

From: [Hoque, Shamsul](#)
To: [Norfolk Vanguard](#)
Cc: rebecca.sherwood@vattenfall.com; [Andrew Ross](#)
Subject: BN07 SACTN Review with drawings
Date: 10 April 2019 12:36:51
Attachments: [BN07 SACTN Review \(Issued\).pdf](#)
[Appendix F LR mentioned in BN07.pdf](#)

Dear Madam/Sir

Following our Deadline 6 response, we are submitting these. This would support the item/task no. 3 and 6, which referred in the Summary table of our response on 05 April 2019. Two attached documents are-

1. BN07 SACTN Review
2. Appendix F LR (i.e. three drawings numbers PB4476-012, 014 & 015 mentioned in BN07)

Thank you.

Kind regards,

Shamsul Hoque, PhD MCIHT FBIP FIAB MURP BArch
Assistant Spatial Planning Manager
Operations (East) Area 8 & Area 6
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Project:	Highways England Spatial Planning Arrangement 2016-2020	Job No:	60600479/DN052.004
Subject:	Norfolk Vanguard Wind Farm - Substations Access Clarifications Technical Note		
Prepared by:	Andrew Cuthbert	Date:	4th April 2019
Checked by:	Andrew Beard	Date:	4th April 2019
Verified by:	John Alderman	Date:	5th April 2019
Approved by:	Andrew Cuthbert	Date:	5th April 2019

Introduction

1. This Briefing Note (BN07) comprises a review of the '**A47 Substation Access Clarification Technical Note**' (SACTN), dated 12th March 2019, prepared by Royal Haskoning DHV (RHDHV) in respect of the access arrangements required to serve the existing and proposed substations adjacent to the A47 Trunk Road at Necton, to the west of Dereham.
2. The SACTN was produced in response to AECOM Briefing Notes BN04 and BN06, which provided responses to previous proposals contained in earlier documents, namely the Substation Access Technical Note (SATN) and the Substation Access Briefing Note (SABN).
3. Three access points to the substation works are proposed, A, B and D1. All of these would obtain access directly from the A47 and all require new or adjusted layouts to make them acceptable to Highways England.
4. The access points would be used for the following purposes:
 - Access A would provide access to the works required to extend the existing National Grid substation (National Grid Substation Extension, NGSE);
 - Access B would provide access to the proposed Norfolk Vanguard Onshore Project Substation, together with Mobilisation Area 1 (MA1a) serving the installation of electricity cables in the vicinity of the two substations;
 - Access D1 would provide access to the overhead line modification works to the west of the A47.
5. The locations of these access points are illustrated in **Figure 1** below.

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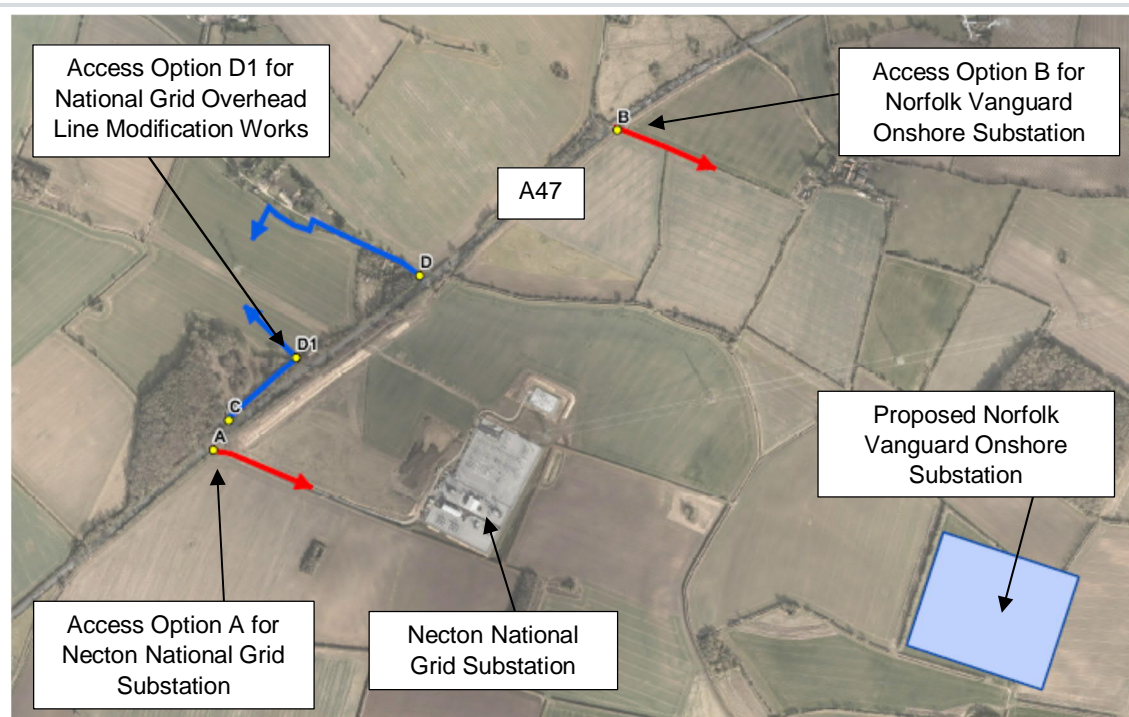


Figure 1. Location of Access A, B and D1 on the A47 at Necton

6. The issues previously raised by AECOM are set out in BN04 and BN06. These, together with the RHDHV response are summarised in Table 7.1 of the SACTN.
7. The SACTN contains the following material:
 - Updated layout plans for site accesses A, B and D1, including:
 - a general arrangement drawing (PB4476-008-006-005 rev 04);
 - swept path plots for the three access points ((PB4476-017, 018, 021, 022, 0233 & 023 rev F1.0).
 - Details of:
 - the traffic forecast to use each of these access points;
 - the duration over which this level of traffic is anticipated;
 - traffic management arrangements which will apply whilst they are in use; and
 - the flows anticipated to divert via the McDonalds roundabout at Swaffham and the Yaxham Road grade separated junction at Dereham because of the use of left-in, left-out only turning restrictions at access points A and D1.
8. Copies of Drawings PB4476-012, 014 & 015, rev F1.0, which provide a layout of each of the proposed site accesses annotated with DMRB geometric and visibility parameters, were not included in the SACTN and have been supplied separately.
9. AECOM's review of the layouts and the traffic flows reveals the following.

Access Arrangements to be provided

Item	Access A	Access B	Access D1
Drawing numbers	PB4476-DR012/F1.0 PB4476-DR017/F1.0 PB4476-DR018/F1.0	PB4476-DR014/F1.0 PB4476-DR021/F1.0 PB4476-DR022/F1.0	PB4476-DR015/F1.0 PB4476-DR023/F1.0 PB4476-DR024/F1.0
Junction type	Simple priority junction, to be limited to left-in, left-out operation	Ghost island priority junction	Simple priority junction, to be limited to left-in, left-out operation
Peak level of traffic use	100 light vehs/day; 68 HGV/ day; 50 light vehs/ peak hr; 7 HGV/ peak hr.	180 light vehs /day; 150 HGV/ day; 90 light vehs / peak hr; 16 HGV/ peak hr.	4 light vehs /day; 20 HGV/ day; 50 light vehs / peak hr; 7 HGV/ peak hr.
Duration of use	86 weeks in total, of which 16 weeks at the peak level of use	At least 100 weeks in total, of which 24 weeks at peak level of use	2 individual weeks of use, separated by a gap of 4-6 months
Design speed of main road adopted	100 km/hr	100 km/hr	60 km/hr (*)
Corner radii	15m	15m	15m
Exit tapers	25m @ 1:10	30m @ 1:6	25m @ 1:10
Visibility splays (assumes existing vegetation to be cleared/maintained as required) <u>NB evidence still to be submitted that these can be proven in the vertical plane</u>	4.5 x 215m	4.5 x 215m (L) 2.4 x 215m (R)	4.5 x 90m (*)
Swept path plots	These all show that HGVs can complete their turns without clipping kerb lines, and without encroaching on the wrong side of the A47		
	An HGV could enter the minor arm and stand clear of the A47 running lane whilst another HGV emerges from the minor arm	HGVs can enter and leave simultaneously without their swept paths conflicting.	An HGV could enter the minor arm and stand clear of the A47 running lane whilst another HGV emerges from the minor arm

(*) – to be operated under a temporary 30 mph speed limit

- The layouts shown on these drawings appear to have taken on board all the issues raised in AECOM Briefing Notes 04 and 06 and, with one exception, appear to meet in full the design requirements of DMRB. The exception is that the visibility to the right out of access point B can only be achieved from a position 2.4m back from the give way line. DMRB design standard TD42 permits a relaxation to 4.5m in difficult circumstances for lightly trafficked simple junctions and to 2.4m in exceptionally difficult circumstances.
- The SACTN contains a statement that *'Increasing the 'x' distance to 4.5m would require the removal of a large proportion of established hedgerows, vegetation and trees. This will have ecological impact and would remove much of the native mature screening required to mitigate the landscape impact'*. In the circumstances, this appears to be sufficient grounds to permit what is effectively a two-step permitted relaxation in the provision of emerging visibility at access point B.
- In the case of access point D, where concern was expressed in BN06 about the ability of HGVs to enter and leave simultaneously, the SACTN proposes a traffic management scheme in which HGVs

arriving from the west will be held at a layby some two miles west of the site and will be called in when the site can confirm that no HGVs are about to leave the site.

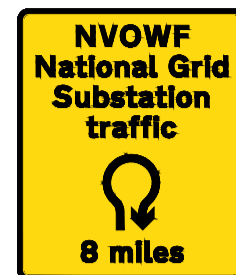
13. On that basis, the layouts currently offered for access points A, B and D1 appear satisfactory, subject to:
- visibility splays being cleared of foliage;
 - visibility being proven in the vertical plane;
 - the implementation of the traffic management measures proposed; and
 - the carrying out of Stage 1 and 2 Road Safety Audits.

Diversions

14. The SACTN contains an assessment of the volume of traffic likely to divert via the McDonalds roundabout at Swaffham and the Yaxham Road grade separated junction at Dereham, as a result of the implementation of left-in, left-out only operation at access options A and D1. This assessment appears to be soundly based and reveals that up to 65 vehicles per day (up to 36 per peak hour) are expected to U-turn at Swaffham and up to 49 per day (up to 20 per peak hour) are expected to U-turn at Dereham. These numbers can be accepted as being below the level that would normally trigger a requirement for a junction capacity assessment and, hence, that the impact of this additional traffic at these locations can be accepted as not 'severe'.

Conclusion

15. The updated layouts, traffic management arrangements and traffic flows presented in the SACTN provide sufficient confidence to allow AECOM to advise Highways England that they could now form the basis of an updated Statement of Common Ground indicating Highways England's agreement in principle with the access arrangements proposed.



Sign Ref	TS-001	1-14002	2005
Sign Code	TS-001	TS-001	
Background	Yellow	Yellow	100mm
Border	Black	Black	100mm
Material	Class B2 (12000-1.2007)	Area	2.71m²



Sign Ref	TS-002	1-14002	2005
Sign Code	TS-002	TS-002	
Background	Yellow	Yellow	100mm
Border	Black	Black	100mm
Material	Class B2 (12000-1.2007)	Area	2.71m²



Sign Ref	TS-003	1-14002	2005
Sign Code	TS-003	TS-003	
Background	Yellow	Yellow	100mm
Border	Black	Black	100mm
Material	Class B2 (12000-1.2007)	Area	2.71m²



Sign Ref	TS-004	1-14002	2005
Sign Code	TS-004	TS-004	
Background	Yellow	Yellow	100mm
Border	Black	Black	100mm
Material	Class B2 (12000-1.2007)	Area	2.71m²



Sign Ref	TS-005	1-14002	2005
Sign Code	TS-005	TS-005	
Background	Blue	Blue	100mm
Border	White	White	100mm
Material	Class B2 (12000-1.2007)	Area	2.71m²



Sign Ref	TS-006	1-14002	2005
Sign Code	TS-006	TS-006	
Background	Yellow	Yellow	100mm
Border	Black	Black	100mm
Material	Class B2 (12000-1.2007)	Area	2.71m²

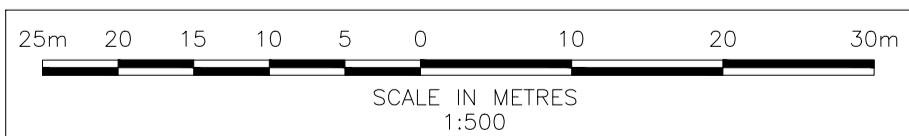


CONSIDERATION OF CLOSING 'THE GROVE' SOUTHERN ACCESS DURING CONSTRUCTION

EXISTING GRASSCRETE ACCESS TO BE REMOVED AND REPLACED WITH FULL DEPTH CARRIAGEWAY CONSTRUCTION (DESIGN TBD)

1:10 TAPER IN ACCORDANCE WITH TD42 (PARA. 7.17)

1:10 TAPER IN ACCORDANCE WITH TD42 (PARA. 7.17)



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A47 - NATIONAL GRID SUBSTATION ACCESS A (AC181)
SCALE - 1:500

NOTES

- Do not scale from this drawing. All dimensions are in metres unless noted otherwise.
- This drawing has been based upon Ordnance Survey Maps and Royal HaskoningDHV can not guarantee the accuracy of data.
- Visibility
- Stopping Sight Distance (SSD) for design speed of the road.
- X-distance - the set back from the nearest edge of the carriageway from which the access will be taken
- Y-distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
- All vegetation to be cleared/trimmed within identified visibility envelope.

Road Signs

- All temporary traffic signs to be mounted on suitable A-Frames weighted down with sandbags as per supplier recommendations.
- All temporary traffic signs to be set out in accordance with the requirements of Traffic Signs Manual Chapter 8, the Traffic Signs Regulations and General Directions 2016 and TD42 during the detailed design stage.
- Setting out of signs to be undertaken only by approved traffic management operatives.

KEY

- ORDER LIMITS
- EXISTING METALED ROAD BOUNDARY
- VISIBILITY SPLAY
- APPROXIMATE SIGN LOCATION
- LAND REQUIRED TO BE CLEAR TO ACHIEVE VISIBILITY
- EXISTING GRASSCRETE

DRAFT - NOT FOR CONSTRUCTION

F.1.0	02/19	Updated in accordance with HE comments	JL	RNE	ADR
D.03	10/18	Traffic Signs Added	JL	RNE	ADR
D.02	04/18	Order Limit updated	RNE	PC	ADR
D.01		FIRST ISSUE			
REV	DATE	DESCRIPTION	BY	CHK	APP

REVISIONS

CLIENT

VATTENFALL

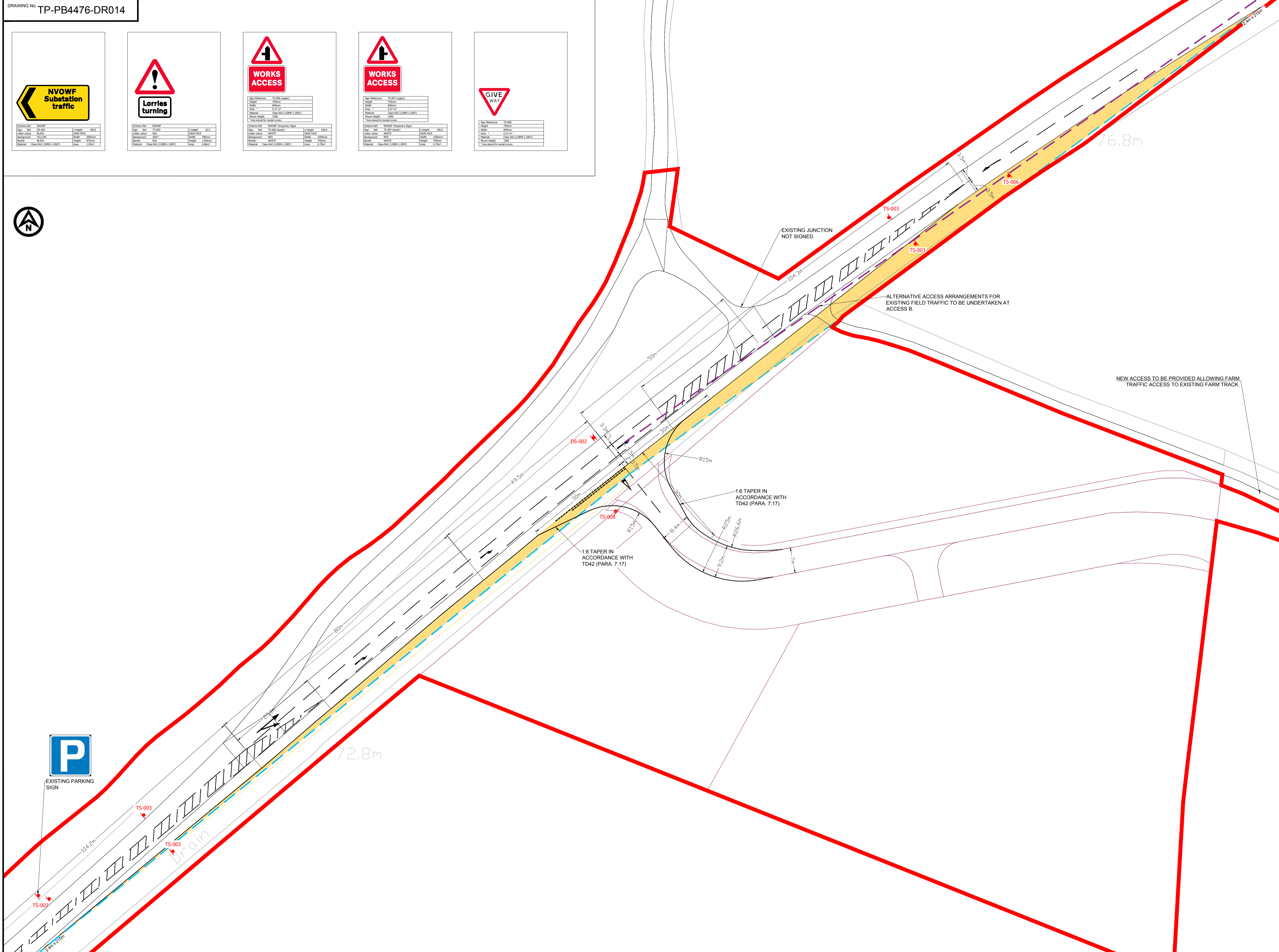
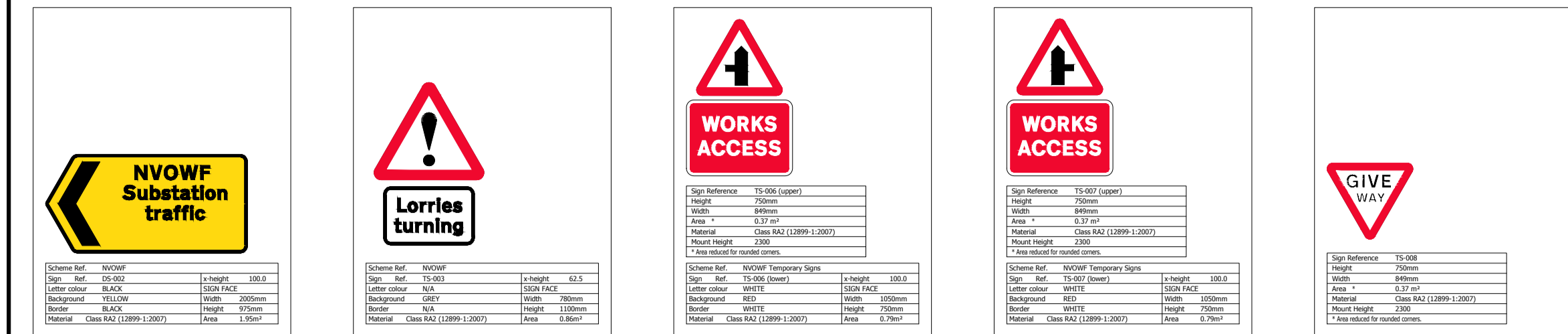
PROJECT

NORFOLK VANGUARD
OFFSHORE WIND FARM

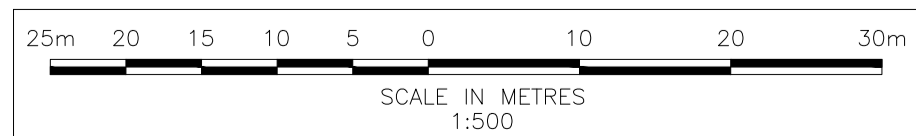
TITLE

A47 NATIONAL GRID SUBSTATION
ACCESS A (AC181)
CONCEPT DRAWING
(LEFT TURN IN / LEFT TURN OUT)

DRAWN	RNE	CHECKED	ST	APPROVED	ADR
DATE	10.01.2018	SCALE AT A1	1:500 untd	CLIENTS REF.	
DRAWING No.	TP-PB4476-DR012	REVISION			
CLIENT DWG No.					F1.0



A47 - SUBSTATION ACCESS B (AC 183)
SCALE - 1:500



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NOTES









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Visibility

3. Stopping Sight Distance (SSD) for design speed of the road.
4. Y-distance - the set back from the nearest edge of the carriageway from which the access will be taken
5. Y-distance - the SSD measured along the nearest edge of the carriageway to its intersection with the centreline of the access.
6. All vegetation to be cleared/trimmed within defined visibility envelope

Road Signs

7. Permanent traffic signs to be set out in accordance with the requirements of Traffic Signs Manual Chapter 1.7. The Traffic Signs Regulations and General Directions 2016 and DMRB D242 during the detailed design stage.
8. Set out of signs to be undertaken only by approved traffic management operatives.

- KEY**
-  ORDER LIMITS
 -  EXISTING METALLED ROAD BOUNDARY
 -  PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
 -  VISIBILITY SPLAY
 -  FORWARD VISIBILITY SPLAY FOR RIGHT TURNING VEHICLE
 -  PROPOSED GATE
 -  APPROXIMATE SIGN LOCATION
 -  LAND REQUIRED FOR VISIBILITY SPLAYS

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CONSTRUCTION**

F1.0	02/19	Updated in accordance with HE comments	JI	RNE	AD
D.03	10/18	Traffic Signs Added	JI	RNE	AD
D.02	04/18	Order Limit updated	RNE	PC	AD
D.01		FIRST ISSUE			
REV	DATE	DESCRIPTION	BY	CHK	APP

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CLIENT



PROJECT

NORFOLK VANGUARD
OFFSHORE WIND FARM

TITLE

A47 NORFOLK VANGUARD
ONSHORE PROJECT SUBSTATION
ACCESS B (AC 183) CONCEPT



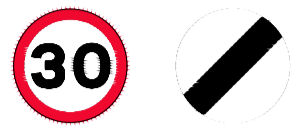
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DATE 10.01.2018	SCALE AT A1 1:500 uno		CLIENTS REF.	
DRAWING No. TP-PB4476-DR014				REVISION
CLIENT DWG No.				F1.0



Scheme Ref.	NVOWF Sigs
Sign Ref.	TS-001
Location	Black
Category	TS-001
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)



Scheme Ref.	NVOWF Sigs
Sign Ref.	TS-002
Location	Black
Category	TS-002
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)



Scheme Reference	TS-001 & TS-002
Sign Ref.	TS-001
Location	Black
Category	TS-001
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)



Scheme Ref.	NVOWF Sigs
Sign Ref.	TS-003
Location	Black
Category	TS-003
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)



Scheme Reference	TS-004 (12000)
Sign Ref.	TS-004
Location	Black
Category	TS-004
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)



Scheme Reference	TS-005 (12000)
Sign Ref.	TS-005
Location	Black
Category	TS-005
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)



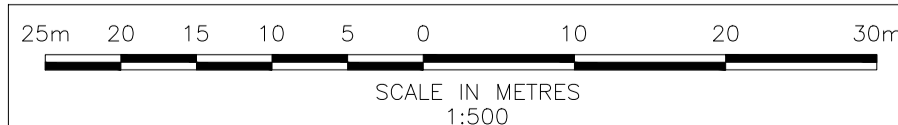
Scheme Reference	TS-006 (12000)
Sign Ref.	TS-006
Location	Black
Category	TS-006
Size	1250mm
Material	Aluminium
Finish	Black
Mount Height	1500mm
Notes	Open A47 (12000 x 12000)

CONSIDERATION OF CLOSING 'THE GROVE' NORTHERN ACCESS DURING CONSTRUCTION FOR A PERIOD OF 2 ONE WEEK DURATIONS SEPERATED BY APPROXIMATELY 6 MONTHS.



A47 - SUBSTATION ACCESS D1 (AC182)
SCALE - 1:500

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- Visibility
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Road Signs

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- All temporary traffic signs to be set out in accordance with the requirements of Traffic Signs Manual Chapter 8, Traffic Signs Regulations and General Direction and DMRB TD42.
- Setting out of signs to be undertaken only by approved traffic management operatives.

Enforcement Measures

- enforcement measures to be determined with NCC in partnership with other organisations such as the Police and Fire and Rescue.

KEY

- ORDER LIMITS
- EXISTING METALLED ROAD BOUNDARY
- PROPOSED ACCESS BOUNDARY/ROAD MARKINGS
- VISIBILITY SPLAY
- PROPOSED GATE
- APPROXIMATE SIGN LOCATION
- LAND REQUIRED TO BE CLEAR TO ACHIEVE VISIBILITY

DRAFT - NOT FOR CONSTRUCTION

F1.0	02/19	Updated in accordance with HE comments	JL	RNE	ADR
D.03	30/18	Traffic Signs Added	JL	RNE	ADR
D.02	04/18	Order Limit updated	RNE	PC	ADR
D.01		FIRST ISSUE			
REV	DATE	DESCRIPTION	BY	CHK	APP

REVISIONS

CLIENT

VATTENFALL

PROJECT

NORFOLK VANGUARD
OFFSHORE WIND FARM

TITLE

A47 NATIONAL GRID OHLMW
ACCESS D1 (AC182)
CONCEPT (TEMPORARY)



DRAWN	RNE	CHECKED	ST	APPROVED	ADR
DATE	10.01.2018	SCALE AT A1	1:500 unid	CLIENTS REF.	
DRAWING No.	TP-PB4476-DR015	REVISION			
CLIENT DWG No.					F1.0