrun	Also known as vehicle track. This is the area that is required to permit the axles and wheels of the abnormal load vehicle to pass by.
Oversail	This is the area required to permit the suspended parts of the vehicle, carrying the load but outside of the wheeled areas.

Transport Configurations

Drawing reference: 21-1121.TC02 shows an indicative 10 axle flat-top trailer transport configuration carrying an indicative 112 te Transformer with a gross weight of 144.4 te and axle line load of 14.44 te. This transport arrangement has an overall height of 4.876 m reducible to 4.656 m using trailer hydraulics.

SPA Summary

An overview of the Swept Path Assessment drawings for Culham Site Access will be presented here summarising the points of interest identified on the drawings.

1. Drawing reference: 22-1121.SPA04 sheet 1 of 1 shows an SPA of the 10-axle flat-top trailer delivery vehicle travelling northbound along site access road Thame Lane, turning right along Thame Lane, at approximate OS grid reference SU 529 962. The transport configuration is recommended to occupy the full carriageway to allow for clearance, no conflicts are anticipated.
2. Drawing reference: 22-1121.SPA05 sheet 1 of 1 shows an SPA of the 10-axle flat-top trailer delivery vehicle traveling east along the site access road Thame Lane, turning right along Thame Lane at approximate OS grid reference SU 530 963. The transport configuration is recommended to occupy the full carriageway to allow for clearance, no conflicts are anticipated. Also shown is a left turn from Thame Lane onto the substation access road, at approximate OS grid reference SU 530 963. The transport configuration is expected to oversail/overrun the proposed road area by approximately 1.5m^2, though no conflicts are anticipated. Where overrun occurs, temporary or permanent road widening to be carried out.

   NOTE: Provided CAD drawing does not indicate any obstruction to the transport configuration, based on this no conflicts are anticipated. However, full confirmation should be provided of any potential obstructions that could impede on the transport configuration or restrict points of movement.
3. Drawing reference 22-1121.SPA06 sheet 1 of 1 shows an SPA of the 10-axle flat-top trailer delivery vehicle traveling north-east along the site access road parallel to the substation at approximate OS grid reference SU 531 964. The transport configuration shows a right turn from the access road into the substation with an overall overrun/oversail of approximately 19.59m^2, no conflicts are anticipated. Where overrun occurs, temporary or permanent road widening to be carried out.

   NOTE: Provided CAD drawing does not indicate any obstruction to the transport configuration, based on this no conflicts are anticipated. However, full confirmation should be provided of any potential obstructions that could impede on the transport configuration or restrict points of movement. Additionally, the entrance to the substation has not been specified within the CAD drawing, an indicative position has been shown, though confirmation of the position should be provided.

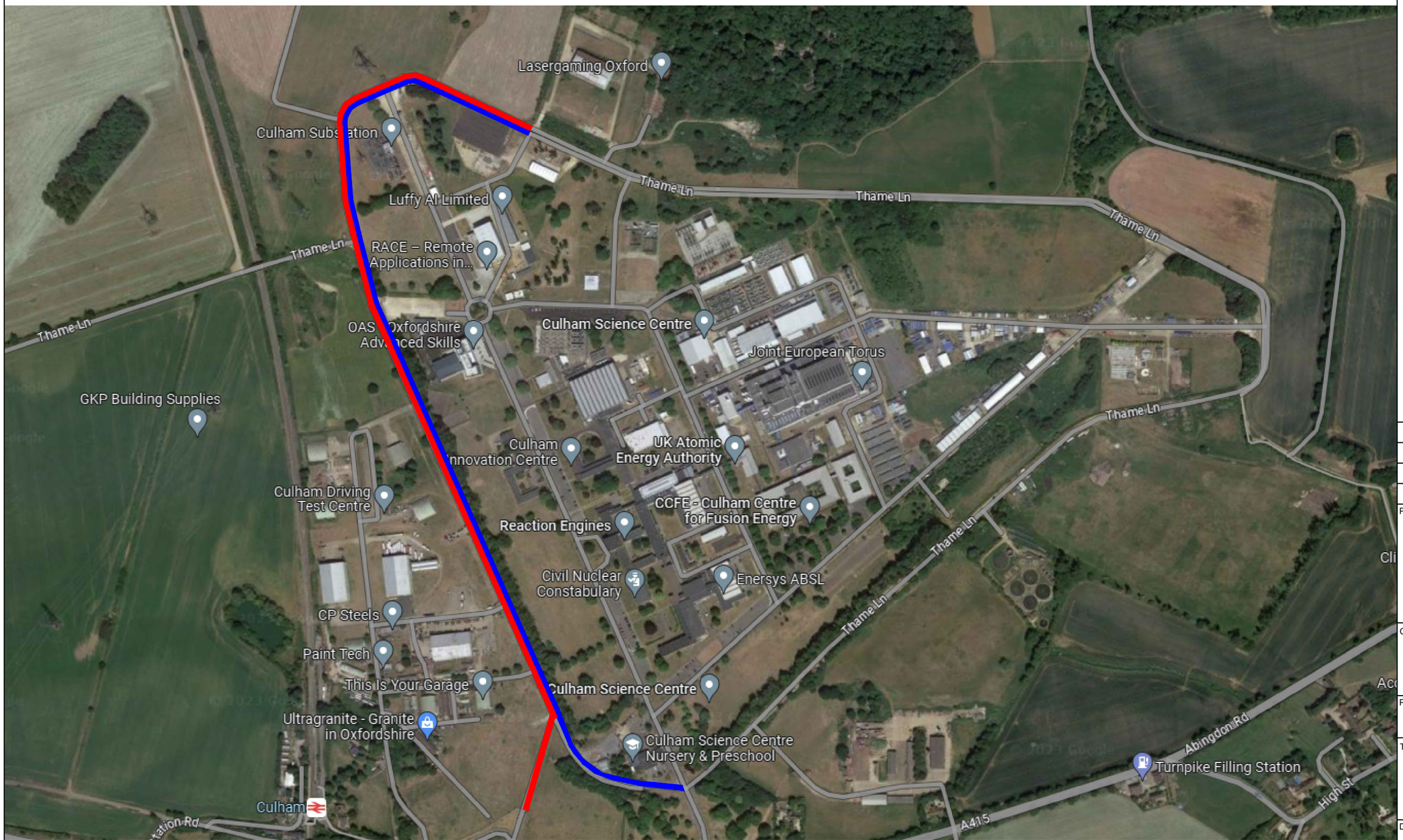
4. Drawing reference 22-1121.SPA07 sheet 1 of 1 shows an SPA of the 10-axle flat-top trailer delivery vehicle turning right into the site access road from A415 Abingdon Road, at approximate OS grid reference SU 531 951. The transport configuration shows a right turn into the access road, no conflicts or overrun/oversail are anticipated to occur. It is recommended that the configuration occupy the full carriageway to aid in the manoeuvre.
5. Drawing reference 22-1121.SPA08 sheet 1 of 1 shows an SPA of the 10-axle flat-top trailer delivery vehicle bearing left along site access road heading north/north-west, at approximate OS grid reference SU 532 954. The transport configuration shows a left turn along the access road, no conflicts or overrun/oversail are anticipated to occur.
6. Drawing reference 22-1121.SPA09 sheet 1 of 2 shows an SPA of the 10-axle flat-top trailer delivery vehicle turning right traveling along site access road heading east, at approximate OS grid reference SU 529 962. The transport configuration shows a right turn along the access road, no conflicts or overrun/oversail are anticipated to occur.
7. Drawing reference 22-1121.SPA09 sheet 2 of 2 shows an SPA of the 10-axle flat-top trailer delivery vehicle turning right traveling along site access road heading north-east, at approximate OS grid reference SU 530 963. The transport configuration shows a right turn along the access road, no conflicts or overrun/oversail are anticipated to occur.

   Drawing reference 22-1121.SPA10 sheet 1 of 1 shows an SPA of the 10-axle flat-top trailer delivery vehicle turning left into substation access road from the site access road heading north-east, at approximate OS grid reference SU 531 962. The transport configuration shows a left turn from the access road into the substation access road. Based on the proposed road size, oversail and overrun is expected to occur on both the outside and inside of the turn, therefore it is recommended that temporary or permanent road widening to be carried out to accommodate this manoeuvre. No conflicts are anticipated to occur.

   NOTE: Provided CAD drawing does not indicate any obstruction to the transport configuration, based on this no conflicts are anticipated. However, full confirmation should be provided of any potential obstructions that could impede on the transport configuration or restrict points of movement. Additionally, the entrance to the substation has not been specified within the CAD drawing, an indicative position has been shown, along with road access sizes based on previously client supplied information, full confirmation should be provided.

N

Plan View of Site Route Options



Please note, two site access road options have been considered within this summary. SPA04, SPA05 and SPA06 show the configuration traveling along the original route via access from the main gate at approximate OS grid reference SU 532 953, indicated in Blue on the above illustration.

SPA07, SPA08, SPA09 and SPA10 are the second route variant where access is given via an access road at approximate OS grid reference SU 532 952, indicated in Rèd on the above illustration.

Location Plan
(As Shown)

Rev.	Date	Amendments
1		
0	09.06.23	Issued for comment

Revisions

Prepared by:

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Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

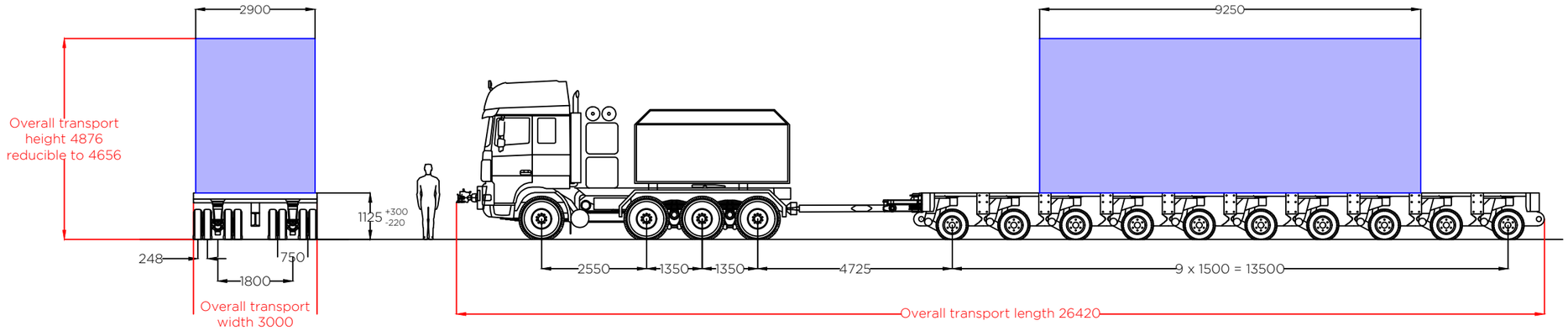
Title: Plan View

Drawing status: Final report

Scale (A3):	Drawn by:	Checked by:
NTS	MTO	ARP

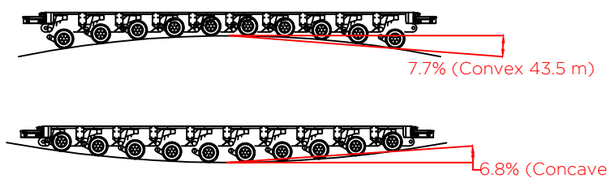
Dwg. no:	Sheet:	Rev:
22-1121.PLAN	1 of 1	0

P:\Clients\Existing Clients\Statera Energy Limited\22-1121 Culham\Swept Path Assessments

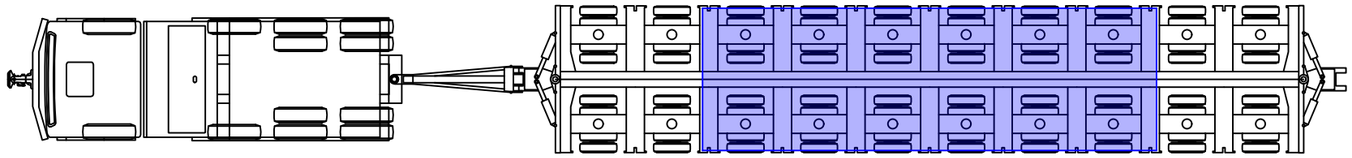


Profile View
Scale 1:125

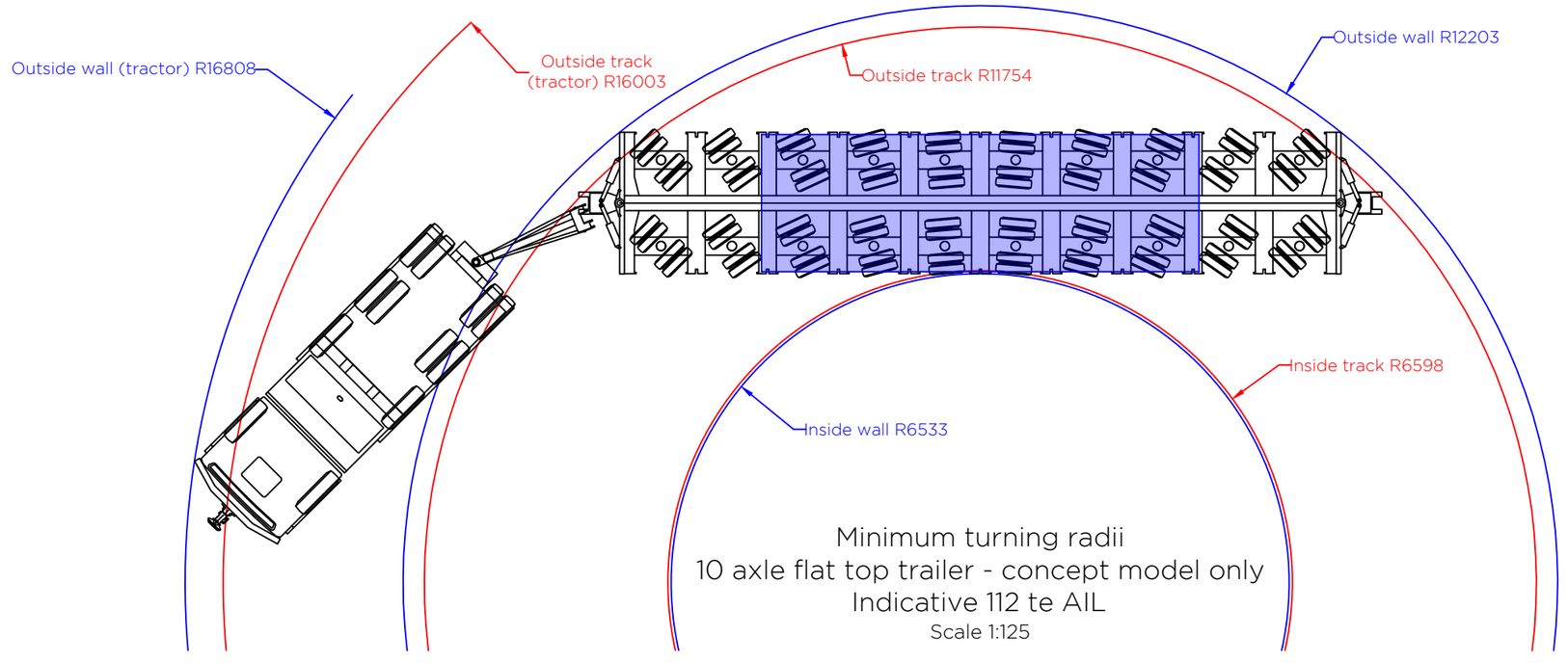
Elevation View - 10 axle flat top trailer - concept model only
Indicative 112 te AIL
Scale 1:125



Vertical Curve Negotiabilty Information
based on manufacturers literature
Scale: 1:250



Plan View - 10 axle flat top trailer - concept model only
Indicative 112 te AIL
Scale 1:125



Minimum turning radii
10 axle flat top trailer - concept model only
Indicative 112 te AIL
Scale 1:125

Load Table	
10 axle flat top trailer	
Self weight of load	112.0 te
Self weight of trailer	32.4 te
Total combined weight	144.4 te
Load per axle line	14.44 te
Load per axle	7.22 te
Load per wheel (4 per axle)	1.81 te
Overall ground bearing pressure	3.57 te/m²
Tractor (42 te)	
Front axle	8.0 te
Second steer	10.0 te
Rear axle	12.0 te
Rear axle	12.0 te

Notes:-

[1] The figures shown above are representative of the transport configuration portrayed however, as tractor and trailer arrangements vary then the loads and dimensions indicated should be treated as probable values.

[2] Actual dimensions including axle spacing and mean running height, may vary slightly depending on manufacturer of trailer deployed.

[3] All linear measures in millimetres unless stated otherwise.

[4] Indicative AIL shown only.

Rev.	Date	Amendments
1		
0	27.03.23	Issued for comment

Revisions

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Independent Transportation Engineers

Client:

STATERA
BALANCING THE GRID

Project:
General arrangement drawing for 160MVA transformer

Title:
Indicative Transport Configuration
112 te AIL carried on
10 axle flat top trailer
showing minimum turning radii

Drawing Status:
Final report

Scale (A3):	Drawn By:	Checked By:
As shown	MTO	ARP

DWG. No:	Sheet:	Rev:
22-1121.TC02	1 of 1	0

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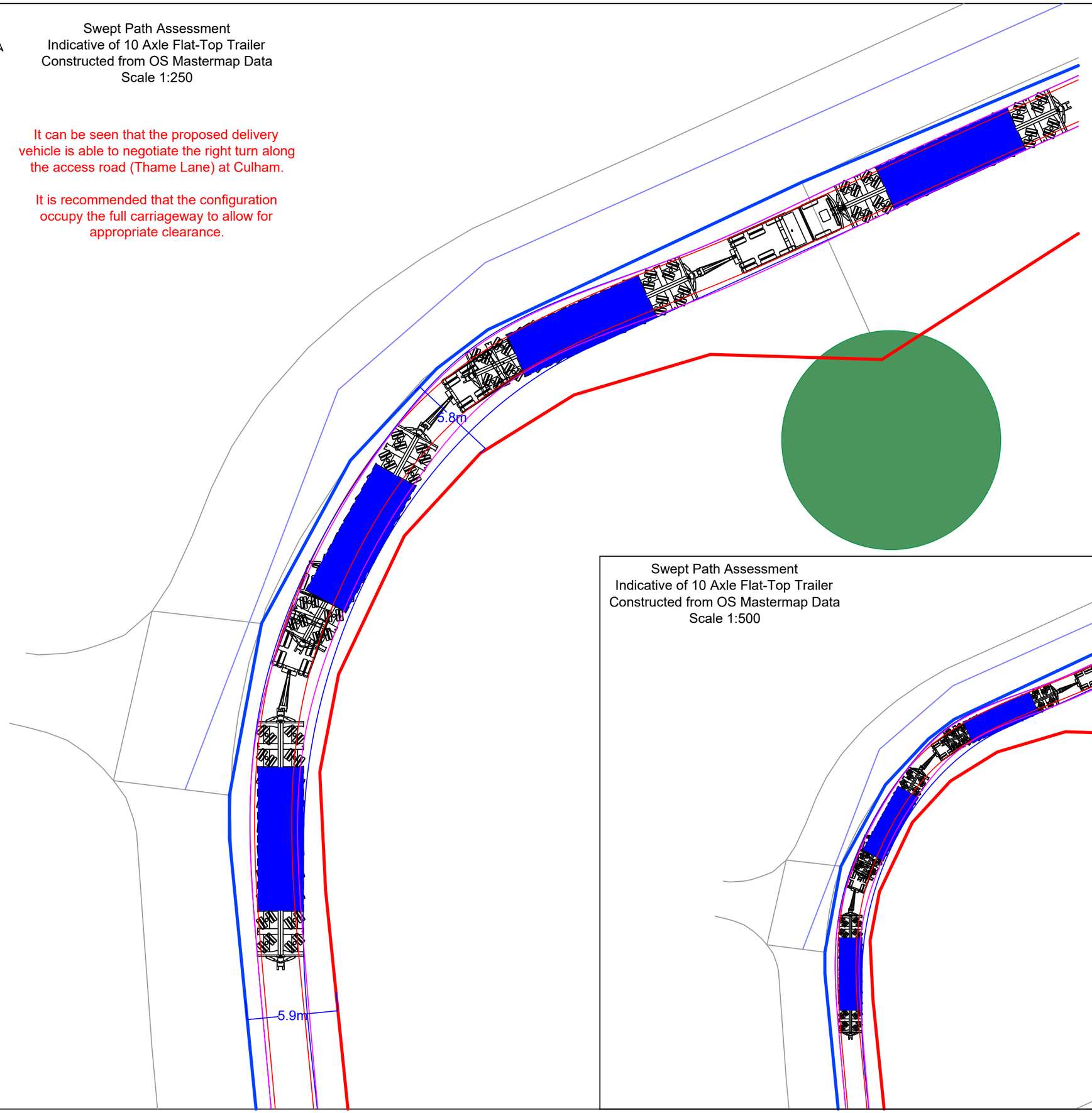
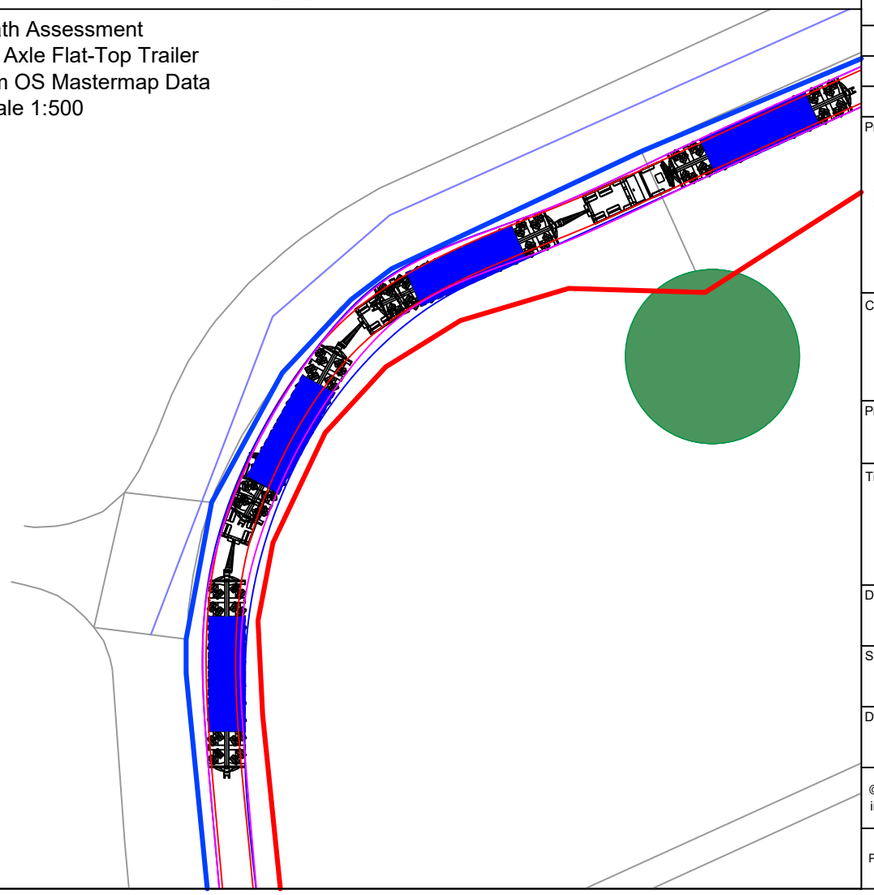
Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

It can be seen that the proposed delivery vehicle is able to negotiate the right turn along the access road (Thame Lane) at Culham.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

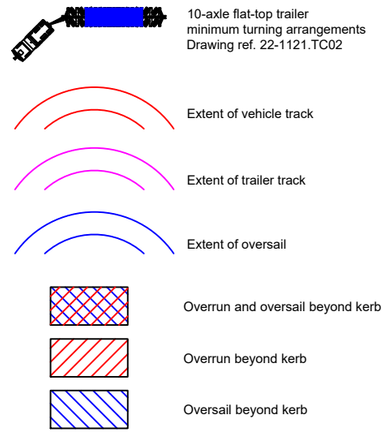


Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:500



Location Plan

Legend:



Rev.	Date	Amendments
1		
0	13.04.23	Issued for comment

Revisions

Prepared by:

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Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

Title:
Swept Path Assessment
Negotiability of left turn along site access road,
indicative 112 te SGT transported on 10-axle flat-top trailer.

Drawing status: Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP
Dwg. no:	**Sheet:**	**Rev:**
22-1121.SPA04	1 of 1	0

P:\Clients\Existing Clients\Novus\22-1148 Drakelow\Swept Paths\22-1140.SPA04

Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

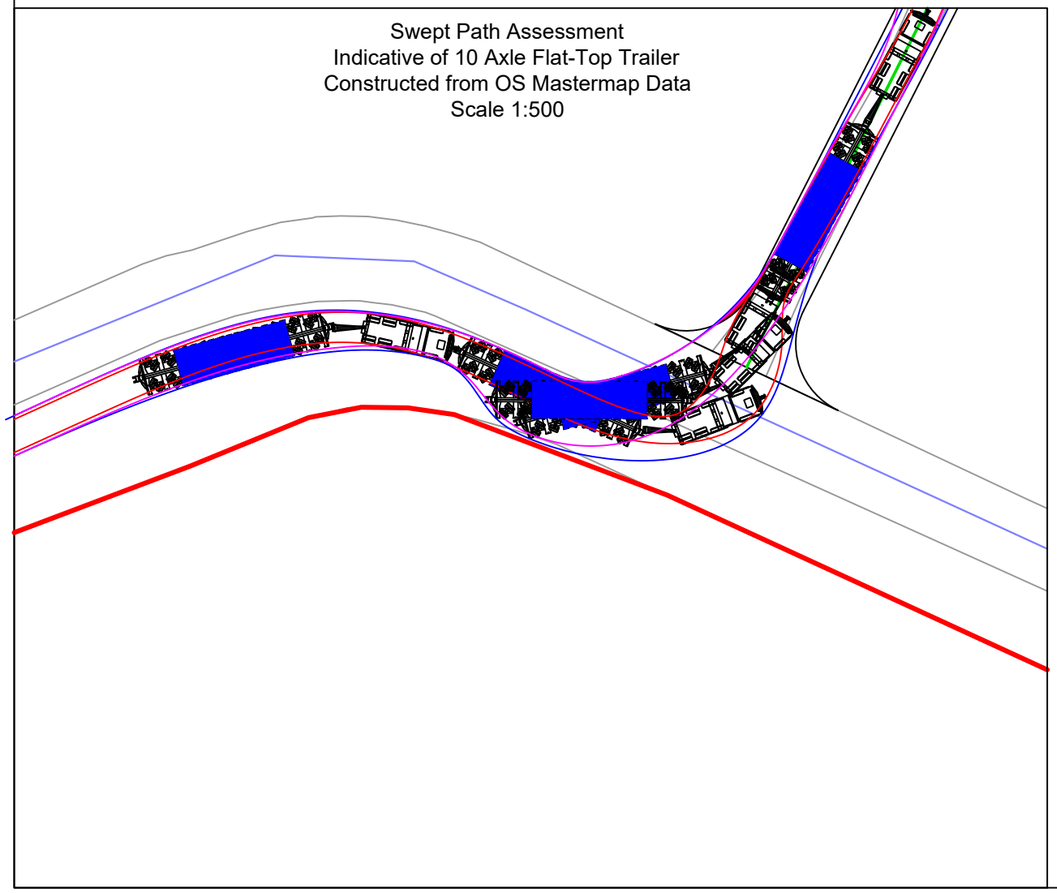
Oversail of Approximately 0.55m²

Oversail and Overrun of Approximately 0.99m²

Where overrun occurs, temporary or permanent road widening to be done.

4.78m

4.5m

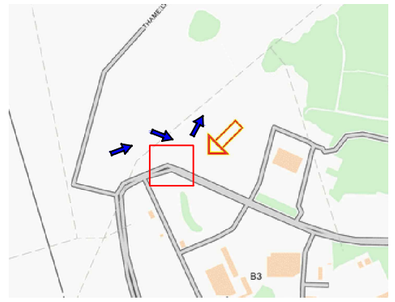


It can be seen that the proposed delivery vehicle is able to negotiate the right turn along the access road (Thame Lane) at Culham.

The configuration is also able to negotiate the left turn leading to the access road parallel to the substation, the manoeuvre can be completed with minimal overrun and oversail to the nearside of the turn.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

Location Plan



Legend:

10-axle flat-top trailer minimum turning arrangements Drawing ref. 22-1121.TC02

Extent of vehicle track

Extent of trailer track

Extent of oversail

Overrun and oversail beyond kerb

Overrun beyond kerb

Oversail beyond kerb

Rev.	Date	Amendments
1		
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Revisions

Prepared by:
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Tel: (01785) 850411
Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

Title:
Swept Path Assessment
Negotiability of two swept path positions, right turn along access road and left turn onto access road.
Indicative 112 te SGT transported on 10-axle flat-top trailer.

Drawing status: Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP
Dwg. no:	Sheet:	Rev:
22-1121.SPA05	1 of 1	0

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Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

N

Where overrun occurs, temporary or permanent road widening to be done.

9.9m

1.85m

16.6m

Oversail of Approximately 6.44m²

Oversail and Overrun of Approximately 12.44m²

Overrun of Approximately 0.71m²

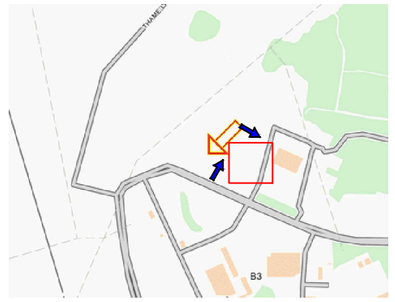
It can be seen that the proposed delivery vehicle is able to negotiate the right turn along the access road parallel to the substation, the manoeuvre can be completed with minimal overrun and oversail to the outside of the turn.

NOTE: The access point into the substation has not been provided, and therefore, confirmation of the position of the opening and opening clearances should be confirmed. This manoeuvre has been shown at an assumed access point central to the position of the subsation. Confirmation will be required.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

SUBSTATION

Location Plan



Legend:

10-axle flat-top trailer minimum turning arrangements Drawing ref. 22-1121.TC02

Extent of vehicle track

Extent of trailer track

Extent of oversail

Overrun and oversail beyond kerb

Overrun beyond kerb

Oversail beyond kerb

Rev.	Date	Amendments
1		
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Prepared by:

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Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

Title:
Swept Path Assessment
Negotiability of right turn into substation, from site access road.
Indicative 112 te SGT transported
on 10-axle flat-top trailer.

Drawing status: Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP

Dwg. no:	Sheet:	Rev:
22-1121.SPA06	1 of 1	0

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Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

6.77m

Direction of Travel

8.54m

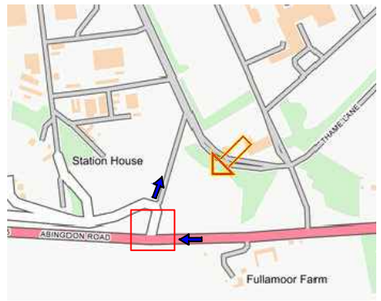
Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:500

Configuration to occupy the full carriageway.

It can be seen that the proposed delivery vehicle is able to negotiate the right turn along into the access road from A415 Abingdon Rd. No oversail or overrun is anticpated for this manoeuvre.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

Location Plan



Legend:

10-axle flat-top trailer
minimum turning arrangements
Drawing ref. 22-1121.TC02

Extent of vehicle track

Extent of trailer track

Extent of oversail

Overrun and oversail beyond kerb

Overrun beyond kerb

Oversail beyond kerb

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1		
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Revisions

Prepared by:

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Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

Title:
Swept Path Assessment
Negotiability of right turn into substation access road.
Indicative 112 te SGT transported
on 10-axle flat-top trailer.

Drawing status: Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP
Dwg. no:	**Sheet:**	**Rev:**
22-1121.SPA07	1 of 1	0

P:\Clients\Existing Clients\Statera Energy Limited\22-1121 Culham\Swept Path Assessments

N

6.22m

Direction of Travel

Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

7.63m

Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:500

Configuration to occupy the full carriageway.

It can be seen that the proposed delivery vehicle is able to negotiate the left turn along the substation access road.
No oversail or overrun is anticpated for this manoeuvre.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

Location Plan

Legend:

10-axle flat-top trailer
minimum turning arrangements
Drawing ref. 22-1121.TC02

Extent of vehicle track

Extent of trailer track

Extent of oversail

Overrun and oversail beyond kerb

Overrun beyond kerb

Oversail beyond kerb

Rev.	Date	Amendments
1		
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Revisions

Prepared by:

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Independent Transportation Engineers

Client:

STATERA
BALANCING THE GRID

Project:

Culham Site Access

Title:

Swept Path Assessment

Negotiability of left turn along substation access road.
Indicative 112 te SGT transported
on 10-axle flat-top trailer.

Drawing status:

Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP

Dwg. no:	Sheet:	Rev:
22-1121.SPA08	1 of 1	0

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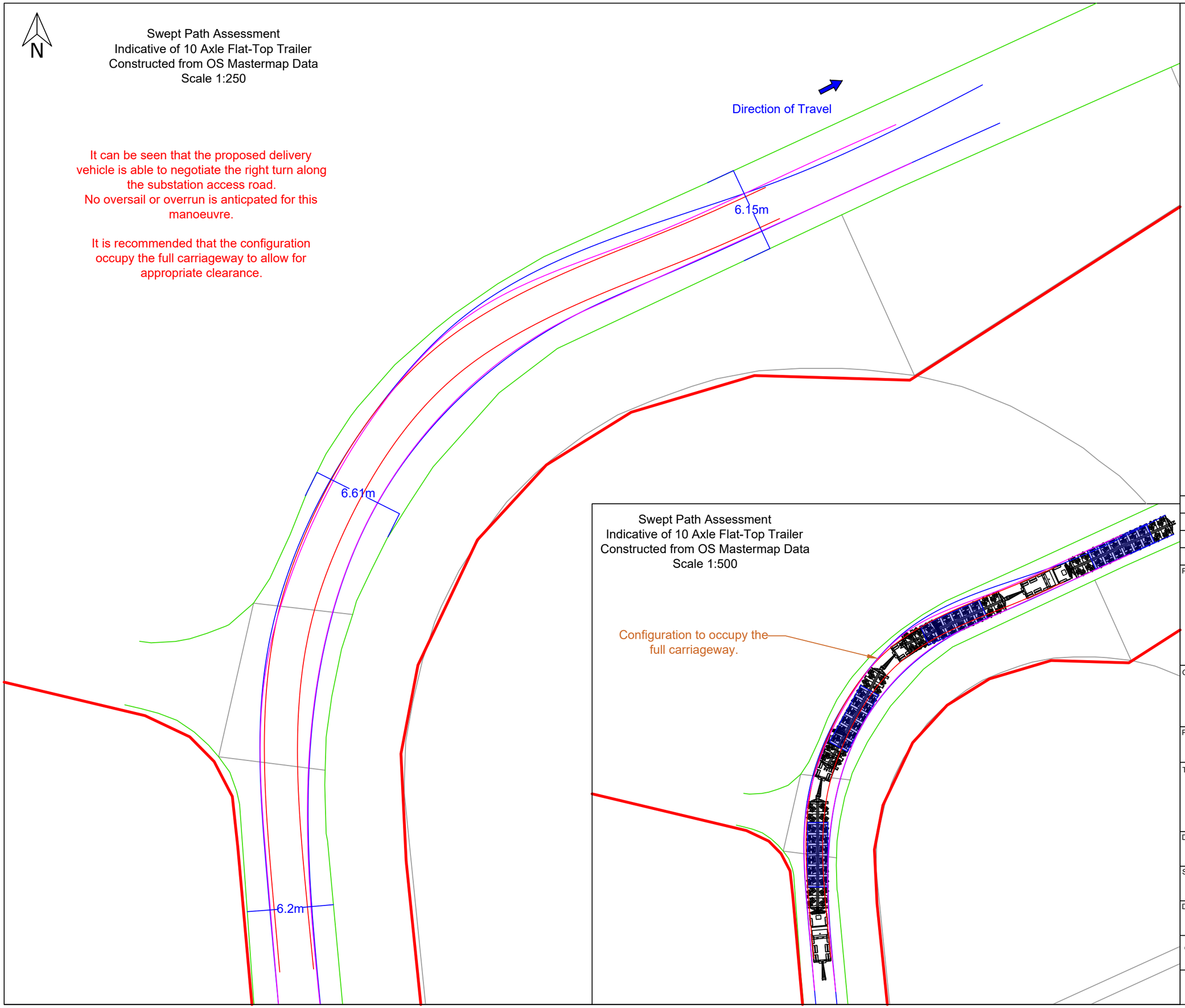
Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

It can be seen that the proposed delivery vehicle is able to negotiate the right turn along the substation access road.
No oversail or overrun is anticpated for this manoeuvre.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.



Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:500

Location Plan

Legend:

- 10-axle flat-top trailer minimum turning arrangements Drawing ref. 22-1121.TC02
- Extent of vehicle track
- Extent of trailer track
- Extent of oversail
- Overrun and oversail beyond kerb
- Overrun beyond kerb
- Oversail beyond kerb

Rev.	Date	Amendments
1		
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Revisions

Prepared by:
Shaftesbury House, 2 High Street,
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Tel: (01785) 850411
Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

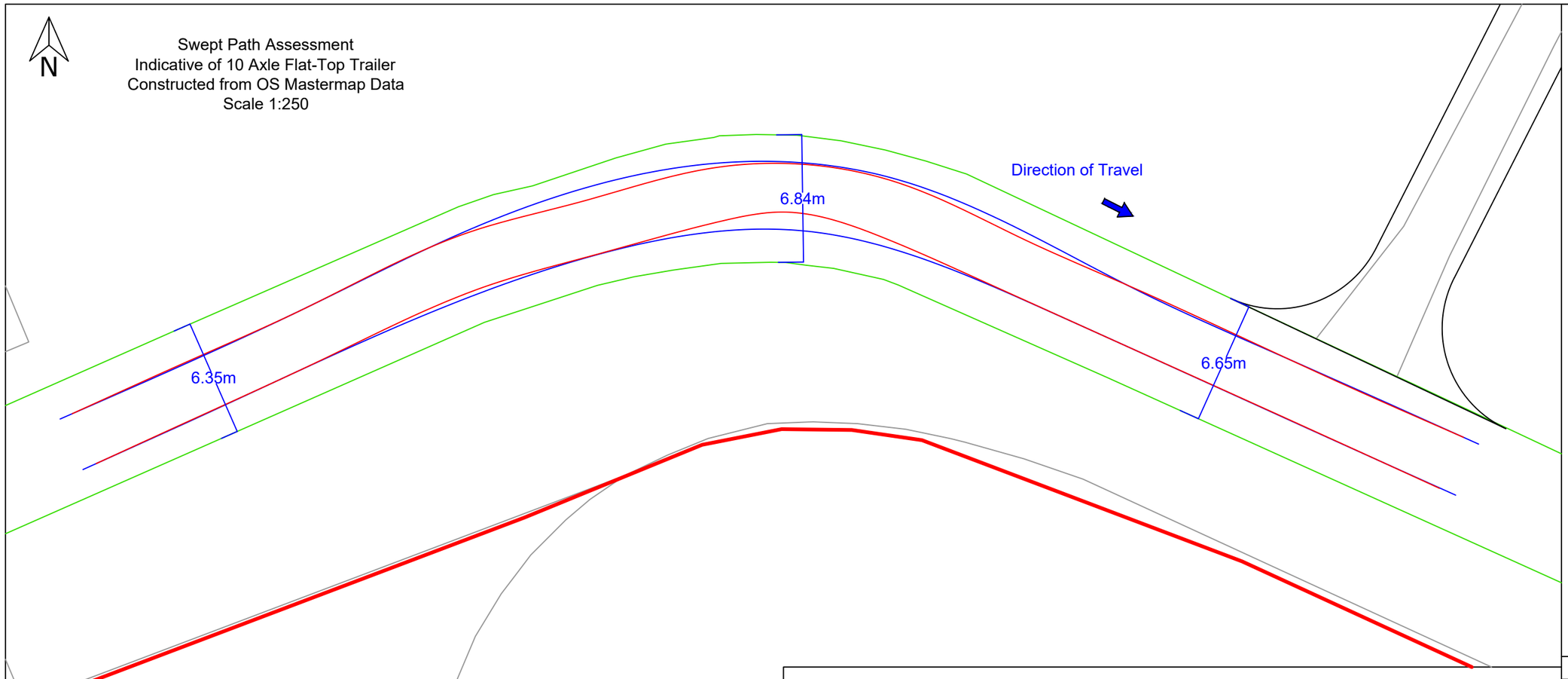
Title: Swept Path Assessment
Negotiability of right turn along substation access road.
Indicative 112 te SGT transported
on 10-axle flat-top trailer.

Drawing status: Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP
Dwg. no:	Sheet:	Rev:
22-1121.SPA09	1 of 2	0

P:\Clients\Existing Clients\Statera Energy Limited\22-1121 Culham\Swept Path Assessments

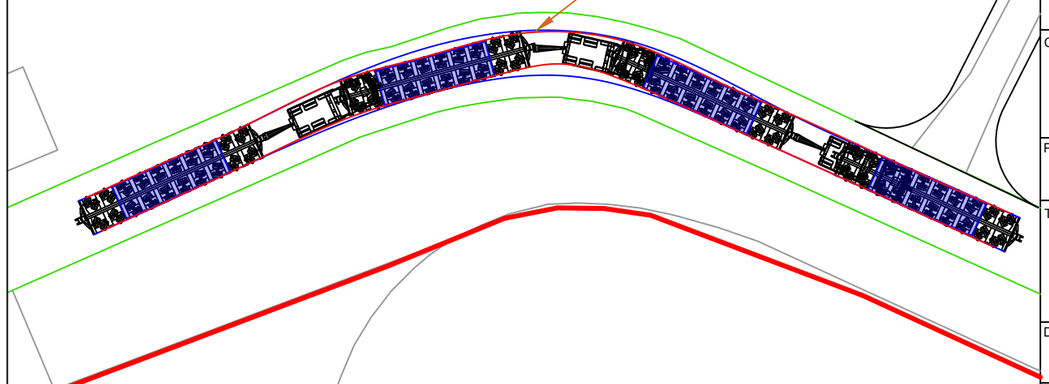
Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250



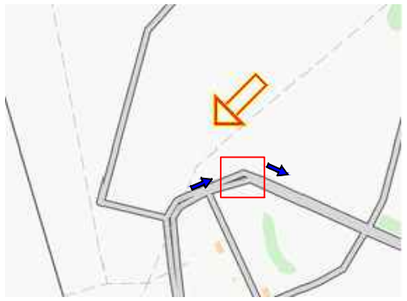
It can be seen that the proposed delivery vehicle is able to negotiate the right turn along the substation access road.
No oversail or overrun is anticpated for this manoeuvre.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:500



Location Plan



Legend:

10-axle flat-top trailer
minimum turning arrangements
Drawing ref. 22-1121.TC02

Extent of vehicle track

Extent of trailer track

Extent of oversail

Overrun and oversail beyond kerb

Overrun beyond kerb

Oversail beyond kerb

Rev.	Date	Amendments
1		
0	10.05.23	Issued for comment

Revisions

Prepared by:

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Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project:
Culham Site Access

Title:
Swept Path Assessment
Negotiability of right turn along substation access road.
Indicative 112 te SGT transported
on 10-axle flat-top trailer.

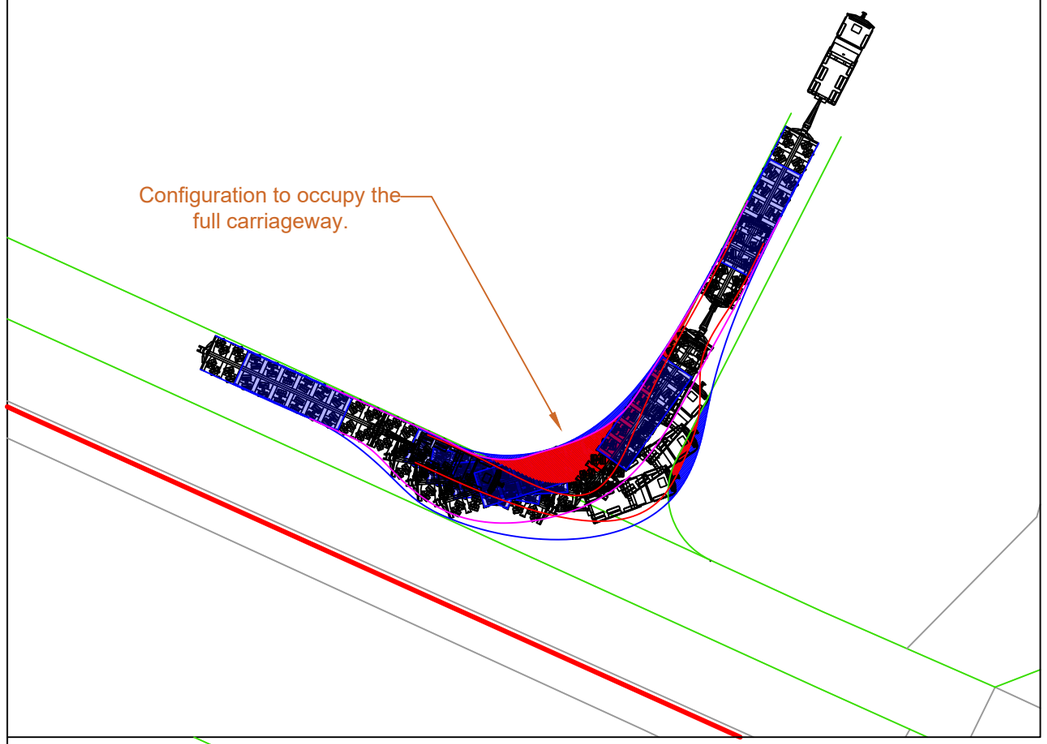
Drawing status:
Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP

Dwg. no:	Sheet:	Rev:
22-1121.SPA09	2 of 2	0

P:\Clients\Existing Clients\Statera Energy Limited\22-1121 Culham\Swept Path Assessments

Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:250

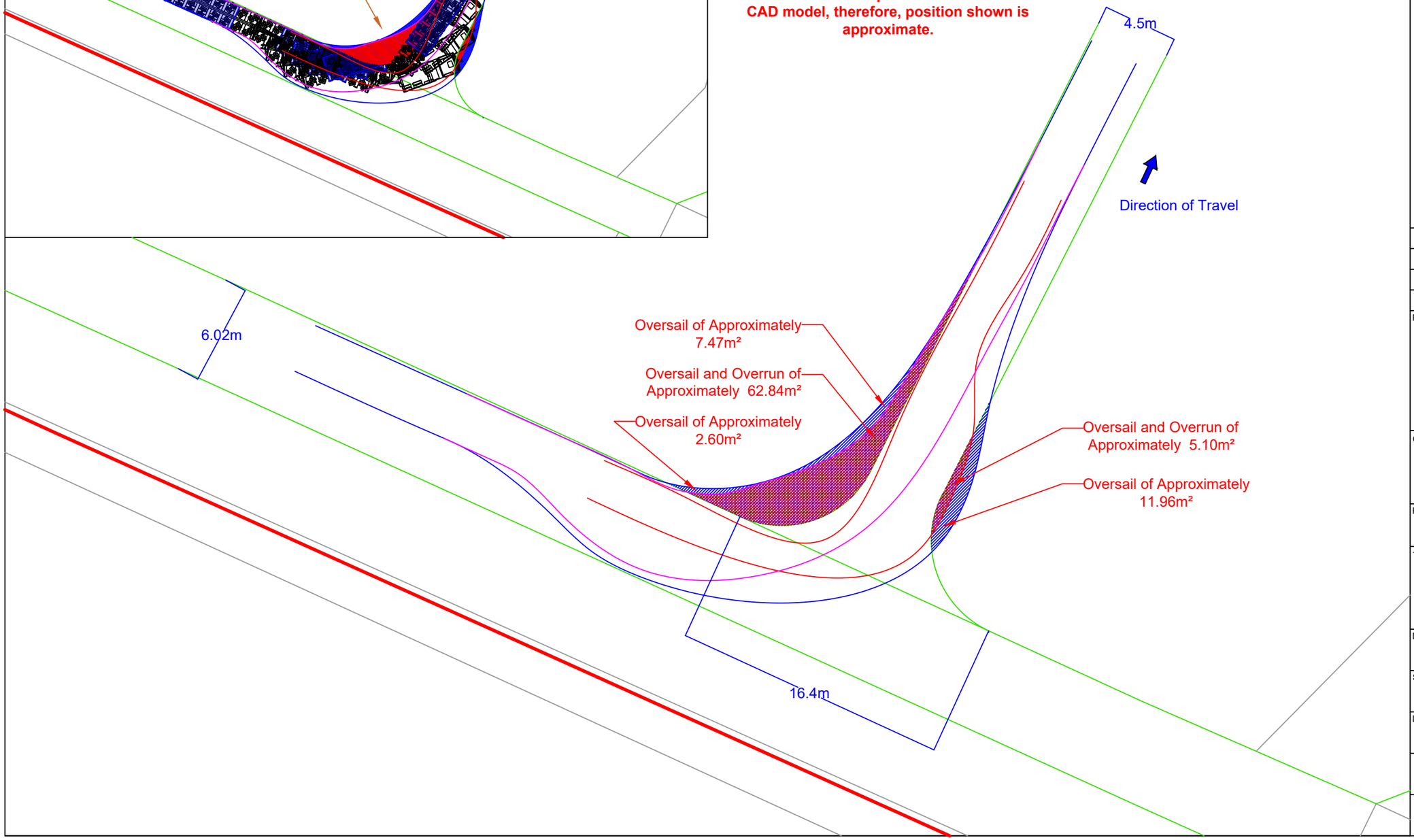


Swept Path Assessment
Indicative of 10 Axle Flat-Top Trailer
Constructed from OS Mastermap Data
Scale 1:500

It can be seen that the proposed delivery vehicle is able to negotiate the left turn into the substation.
Oversail and overrun are anticipated on the outside and nearside of the turn, temporary or permanent road widening to be carried out to accomodate overrun.

It is recommended that the configuration occupy the full carriageway to allow for appropriate clearance.

NOTE: Site access position not shown on CAD model, therefore, position shown is approximate.



Location Plan

Legend:

10-axle flat-top trailer minimum turning arrangements Drawing ref. 22-1121.TC02

Extent of vehicle track

Extent of trailer track

Extent of oversail

Overrun and oversail beyond kerb

Overrun beyond kerb

Oversail beyond kerb

Rev.	Date	Amendments
1		
0	10.05.23	Issued for comment

Revisions

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Independent Transportation Engineers

Client: STATERA BALANCING THE GRID

Project: Culham Site Access

Title: Swept Path Assessment
Negotiability of left turn into substation.
Indicative 112 te SGT transported
on 10-axle flat-top trailer.

Drawing status: Final Report

Scale (A3):	Drawn by:	Checked by:
As shown	MTO	ARP
Dwg. no:	**Sheet:**	**Rev:**
22-1121.SPA10	1 of 1	0

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