

DATED 28th July 2025

SUFFOLK COUNTY COUNCIL (1)

- and -

VINCI CONSTRUCTION UK LIMITED (2)

AGREEMENT

made pursuant to Section 278 of the Highways Act 1980
and any other enabling power relating to
the development of land at **Grove Road, Saxmundham, Suffolk (Access 11 and 12
- East Anglia Two Offshore Wind Farms)**

Nigel Inniss
Monitoring Officer – Assistant Director Governance, Legal, and Assurance
Suffolk County Council
Endeavour House
8 Russell Road
Ipswich
Suffolk IP1 2BX

Ref: SH/84603

**SECTION 278 AGREEMENT
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THIS AGREEMENT is made the 28th day of July 2025
BETWEEN the following parties :-

- (1) **SUFFOLK COUNTY COUNCIL** of Endeavour House 8 Russell Road Ipswich Suffolk IP1 2BX ("the County Council")
- (2) **VINCI CONSTRUCTION UK LIMITED** (company number 02295904) of Astral House, Imperial Way, Watford, Hertfordshire, WD24 4WW ("the Principal Contractor")

RECITALS AND DEFINITIONS

(A) In this Agreement unless the context otherwise requires the following words shall have the following meanings :-

"1980 Act"	Means the Highways Act 1980 (as amended)
"Approved Contractor"	Means the contractor(s) approved by the County Council for carrying out the Highway Works of the value and complexity proposed
"Approved Sub-Contractor"	Means the sub-contractor(s) approved by the County Council for carrying out the Highway Works of the value and complexity proposed
"CDM Regulations"	Means the Construction (Design and Management) Regulations 2015 (SI 2015/51)
"Certificate of Final Completion"	Means any of the certificates referred to in paragraph 15.3 of Schedule I
"Certificate of Substantial Completion"	Means any of the certificates referred to in paragraph 14.2 of Schedule I
"Construction Traffic Management Plan"	Means the construction traffic management plan or plans approved pursuant to Requirement 28 of the Development Consent Order

“Contract”	Means the contract or contracts in respect of each and all of the Highway Works
“Contractor”	Means the contractor or contractors who have been awarded the Contract to execute the Highway Works. For the avoidance of doubt the aforementioned definition does not include any subcontractor
“Developer”	Means East Anglia TWO Limited (company number 11121842) and East Anglia ONE North Limited (company number 11121800)
“Development”	Means the development to be carried out pursuant to the Development Consent Order
“Development Consent Order”	Means The East Anglia TWO Offshore Wind Farm Order granted by the Secretary of State for Business and Industrial Strategy on the 31 st March 2022
“Director”	Means the County Council’s Executive Director of Growth, Highways and Infrastructure or other officers of the County Council acting under his hand
“Highway Works”	Means the works collectively or individually as the context requires which are set out in Schedule III of this Agreement and shown in the Works Drawings (excluding the Reinstatement Works)
“Highway Structure”	Means any bridge, subway, culvert, pipe, tunnel, or other structure built in, over, under or adjacent to any part of the highway
“National Highways”	Means the body appointed by the Secretary of State for Transport as a strategic highways company under section 1 of the Infrastructure Act 2015 and statutory instrument 2015/376

or any other body so appointed

“Onshore DCO Works”	means those works defined under paragraph (b) of definition of “commence” of the Development Consent Order
“Performance Figure”	Means the sum of £132,064.90 (one hundred and thirty-two thousand, sixty-four pounds, and ninety pence) being the Tender Sum plus 10 per cent in respect of the Highway Works and as set out in each of the Contracts
“Performance Cash Deposit”	Means the cash deposit for all of the Highway Works such cash deposit to be held by the County Council should the Principal Contractor default in the execution of its obligations to carry out the Highway Works and to maintain the same in accordance with the provisions of this Agreement then the County Council will apply the Performance Cash Deposit to the necessary works in satisfaction thereof (subject to the provisions hereinafter contained) to carry out the Highway Works and maintain the same as aforesaid.
“Reinstatement Works”	Means the works detailed in the reinstatement plan no EA2-ONS-CIV-DRG-TYW-000672 set out in Schedule III of this Agreement and shown in the Works Drawings
“Road Safety Audit”	Means the evaluation of each and all of the Highway Works during design and at the end of construction to identify potential road safety problems that may affect any users of the highway and to suggest measures to eliminate or mitigate those problems in accordance with Department for Transport standards or by the County Council as agreed by the Director
“Site”	Means land situated at Grove Road, Saxmundham, Suffolk shown edged red and with purple dashed lines for identification only on the attached plan no EA2-ONS-CIV-DRG-TYW-000457
“Specification”	The County Council’s “Specification for Estate Roads” dated May 2007 (or later amendment current at the date of this Agreement) so far as this is consistent with the Works

Drawings and description in Schedule III (subject to any variations agreed in writing by the Director)

“Sub-contractor” Means the sub-contractor(s) working for the Contractor(s) who have been contracted to execute the Highway Works

“Substantial Completion” Means complete to the reasonable satisfaction of the Director and so that the Highway Works can be used for the purpose and operate in the manner for which they were designed

“Technical Standards” Means the standards necessary to ensure complete conformity with all UK primary and secondary legislation (including by-laws) all guidance standards and codes of practice issued by the Department for Transport the County Council statutory undertakers and relevant professional institutes the Road Safety Audit and formal instructions issued by the Director from time to time during the design and implementation of the Highway Works and for the avoidance of doubt this shall include the Traffic Signs Regulations and General Directions 2016 and BS5489 in relation to the design of any street lighting

“Tender Sum” Means the sum of £120,059.00 (one hundred and twenty thousand and fifty-nine pounds) (including the costs associated with statutory undertakers work and traffic management) agreed by the Director for carrying out the Contract by the Contractor

“Works Drawings” Means the attached drawings bearing the numbers referred to in Schedule IV or any subsequent revision of them which has been approved or requested by the Director and which relate to the Highway Works

- (B) In this Agreement unless the context otherwise requires :-
- (i) Words importing the singular meaning where the context so admits include the plural meaning and vice versa; and
 - (ii) Words of gender include any other genders and words denoting actual persons include companies, corporations and firms and all such words shall be construed interchangeably in that manner; and

- (iii) "party" or "parties" means a party or parties to this Agreement; and
 - (iv) references to any party shall include the successors in title and assigns of that party; and in the case of the County Council the successors to its statutory functions; and
 - (v) where a party includes more than one person any obligations of that party can be enforced against all of them jointly and severally unless there is an express provision otherwise; and
 - (vi) the headings and contents list in this Agreement shall not form part of or affect its construction; and
 - (vii) references to clauses schedules and paragraphs are references to clauses in and schedules to this Agreement and paragraphs in schedules to this Agreement; and
 - (viii) where a party or any officer or employee is required to give its consent approval or agreement to any specific provision in this Agreement such consent approval or agreement shall not be unreasonably withheld or delayed; and
 - (ix) any mention herein of any act or of any section regulation or statutory instrument shall be deemed to refer to the same source as at any time amended and where such act section regulation or statutory instrument has been replaced consolidated or re-enacted with or without amendment such mention shall be deemed to refer to the relevant provision of the updating consolidating or re-enacting act or section or regulation or statutory instrument
- (C) The County Council is the highway authority (except for trunk roads) for the purposes of the 1980 Act for the area within which the Site is situated and the Highway Works will be carried out
- (D) The Developer has the benefit of the Development Consent Order and will undertake the work at the Site as detailed within the Works Drawings

- (E) The Developer has appointed the Principal Contractor Vinci Construction UK Limited (company number 02295904) of Astral House, Imperial Way, Watford, Hertfordshire, WD24 4WW to enter into this Agreement and to undertake the Highway Works on their behalf
- (F) Jeannie Ethel May Wright and Anne Elizabeth Wright is the registered proprietor with title absolute of some of the land adjoining the Site in so far as it is registered at the Land Registry under Title Number SK244913 and over which temporary accesses are to be constructed
- (G) Peter Murray Mann is the registered proprietor with title absolute of some of the land adjoining the Site in so far as it is registered at the Land Registry under Title Number SK350290 and over which temporary accesses are to be constructed
- (H) It is intended that the temporary accesses being constructed as part of the Highway Works shall be removed and the highway reinstated at a future date in accordance with the Development Consent Order and that a further Agreement pursuant to S278 of the 1980 Act will be sought at that time to facilitate these Reinstatement Works save that the Performance Cash Deposit or a reasonable retention thereof will be retained by the County Council in the event that the Reinstatement Works are not undertaken without unreasonable delay
- (I) Having regard to the development plan and other material considerations the County Council considers it expedient in the interests of the proper planning of their area that the Highway Works need to be carried out to facilitate the Development and that entering into this Agreement will be of benefit to the public

NOW THIS DEED WITNESSES as follows:-

1 LEGAL EFFECT

1.1. This Agreement and the covenants that appear hereinafter are made pursuant to Section 278 of the 1980 Act Section 111 of the Local Government Act 1972 and Section 1 of the Localism Act 2011 and all other enabling powers to the intent that the provisions of this Agreement shall bind the Site and the parties hereto and all persons deriving title through or under them

- 1.2. This Agreement is a Deed. Any financial default under this Agreement will be registered as a Local Land Charge under section 278(5)(c) of the 1980 Act
- 1.3. No waiver (whether express or implied) by the County Council of any breach or default by the Principal Contractor in the performance or observance of any of the covenants, terms or obligations in this Agreement shall constitute a continuing waiver and no such waiver shall prevent the County Council from enforcing any of the covenants, terms or obligations or from acting upon any subsequent breach or default in respect thereof
- 1.4. Any provision of this Agreement which is or may be unlawful void or unenforceable shall to the extent of such unlawfulness invalidity or unenforceability be deemed severable and shall not affect any other provision of this Agreement
- 1.5. This Agreement is governed by and interpreted in accordance with English law and shall be determined in the Courts of England

2 NOTICES

- 2.1. Any notices or other written communication to be served or given by one party upon or to any other party under the terms of this Agreement shall be deemed to have been validly served or given if delivered by hand or sent by recorded delivery post or sent by the DX service to the party upon whom it is to be served or to whom it is to be given or as otherwise notified for the purpose by notice in writing provided that the notice or other written communication is addressed and delivered by hand or by recorded delivery post or by the DX service to the address of the party concerned as nominated in sub-clause 2.2. below
- 2.2. The address for any notice or other written communication in the case of each party to this Agreement shall be as follows:-

The County Council Suffolk County Council Endeavour
House 8 Russell Road Ipswich IP1
2BX marked for the attention of the
Assistant Director of Governance,

Legal and Assurance (or where the context requires the Executive Director of Growth, Highways and Infrastructure, Endeavour House 8 Russell Road Ipswich IP1 2BX)

The Principal Contractor Marked for the attention of the Project Director, VINCI Construction UK, Astral House, Imperial Way, Watford. Herts. WD24 4WW

- 2.3. Any notice or other written communication to be given by the County Council shall be deemed to be valid and effective if on its face it is signed on behalf of the County Council by a duly authorised officer

3 GENERAL

- 3.1. All works and activities to be carried out under the terms of this Agreement (including for the avoidance of doubt such works as are of a preparatory ancillary or of a maintenance nature) are (save where expressly provided otherwise) to be at the sole expense of the Principal Contractor and at no cost to the County Council
- 3.2. All consideration given and payments made in accordance with the provisions of this Agreement shall be exclusive of any VAT properly payable in respect thereof and in the event of VAT becoming chargeable at any time in respect of any supply made in accordance with the terms of this Agreement then to the extent that VAT had not previously been charged in respect of that supply the person making the supply shall raise a VAT invoice to the person to whom the supply was made and the VAT shall be paid accordingly
- 3.3. The County Council and their respectively duly authorised officers and agents may enter upon the land on which the Highway Works are being carried out at any reasonable time to ascertain whether the terms of the Agreement are being or have been complied with

4 ARBITRATION

- 4.1. Any dispute or difference arising between the parties as a result of this Agreement may be referred to the arbitration of a single arbitrator to be agreed upon between the parties or failing agreement within fourteen days after either of the parties has given to the other a written request requiring the appointment of an arbitrator to a person to be appointed at the request of either of the parties by the President for the time being of The Institution of Civil Engineers
- 4.2. Any reference to arbitration shall be undertaken in accordance with and subject to the provisions of the Arbitration Act 1996 save as follows:-
 - (a) the seat of the arbitration shall be at the County Council's offices in Ipswich Suffolk
 - (b) where appropriate the arbitrator may consolidate arbitral proceedings
 - (c) with the parties' agreement the arbitrator may appoint experts or legal advisers
- 4.3 A party wishing to refer any such dispute or difference to arbitration shall notify the other party in writing of such intention without delay
- 4.4 The arbitrator shall act as a referee and not as an expert except in any case where the parties to a dispute or difference agree on the arbitrator when such parties may also agree that such arbitrator shall act as an expert
- 4.5 Subject to Sections 67 68 and 69 of the Arbitration Act 1996 the parties agree to be bound by the decision of the arbitrator

5 COVENANTS

- 5.1 The Principal Contractor covenants and warrants to the County Council that they have full power to enter into this Agreement and there is no other person having a charge over or any other interest in the Site whose consent is necessary for the Principal Contractor to enter into this Agreement
- 5.2 The Principal Contractor hereby covenants and undertakes with the County Council that from the date of this Agreement it will (unless

otherwise agreed by the County Council) carry out and comply with the obligations set out in Schedule I and the details set out in Schedules III and IV hereto

- 5.3 The County Council without prejudice to its statutory powers and duties hereby appoints the Principal Contractor to act as its agent and gives to the Principal Contractor licence (in so far as is reasonably necessary for the Principal Contractor to perform the obligations under the terms of this Agreement) to enter into and upon and remain upon the highway to carry out the construction of the Highway Works within the timescales referred to in Schedule III hereto or such other period as may be agreed in writing by the Director, provided that this licence shall not extend to the Principal Contractor's successors in title or assigns unless otherwise agreed in writing by the Director prior to that successor or assignee commencing work in the public highway
- 5.4 The Principal Contractor covenants with the County Council not to commence the Highway Works set out in Schedule III unless road space has first been booked with the County Council
- 5.5 The Principal Contractor covenants with the County Council as highway authority to give written notice not less than three calendar months prior to works commencing, in order that the County Council as highway authority has sufficient time to ensure that the commencement of works will cause the least disruption possible to road users and the County Council reserves the right to refuse consent and/or to stop or require the stopping of works under the terms of this Agreement and relevant legislation where the aforesaid notice period is not complied with
- 5.6 The Principal Contractor covenants with the County Council as highways authority to comply with the provisions of the New Roads and Street Works Act 1991, the Traffic Management Act 2004 and any amendments thereof
- 5.7 The County Council covenants with the Principal Contractor that on the date of issue of the Certificate of Final Completion the roads subject to the Highway Works shall thenceforth be, to the extent they are not already, adopted as highways maintainable at the public expense

5.8 The Principal Contractor covenants with the County Council that in the event that no other party does so to enter into a further agreement with the County Council pursuant to Section 278 of the 1980 Act to undertake the Reinstatement Works in full accordance with the requirements of the Development Consent Order and the timings for reinstatement set out therein and in any event no later than the accesses being constructed as part of the Highway Works cease to be required for their intended purpose serving the carrying out of the Development

6 NOT USED

7 THIRD PARTY RIGHTS

7.1 It is hereby agreed and declared that the provisions of Contracts (Rights of Third Parties) Act 1999 shall not apply to this Agreement

8 LAPSE

8.1 If the Highway Works have not been commenced within one (1) year from the date of this Agreement, save as this period is otherwise extended in writing by the Director at his discretion, then this Agreement shall lapse and be of no further effect (save to the extent already complied with) and the Principal Contractor agrees to pay to the County Council any costs properly incurred by the County Council prior to the lapse of this Agreement (which have not already been paid) including but not limited to those costs set out in paragraph 19 of Schedule I to this Agreement

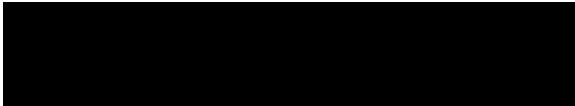
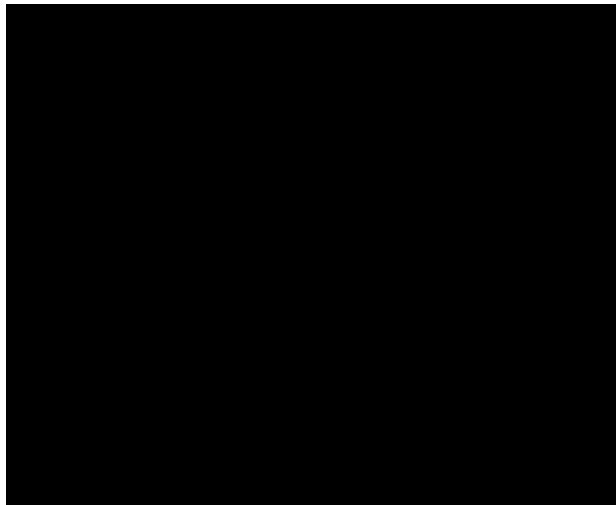
8.2 Where, in accordance with clause 8.1 above the Director, at his discretion, agrees in writing to an extension to the period of one (1) year after which this Agreement shall lapse, this Agreement shall lapse at the end of such period as agreed in writing by the Director where the Highway Works have not been commenced by the expiry of that extension period

9 COUNTERPARTS

9.1 The Agreement may be entered into the form of two counterparts each executed by one of the parties respectively but taken together shall constitute one instrument

In witness whereof this Agreement has been executed and delivered as a Deed on
the date first written above

The COMMON SEAL of)
SUFFOLK COUNTY COUNCIL)
was hereunto affixed)
in the presence of)



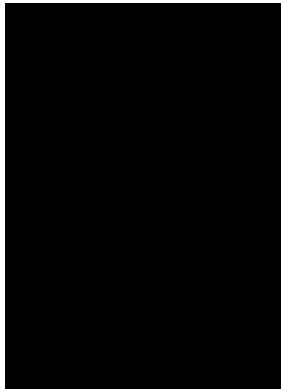
A Duly Authorised Officer

EXECUTED AS A DEED by VINCI CONSTRUCTION UK LIMITED
in the presence of:

Attorney:

Witness:

Witness Address:



SCHEDULE I

1 THE DESIGN OF THE HIGHWAY WORKS

- 1.1 The design of the Highway Works shall be to the satisfaction of the Director (the Director being obliged to act reasonably) with due consideration of the Technical Standards
- 1.2 No work on any of the Highway Works shall commence and no Contract for their construction shall be let until
 - 1.2.1 full details of the design of the Highway Works to be commenced in the form of plans, drawings, specifications and other materials have been submitted to the Director together with the name of the principal designer (whom the Principal Contractor shall appoint for the full duration of the design and construction of each and all of the Highway Works) in accordance with the CDM Regulations and any codes of practice referred to therein
 - 1.2.2 the Director has given his written approval to the Highway Works to be commenced and such approval shall not be given if the said plans, drawings, specifications and other documentation have not adequately addressed the issues raised in the pre-construction stages of the Road Safety Audit process and if given shall lapse if the Highway Works are not commenced within twelve (12) months of the date of the said Director's approval
 - 1.2.3 preliminary proposals, detailed contract drawings, schedules and specifications for any Highway Structures have been prepared by the Principal Contractor and submitted for written approval to the County Council's Structures Team in accordance with Department for Transport Document BD2/12 and the structural design and checking procedure has been carried out by an incorporated or chartered engineer familiar with Department for Transport Codes of Practice and experienced in the design of Highways Structures. The documents are to be agreed as applicable with the Director before the design is commenced and details are submitted for approval

Provided always and for the avoidance of doubt that nothing in this Agreement is intended to prevent submission and approval of works pursuant to this paragraph 1.2 (or indeed any other provision of this Agreement) and/or implementation of any Highway Works in accordance with this Agreement prior to approval of the Construction Traffic Management Plan

- 1.3 If the Director does not propose to give his approval in relation to those matters referred to in paragraph 1.2 of this Schedule he shall in each case as soon as possible in writing inform the Principal Contractor and if the Director requires amendments or additions to the plans drawings specifications and other materials referred to in paragraph 1.2 of this Schedule these amendments shall be undertaken by the Principal Contractor at his own expense and a revised set of updated documents shall be re-submitted to the Director for his approval
- 1.4 Without prejudice to paragraph 1.2 of this Schedule, the Director shall not give his approval as referred therein until the Principal Contractor has paid the sum referred to in paragraph 19.1.3 towards the cost of checking the design of the Highway Works and inspecting the Highway Works. The Highway Works at all times shall be carried out in accordance with the plans, drawings, specifications and other materials which have received the Director's approval referred to in paragraph 1.2 of this Schedule and the Principal Contractor shall in the execution of the Highway Works comply or ensure that the Contractor complies with the Technical Standards

2 LETTING OF THE CONTRACT

- 2.1 No Contract shall be let until all traffic management measures have been prepared by the Principal Contractor and approved in writing by the Director (“the approved programme”) and thereafter each of the Contracts will be offered to an Approved Contractor
- 2.2 The Contract to be let under paragraph 2.1 of this Schedule shall be let under NEC3 suite of contracts (and any amendments thereto shall be approved by the Director) and the Principal Contractor shall obtain the

agreement of the Contractor to be bound by the agreed drawings in Schedule IV

- 2.3 The Contract shall be awarded by the Principal Contractor subject to the Director having first given his written approval to the proposed chartered engineer(s) or other suitably qualified person(s) who shall be independent of the Contractor and will supervise the execution of the Highway Works by the Contractor
- 2.4 The Principal Contractor shall not award the Contract unless the Approved Contractor and the Approved Sub-Contractor/s concerned are insured throughout the period of the Contract (such period to include the maintenance period detailed in paragraph 15.1 of this Schedule) for public liability risks in the sum of at least ten million pounds (£10,000,000) in respect of any single claim and the Principal Contractor shall ensure that the Contractor remains so insured throughout the period of the Contract and prior to the commencement of each or all of the Highway Works or any maintenance works carried out in accordance with paragraph 15.1 of this Schedule the Principal Contractor shall produce to the Director insurance policies fully covering the Principal Contractor's liability in respect of the matters set out in this Agreement
- 2.5 The Principal Contractor shall not sub-contract or assign the Contract without the written approval of the Director and any sub-contractor shall be an Approved Sub-Contractor

3 INSPECTION OF THE HIGHWAY WORKS

- 3.1 The Principal Contractor shall provide the Director with not less than twenty-four (24) hours nor more than seventy-two (72) hours notice (excluding weekends and bank holidays) of any intended execution of the Highway Works specifying the tasks to be carried out in accordance with the approved programme referred to in paragraph 2.1 of this Schedule
- 3.2 Without prejudice to the approved programme the Principal Contractor shall notify the Director in writing at least twenty-eight (28) days prior to the commencement of any work connected with statutory undertaker's equipment

- 3.3 Without prejudice to the approved programme the Principal Contractor shall notify the Structures Team and the Director in writing at least seventy-two (72) hours prior to the commencement of each and every stage of excavation and concrete operations associated with any Highway Structures
- 3.4 The Principal Contractor shall during the progress of each and all of the Highway Works give to or procure for the Director and any person or persons duly authorised by him free access to every part of the Highway Works and the Site and permit him or them to inspect the same as they proceed and all materials used or intended to be used therein and shall give effect to any reasonable and proper requirements made or reasonable and proper directions given by the Director to conform to the approved detailed plans Works Drawings and specification referred to in paragraph 1.2 of this Schedule
- 3.5 The Principal Contractor shall not cover up or put out of view any works forming part of the Highway Works without the approval of the Director and shall afford full opportunity for the Director to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon and shall give at least seventy-two (72) hours' notice to the Director whenever any such work or foundations is or are ready or about to be ready for examination
- 3.6 The Director shall without unreasonable delay, unless she considers it unnecessary and advises the Principal Contractor accordingly, attend when required by the Principal Contractor for the purpose of examining such works or of examining such foundations
- 3.7 The Director shall for the purposes of paragraphs 3.1 to 3.6 be allowed reasonable access and admission to the Highway Works or the places where materials or plant for the Highway Works may be stored or in the course of preparation manufacture or use (unless such access or admission is refused due to circumstances beyond the control of the Principal Contractor)

4 TESTING OF MATERIALS

- 4.1 The Principal Contractor shall reimburse the County Council for all reasonable costs and expenses whatsoever arising from the operation of paragraphs 4.2 to 4.5
- 4.2 The Director shall require the testing of materials plant and workmanship used or proposed to be used in the Highway Works and in his reasonable discretion have the power to reject any materials plant or workmanship so tested which he may reasonably and properly find to be not in accordance with the approved detailed plans Works Drawings and specification referred to in paragraph 1.2 of this Schedule In relation to Highways Structures the Director will require a schedule of testing to be agreed prior to the commencement of works or any part thereof
- 4.3 The Principal Contractor shall as soon as is reasonably practicable replace or repair any materials plant or workmanship which have been found to be not in accordance with the approved detailed plans Works Drawings and specification referred to in paragraph 1.2 of this Schedule
- 4.4 The Director shall for the purposes of paragraphs 4.2 to 4.5 be allowed reasonable access and admission to the Highway Works or the places where materials or plant for the Highway Works may be stored or in the course of preparation manufacture or use (unless such access or admission is refused due to circumstances beyond the control of the Principal Contractor)
- 4.5 The Principal Contractor shall as soon as is reasonably practicable remove such materials and plant as are rejected by the Director pursuant to paragraph 4.2. of this Schedule which are not capable of repair or remedy from the Site and if the Principal Contractor shall wish to continue to store such rejected materials and plant on the Site they shall be stored separately from those materials and plant which have not been so rejected or which the Principal Contractor shall wish in future to use in execution of the Highway Works

5 OPENING OF THE HIGHWAY WORKS

- 5.1 During the construction of each and all of the Highway Works and prior to the issue of the Certificate of Substantial Completion:

- (a) the Director may issue instructions to the Principal Contractor to open or expose any of the Highway Works which has been covered up without previously being inspected by the Director
- (b) should the Principal Contractor fail to comply with any such instructions the County Council may so take up or expose the relevant part of the Highway Works causing as little damage or inconvenience as is possible in respect of any other part or parts of the Highway Works the reasonable and proper cost of such taking up or exposure and reinstatement to be met by the Principal Contractor

PROVIDED THAT if the Highway Works or any part or parts thereof are covered up by the Principal Contractor after giving the notice referred to in paragraph 3.5 of this Schedule and the Director shall have failed to inspect in the period therein referred to and the Director shall subsequently require the Highway Works or any part of them to be uncovered for the purposes of inspection:-

- (a) if inspection reveals the relevant part or parts of the Highway Works to have been completed in accordance with the approved detailed plans drawings and specification referred to in paragraph 1.2 of this Schedule all costs in respect of such uncovering and inspection and of reinstating the part or parts of the Highway Works uncovered shall be borne by the County Council; or
- (b) if inspection reveals the relevant part or parts of the Highway Works not to have been completed in accordance with the approved detailed plans drawings and specifications referred to in paragraph 1.2 of this Schedule all reasonable and proper costs in respect of uncovering and inspection and of reinstating the part or parts of the Highway Works uncovered shall be borne by the Principal Contractor

6 UNDERTAKERS

- 6.1 Insofar as the County Council as Highway Authority is required by any legislation regulation direction or code of practice (including in particular but without prejudice to the generality of the foregoing the New Roads and Street Works Act 1991) to serve a notice or notices in respect of the

Highway Works on undertakers or other persons the Principal Contractor shall comply with such requirement on behalf of the County Council before the Highway Works commence and shall thereafter assume on behalf of the County Council such responsibilities as follow on therefrom in particular during the construction of the Highway Works and prior to the issue of the Certificate of Substantial Completion the Principal Contractor shall also:-

- (a) carry out or procure the carrying out of such works and activities in regard to the plant and equipment of undertakers as are required by undertakers in accordance with their statutory powers under the New Roads and Street Works Act 1991 as a result of the construction or intended construction of each and all of the Highway Works
- (b) cause all public sewers, highway drains gas and water mains electric cables and telecommunications ducts or other apparatus which are to be laid by the Principal Contractor under the Highway Works together with all necessary connections from them to the boundary of the Highway Works to be laid so far as is practicable under the Highway Works before the foundation of the Highway Works are laid and shall also in so far as is practicable cause the connections from electric cables to any street lamp to be laid before the paving of the footways comprised in the Highway Works is carried out
- (c) cause all trench works within the highway to be backfilled and reinstated in accordance with the Specification for the Reinstatement of Openings in the Highway as determined from time to time under the New Roads and Street Works Act 1991
- (d) not at any time give consent to the erection by any telecommunications operator of telegraph poles or telephone poles or to the erection by any statutory undertaker or public or private company firm or individual of any over ground or underground equipment without the consent in writing of the Director

7 PROTECTION OF THE PUBLIC

- 7.1 The Principal Contractor shall give due consideration to adjoining owners and occupiers at all times and shall organise activities relating to the Highway Works in such a manner as to cause the least practicable disruption
- 7.2 Prominent notices shall be displayed and maintained around the perimeter of the site of each and all of the Highway Works to warn the public of the dangers of entering the Site
- 7.3 The Principal Contractor shall nominate a member of the site management team as the contact point for the Director in the event of an emergency and shall advise a daytime and twenty-four (24) hour contact number to the Director for the same purpose
- 7.4 The Principal Contractor shall take or procure the taking of all necessary steps to avoid creating a nuisance from noise and in particular:
 - 7.4.1 the Principal Contractor shall afford all reasonable facilities to enable the Director to carry out such site investigations as she may deem necessary in order to determine noise emission levels
 - 7.4.2 all vehicles and plant including compressors shall be fitted with effective silencers and acoustic covers as appropriate and maintained in good working order and all static plant shall be located to minimise nuisance to persons living or working in the vicinity
 - 7.4.3 all portable traffic signals and pumps shall be operated from mains electricity unless otherwise agreed with the Director
 - 7.4.4 noisy activities shall not be permitted on Sundays and Bank Holidays and except as agreed in writing by the Director shall not be permitted outside the hours of 9.30 a.m. to 4.30 p.m. Monday to Friday and 9.30 a.m. to 1 p.m. on Saturdays

PROVIDED THAT if in the reasonable opinion of the Director the Principal Contractor is not dealing adequately with the control of noise the Principal Contractor shall carry out or procure the carrying out of such additional measures as the Director considers necessary at the Principal Contractor's expense

- 7.5 Compliance with the provisions of paragraph 7.4 shall not relieve the Principal Contractor of any of his obligations and liabilities under this Agreement the Control of Pollution Act 1974 or the Environmental Protection Act 1990
- 7.6 The Principal Contractor shall take or procure the taking of all necessary steps to avoid creating a nuisance from dust and as far as practicable works are to be carried out in such a way that dust is kept to a minimum PROVIDED THAT if in the reasonable opinion of the Director the Principal Contractor is not dealing adequately with the control of dust the Principal Contractor shall carry out or procure the carrying out of such additional measures as the Director considers necessary at the Principal Contractor's expense
- 7.7 The Principal Contractor shall arrange the regular removal of refuse likely to encourage vermin and arrange for suitable secure storage containers to be provided for collection
- 7.8 The Principal Contractor shall keep a log book on site to record all complaints received from the public and the action taken in response and the log book shall be available for inspection by the Director

8 PREVENTION OF MUD BEING CARRIED ON THE PUBLIC HIGHWAY

- 8.1 Provision shall be made at the Site to limit in so far as is practicable the amount of mud dust and other materials carried on to adjacent public highways by vehicles and plant leaving the Site
- 8.2 The Principal Contractor shall keep or procure the keeping of all roads footpaths rights of way and other means of passage leading to or from or crossing the Site free from mud slurry or other hazardous substances that are deposited through the construction of the Highway Works and any such substance so deposited on any such road footpath right of way or other means of passage shall be promptly removed by or at the direction of the Principal Contractor
- 8.3 The Director may close any associated crossings entrances and exits if such substances deposited are not promptly removed by the Principal Contractor and any losses or expenses incurred as a result shall be

borne by the Principal Contractor and on removal of such substances the Director shall reopen such crossings entrances and exits and the Principal Contractor shall bear the costs incurred

9 TRAFFIC CONTROL

9.1 During the periods when the Highway Works are being executed the Principal Contractor shall institute at his own expense measures previously approved in writing by the Director to maintain the safe flow of traffic on the highways in the vicinity of the site of the Highway Works

9.2 The Highway Works shall be signed and protected to at least the standards of Chapter 8 of the Traffic Signs Manual published by His Majesty's Stationery Office and the proposed arrangements shall be approved in writing by the Director before the Highway Works commence

10 TIMING

10.1 No Highway Works within or affecting existing public highways or temporary diversions which could interfere with the traffic flow will be permitted within the morning and evening peak periods i.e. 7.30 - 9.30 a.m. and 4.30 - 6.30 p.m. Monday to Friday except as agreed in writing by the Director

11 SAFETY

11.1 During the periods when the Highway Works are being carried out the Principal Contractor shall provide all watching and lighting as required and shall maintain all lights, guards, fencing, warning signs when and, where necessary, undertake such further measures as may be reasonably required by the Director

12 ACCOMMODATION WORKS

12.1 The Principal Contractor shall carry out or ensure that there shall be carried out all related accommodation works associated with the Highway Works

13 CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015

- 13.1 The Principal Contractor shall be the only client for the purpose of the CDM Regulations and the Principal Contractor agrees to undertake the obligations of a client under the CDM Regulations and to use all reasonable endeavours to ensure that the Highway Works are carried out in accordance with the CDM Regulations
- 13.2 The Highway Works shall not commence until the Principal Contractor as the only client has provided to the Director:
- 13.2.1 an estimate of the number of working days and/or person days of construction work and the number of workers working on site simultaneously at any one point in the project which the Contract will entail
 - 13.2.2 written details of the principal designer and the principal contractor appointed for the project and also provide copies of the Construction Phase Plan and Health & Safety File
 - 13.2.3 a copy of the Notification of Project (form HSE F10) to the HSE pursuant to Regulation 6 of the CDM Regulations
- 13.3 Throughout the Highway Works the Principal Contractor shall provide to the Director copies of the updates and revisions to the construction phase plan and Health and Safety File pursuant to Regulation 12
- 13.4 Within twenty-eight (28) days of issue of the Certificate of Substantial Completion for any or all of the Highway Works the Principal Contractor shall provide to the Director
- 13.4.1 a plan showing the land over which those Highways Works have been constructed and
 - 13.4.2 a Health and Safety file conforming in all respects with the CDM Regulations and which shall accord with the current format used by the County Council to include a separate Health and Safety File for each Highway Structure
- 13.5 The Director shall be at liberty to delay issue of the Certificate of Final Completion in respect of any of the Highway Works if the Principal Contractor fails to provide the Director with the documents referred to in 13.4.1 and 13.4.2 above within twenty-eight (28) days of issue of any

Certificate of Substantial Completion for any of the Highway Works equivalent to the number of days after the twenty-eight (28) day period that the documents were submitted

13.6 In respect of the Highway Works generally the Principal Contractor shall provide to the Director the final information in both paper and electronic format and shall at least comprise:

13.6.1 1:500 scale (or alternative scale as may be specified by the Director) "as built" drawings

13.6.2 records of the earthworks showing sources of material used in areas of fill description of fill materials descriptions of sub-grades in cut areas copies of results of tests of material carried out as part of the supervision of the construction of the earthworks

13.6.3 records of the sources of supply of all deliveries of road construction materials with details of the location of the Highway Works at which each load is placed

13.6.4 records of the sources of supply of all other manufactured materials (e.g. drainage goods, fencing materials, traffic signs, electrical components and cables etc used for the Highway Works).

13.7 No work on Highway Structures shall commence until the general Health and Safety file information including format to be supplied in respect of Highway Structures has been agreed with the County Council's Structures Team and shall accord with the County Council's current Technical Approval Procedure for Highway Structures

13.8 The Principal Contractor shall indemnify and keep the County Council indemnified against any breach of the Principal Contractor's obligations under this paragraph 13

14 SITE CLEARANCE AND CERTIFICATE(S) OF SUBSTANTIAL COMPLETION

14.1 On Substantial Completion of the Highway Works the Principal Contractor shall:-

- 14.1.1 clear away and remove from the site of the Highway Works all constructional plant and temporary works of every kind and leave the site of the Highway Works in a neat and tidy condition to the satisfaction of the Director and
- 14.1.2 carry out stage 3 of the Road Safety Audit process and comply to the satisfaction of the Director with recommendations arising thereunder prior to the opening of the Highway Works to the public
- 14.2. Upon Substantial Completion of the Highway Works including any additional work resulting from stage 3 of the Road Safety Audit process to the satisfaction in all respects of the Director he shall issue a Certificate of Substantial Completion in respect of those Highway Works to the Principal Contractor provided that all costs and expenses owing to the County Council have been paid in respect of those Highway Works

14.3. *Not used*

14.4. After the issue of the Certificate of Substantial Completion the County Council may approve a reduction of the Performance Figure such that a sum reasonably sufficient to undertake the Reinstatement Works is retained and return that released amount plus interest applied at the Bank of England Base Rate minus 2 basis points, compounding annually at financial year end to the Principal Contractor on receipt of a written request in respect of the relevant Highway Works and the County Council shall release the Principal Contractor from its obligations under that Performance Cash Deposit in respect of the relevant Highway Works to such extent if for any period the Bank of England Base Rate is at or below 0.02% then no interest shall be payable for that period by any party to this Agreement

15 DEFECTS CORRECTION PERIOD AND CERTIFICATE OF FINAL COMPLETION

15.1 The Principal Contractor shall maintain each and all of the Highway Works for a period of eighteen (18) months (unless the Director agrees in writing a lesser period having considered paragraph 15.2) from the issue

of the related Certificate of Substantial Completion and prior to the expiration of this period the Principal Contractor shall reinstate and make good any damage or defect which may have arisen from any cause whatsoever or be discovered during the said period of eighteen months (including any defect in or damage to the surface water drainage system) so as to place the highway and the Highway Works in a condition satisfactory to the Director

15.2 After the expiration of the period of twelve (12) months from Substantial Completion or the date the Onshore DCO Works commenced (whichever is the latter) the Principal Contractor shall (unless the Director writes to the Principal Contractor informing him that it is to be carried out sooner or that he does not need to do so) carry out stage 4 of the Safety Audit and comply to the satisfaction of the Director with any recommendations arising thereunder.

15.3 After the expiration of the period of eighteen (18) months referred to in paragraph 15.1 (or such lesser period as agreed in writing by the Director under paragraph 15.1) and after any defects have been made good as therein provided including any improvements arising under stage 4 of the Road Safety Audit to the satisfaction of the Director and after the provisions of paragraph 13.4 and paragraph 20.2 of this Schedule have been fulfilled the Director shall issue forthwith to the Principal Contractor the Certificate of Final Completion in respect of the Highway Works provided that the Certificate of Final Completion shall in the case of road gullies extend only as far as their points of entry to the surface water sewers where those are not being adopted by the County Council as highway drains

15.4 *Not used*

16 INDEMNITY

16.1 The Principal Contractor shall from the date of this Agreement indemnify the County Council against all claims charges costs expenses liability or loss whatsoever arising out of and incidental to any or all of the Highway Works including but not limited to those arising out of any legally sustainable claims for payments under Section 10 of the Compulsory Purchase Act 1965 and Part I of the Land Compensation Act 1973 (as

amended) in connection with those Highway Works provided that the Principal Contractor 's indemnity will not extend to any claims submitted to the County Council arising out of the negligence of the County Council's employees or arising out of any works of alteration carried out to any of the Highway Works by the County Council after the issue of the related Certificate of Final Completion

16.2 The County Council shall notify the Principal Contractor forthwith upon receipt of any such claim or liability

16.3 The County Council shall not accept or settle any claim without first having given the Principal Contractor the opportunity to provide the County Council with representations as to the validity of such claim

16.4 The indemnification referred to in paragraph 16.1 includes:

16.4.1 all fees incurred by claimants which the County Council is obliged to pay, and those of the County Council or its agent or contractor, in negotiating any claims (together with VAT payable on the claimants' professional advisors' fees);

16.4.2 statutory interest payments to claimants and their professional advisors; and

16.4.3 the County Council's reasonable and proper legal costs in making the compensation, fees and interest payments

17 PERFORMANCE CASH DEPOSIT

17.1 Without expense to the County Council the Principal Contractor shall on the date of this Agreement pay the Performance Cash Deposit to the County Council for each and all of the Highway Works and the Principal Contractor shall be bound to the County Council in the amount of the Performance Figure for the Highway Works

17.2 Should the Principal Contractor default in the execution of its obligations to carry out any or all of the Highway Works or to enter into an agreement pursuant to Section 278 of the 1980 Act to undertake the Reinstatement Works in accordance with clause 5.8 of this Agreement and to maintain the same in accordance with the provisions of this Agreement then the County Council may (subject to the provisions hereinafter contained)

itself carry out the Highway Works or Reinstatement Works (as the case may be) and maintain the same as aforesaid having first called upon the Performance Cash Deposit for the cost to be expended in so doing

17.2.1 Unless there is a danger to users of the highway the County Council shall give twenty (20) working days prior written notice (or lesser period as may in the circumstances be reasonable) of its intention to commence work under Paragraph 17.2

17.2.2 any notice served under this paragraph shall specify the period of the notice ("the Notice Period") the extent of the work which the County Council proposes to carry out and full details of all matters in respect of which the Director considers that the Highway Works have not been carried out in accordance with the terms of this Agreement

17.2.3 if before the expiry of the Notice Period the Principal Contractor serves written notice upon the County Council that the Principal Contractor intends diligently to execute the works specified in the notice in accordance with the terms of this Agreement and specifies a time to complete that the County Council considers reasonable in the circumstances the County Council shall not be entitled to execute the relevant part or parts of the Highway Works specified in the notice served under this paragraph unless the Principal Contractor then fails to execute those works within the agreed time scale

17.3 If the Principal Contractor should default in the execution of its obligations to carry out any or all of the Highway Works and Reinstatement Works and to maintain the same in accordance with the provisions of this Agreement then the County Council will call upon the Performance Cash Deposit to provide the full Performance Figure (or such sum that remains following reduction of the Performance Cash Deposit in accordance with Paragraph 14.4 of this Schedule) in accordance with this Agreement. Save that the County Council after all works are completed and all contracts and any contract claims settled will return any Performance Cash Deposit sum unused with interest at the Bank of England Base Rate minus 2 basis points, compounding annually at financial year end on receipt of a written request to the Principal Contractor within one

month of all the aforementioned completing and settling. If for any period the Bank of England Base Rate is at or below 0.02% then no interest shall be payable for that period by any party to this Agreement

17.4 Any part of the Performance Cash Deposit retained for the purposes of the Reinstatement Works may be either retained by the County Council to act as security for performance under the further agreement to be entered into pursuant to clause 5.8 of this Agreement or may be substituted for an alternative sum at such time by agreement between the parties in which case monies shall be paid to or released by the County Council to reconcile monies held to the alternative sum thereby agreed

17.5 In accordance with clause 17.4 above and pursuant to clause 5.8 of the Agreement the retained sum or alternative sum agreed may be substituted by a bond or cash deposit reasonably acceptable to the County Council provided by any other party by agreement to act as security in which case any monies retained for Reinstatement Works pursuant to this Agreement shall be paid to or released by the County Council to the Principal Contractor as soon as reasonably practicable following receipt of the aforementioned alternative security

18 NOT USED

19 LEGAL AND ADMINISTRATIVE COSTS

19.1 The Principal Contractor shall pay to the County Council:-

19.1.1 the whole of the costs of the County Council's Legal Services Department in connection with the preparation and completion of this Agreement and these costs shall be payable prior to sealing of this Agreement;

19.1.2 interest at four per cent above the Bank of England Base Rate from time to time on any sum due to the County Council under this Agreement which is outstanding for more than twenty-eight (28) days from the date on which it was demanded or in the event that a dispute or difference regarding such payment is referred to arbitration pursuant to clause 4.1 of this Agreement the said twenty-eight (28) day period shall run from the date of the decision of the arbitrator (such interest to be charged on the

amount outstanding each day from the date of issue of a written demand for any sum due or in the event that a dispute or difference regarding such payment is referred to arbitration pursuant to clause 4.1 of this Agreement such interest to be charged on the amount outstanding each day from the date of issue of the decision of the arbitrator)

- 19.1.3 The greater of £5000 (Five thousand pounds) or 7½% of the Performance Figure (excluding the costs associated with statutory undertakers work and traffic management) for the Highway Works towards the costs and expenses of the County Council of checking the design of each and all of the Highway Works and inspecting each and all of the Highway Works such sum shall be payable prior to sealing of this Agreement
- 19.1.4 the reasonable cost to the County Council of undertaking Road Safety Audits and also the cost of the safety checks of details submitted which sum shall be payable prior to the safety audit commencing
- 19.1.5 the cost of any temporary and permanent traffic regulation orders which sum shall be payable prior to any work on the making of such order being commenced
- 19.1.6 the full cost of any other road traffic orders required to facilitate the Highway Works which sum shall be payable prior to any work on the making of such order being commenced
- 19.1.7 In cases where it may be necessary to enter into a Section 4 or 6 agreement under the Highways Act 1980, the cost of inspecting each and all of the Highway Works on behalf of National Highways , the cost of checking the design of each and all of the Highway Works on behalf of National Highways , the cost of any National Highways fees, and the reasonable cost of County Council administrative and legal fees, which sums shall be payable prior to the sealing of this Agreement
- 19.1.8 the whole of the costs of the County Council in connection with surveying and assessing the land upon which the Highways Works are to be constructed and land in the vicinity of the

Highway Works as deemed necessary by the County Council in order to provide the Compensation Figure for the Compensation Bond, and these costs shall be payable prior to sealing of this Agreement

20 PARTS I AND II OF THE LAND COMPENSATION ACT 1973

Part I and II Claims

Part I Claims - Depreciation Caused By Public Works

20.1 The Principal Contractor hereby undertakes and agrees with the County Council that in the event of any claim for compensation or otherwise or costs or charges arising in connection with or incidental to or in consequence of the carrying out of the Highway Works whether mandatory or discretionary which may be incurred by virtue of any enactment or statutory instrument and otherwise hereby provided for he will hold the County Council fully indemnified from and against all claims charges costs and expenses in connection therewith or arising therefrom

Part II Claims

20.2 The Principal Contractor covenants with the County Council to comply with the requirements of the Noise Insulation Regulations 1975 (SI 1975/1763) as amended and to provide to the County Council such evidence as is required by the Director to demonstrate compliance with the Noise Insulation Regulations 1975 prior to the issuing by the County Council of the Certificate of Final Completion in accordance with paragraph 15.3 of this Schedule

SCHEDULE II.A – NOT USED

SCHEDULE II.B – NOT USED

SCHEDULE III

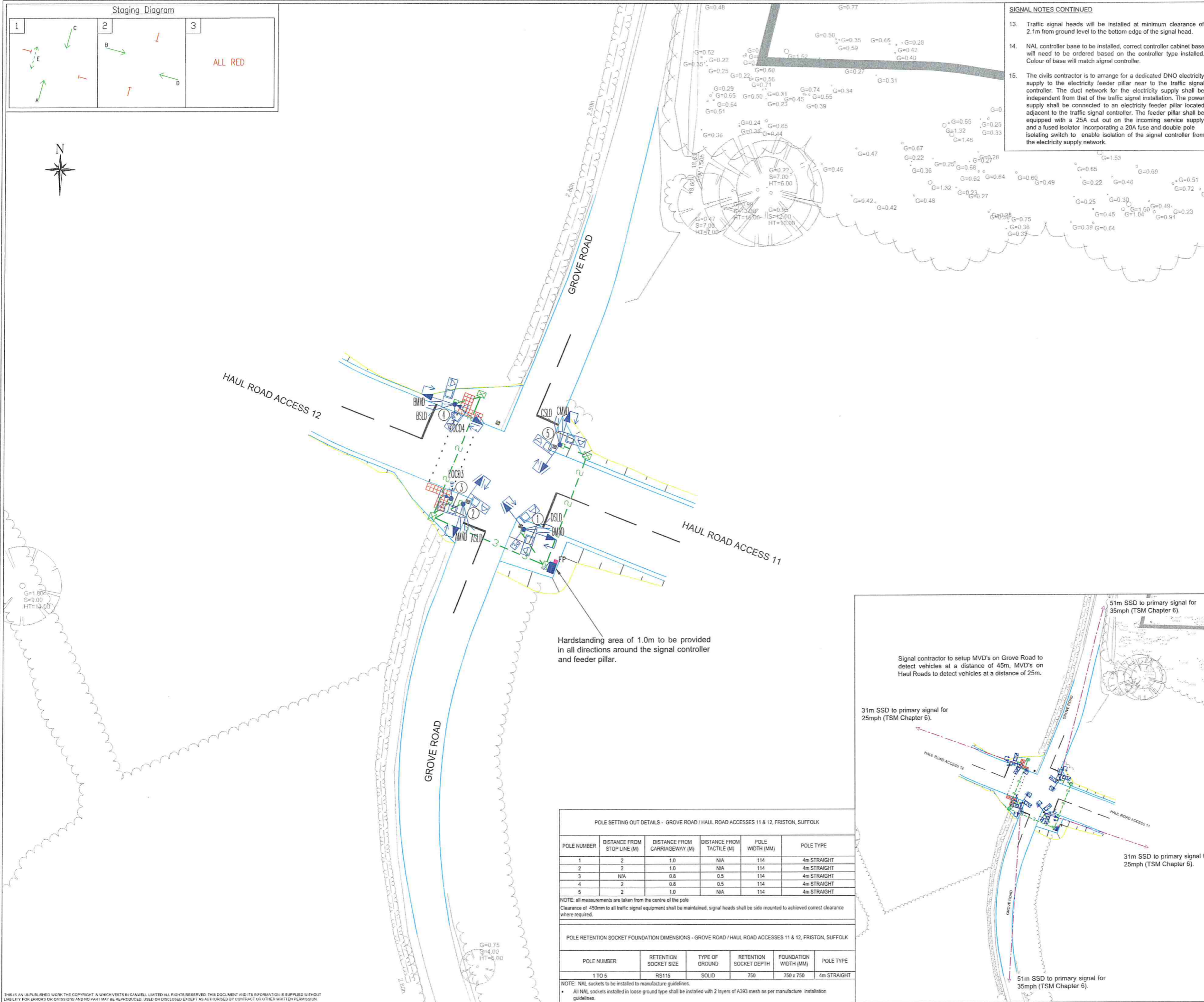
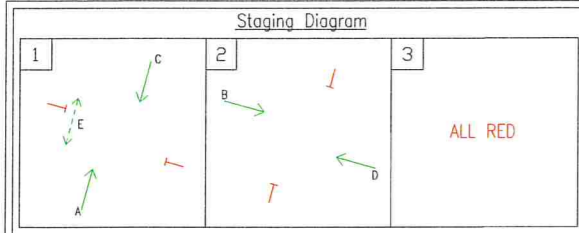
The Highways Works comprising the following works:

<u>Location</u>	<u>Works</u>	<u>Delivery Programme</u>
<p>Grove Road, Saxmundham.</p>	<p>Construction of two new construction accesses including earthworks, kerbing, and tarmac installation.</p>	<p>The Highways Works are to be commenced within 12 (twelve) months of the date of this Agreement and completed within 3 (three) months of commencement of the Highway Works.</p>

SCHEDULE IV

Approved List of drawings

Drawing Title	Drawing No
ACCESS 11 AND 12 GROVE ROAD ROAD MARKINGS AND SIGNS	EA2-ONS-CIV-DRG- TYW-000470
PROPOSED TRAFFIC SIGNAL JUNCTION GROVE ROAD / HAUL ROAD ACCESSES 11 & 12 FRISTON, SAXMUNDHAM	EA2-ONS-CIV-DRG- TYW-000520
ACCESS 11 AND 12 GROVE ROAD CONTOURS & SECTIONS	EA2-ONS-CIV-DRG- TYW-000463
ACCESS 11 AND 12 GROVE ROAD STATUTORY UNDERTAKER UTILITIES	EA2-ONS-CIV-DRG- TYW-000460.pdf
ACCESS 11 AND 12 GROVE ROAD SITE CLEARANCE	EA2-ONS-CIV-DRG- TYW-000459
Proposed Traffic Signal Junction, Grove Road / Haul Road Accesses 11 & 12 - Traffic Signals Installation Specification - Appendix 12/5	EA2-ONS-CIV-SPE- TYW-000003
APPENDIX 5/2 Proposed Signal Junction Grove Road / Haul Road Accesses 11 & 12, Saxmundham EA2-ONS-CIV-SPE-TYW-000002	EA2-ONS-CIV-SPE- TYW-000002
ACCESS 11 AND 12 GROVE ROAD GENERAL ARRANGEMENT	EA2-ONS-CIV-DRG- TYW-000457
ACCESS 11 AND 12 GROVE ROAD PAVEMENT PLAN	EA2-ONS-CIV-DRG- TYW-000502
ACCESS 11 AND 12 GROVE ROAD REINSTATEMENT PLAN	EA2-ONS-CIV-DRG- TYW-000672



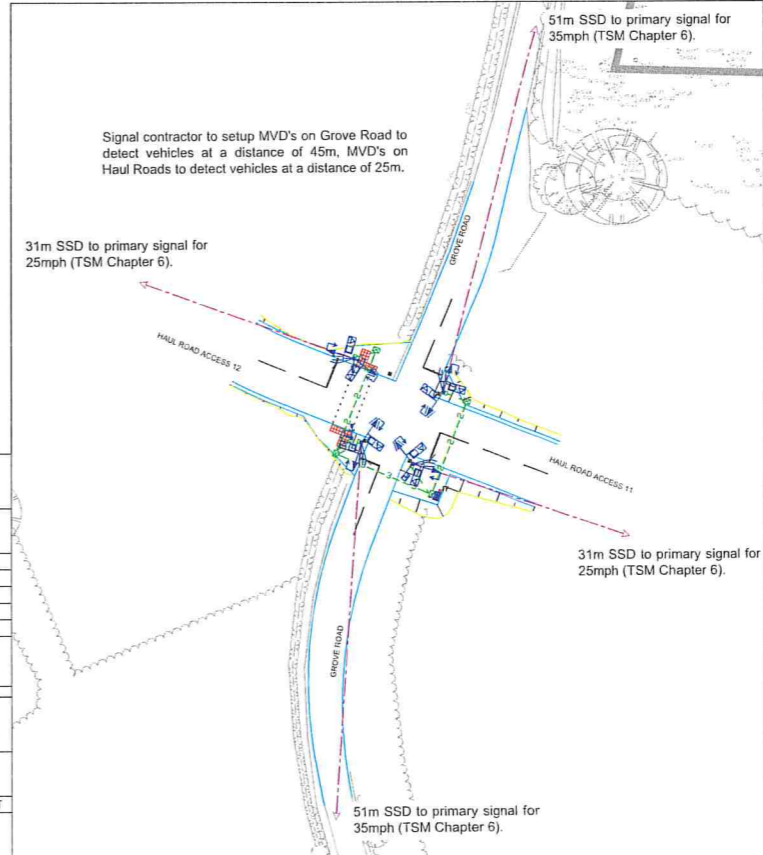
SIGNAL NOTES CONTINUED

- Traffic signal heads will be installed at minimum clearance of 2.1m from ground level to the bottom edge of the signal head.
- NAL controller base to be installed, correct controller cabinet base will need to be ordered based on the controller type installed. Colour of base will match signal controller.
- The civils contractor is to arrange for a dedicated DNO electricity supply to the electricity feeder pillar near to the traffic signal controller. The duct network for the electricity supply shall be independent from that of the traffic signal installation. The power supply shall be connected to an electricity feeder pillar located adjacent to the traffic signal controller. The feeder pillar shall be equipped with a 25A cut out on the incoming service supply and a fused isolator incorporating a 20A fuse and double pole isolating switch to enable isolation of the signal controller from the electricity supply network.

- KEY:-
- 4.0m Signal pole with low level access door and fitted with vented top caps.
 - VEHICLE SIGNAL HEADS**
 - RA Ahead green arrow fitted with primary hoods
 - RA Ahead green arrow fitted with secondary hoods
 - REGULATORY SIGNS**
 - Internally illuminated
 - Ahead Only
 - PEDESTRIAN SIGNALS**
 - Combined Puffin near sided indicator with push button indicator fitted with tactile device
 - ELV Signal Traffic Controller
 - Electricity Feeder Pillar (Ritherdon RH Pillar), a dedicated power supply to be ordered by the civils contractor as per note 14
 - DETECTION**
 - Photo cell
 - Microwave Vehicle Detector
 - Above ground Stop line detector
 - On crossing detector
 - DUCTING AND CHAMBERS**
 - 1 No. Polyethylene 100mm orange duct
 - X No. Polyethylene 100mm orange duct
 - Pole and RS115 NAL retention socket installed as per foundation table
 - NAL STAKKAbx 600mm x 450mm, Twin walled access chambers, composite covers to B125

- SIGNAL NOTES
- Carriageway marking to be laid in accordance with 'The Traffic Signs Regulations and General Directions 2016'.
 - An appropriate hard standing area shall be constructed around the controller and feeder pillar suitable access and maintenance.
 - Road markings shown are indicative and for illustration purposes only. For details of all road markings refer to Tony Gee and Partners road marking design drawing.
 - All new traffic signal ducting shall be orange in colour, high density polyethylene ducting (Twin Wall) of 100mm diameter with 'TRAFFIC SIGNALS' marked on it every 1m. Draw ropes should be provided in the duct runs for the use of pulling cable, the maximum bend in ducting runs should not exceed 45 degree radius, gentle bends are acceptable. Ducting in footways to have 450mm cover and in carriageway 750mm cover will need to be achieved.
 - All access chambers in verges to have 150mm concrete surround to prevent the chamber being overgrown in grassed areas.
 - The controller is to be supplied with a new PEEK Chameleon unit for connection to SCC RMS for monitoring. Chameleon Unit to be configured and tested by the traffic signal contractor by use of 4G communications both ways between the installation / outstation and proved all is working before SAT. Aerial and configured 4G Router to be supplied and installed and tested by traffic signal contractor. 4G Data SIM card will be supplied by SCC.
 - Signal pole positions and orientation to be agreed on site by Suffolk County Council engineer or their representative.
 - Signal heads shall be angled to the satisfaction of the engineer on the day of commissioning.
 - All traffic signal equipment will have at least 450mm clearance from carriageway edge.
 - Tactile devices shall be mounted with in all pedestrian demand units and shall protrude from the underside of the unit.
 - Nearside pushbutton displays shall be installed so that they are angled at 30 degrees from to carriageway and not visible from the opposite waiting area. Nearside aspects on central island shall be parallel with kerbline.
 - Correct camera brackets shall be installed so no above ground detector is blocked by the signal head or its associated backing board.
 - All traffic signal equipment will be grey in colour.
 - All traffic signal equipment including signal controller will be of ELV type.

Hardstanding area of 1.0m to be provided in all directions around the signal controller and feeder pillar.



POLE SETTING OUT DETAILS - GROVE ROAD / HAUL ROAD ACCESSES 11 & 12, FRISTON, SUFFOLK

POLE NUMBER	DISTANCE FROM STOP LINE (M)	DISTANCE FROM CARRIAGEWAY (M)	DISTANCE FROM TACTILE (M)	POLE WIDTH (MM)	POLE TYPE
1	2	1.0	N/A	114	4m STRAIGHT
2	2	1.0	N/A	114	4m STRAIGHT
3	N/A	0.8	0.5	114	4m STRAIGHT
4	2	0.8	0.5	114	4m STRAIGHT
5	2	1.0	N/A	114	4m STRAIGHT

NOTE: all measurements are taken from the centre of the pole
Clearance of 450mm to all traffic signal equipment shall be maintained, signal heads shall be side mounted to achieved correct clearance where required.

POLE RETENTION SOCKET FOUNDATION DIMENSIONS - GROVE ROAD / HAUL ROAD ACCESSES 11 & 12, FRISTON, SUFFOLK

POLE NUMBER	RETENTION SOCKET SIZE	TYPE OF GROUND	RETENTION SOCKET DEPTH	FOUNDATION WIDTH (MM)	POLE TYPE
1 TO 5	RS115	SOLID	750	750 x 750	4m STRAIGHT

NOTE: NAL sockets to be installed to manufacture guidelines.
All NAL sockets installed in loose ground type shall be installed with 2 layers of A393 mesh as per manufacture installation guidelines.

DO NOT SCALE

ISSUE	DESCRIPTION	DRN	CHK	DATE
5	Updated to new GA layout.	JPS	LC	20.03.25
4	Updated to new GA layout.	JPS	LC	25.02.25
3	Note added for MVD's detect distances.	JPS	LC	28.08.24
2	Updated to new GA layout.	JPS	LC	05.03.24

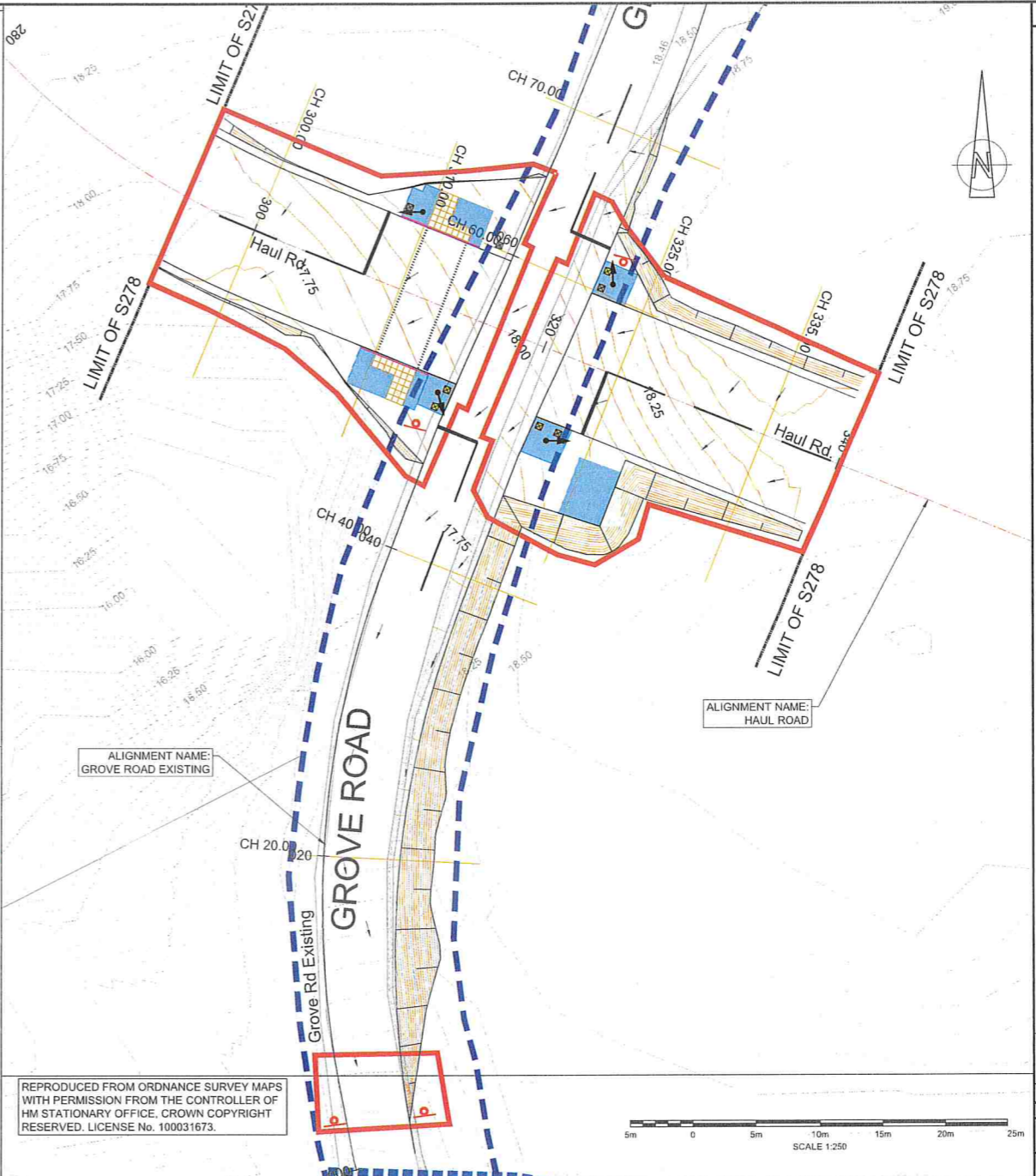
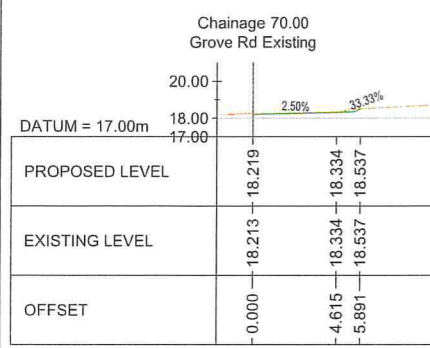
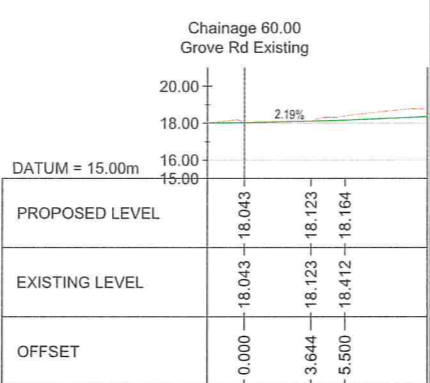
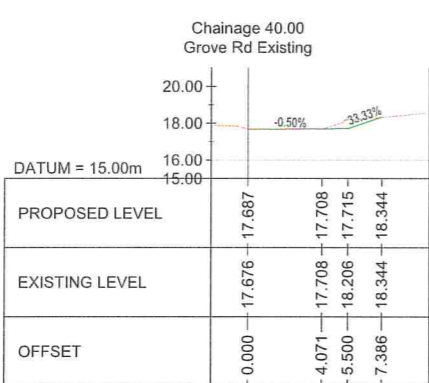
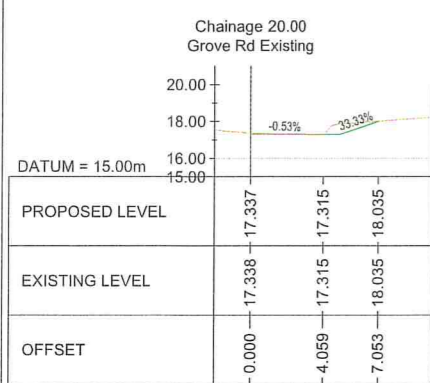
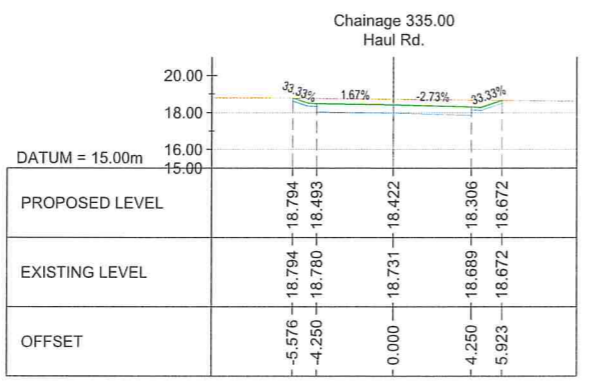
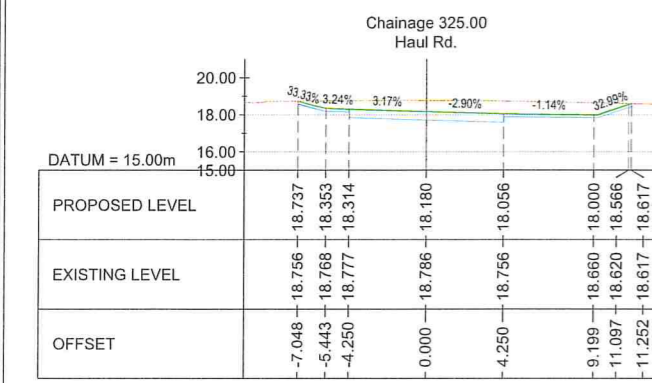
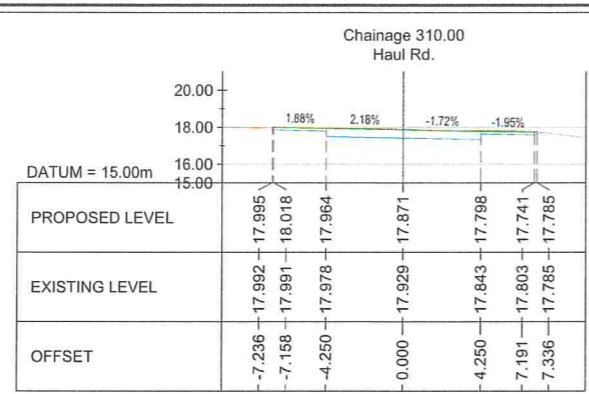
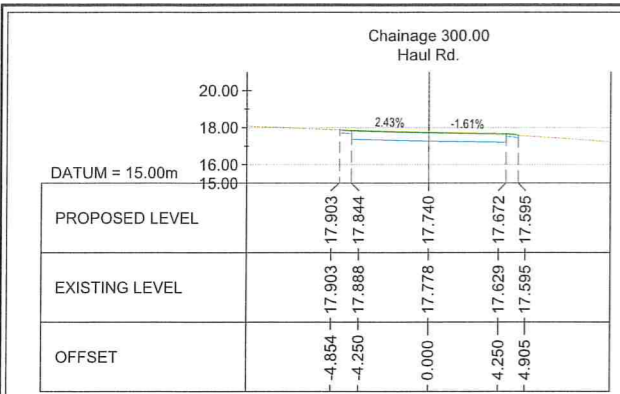


CLIENT TONY GEE AND PARTNERS

SCHEME TITLE PROPOSED TRAFFIC SIGNAL JUNCTION GROVE ROAD / HAUL ROAD ACCESSES 11 & 12 FRISTON, SAXMUNDHAM

DATE: 12/09/23 DRN: JPS CHKD: LC SCALE: 1:200 @ A1 STATUS: DETAIL DESIGN

Canwell Ltd
Canwell House
High Street
Bromham
B7 4BP
T 0121 250 5725
E emp@canwell.co.uk



DO NOT SCALE FROM THIS DRAWING

NOTES

- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE IN METRES RELATIVE TO ORDNANCE DATUM UNLESS NOTED OTHERWISE.
- THIS DRAWING HAS BEEN BASED UPON SURVEY/OS INFORMATION SUPPLIED BY OTHERS. TONY GEE SHALL NOT BE LIABLE FOR ANY INACCURACY OR DEFICIENCIES ARISING FROM IT.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
- ALL LEVELS, DIMENSIONS AND LOCATIONS ARE TO BE CHECKED BY THE MAIN CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON SITE.
- ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH SUFFOLK COUNTY COUNCIL STANDARD DETAILS, WHERE RELEVANT, AND THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS (MCHW).
- HIGHWAY DRAINAGE TO BE IMPLEMENTED BY THE CONTRACTOR AND DESIGNED BY OTHERS.

CONTOURS KEY:

- PROPOSED CONTOUR - MAJOR 250mm INTERVAL
- PROPOSED CONTOUR - MINOR 50mm INTERVAL
- EXISTING CONTOUR - MAJOR 250mm INTERVAL
- EXISTING CONTOUR - MINOR 50mm INTERVAL
- FLOW ARROWS
- S278 WORK AREA

SECTIONS KEY:

- PROPOSED PROFILE
- PROPOSED FORMATION PROFILE
- EXISTING GROUND PROFILE

P01	TWR	BM	GG	21/03/25	FIRST ISSUE
REV.	BY	CHKD	APPD	DATE	DESCRIPTION
CODE	DRAWING STATUS				
S4	FOR REVIEW/AUTHORISATION				

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Sub Client

ScottishPower Renewables TAYLOR WOODROW

A SHE box using the template shown below is to be included on all drawings showing works that involve project specific risks that may not be obvious to those who use the design.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following

Construction

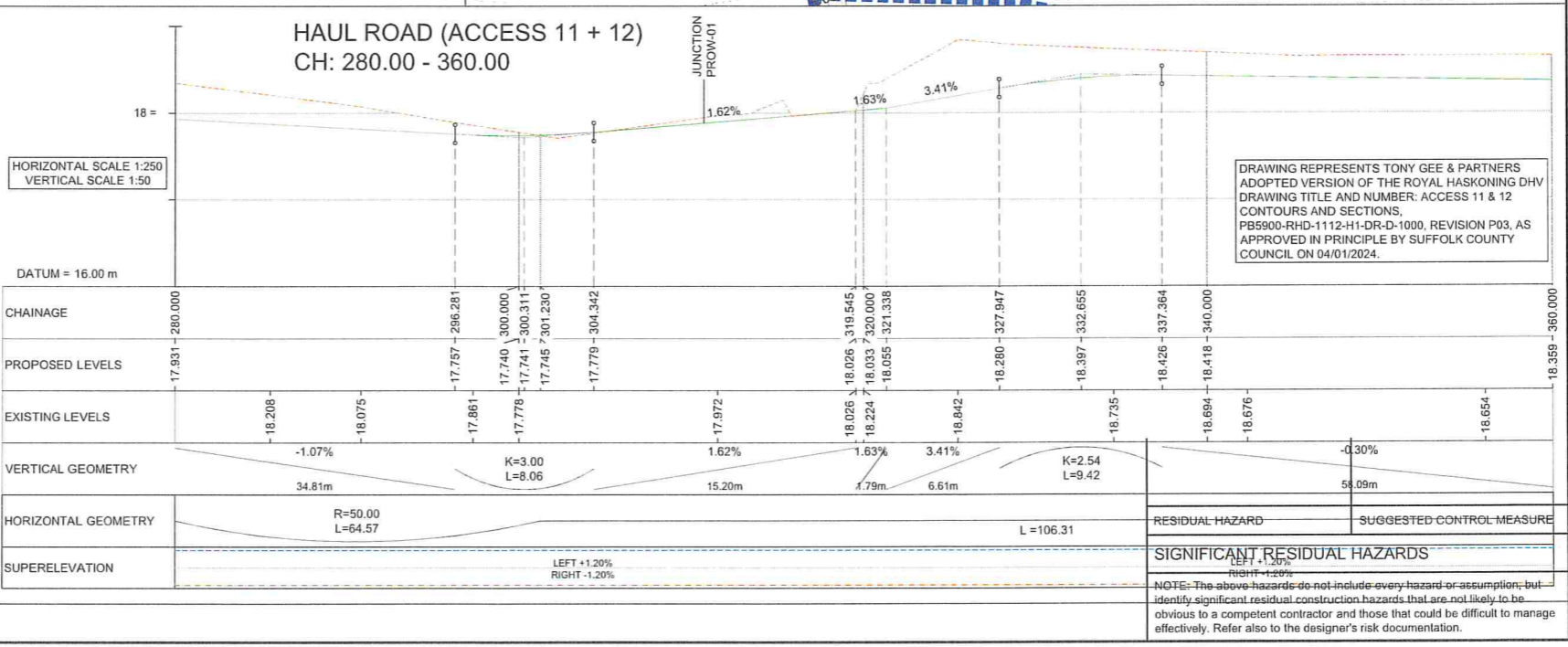
- Working adjacent to the live traffic during construction.
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- Construction noise, vibration and buried services.
- Working with hot bituminous materials.
- Site clearance - Vegetation removal and plaining of the existing carriageway at the junction.
- Interaction of construction work traffic movements with the public traffic.
- Unidentified statutory undertakers.
- Hazardous materials COSHH such as TAR when breaking out and disposing of existing pavement materials.
- Working in vicinity to the existing water mains and overhead electric cables.
- To test, commission and energise the signals suitable trained persons to be used.
- Access to adjacent land is restricted, access will need to either be maintained or alternative arrangement/agreement made.

Maintenance

- Workers being struck by vehicle in live carriageway.
- Injury to maintenance teams due to insufficient access and working space.

Decommissioning / Demolition

- Working adjacent to the live traffic during decommissioning the haul road, traffic signals, replace/removal of the traffic signs and road markings.
- Danger to operatives/public when paving/plaining pavement due to use of heavy plant at the junction.
- Disposal of hazardous waste material following excavation/plaining of paved area materials and decommissioning.

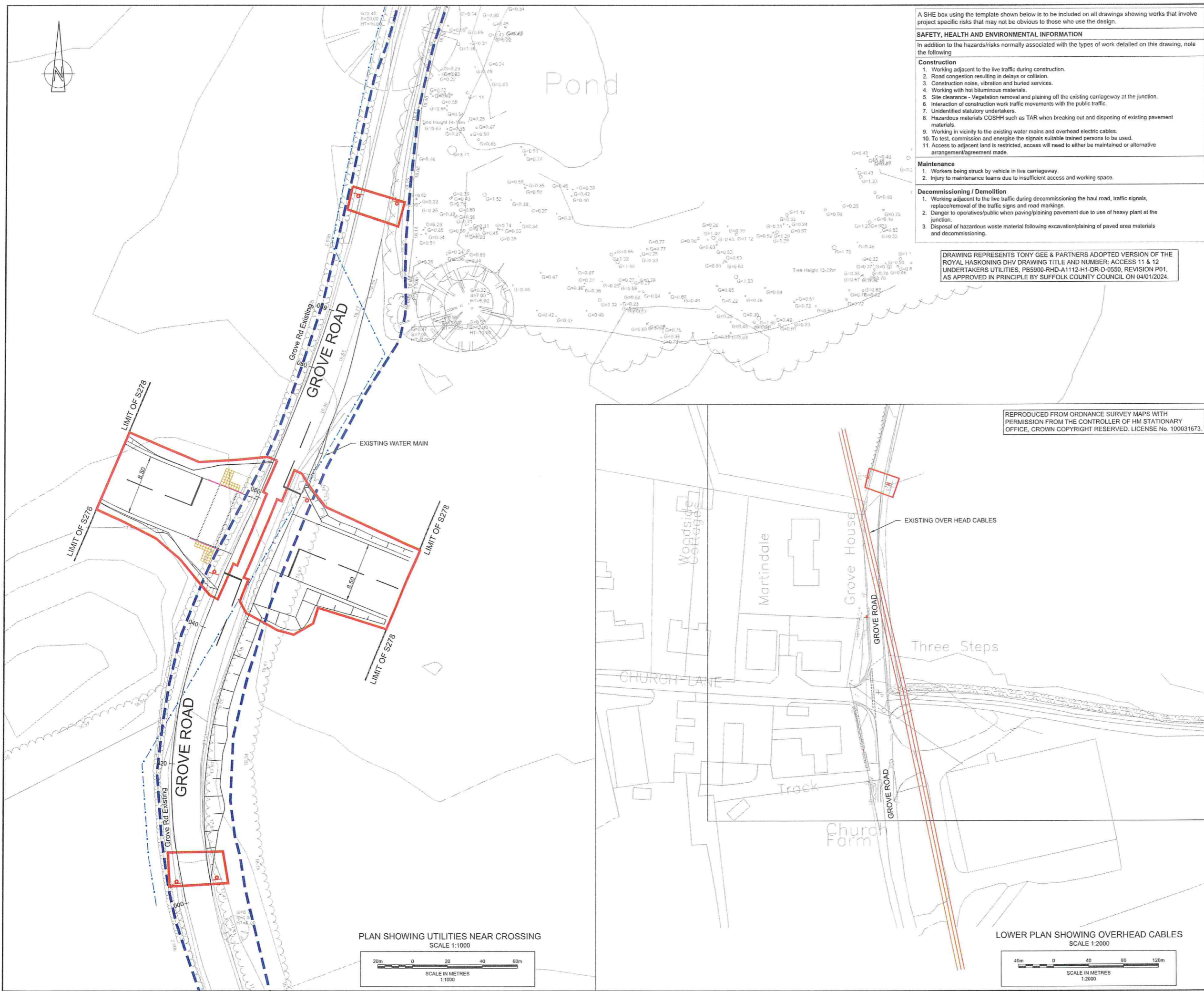


SPR EA1 & EA2

ACCESS 11 AND 12
GROVE ROAD
CONTOURS & SECTIONS

DRAWING No
EA2-ONS-CIV-DRG-TYW-000463

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- Construction noise, vibration and buried services.
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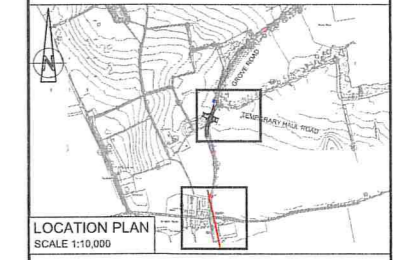
DRAWING REPRESENTS TONY GEE & PARTNERS ADOPTED VERSION OF THE ROYAL HASKONING DHV DRAWING TITLE AND NUMBER: ACCESS 11 & 12 UNDERTAKERS UTILITIES, PB5900-RHD-A112-H1-DR-D-0550, REVISION P01, AS APPROVED IN PRINCIPLE BY SUFFOLK COUNTY COUNCIL ON 04/01/2024.

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 - ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS (MCHW).
 - REFER TO DWG. NO. B124022-TG-H0-XX-DR-0044 FOR ACCESS 11 AND 12 GENERAL ARRANGEMENT DETAILS SHEET 2 OF 2.

- KEY**
- EXISTING TOPOGRAPHICAL SURVEY / OS BASE MAP
 - HIGHWAY ADOPTION BOUNDARY
 - S278 WORK AREA
- UTILITIES**
- WATER MAIN
 - OVERHEAD CABLES



P01	TWR	BM	GG	21/03/25	FIRST ISSUE
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CODE: S4 DRAWING STATUS: FOR REVIEW/AUTHORISATION

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SPR EA1 & EA2

SP

ACCESS 11 AND 12 GROVE ROAD STATUTORY UNDERTAKER UTILITIES

DRAWING No. EA2-ONS-CIV-DRG-TYW-000460

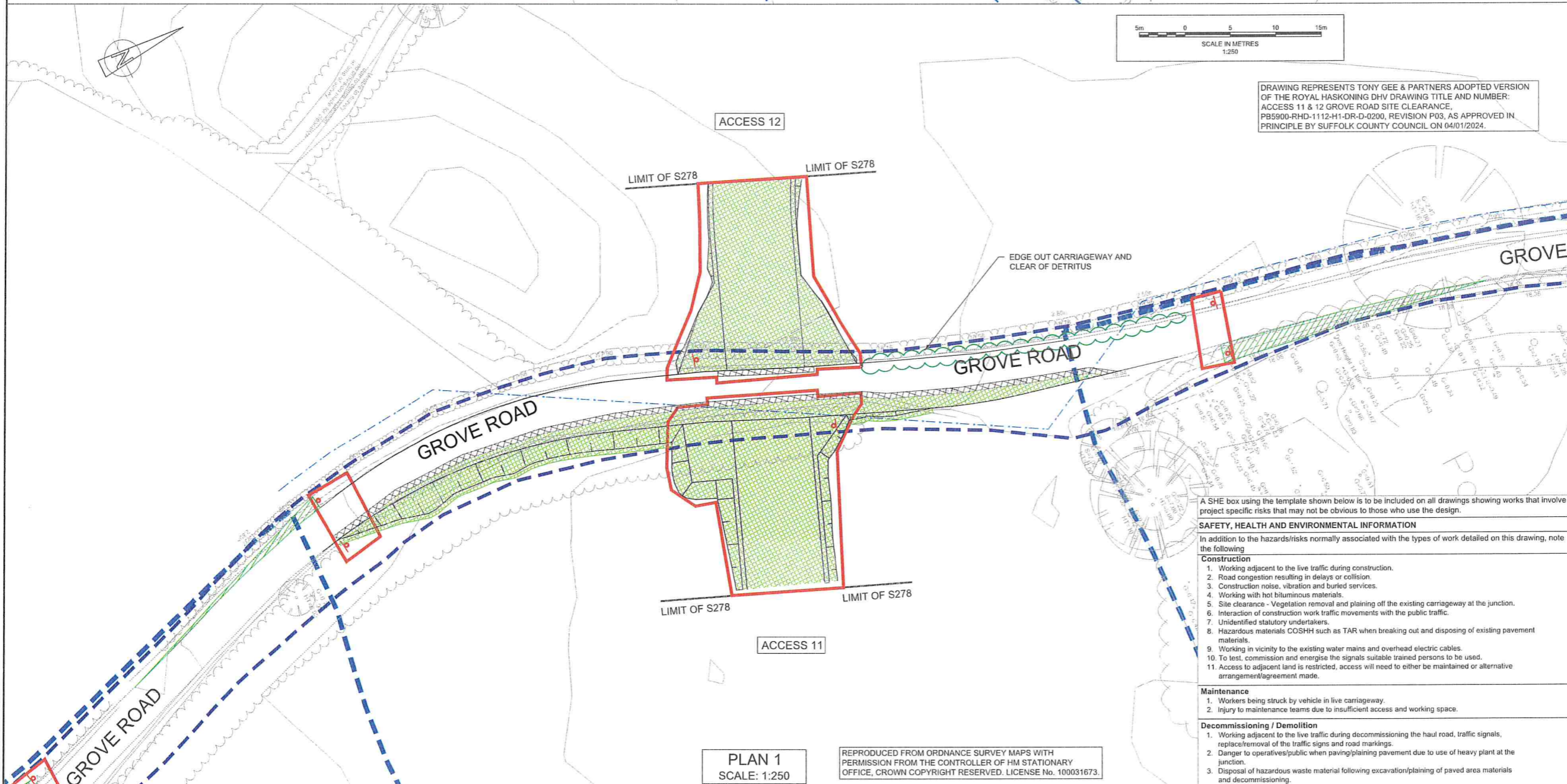
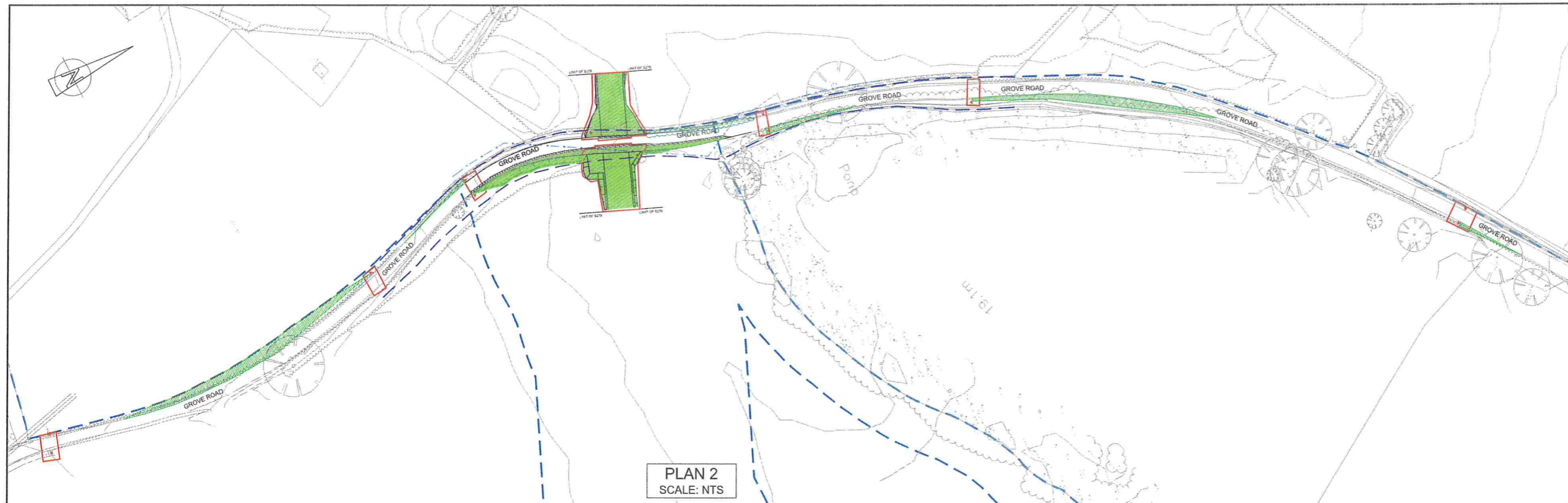
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SCALE: AS SHOWN	ORIGINAL SIZE: A1	P01

PLAN SHOWING UTILITIES NEAR CROSSING SCALE 1:1000



LOWER PLAN SHOWING OVERHEAD CABLES SCALE 1:2000

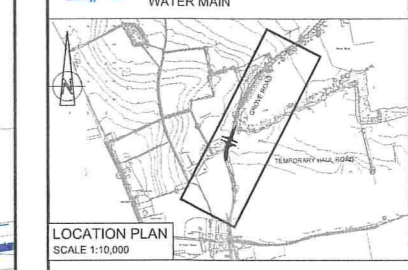




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 - REQUIREMENT FOR ECOLOGY SITE WALKOVER SURVEYS, PRIOR TO COMMENCEMENT OF SITE CLEARANCE, TO BE MANAGED BY OTHERS.

- KEY
- HIGHWAY BOUNDARY
 - S278 WORK AREA
 - DCO BOUNDARY
 - EXISTING TOPOGRAPHICAL SURVEY PLANE OFF 50mm SURFACE COURSE AND 60mm BINDER OF EXISTING CARRIAGEWAY FOR TIE IN. REFER TO "EA20NS-TG-ZZ-DRG-H-11_12-0083" FOR CONSTRUCTION DEPTHS.
 - FULL VERGE / VEGETATION REMOVAL
 - EXISTING VEGETATION TO BE CLEARED TO IMPROVE VISIBILITY. VEGETATION CLEARANCE TO BE MAINTAINED THROUGHOUT THE USE OF SITE.
 - WATER MAIN



DRAWING REPRESENTS TONY GEE & PARTNERS ADOPTED VERSION OF THE ROYAL HASKONING DHV DRAWING TITLE AND NUMBER: ACCESS 11 & 12 GROVE ROAD SITE CLEARANCE, PB5900-RHD-1112-H1-DR-D-0200, REVISION P03, AS APPROVED IN PRINCIPLE BY SUFFOLK COUNTY COUNCIL ON 04/01/2024.

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REV.	BY	CHKD	APPD	DATE	DESCRIPTION

CODE: S4 DRAWING STATUS: FOR REVIEW/AUTHORISATION

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SPR EA1 & EA2

ACCESS 11 AND 12
 GROVE ROAD
 SITE CLEARANCE

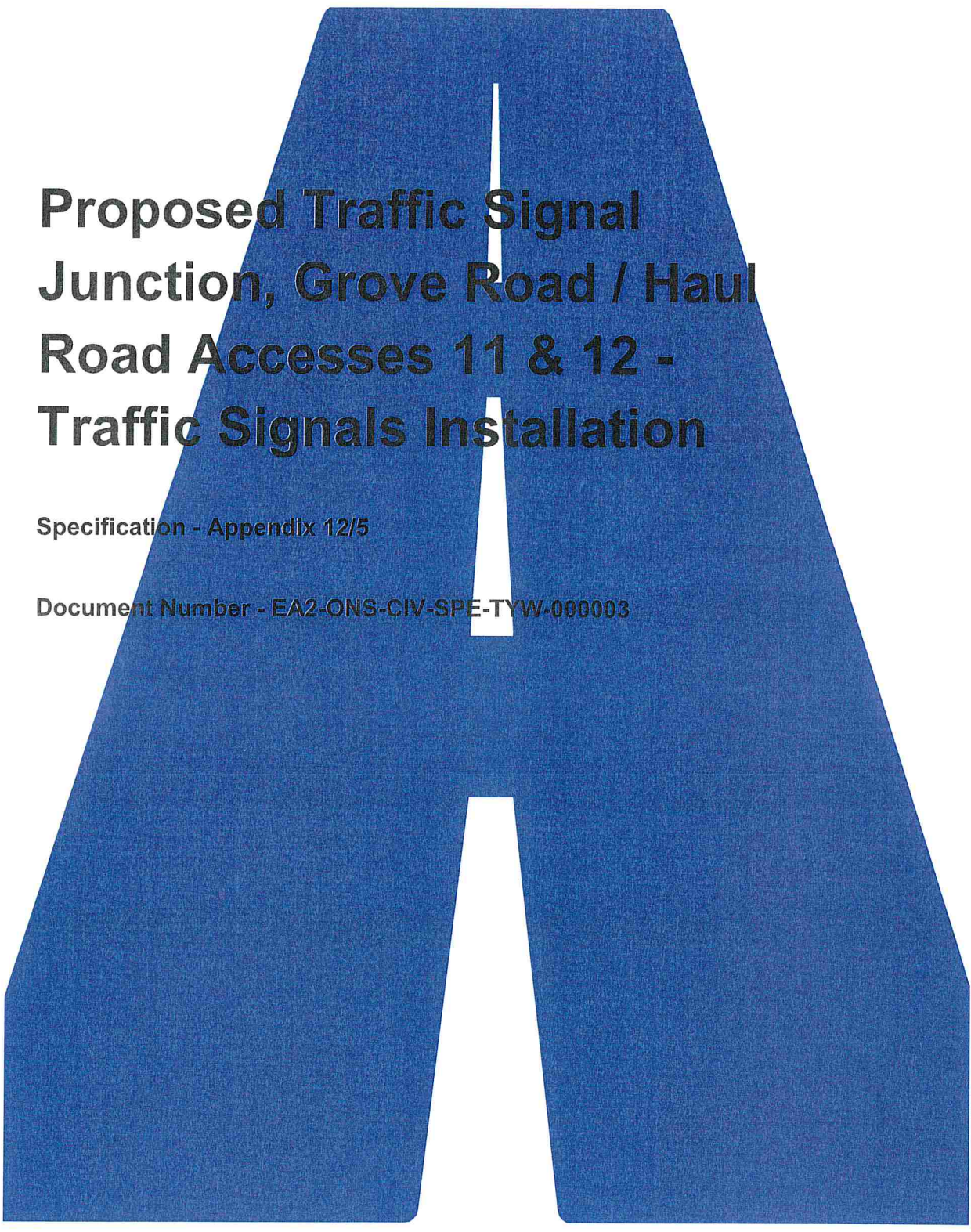
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SCALE: AS SHOWN	ORIGINAL SIZE: A1	

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- In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following
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 - Disposal of hazardous waste material following excavation/plaining of paved area materials and decommissioning.

PLAN 1
 SCALE: 1:250

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Proposed Traffic Signal Junction, Grove Road / Haul Road Accesses 11 & 12 - Traffic Signals Installation

Specification - Appendix 12/5

Document Number - EA2-ONS-CIV-SPE-TYW-000003

DOCUMENT CONTROL SHEET

Issued by:

Canwell Ltd
iCentrum
Holt Street
Birmingham
B7 4BP

Client: Tony Gee and Partners
Project: Grove Road / Haul Road Accesses 11 & 12
Title: Traffic Signal Requirements
Status: Final
Date: September 2023

Document Production Record

Issue number:	1.1	Name	Signature
Prepared		[Redacted]	[Redacted]
Checked		[Redacted]	

Document Revision Record

Issue number	Date	Revision details
1	26 March 2024	Original issue.
2	26 th February 2025	Updated to new GA layout
3	21 ST March 2025	Updated to new GA layout

Canwell Limited has prepared this report in accordance with the instructions of the above-named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

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APPENDIX 12/5 – TRAFFIC SIGNS: TRAFFIC SIGNALS**1.0 INSTALLATION OVERVIEW**

- 1.1 The purpose of this specification is to set out the traffic signal equipment and installation requirements of the project and has been developed following discussions with Suffolk County Council (SCC)
- 1.2 All traffic signal equipment associated with Grove Road Signal junction is to be maintained by Scottish Power.
- 1.3 All equipment shall be Extra Low Voltage (ELV) with voltages of not greater than 50 volts appearing on site.
- 1.4 The contractor(s) shall include for materials that are not included in this specification but are implied and necessary for the satisfactory completion of the installation.
- 1.5 At the junctions, all new ducts, chambers, and retention sockets shall be supplied and installed by the Lead Contractor (LC) prior to the Traffic Signals Contractor (SWARCO) arriving on site.
- 1.6 The required number of retention sockets, large and small access chambers and lids, and carriageway loop boxes shall be ordered by the LC directly from the respective suppliers.
- 1.7 The LC shall procure a power supply into a feeder pillar(s) adjacent to the controller(s) direct from the appropriate service provider. The power supply shall be available before the traffic signal controller is installed on site.
- 1.8 The LC shall be responsible for the procurement, receiving, unloading and storage of all traffic signal poles.
- 1.9 The SWARCO shall be responsible for the procurement (or arranging for the procurement), receiving, unloading and storage of all required traffic signal street furniture and cables.
- 1.10 As required the SWARCO, shall be responsible for the electrical design of both installations, including all impedance and volt drop calculations, to the satisfaction of the Overseeing Organisation. The SWARCO shall submit complete electrical schematics which must be agreed with the Overseeing Organisation prior to the commencement of the works.
- 1.11 The SWARCO shall be responsible for the installation of all traffic signal poles, cabling, traffic signal controller(s), signal heads, detector packs, connection of the electrical supply and distribution unit and the termination of cabling to the gland termination bar within the controller cabinets. The controller(s) shall not be installed on site until the electricity supply within the new feeder pillar.
- 1.12 The SWARCO shall be responsible for testing and commissioning of the traffic signal heads together with all associated electrical work (including power supply from a feeder pillar to the controllers).
- 1.13 The SWARCO shall provide all slot cutting and MC shall provide suitable traffic management.

- 1.14 The SWARCO shall be responsible for the maintenance of the traffic signals installations (including associated cabling) for the duration of the works, and provide a 28-day fault free maintenance agreement to maintain the signal equipment and replace any defective items in the installation.
- 1.15 The SWARCO shall provide adequate protection for all traffic signal equipment from adverse environmental conditions. The Overseeing Organisation reserve the right to stop work where measures necessary to provide adequate protection are insufficient. Any delay and additional cost shall be borne by the SWARCO.
- 1.16 The SWARCO shall maintain the site in a safe and tidy condition at all times, and shall remove all waste and equipment from the site. All access to individual premises, properties and apparatus shall be maintained at all times.
- 1.17 All urgent faults shall be repaired within 24 hours.

2.0 LOCATION OF EQUIPMENT, DRAWINGS AND STANDARD DETAILS

2.0 The location of all signal posts, signal heads, ducting, detection, loop schedules and stage diagrams for the Grove Road junction are shown on the following drawings:

Signal Drawings	Location
EA2-ONS-CIV-DRG-TYW-000520	Grove Road / Accesses 11 & 12

2.1 The location of the controller, retention sockets, signal poles / heads and ducting and chambers shall be agreed with the Overseeing Organisation prior to installation. The Overseeing Organisation will require at least 5 working days advance notice to set out the positions of the equipment with the LC and SWARCO. Neither the LC and/or the SWARCO shall commence installation of any traffic signal equipment until the location of each item has been agreed on Site by a representative of the Overseeing Organisation.

3.0 STANDARDS OF WORKMANSHIP AND MATERIALS

3.1 Work shall be undertaken by approved SWARCOs, having accreditation under Quality Management Scheme No. 8 – Installation and Maintenance of Traffic Signals The SWARCO shall provide statements to the Overseeing Organisation regarding the following:

- Accreditation under Quality Management Scheme No. 8
- Current BS EN ISO 9002 status
- Health and Safety Policy
- Risk Assessment Policy

3.2 All electrical design, installation and testing shall be undertaken in accordance with the following;

- Traffic Signs Manual Chapter 6 – “Traffic Control”
- DMRB TS 101 “Traffic signalling systems (inspection and assessment)”
- BS 7987:2001 – Road Traffic Signal Systems.
- EN 12368 – Traffic Control Equipment - Signal Heads
- BS 7671: 2018 IEE Wiring Regulations Eighteenth Edition
- EN 12675 – Traffic Signal Controllers – Functional Safety Requirements.

3.3 The SWARCO shall ensure that all personnel are appropriately trained and experienced in undertaking traffic signal installation work, with particular reference to the electrical installation and testing of traffic signals in accordance with BS 7671. The SWARCO shall provide a Statement of Competency of personnel undertaking the installation of traffic signal control equipment when requested.

3.4 The SWARCO shall ensure that all test equipment is suitably maintained and calibrated periodically. Calibration test certificates and electrical test certificates shall be made available to the Overseeing Organisation when requested.

4.0 HEALTH AND SAFETY

- 4.1 The SWARCO shall ensure that all personnel are appropriately trained and equipped with appropriate safety equipment, including cable location equipment to perform the requirements of the Contract.
- 4.2 The SWARCO shall take due care to protect people working at the site and the public when duct chamber lids have been removed and when cables are being installed.
- 4.3 All special requirements and regulations shall be observed when working in close proximity to Utility Company apparatus.
- 4.4 The SWARCO shall ensure that all employee's shall be made aware of the potential danger of gas build-up in confined spaces such as ducts and duct boxes, and the need for appropriate gas testing equipment.
- 4.5 The SWARCO shall ensure that all personnel are appropriately trained and equipped with appropriate safety equipment when working at height.
- 4.6 The SWARCO shall comply with the requirements of "Chapter 8 of the Traffic Signs Manual" and the "Safety at Street Works and Road Works - A Code of Practice". All signs shall be Class RA.2. The SWARCO must provide as necessary "Light Signals Not in Use (Diag 7019)" together with orange signal-head cover sleeves, which conform to Statutory Regulations and Department for Transport Specifications.
- 4.7 The SWARCO shall give the Overseeing Organisation a minimum of 14 days notice of any proposal to switch traffic signals off for planned works and confirm this 24 hours before the event. Should pedestrian or motorists' safety be deemed to be at risk then traffic signals may be switched off, with appropriate warning signs erected, but the Overseeing Organisation shall be informed as soon as possible. Portable traffic signals shall only be used at works associated with this project with the prior consent the Overseeing Organisation. At least six weeks notice is required.
- 4.8 The SWARCO shall ensure that all new primary and secondary signal heads are covered with an orange cover if not in operation, to avoid confusion for road users. These shall remain in place until commissioning of the traffic signal controllers is complete.

5.0 COORDINATION OF WORKS

- 5.1 The LC and SWARCO shall coordinate works with the Overseeing Organisation in order to ensure that road space is booked and equipment is available when required.

6.0 EQUIPMENT SUPPLY AND INSTALLATION

- 6.1 All equipment shall be in accordance with all relevant standards and approvals. Traffic signal equipment shall conform to the following standards or their subsequent revisions:
- Traffic Signs Manual Chapter 6 – "Traffic Control"
 - DMRB TD 101 "Traffic signalling systems (design)"
 - DMRB TS 101 "Traffic signalling systems (inspection and assessment)"
 - DMRB TM 101 "Traffic signalling systems (maintenance and operation)"
 - DMRB CA 185 "Vehicle speed measurement"
 - DMRB CD 116 "Geometric design of roundabouts"
 - EN12368 'Traffic Control Equipment';
 - LTN 01/08 'Traffic Management and Street Sweeping';
 - BS EN 12767:2019 "Passive safety of support structures for road equipment. Requirements and test methods"
 - TR 0102 'Standard Traffic Signals';
 - TOPAS 2500A 'Specification for Traffic Signal Controller';
 - TOPAS 2505A 'Performance Specification for Above Ground Vehicle Detector Systems for use at Permanent Traffic Signal Installations';
 - TOPAS 2506A 'Performance Specification for Above Ground On-Crossing Pedestrian detection Systems';

-
- TOPAS 2507A 'Performance Specification for Kerbside Detection Systems for use with Nearside Signals and Demand Units';
 - TOPAS 2508A 'Performance Specification for Tactile Equipment for use at Pedestrian Crossings';
 - TOPAS 2511A 'Performance Specification for Nearside Signal and Demand Units';
 - TOPAS 2512A 'Specification for Below Ground Vehicle Detection Equipment';
 - TOPAS 2522A 'Remote Monitoring and Control of Traffic Control Equipment via a Telecommunications Network';
 - TOPAS 2523A 'Traffic Control Equipment Interfacing Specification';
 - TR 2029 'Inductive Loop Cable for Vehicle Detection Systems';
 - TR 2031 'Armoured Feeder Cable for Inductive Loop Systems';
 - MCH 1542 'Guidelines for the Installation guide for MOVA'; and
 - MCHW Vol 3 'Manual of Contract Documents for Highway Works, Volume 3, G series drawings for detector loops'.
- 6.2 TOPAS specifications shall take precedence over TR specifications.
- 6.3 The electrical design, mechanical termination of the cables and electrical testing of the unterminated cables shall be carried out by the SWARCO under this Contract, in accordance with IEE Regulations for Electrical Installations (latest edition).
- 6.4 Unless otherwise specified, the LC shall complete all retention socket and ducting and chamber installation work before The SWARCO commences the cable termination works.
- 6.5 All traffic signal street furniture and cables shall be supplied by the SWARCO and will be as described in the Contract. The SWARCO shall be responsible for the following:
- Purchase of the equipment.
 - Delivery to site, handling and installation in accordance with this specification.
 - Undertaking repairs to faulty equipment or any equipment damaged during the works, until formal acceptance for maintenance by the Overseeing Organisation.
- 6.6 All equipment, including cables, shall be supplied in a new and unused condition except insofar as it has been tested in the course of manufacture. Equipment of the most recent pattern and in current production shall be used.

- 6.7 When requested by the Overseeing Organisation, the SWARCO shall confirm in writing that the equipment being offered has the required Type approval for use on public roads.

7.0 SIGNAL POLES

- 7.1 All signal poles shall be steel with top cap terminations. Signal poles shall be provided as follows:
- 4m standard poles
- 7.2 The SWARCO shall install all signal poles in retention sockets installed by the LC.
- 7.3 The SWARCO shall number all signal poles in accordance with the numbering system used on the latest revisions of the drawings listed above. All poles shall be numbered at a right angle to the traffic signal head top-fixing bracket.

Retention Sockets

- 7.4 All retention sockets shall be of a suitable size for the pole being installed with an appropriate depth root according to the Manufacturer's recommended base specification, unless otherwise agreed with the overseeing organisation
- 7.5 NAL RS115 Retaining Socket System or equivalent shall be installed with standard 114mm 4m poles.
- 7.6 The retention sockets shall be procured and installed by the LC according to the manufacturers recommended specifications for signal poles. All signal poles shall be supplied without slots cut into the base.

Setting out and positioning

- 7.7 The retention sockets shall be installed as set out on site, in the same positions as the poles marked on the drawings listed above.
- 7.8 The position of all retention sockets shall be agreed with the Overseeing Organisation prior to installation on site.
- 7.9 Signals shall be positioned so that the minimum horizontal clearance between the signal head assembly and the edge of the carriageway shall be 450m.

8.0 SIGNAL HEADS

General

- 8.1 LED signal heads shall be provided throughout the traffic signal installation. All LED signals heads shall have red lamp monitoring.
- 8.2 All signal heads shall be to the current Department for Transport specification. Signal heads shall be as detailed on the tables on the detailed signal layout drawings listed above and be supplied by Swarco or Yunex or Telent.
- 8.3 The SWARCO shall ensure that the signal heads have a minimum 5 year warranty and evidence of this shall be provided to the Overseeing Organisation.

Installation

- 8.4 Backing boards shall be supplied by the SWARCO and be fitted to all traffic signal head displays. All backing boards shall have a 50mm border of Class RA.2 retro-reflective material (white). The backing boards shall be fitted using the correct number and type of fixings as specified by the signal head manufacturer.
- 8.5 The SWARCO shall supply and fit flexible tubing and matching gland, or equivalent, to link the signal head to the signal pole: the tubing shall protrude into the pole by approximately 12 mm after signal head

-
- alignment.
- 8.6 Standard poles shall be supplied by the LC and be of such a length as to enable the centre of the amber lens to be sited not less than 2.4m, nor more than 3.1m above footway level with regards to "3 in line" signal heads. The amber lens of each vehicular aspect on any one approach shall be at the same height above carriageway level. The bottom of the signal head shall not be less than 2.1m above footway level.
- 8.7 Primary signal heads shall normally be directed at a point approximately 1.5m above the centre of the approach at a distance of approximately 50m from the stop-line. Final alignments shall be agreed at switch-on.
- 8.8 Secondary signal heads shall be directed at a point approximately 1.5m above the centre of the approach at a distance of approximately 30 metres from the stop line. Final alignments to be agreed at switch-on with the Overseeing Organisation.
- 8.9 As a part of the installation, the SWARCO shall label the signal heads with the designated phase letter. The phase letter shall be viewable from a safe position placed near the rear lower edge of the signal head.
- 8.10 Until the signals are officially switched on the SWARCO shall ensure that all signal heads, are 'bagged off' such that all aspects can be fully tested without displaying any illuminated signals to vehicles or pedestrians.
- 8.11 All unused holes in signal poles shall be filled or covered up by a suitable means to be approved by the Overseeing Organisation. If the poles are drilled incorrectly, the pole will be replaced at the SWARCO's expense.
- 8.12 Wiring for red lamp monitoring shall be agreed with the Overseeing Organisation prior to installation.
- 8.13 Side cutout hoods shall be provided in lieu of standard secondary hoods where shown on the drawings.
- 8.14 Where indicated on the drawings the secondary hoods need to be rotated in order to ensure that the signal is not visible from adjacent stoplines.
- 9.0 ELECTRICAL ISOLATION**
- 9.1 N/A
- 10.0 INSTALLATION OF TERMINATIONS, POLE CAPS AND PHOTO-ELECTRIC CELL**
- 10.1 At the cable termination assembly in the signal poles, at the terminal point of any cable circuits (i.e. where no cables loop out to other poles), the cores on the armoured cable that are not use for any function at that point shall be designated as "spare". The cable cores thus designated shall be connected to the terminal block in the normal way but the terminal on the other side of the terminal block (to which the cable cores to the signal head etc. are usually connected) shall be connected to the Circuit Protective Conductor (earth point).
- 10.2 All designated "Circuit Protective Conductors" shall be sleeved in green/yellow sleeving.
- 10.3 All multi-core armoured cables, identified with cable markers, shall have their steel wire armouring (SWA) terminated with BS Armoured Cable Glands (or equivalent) which shall be securely fastened to a termination plate. The removal of the outer sheath of the cable shall be made good with green/yellow PVC tape all the way up and over the gland to prevent corrosion of the CPC.
- 10.4 All ELV incoming/outgoing multi-core SWA signal cables shall be securely fastened to the appropriate side of the termination plate and connected to the appropriate connector block.
- 10.5 If the number of terminations within a signal pole exceeds the number of termination points available, then a 'flying' termination block may be used for spare cores. Live or neutral cores shall only be terminated in this way if there is no alternative, and then only with the prior approval of the Authority.

-
- 10.6 Separate neutrals shall be used for each traffic signal phase.
- 10.7 Any work on or around the top of the signal poles must be carried out according to the safe working procedures for working at height and electrical safety.

11.0 CABLING AND ELECTRICAL SUPPLY

General

- 11.1 The SWARCO shall undertake the electrical design of the installation including all impedance and volt drop calculations. The SWARCO is to provide a comprehensive cable schematic.
- 11.2 Prior to commencement of installation, the SWARCO, when requested, shall supply the Overseeing Organisation full details of all cables to be used. Only cables approved by the traffic signal head manufacturer shall be used.
- 11.3 All cabling shall have orange coloured outer sheathing and shall be laid in ducts.
- 11.4 All 16, 12, 8 and 4 core signal cable shall have a minimum cross sectional area (csa) of 1.5sq.mm. All signals cables shall comply with the requirements of BS 6346 or equivalent and shall be of adequate size and rating to meet the electrical current carrying and voltage drop requirements and provide the necessary electrical protection.
- 11.5 Unless otherwise agreed with the Overseeing Organisation the following requirements shall apply to cables:
- Armoured cables shall be terminated in no more than two rows on no more than 2 earth termination bars, unless the termination bars are mounted in such a fashion as to enable easy access to more than two rows.
 - Cables shall not be mounted on opposing sides of the same termination bar. It is the responsibility of the SWARCO to determine whether the traffic signal controller will provide enough termination points for the proposed cabling at the time of quotation.
- 11.6 Where the maximum terminations required exceed the maximum terminations provided by the controller, a separate termination cabinet shall be provided either adjacent to the controller or at some other point agreed with LC. The provision and installation of this termination cabinet shall be the responsibility of the SWARCO.
- 11.7 Cables between each signal pole and the controller shall have a minimum of 16 cores. No one cable shall serve more than one pole and no one traffic signal phase shall be dependent on a single cable run.
- 11.8 Multi-cored cables, including linking cables, to all other equipment housings where specified shall have a spare capacity of at least 4 spare cores or 25% at the time of installation. Where this is not possible, a second cable shall be provided which is terminated correctly at each end.
- 11.9 Feeder cable shall be single pair, comprising of two core SWA, insulated with polyethylene. The cable conductors shall be annealed copper of CSA 1.5sq.mm, complying with the requirements of BS 6360 (Class 1) or equivalent.
- 11.10 The SWARCO shall label all cables at source, and destination. Markings on the labels shall be permanent and securely fastened by Critchley cable tags. All cables shall be labelled at each source and destination, in accordance with Appendix 12/70.
- 11.11 Cables shall be continuous throughout their length from origin to destination and shall not be jointed.

Ducts and Installation

- 11.12 The number of cables in any 50mm duct shall not exceed 2 armoured or 4 non-armoured cables. If used in combination, it may be taken that an armoured cable is equivalent to 2 non-armoured cables.
- 11.13 The number of cables in any 100mm duct shall not exceed 5 armoured or 10 non-armoured cables. If

used in combination, it may be taken that an armoured cable is equivalent to 2 non- armoured cables.

- 11.14 If the number of ducts or chambers required by the SWARCO to satisfy the requirements above exceeds the number shown on the drawing provided to them, the SWARCO shall define the extra requirements at the time of submitting their tender price to the LC.
- 11.15 The Main Contractor shall supply and install an electricity feeder pillar, unless stated otherwise. The pillar shall be a single or dual unit as appropriate to the installation concerned and the Traffic Signals Contractor shall ensure that the Main Contractor is advised of the correct requirements. The location of any feeder pillar shall be agreed with the LA Signals Engineer. The Main Contractor shall make all necessary arrangements.

Loop Feeder Cables

- 11.16 The connection of loop detector feeder cables at the controller end shall be made by the SWARCO. At the controller end; the SWARCO shall allow a length of 2.5m of cable for routing and connection of cables within the controller. 2.5m of the PVC outer sheaf is to be removed. The SWA is to be glanded off by an approved CET gland leaving 2.5m of cable with inner sheaf intact for connection to the controller.
- 11.17 The connection at the loop detector end shall be made by the SWARCO. The outer sheaf of PVC insulation to be removed and SWA to be glanded off. Joints shall be re-usable, unless otherwise agreed with the Overseeing Organisation. The SWARCO shall ensure that all bare cable ends are clear of any exposed metalwork, other casework or the ground.

Earthing

- 11.18 Earthing arrangements for controller, cabling and other equipment and enclosures shall comply fully with the requirements of BS 7671.
- 11.19 On completion of the earth continuity installation, the earth resistance shall be tested by an approved method as stated in BS 7671. The maximum acceptance earth resistance is 20 ohms. Earth continuity shall be provided through all cable joints.
- 11.20 The controller cabinet shall be equipped with an earthing terminal to which all other leads shall be connected either directly or via earth blocks. A copper conductor of min 16 sq.mm csa, shall bond this termination to the incoming supply earth terminal block. It shall be labelled with the words "Safety Electrical Earth - Do Not Remove". Earth conductors that are part of a multi-core cable and where a green/yellow stripe colour coded core is not available, the SWARCO shall ensure that a protective conductor is adequately identified as such by sleeving or marking tape of the correct colouring. The selected core shall comply with earthing requirements of BS 7671.
- 11.21 The steel wire armouring of all cables shall be earthed using a purpose made terminator of a type approved the Overseeing Organisation.

Mains Electrical Supply

- 11.22 At the controller location a new feeder pillar shall be provided with a DNO supply.

12.0 ABOVE GROUND DETECTION

- 12.1 The above ground detectors shall be mounted and aligned in accordance with the manufacturer's instructions and approved by the Overseeing Organisation. Care must be taken to avoid masking by backing boards.

13.0 INDUCTIVE LOOP DETECTION

General

- 13.1 N/A

14.0 TRAFFIC SIGNAL CONTROLLERS

General

- 14.1 The type and manufacturer shall be agreed with the Overseeing Organisation. The LC shall order the required number of intersection controllers and all ancillary equipment, including Chameleon Unit and all required detector packs. The controller cases shall be black. The LC is reminded that lead in periods for the supply of equipment can be 8 – 14 weeks. The SWARCO should be aware that while both Swarco and Siemens controllers may be used and the OMU must be compatible with Overseeing Organisation's instation system.
- 14.2 The controllers shall be compliant with the requirements set out in TR2500 and installed by the SWARCO. The SWARCO shall state the equipment power consumption and provide lamp load calculations of each controller.
- 14.3 The controllers shall be located as shown on the traffic signal drawings listed above and shall be installed on a foundation that has a plinth level set 50mm above the finished ground level.
- 14.4 The controller cabinets shall be fitted with a dual 13 amp socket to BS 1363, protected by a residual current device of maximum rating 30mA. The socket shall be marked 'for maintenance use only'.
- 14.5 Each controller and ancillary cabinet shall have a door pocket to retain site paperwork. The door pocket shall contain all necessary handbooks relating to the controller (i.e. Maintenance, Handset Commands, General and a waterproof staging diagram with clearly labelled road names, stages and phases). The controller and ancillary cabinets shall be fitted with a device to retain the controller door securely in an open position. Two complete sets of keys shall be provided including 'T' bars/keys, for each cabinet.
- 14.6 Each detector channel should be labelled to clearly indicate to which loops they are connected and diagrammatic mapping should be provided in every controller.
- 14.7 The tender should include for cabling and connections between the controllers and pre-installed feeder pillar with dedicated power supply for traffic signals.

Installation

- 14.8 For each controller or termination cabinet the LC shall install a NAL Cabinet Base with associated chamber, the cabinet base shall be installed in accordance with manufacturer's instructions.
- 14.9 The LC shall provide paving around the controller to allow the maintenance engineer a dry standing/working area and to ensure that the grass surround can be cut without damaging the controller.
- 14.10 The SWARCO shall secure all external SWA signal cables, including the multi-paired link cable to the gland termination bars at the controller. The outer sheath of the PVC insulation is to be removed, and the SWA to be glanded-off leaving a minimum of 2.5 metres of cable with inner sheath intact for connection to the controller(s) by the SWARCO. The PVC outer sheath should then be made good with self-adhesive tape.

SCC: Telecommunications

- 14.11 The signal controller shall be provided with a Chameleon / MOVA Unit compatible with SCC RMS system complete with SCC approved 4G Router and cabinet antenna, SIM shall be provided by SCC. All licenses shall be provided.

15.0 COMPLETION OF WORKS

- 15.1 Upon completion the SWARCO shall complete and submit to the Overseeing Organisation the Construction Certificate and the Inspection and Test Certificate provided within the Electrical Test Results Schedule, or the contractor's own documentation where agreed in advance with the Overseeing Organisation.
- 15.2 A pre-commissioning shall be undertaken by the SWARCO before SAT shall be undertaken. Any defects identified in this inspection shall be rectified by The SWARCO prior to switching on the traffic signals.
- 15.3 At switch-on, all lanes shall be open for traffic, road markings complete, and traffic management removed, in order that the signals can operate efficiently and do not create congestion. A means of signal co-ordination must be implemented at switch on, and MOVA commissioning and validation shall be undertaken as soon as possible thereafter.

16.0 TESTING & COMMISSIONING

- 16.1 Commissioning tests shall be undertaken as follows:
- A successful Factory Acceptance Test (FAT) of each controller before site installation to ensure that the controller conforms to the TR2500A specification. These tests shall be carried out on the actual controllers to be installed at the site where possible and will be attended by Overseeing Organisation / design engineer.
 - Inspection of site layout, equipment location, traffic signs and road markings, for compliance with the requirements of the specification and drawings.
 - Electrical tests to demonstrate compliance with electrical requirements. Forms SF 279 Traffic Signal Cable Test Certificate SF 280 Inductive Loop Test Certificate are provided
 - The SWARCO shall carry out earth loop impedance and any other necessary electrical safety checks at the time of commissioning the installation. The Overseeing Organisation shall not accept responsibility for the installation until this has been provided.
 - A successful Site Acceptance Test (SAT) at each junction to demonstrate satisfactory and safe signal operation and control including correct cabling of signal heads shall be undertaken in the presence of the Overseeing Organisation and Design engineer.
- 16.2 The Overseeing Organisation shall be given 10 working days notice of all the above tests to allow sufficient time to attend the FAT and the SAT and witness the tests being carried out. The LC shall place an Order with the Overseeing Organisation traffic signal term maintenance contractor to attend the SAT.
- 16.3 The FAT shall be conducted by the SWARCO via Teams and witnessed by the Design Engineer / Overseeing Organisation. The FAT shall take place at least two weeks in advance of the planned installation of the controller.
- 16.4 All necessary green conflict monitoring can be undertaken by Swarco and signed paperwork provided.
- 16.5 Pre-commissioning shall be carried out by the SWARCO on completion of the installation work, but before commissioning. The whole of the installation shall be thoroughly tested prior to the Site Acceptance test (SAT) being carried out.
- 16.6 Under normal circumstances, the installation will be complete (including all feeders, linking cables etc.) prior to commissioning. In exceptional circumstances the client may choose to switch on the signals with some items outstanding. In such cases take-over will be classified as interim until such time that all outstanding items are cleared to the approval of the Authority, where upon the take-over will be classed as final. Any outstanding items must be completed within one week of switch-on unless agreed with the Overseeing Organisation.
- 16.7 Until such time as the installation is taken over and the certificate is signed, the SWARCO shall be responsible for the testing of all equipment.
- 16.8 The commissioning of the installation shall be carried out by the SWARCO in the presence of the

Overseeing Organisation / Design Engineer. SWARCO must give 48 hours notice and seek the agreement of the Overseeing Organisation if any items of work will be outstanding at commissioning. The Overseeing Organisation must be informed as soon as possible if the agreed commissioning date/time has to be cancelled and re-arranged.

16.9 The design engineer will undertake any validation after the SAT is finished.

17.0 ALTERATIONS/MODIFICATIONS

17.1 If The SWARCO, at their own expense, proposes to modify the equipment, they shall notify the Overseeing Organisation and request consent to the proposed modification. If the consent is given and the change is approved by the Overseeing Organisation, then the SWARCO shall carry out the work at a time convenient to the Overseeing Organisation.

17.2 All modifications shall be of a standard type approved by the DfT, equipment manufacturer and the Overseeing Organisation, using Approved components.

17.3 Within ten days of any modification(s) being carried out, The SWARCO shall provide the Overseeing Organisation with the relevant updated documentation.

18.0 DAMAGE

18.1 If any part of the traffic signal installation or associated equipment is damaged by some cause outside the control of the SWARCO, then the SWARCO shall report this to the LC and the repairs made in accordance with the agreements made between the LC, Undertaker and the Overseeing Organisation. If such damage occurs because of negligence of the SWARCO he shall be responsible for making good such damage at no cost to the Undertaker or Overseeing Organisation.

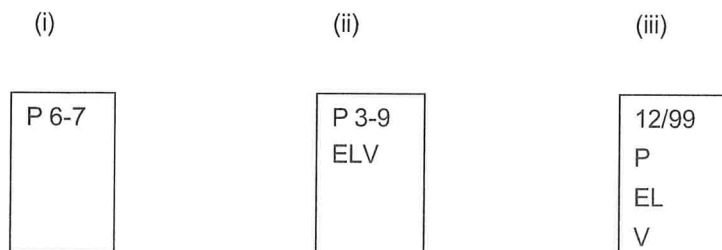
APPENDIX 12/70: TRAFFIC SIGNAL CABLE AND CABLE CORE IDENTIFICATION

Traffic Signals Cable Identification

12.70.1 All cables entering any equipment housing shall be identified by a 'Pull-Tite' tag fixed around the inner sheath immediately above the SWA termination gland. The tag shall be marked, using an approved waterproof, indelible black marker pen, in the following manner:

- (i) Low Voltage Signal Cables - The tag shall be red and shall be marked with the numbers of the post, serviced by the cable.
- (ii) Extra Low Voltage Cables (Pedestrian Push Buttons, etc) - The tag shall be yellow and shall be clearly marked with the post number serviced by the cable, in addition, the letters ELV shall be added.
- (iii) Extra Low Voltage Cables (Linking Cables) - The tag shall be yellow and shall be marked with the site reference number of the linked equipment and in addition, the letters ELV shall be added.

Examples:



Identification of Cable Cores

12.70.2 All individual cable cores in cables used in a traffic signal installation shall be identified using coloured PVC grip type markers as shown below. The markers shall be positioned on the core adjacent to the termination point in such a way that they can be read easily. The markers shall be of a type that cannot be removed without the removal of the core from its terminal.

12.70.3 The three identification markers used shall be:

- (i) First Marker – Numbered markers indicating posts numbers. These will be colour coded in accordance with the international resistor colour code. The numbers shall indicate the post fed by that cable, i.e. the next post to which the cable runs.
- (ii) Second Marker – Legend markers indicating the function of the core as shown below. These shall be colour coded as follows:
 - LV Live conductor - Red with Black Text
 - LV Neutral conductor - Black with white text
 - LV Spare conductors - Brown with black text
 - ELV All conductors - Yellow with Black text
- (iii) Lettered markers indicating the phase of the core (White with black text) Notes

12.70.4 Where the address of the other end of a cable is the controller the first marker shall be omitted.

12.70.5 Functions not covered by the above shall be written onto blank markers with an approved pen.

Example of standard pre-printed markers

First marker

<input type="text" value="1"/>	Brown	<input type="text" value="2"/>	Red	<input type="text" value="3"/>	Orange	<input type="text" value="4"/>	Yellow	<input type="text" value="5"/>	Green
<input type="text" value="6"/>	Blue	<input type="text" value="7"/>	Violet	<input type="text" value="8"/>	Grey	<input type="text" value="9"/>	White	<input type="text" value="0"/>	Black

Second marker for LV cables

<input type="text" value="RED"/>	Red	<input type="text" value="AMBER"/>	Red	<input type="text" value="GREEN"/>	Red
<input type="text" value="R/MAN"/>	Red	<input type="text" value="G/MAN"/>	Red	<input type="text" value="WAIT"/>	Red
<input type="text" value="I.G/A"/>	Red	<input type="text" value="F.G/A"/>	Red	<input type="text" value="SIGN"/>	Red
<input type="text" value="PE/L"/>	Red	<input type="text" value="PE/N"/>	Black	<input type="text" value="PE/SW"/>	Red
<input type="text" value="SIG/N"/>	Black	<input type="text" value="SIGN/N"/>	Black	<input type="text" value="SPARE"/>	Brown

Second marker for ELV cables

<input type="text" value="PUSH/B+"/>	Yellow	<input type="text" value="BLEEP +"/>	Yellow	<input type="text" value="TACT+"/>	Yellow
<input type="text" value="PUSH/B-"/>	Yellow	<input type="text" value="BLEEP -"/>	Yellow	<input type="text" value="TACT-"/>	Yellow
<input type="text" value="COMM"/>	Yellow	<input type="text" value="ISCCIB"/>	Yellow	<input type="text" value="LINK"/>	Yellow
<input type="text" value="DET+"/>	Yellow	<input type="text" value="SPARE"/>	Yellow	<input type="text" value="T/O"/>	Yellow
<input type="text" value="DET-"/>	Yellow	<input type="text" value="MVD"/>	Yellow	<input type="text" value="IRD"/>	Yellow

Third marker

<input type="text" value="A"/>	<input type="text" value="B"/>	<input type="text" value="C"/>	<input type="text" value="D"/>	<input type="text" value="E"/>	Etc. All White
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TRAFFIC SIGNALS BILL OF QUANTITIES
**TRAFFIC SIGNAL EQUIPMENT – Grove Road / Haul Road Accesses
11 & 12 Suffolk**

Description	Quantity	Total Cost
Controller		
ELV Intersection Controller (Black)	1	
Chameleon Unit with the latest firmware	1	
Telecommunications 4G Router, aerial	1	
Mains Electricity Supply	1	
Electricity Supply Galvanized Feeder Pillar	1	
NAL Controller Root	1	
Install / FAT / SAT	1	
Signal Heads and Detection		
LED Signal heads RAG / Ahead Only box sign, incl brackets etc	8	
Microwave Vehicle Detection, incl brackets etc	4	
Above Ground Stop Line Detection, incl brackets etc	4	
Photo-electric cell	1	
Nearside Puffin aspect	2	
Oncrossing Pedestrian Detection	2	
Poles		
4m Black straight signal pole	5	
Retention Socket (NAL RS115 or equivalent)	5	
Cables/slot cutting		
Electrical Design	1	
16 core cable – SWARCO to calculate length	Item	
20 core cable - SWARCO to calculate length	Item	
Traffic Control		
Liaison with Highway Authority Signal Engineer	Sum	
Instation configuration and connection to SCC RMS system	1	

BILL OF QUANTITIES NOTES

The following list clarifies the inclusions in the rates in the above table provided by the SWARCO

Traffic Signal Heads

Supply of traffic signal heads includes:

- Delivery, signal heads, optics, backing boards, brackets (all sizes) for signal poles and street lighting columns, reinforcing bars, green arrows in any direction, hoods (primary and secondary), copex tubing. Signal heads shall be ordered as 'complete' heads.

Installation includes:

- Collection, assembly, delivery, installation and all electrical connections
- Installation on Street Lighting columns as well as signal posts.

Traffic Signal Poles

Supply of traffic signal poles includes:

- Delivery of poles, pole cap and assembly.

Installation includes:

- Collection, assembly, delivery, installation of signal poles in NAL retention sockets, electrical connections and drilling for push buttons and pole numbering.

Vehicle Detection

Supply of vehicle detection includes:

- Delivery, all fixings, brackets and connectors.

Installation includes:

- Collection, assembly, delivery and installation including electrical connections.

Cables

Supply of cables includes:

- Delivery, all fixings and connectors.

Installation includes:

- Collection, delivery, installation and electrical connections.

APPENDIX 5/2**Proposed Signal Junction****Grove Road / Haul Road Accesses 11 & 12, Saxmundham**
EA2-ONS-CIV-SPE-TYW-000002

Updated to New GA Layout	JPS		26.02.25	2
First draft	JPS		26.03.24	1
DESCRIPTION	AUTHOR	APPROVED	DATE	ISS

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1. Introduction

- 1.1 The purpose of this document is to detail the steps required for the traffic signal ducts which form part of the Snape Road Junction scheme and ensure that the infrastructure is installed correctly to Suffolk County Council specification.
- 1.2 This document shall be read by all key parties who are involved within this installation of the traffic signal ducted networks.
- 1.3 Traffic Signal Design Drawing EA2-ONS-CIV-DRG-TYW-000520 should be read in conjunction with this document.

2. Service Duct Requirements

General

- 2.1 Position of ducts, traffic signal controller stools, termination cabinet stools, mini pillars, feeder pillars and chambers, including pole retention chambers are to be installed as shown on the signal design drawing.
- 2.2 A copy of the proposed civil works and signals installation programme is to be presented to the engineer at the pre-works meeting detailed in Appendix 12/5. Programme to include the duration of all areas of works.
- 2.3 The Principal Contractor is to liaise direct with the Traffic Signal Contractor prior to, at the commencement of and during the associated signals works.
- 2.4 The Principal Contractor shall be responsible for providing all necessary traffic management arrangements for all signal installation works in accordance with the requirements of Chapter 8 of the Traffic Signs Manual.
- 2.5 The Principal Contractor shall be responsible for the installation of traffic signal controller base stool and termination feeder pillar. The civil contractor is to liaise with the signal contractor

Installation

- 2.6 The minimum cover below finished level shall be as follows.

• 100mm diameter ducts across carriageway.	750mm
• 100mm diameter ducts within footway/verges.	450mm
• 50mm diameter duct between controller and adjacent feeder pillar	450mm
- 2.7 Draw cords are to be installed in all ducts at time of installation. If draw cords are omitted at installation, the Principal Contractor shall install draw cords prior to any cable pulling activities.
- 2.8 Traffic Signal Ducts shall be 100mm diameter orange coloured MDPE and have "Traffic Signals" etched in white at 1 metre intervals along their length. All ducts to have smooth internal bore. Duct between the controller and feeder pillar shall be 50mm diameter and orange in colour.
- 2.9 The colour coding of ducts is contained in Table 1 - Colour Coding of Ducts below.
- 2.10 The numbers and sizes of ducts are defined in Table 2 – Schedule of Proposed Ducts Requirements below.

- 2.11 Joints between sections of ducts shall have any burrs removed and the edges shall be chamfered.
- 2.12 Multiple ducts installed in a single trench shall be strapped together at 1m intervals, as per bullet point 4, paragraph 2.6.
- 2.13 Traffic signal chambers, except pole retention chambers and loop carriageway connection boxes, shall be of a pre-formed polypropylene twin walled type.
- 2.14 Duct chambers shall be at least 450 x 450mm opening width and shall be installed as per manufacturer's instructions and shall have a smooth and level concrete base and a concrete surround. At the ends of road crossings, or where more than two ducts enter the chamber, the chamber shall be of a size 600mm x 600mm.
- 2.15 Boxes and chambers shall of the following types, or direct equivalent:
- Pole Retention sockets: NAL Ltd RS115 or similar approved
 - Chambers: NAL STAKKAbOX 600 x 450mm or similar approved
- 2.16 All duct chambers shall be made clear of construction debris and detritus prior to the installation of any signal cable or other equipment
- 2.17 Ducts shall be sealed by means of pre-formed plastic endcaps prior to the pulling of traffic signal cables. Expanding foam sealant at every duct chamber shall be used upon completion of the installation to prevent vermin and flooding of the duct network.
- 2.18 Chambers located behind safety fences shall be installed at the current minimum safety working width.
- 2.19 The dimensions and sizes of chambers will be identified on the traffic signals drawings and in the schedule Table 2 – Schedule of Proposed Ducts below.
- 2.20 All chambers shall be installed on a flat bed of ST3 concrete with a 100mm drain hole and adequate drain away.
- 2.21 Chamber cover and frame should be class B125 minimum or as defined in the schedules below. Chambers covers shall fasten to chambers by means of 8mm coach screws. Chamber covers shall be marked only with the legend "Traffic Signals".
- 2.22 All B125 chambers shall be fitted with resin composite non-slip lids and the frame shall have a concrete surround not less than 150mm deep and shall, when chambers are placed in verges, provide a clear surround of 150mm.
- 2.23 Ducts are to extend into access chambers / poles boxes to a distance of 25mm +/- 2mm.
- 2.24 A minimum of 3 x 100mm ducts are to be installed between the controller cabinet and associated chamber adjacent to it.
- 2.25 All pole retention sockets shall be constructed from ductile iron and have a 360 degree rotational duct access. Pole retention sockets shall enable extraction of poles without damage.
- 2.26 All pole retention sockets are to be installed as per manufacturer's instructions and shall be vertical. If sockets are installed in such a way that the poles are not vertical, then the civil contractor will be instructed to reinstall the sockets at the Principal Contractor's expense.
- 2.27 All poles are to be mounted in NAL (or equivalent if agreed by highway authority) retention sockets and as such the poles can be slot-less. Slot-less poles shall always be used for shallow depth retention sockets.
- 2.28 All cable shall be pulled into ducts by the use of a draw cord. New draw cord shall be pulled in at the same time. Installing the cables by the use of rods is not acceptable. It shall be the responsibility of the Principal Contractor to ensure that all duct runs are clear of obstructions and contain draw cord before cable installation work begins.
- 2.29 The Traffic Signal Contractor is to ensure that all draw cords are to remain within the ducts, chambers and all other access points following the installation of cable to facilitate future maintenance or modification requirements.

- 2.30 Draw cord shall be left in all ducts used, whether there was draw cord originally installed or not, they shall be secured by tying/fixing the draw rope to the stoppers or securely fastened within the terminal draw pit as appropriate. Two metres of slack ropes shall be provided at both ends of every duct.
- 2.31 The number of cables in any 100mm duct shall not exceed 5 armoured or 10 non-armoured cables. If used in combination, it may be taken that an armoured cable is equivalent to two non-armoured cables.

Reinstatement

- 2.32 Trench and carriageway reinstatement shall be in accordance to "HAUC Specification For the reinstatement of Opening in Highways".
- 2.33 Brightly coloured marker tape in accordance with SHW Clause 1421 and bearing the legend: - "CAUTION TRAFFIC SIGNALS CABLE BELOW" shall be installed.
- 2.34 Final reinstatement of disturbed footway and carriageway surfaces shall be deemed as permanent (by definition) and shall undertaken by the Principle Contractor in materials similar to those removed.
- 2.35 All reinstatement works will be inspected by the Highway Authority or their appointed representative and final approval of all reinstatement works will be given in writing.
- 2.36 All reinstatement works shall be guaranteed for a period of 12 months from system takeover. Any failure in the reinstatement works during the warranty period shall be corrected / replaced at the cost of the Contractor.
- 2.37 Any defective reinstatement works must be rectified within thirty days of a formal notice being served to the Principle Contractor by the Highway Authority. All tenderers are reminded of their obligations defined in the New Roads & Street Works Act 1991.

Table 1 – Colour Coding of Ducts

Utility	Duct	Pipe	Cable	Colour of Marking/Warning Tape where used
Gas	Yellow	Yellow		Yellow with black legend
Water	Blue	Blue MDPE/MOPVC. Also blue coated ductile iron. Can be black in blue sheathing.		
Water pipes for special purposes (e.g. contaminated ground)		Blue with brown stripes. Polyethylene		
Sewerage		Black		
"Grey" water		Black with green stripes		
Electricity	Black		Black (red for some HV)	Yellow with black legend
Telecommunications	Grey/Green		Light grey/black	Yellow with blue legend
Communications	Grey/Green			White with blue legend/Green and/or yellow with identification showing co-axial fibre optic
Highway Authority Services	Duct	Pipe	Cable	Tape
Street lighting England and Wales	Orange		Black	Yellow with black legend
Traffic Control	Orange		Orange	Yellow with black legend
Telecommunications	Light grey		Light grey (or black)	Yellow with black legend
Motorways / Trunk Roads - England and Wales				
Communications	Purple		Grey	Yellow with black legend
Communications power	Purple		Black	Yellow with black legend
Road Lighting	Orange		Black	Yellow with black legend

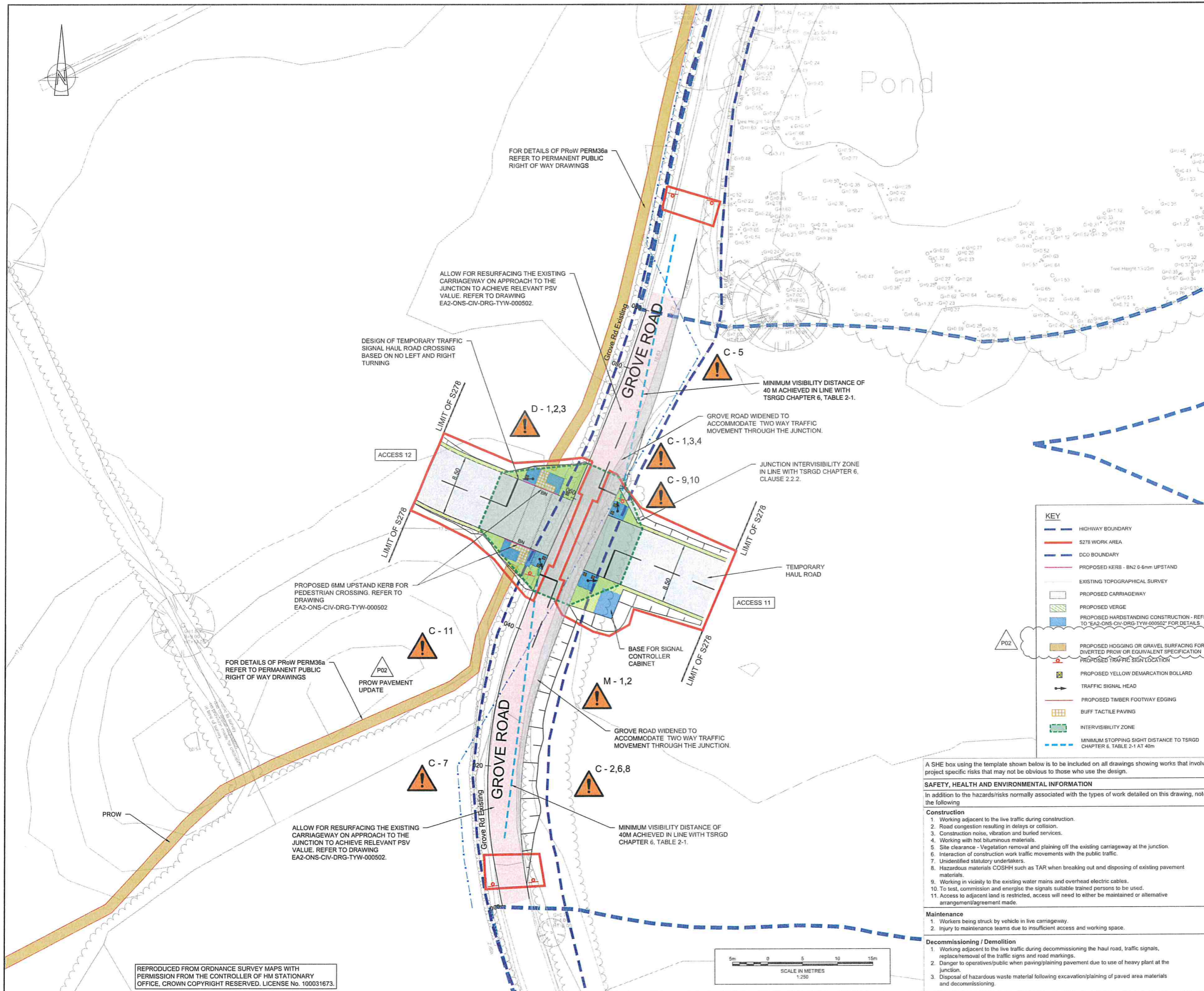
Table 2 Ducting and Socket Details

Item	Requirement	Comments
Duct in footway/verge depth of cover	450mm	
Duct in footway/verge bedding/cover	HCD I2 Type A**	Reinstatement above duct bedding to match footway/verge construction
Duct in carriageway depth of cover	750mm	
Duct in carriageway bedding/cover	HCD I2 Type A**	Reinstatement above duct bedding to match carriageway construction
Max duct run length between chambers	50m	Unless otherwise agreed
Main Ducting Material	MDPE/HDPE or UPVC	
Main Ducting Colour	Orange	
Main Ducting Flexibility	Solid wall, Rigid or Twin wall, Smooth internal wall	Single wall corrugated duct not permitted
Main Ducting Markings	White/Black lettering, min 9mm high at max 1m "TRAFFIC SIGNALS"	Duct to be laid so markings face upwards
Main Ducting Internal Properties	Must be smooth bore	Internal corrugation not permitted
Main Ducting Internal Dimensions	Min 94mm	Ducting to be "100mm"
Main Ducting External Dimensions	Max 110mm	Ducting to be "100mm"
Main Ducting Wall Thickness	Min 4mm	
Main Ducting Marker Tape Type	Yellow with Black Legend	As per NJUG*
Main Ducting Topology	Ring	Central area of site duct ring required with spare capacity
Main Ducting Testing Methodology	Mandrel – HCD I2	Highway Construction Detail I2**
Maximum duct run between chamber and Carriageway Loop Box (CLB)	5m	Unless otherwise agreed
Maximum duct run between controller and feeder pillar (FP)	2m	Unless otherwise agreed
Ducting to Carriageway Loop Box (CLB) and Feeder Pillar (FP) Material	MDPE/HDPE or UPVC	
Ducting to CLB/FP Flexibility	Solid wall, Rigid or Twin wall, Smooth internal wall	Single wall corrugated duct not permitted.
Ducting to CLB/FP Colour	Orange	
Ducting to CLB/FP Internal Dimensions	49mm Min	
Ducting to CLB/FP External Dimensions	64mm Max	
Ducting to CLB/FP Internal Properties	Must be smooth bore	Internal corrugation not permitted
Ducting to CLB/FP Surround	ST2 Concrete	
Draw Cord Material	Polypropylene or Nylon	Must be present for all duct runs
Draw Cord Colour	Blue	To make clearly visible in dirt
Draw Cord Breaking Strain	500kg	This equates to min 6mm dia.
Draw Cord Ends	Must be tied at ends	To avoid losing rope in duct
Chamber Type	Modular Twin Wall	Preformed Liners not acceptable
Chamber Duct Entries	Predrilled with removable caps	
Chamber Material	Preformed Polypropylene	For structural strength

Chamber Surround Footway	To match reinstatement	Surface to match current paved
Chamber Surround Verge	From 150mm depth to surface ST4 concrete with rear base brush finish extending 200mm around chamber frame with EF kerb edge on outer edge	EF kerbing is to prevent concrete breaking away, brush finish is to provide texture and grip, rear base describes dragging the brush at an angle
Chamber Bedding Footway/Verge	Compacted SHW type 2 sub base	For drainage purposes
Chamber (Road Crossing) minimum size	600 x 600	Can be reduced to 600 x 450 where total ducts entering / exiting chamber is 4 or less
Chamber (Controller Access) min. size	600 x 600	
Chamber Lid Minimum Spec (In Footway/Verge)	BSEN124: Class B 125	EG A chamber located in pedestrian footway or grass verge
Chamber Lid Minimum Spec (In Regular low speed trafficked areas)	BSEN124: Class C 250	EG Footways that are regularly overrun by delivery vehicles
Chamber Lid Minimum Spec (In Carriageway)	BSEN124: Class D 400	EG A chamber located within the road surface
Chamber Lid Labelling	"Traffic Signals"	
Chamber Lid Min PSV	50	Skid resistant cover & frame
Chamber Lid Material	Composite or Ductile Iron	Unless otherwise agreed
Signal Pole Installation Method	Retention Socket	Not to be Pole Chamber or direct buried. Manufacturer to be NAL unless otherwise agreed.
Signal Pole / retention socket in verge surface surround	2m x 2m water permeable hardstanding with EF kerb edge	To footway construction Unless otherwise agreed
Retention socket foundation	Depends on pole size	See manufacturer guidance
Signal Pole / Controller Cabinet Colour	Black	Check with engineer, location dependant
Signal Pole Retention Socket distance to nearest chamber	Max 5m	Unless otherwise agreed
Product Certification	Construction Products Regulation 2015 + EU Exit Amendments 2019/2020	(All equipment used must be CE marked – applies until end of EU Exit transitional period)

* NJUG refers to *NJUG GUIDELINES ON THE POSITIONING AND COLOUR CODING OF UNDERGROUND UTILITIES' APPARATUS*

**HCD I2 Type A refers to the *Highway Construction Detail Sheet I2 – Detail Type A*



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- ALL LEVELS, DIMENSIONS AND LOCATIONS ARE TO BE CHECKED BY THE MAIN CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON SITE.
- ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH SUFFOLK COUNTY COUNCIL STANDARD DETAILS, WHERE RELEVANT, AND THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS (MCHW).
- REFER TO DWG. NO. B124022-TG-H0-XX-DR-CH-0044 FOR ACCESS 11 AND 12 GENERAL ARRANGEMENT DETAILS SHEET 2 OF 2.
- HIGHWAY DRAINAGE TO BE IMPLEMENTED BY THE CONTRACTOR AND DESIGNED BY OTHERS.
- CONTRACTOR TO ENSURE APPROPRIATE MEASURES ARE PUT IN PLACE TO PREVENT MUD OR DEBRIS BEING DEPOSITED ONTO THE GROVE ROAD CARRIAGEWAY BY CONSTRUCTION TRAFFIC.
- ALL SIGN LOCATIONS TO ENSURE THAT THE SIGN FACE IS SET BACK FROM THE EDGE OF CARRIAGEWAY BY A MINIMUM OF 450mm. ANY DISCREPANCIES TO BE REPORTED BACK TO ENGINEER.
- DRAWING REPRESENTS TONY GEE & PARTNERS ADOPTED VERSION OF THE ROYAL HASKONING DHV DRAWING TITLE AND NUMBER: ACCESS 11 & 12 GROVE ROAD GENERAL ARRANGEMENT, PB5900-RHD-A112-H1-DR-D-0100, REVISION P07, AS APPROVED IN PRINCIPLE BY SUFFOLK COUNTY COUNCIL ON 04/01/2024.

LOCATION PLAN SCALE 1:10,000

REV	BY	CHKD	APPD	DATE	DESCRIPTION
P02	TWR	BM	GG	03/04/25	PROW PAVEMENT UPDATE
P01	TWR	BM	GG	21/03/25	FIRST ISSUE

CODE	DRAWING STATUS
S4	FOR REVIEW/AUTHORISATION

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SPR EA1 & EA2

ACCESS 11 AND 12 GROVE ROAD GENERAL ARRANGEMENT

DRAWING No: EA2-ONS-CIV-DRG-TYW-000457

DRAWN	DESIGNED	REVISION
TWR	BM	P02

SCALE: 1:250 ORIGINAL SIZE: A1

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following

Construction

- Working adjacent to the live traffic during construction.
- Road congestion resulting in delays or collision.
- Construction noise, vibration and buried services.
- Working with hot bituminous materials.
- Site clearance - Vegetation removal and plaining off the existing carriageway at the junction.
- Interaction of construction work traffic movements with the public traffic.
- Unidentified statutory undertakers.
- Hazardous materials COSHH such as TAR when breaking out and disposing of existing pavement materials.
- Working in vicinity to the existing water mains and overhead electric cables.
- To test, commission and energise the signals suitable trained persons to be used.
- Access to adjacent land is restricted, access will need to either be maintained or alternative arrangement/agreement made.

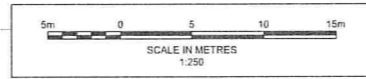
Maintenance

- Workers being struck by vehicle in live carriageway.
- Injury to maintenance teams due to insufficient access and working space.

Decommissioning / Demolition

- Working adjacent to the live traffic during decommissioning the haul road, traffic signals, replace/removal of the traffic signs and road markings.
- Danger to operatives/public when paving/plaining pavement due to use of heavy plant at the junction.
- Disposal of hazardous waste material following excavation/plaining of paved area materials and decommissioning.

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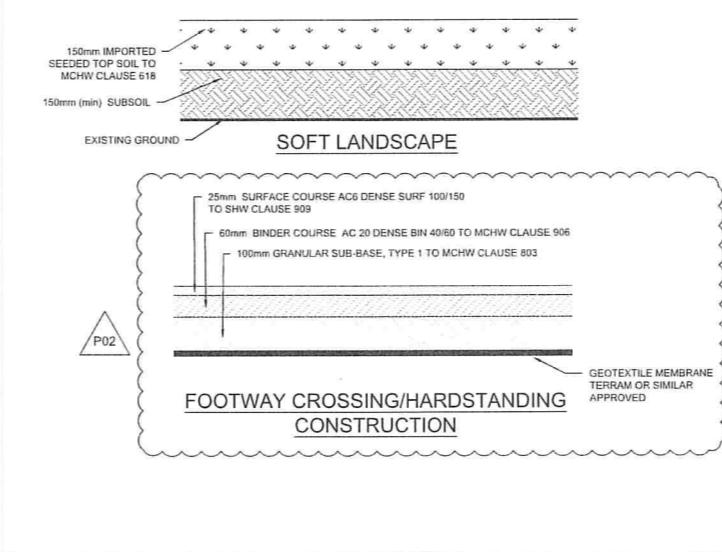
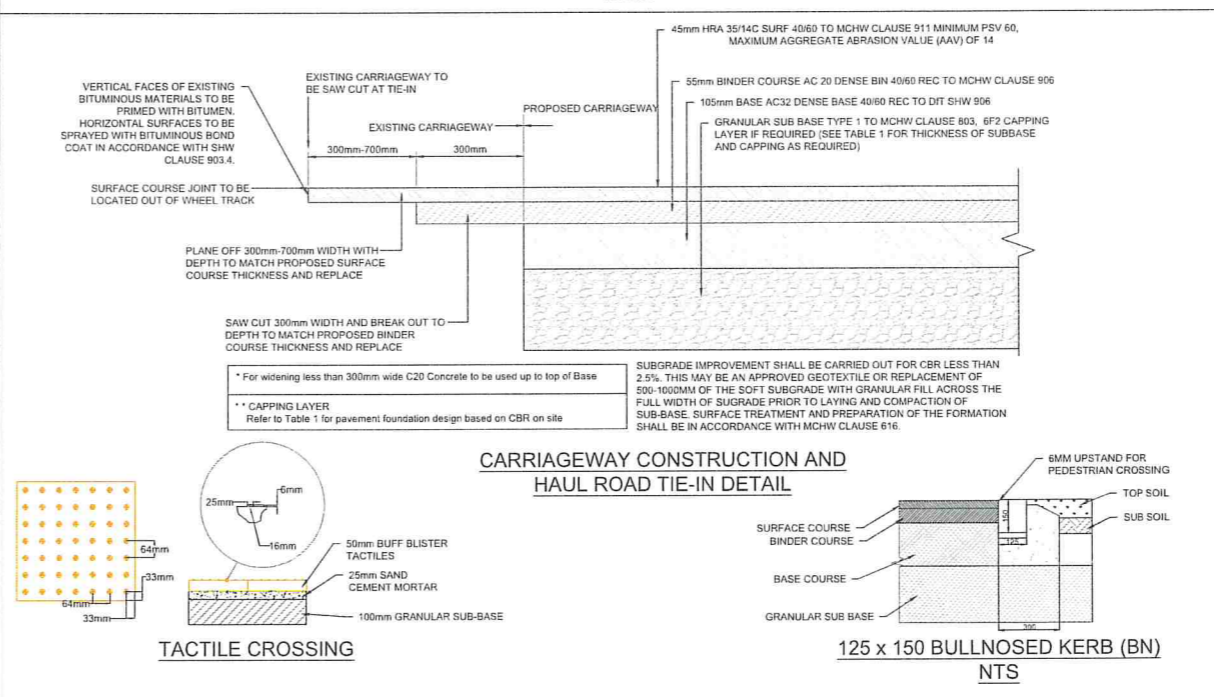
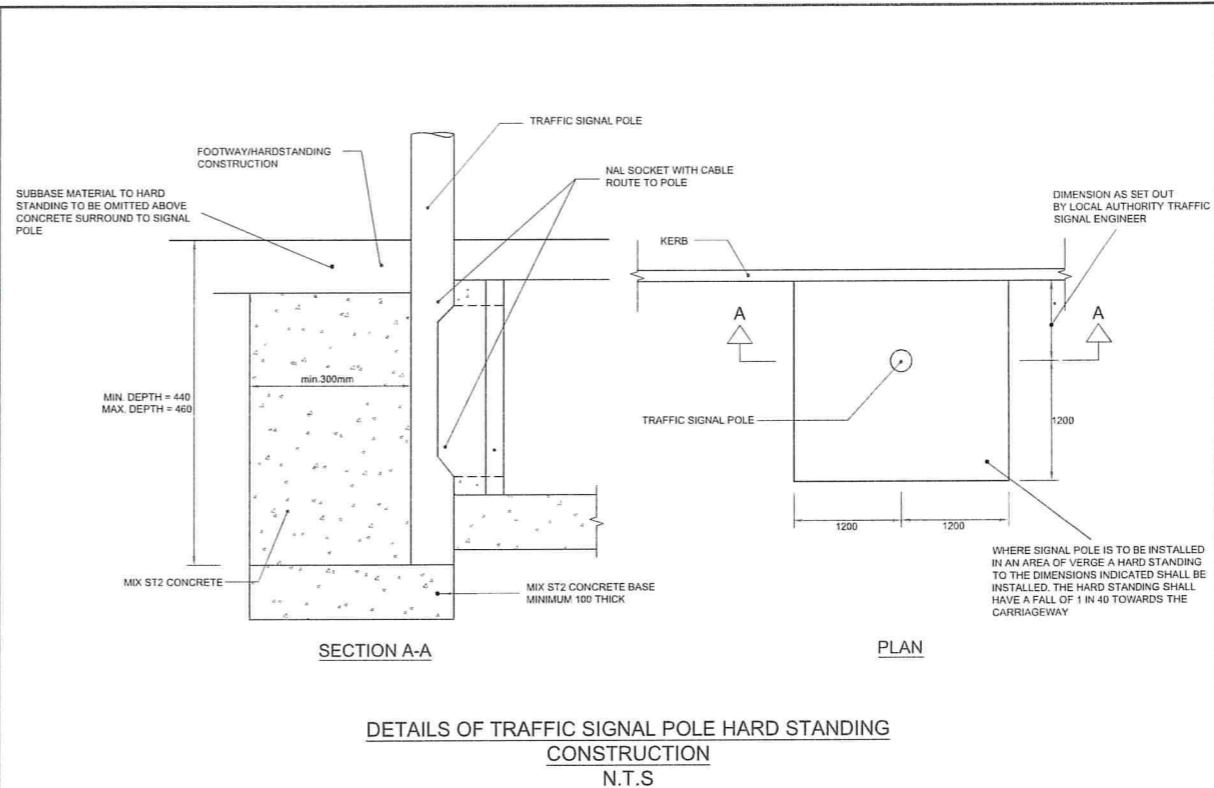
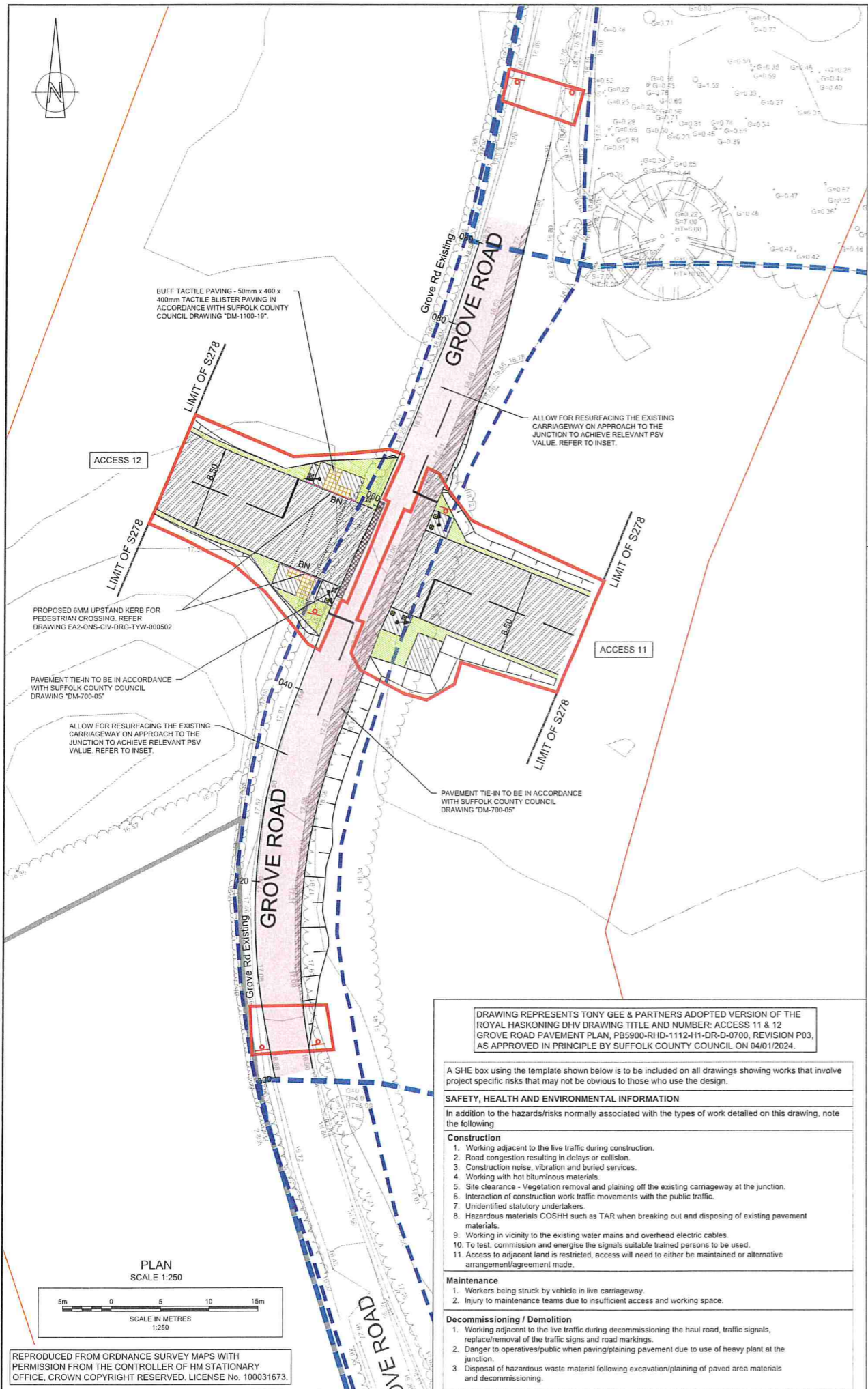


TABLE 1: FOUNDATION CONSTRUCTION THICKNESSES

CBR (%)	OPTION 1: SUBBASE ONLY		OPTION 2: SUBBASE ON CAPPING	
	SUBBASE TO CL. 803, 804, 806, 807	SUBBASE TO CL. 803, 804, 806, 807	CAPPING TO CL. 613	CAPPING TO CL. 613
15.000	200.000	150.000	150.000	150.000
14.000	210.000	150.000	160.000	160.000
13.000	210.000	150.000	170.000	170.000
12.000	220.000	150.000	180.000	180.000
11.000	220.000	150.000	190.000	190.000
10.000	230.000	150.000	200.000	200.000
9.000	230.000	150.000	210.000	210.000
8.000	240.000	160.000	220.000	220.000
7.000	250.000	170.000	230.000	230.000
6.000	260.000	180.000	240.000	240.000
5.000	**	200.000	250.000	250.000
4.000	**	220.000	320.000	320.000
3.000	**	230.000	370.000	370.000
2.500	**	240.000	420.000	420.000
2.000	**	-	-	-
1.500	**	-	-	-
1.000	**	-	-	-

NOTE: FOR CBR VALUES BELOW 2.5% REFER TO ENGINEER FOR GROUND IMPROVEMENT
**FOR CBR VALUES LESS THAN 6% THE FOUNDATION SHALL CONSIST OF SUBBASE AND CAPPING (OPTION 2)

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- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS.
- ALL LEVELS, DIMENSIONS AND LOCATIONS ARE TO BE CHECKED BY THE MAIN CONTRACTOR PRIOR TO COMMENCEMENT OF ANY WORK ON SITE.
- PAVEMENT DESIGN IS BASED ON 5 YEARS DESIGN LIFE AND 127 HGV PASSES PER DAY.
- ALL HIGHWAY WORKS TO BE CARRIED OUT IN ACCORDANCE WITH SUFFOLK COUNTY COUNCIL STANDARD DETAILS, WHERE RELEVANT, AND THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS (MCHW)
- PAVEMENT JOINTS SHALL BE LOCATED OUTSIDE OF WHEEL TRACK ZONE IN ACCORDANCE WITH MCHW CLAUSE 929.
- BOND AND TACK COATS SHALL BE APPLIED IN ACCORDANCE WITH MCHW CLAUSE 920.

KEY

- HIGHWAY BOUNDARY
- S278 WORK AREA
- EXISTING TOPOGRAPHICAL SURVEY
- DCO BOUNDARY
- FULL CARRIAGEWAY CONSTRUCTION. REFER TO CONSTRUCTION DETAIL.
- 0.5m WIDE SOFT LANDSCAPE. 150mm ACCEPTABLE TOP SOIL AND SEED IN ACCORDANCE WITH APPENDIX 6/18 OF SHW. WHERE POSSIBLE TOP SOIL SHOULD BE RE-USED FROM SITE.
- PROPOSED 600mm TIE-IN TO EXISTING CARRIAGEWAY. REFER TO TIE-IN DETAIL.
- BUFF TACTILE PAVING
- FULL FOOTWAY CONSTRUCTION FOR HARDSTANDING AREA. REFER HARDSTANDING CONSTRUCTION DETAIL.

LOCATION PLAN SCALE 1:10,000

REV	BY	CHKD	APPD	DATE	DESCRIPTION
P02	TWR	BM	GG	03/04/25	PROW PAVEMENT UPDATE
P01	TWR	BM	GG	21/03/25	FIRST ISSUE

CODE: DRAWING STATUS

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ScottishPower Renewables TAYLOR WOODROW

SPR EA1 & EA2

ACCESS 11 AND 12 GROVE ROAD PAVEMENT PLAN

DRAWING No. EA2-ONS-CIV-DRG-TYW-000502

DRAWN	DESIGNED	REVISION
TWR	BM	P02

SCALE: NTS ORIGINAL SIZE: A1

DRAWING REPRESENTS TONY GEE & PARTNERS ADOPTED VERSION OF THE ROYAL HASKONING DHV DRAWING TITLE AND NUMBER: ACCESS 11 & 12 GROVE ROAD PAVEMENT PLAN, PB5900-RHD-1112-H1-DR-D-0700, REVISION P03, AS APPROVED IN PRINCIPLE BY SUFFOLK COUNTY COUNCIL ON 04/01/2024.

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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following

Construction

- Working adjacent to the live traffic during construction.
- Road congestion resulting in delays or collision.
- Construction noise, vibration and buried services.
- Working with hot bituminous materials.
- Site clearance - Vegetation removal and plaining off the existing carriageway at the junction.
- Interaction of construction work traffic movements with the public traffic.
- Unidentified statutory undertakers.
- Hazardous materials COSHH such as TAR when breaking out and disposing of existing pavement materials.
- Working in vicinity to the existing water mains and overhead electric cables.
- To test, commission and energise the signals suitable trained persons to be used.
- Access to adjacent land is restricted, access will need to either be maintained or alternative arrangement/agreement made.

Maintenance

- Workers being struck by vehicle in live carriageway.
- Injury to maintenance teams due to insufficient access and working space.

Decommissioning / Demolition

- Working adjacent to the live traffic during decommissioning the haul road, traffic signals, replace/removal of the traffic signs and road markings.
- Danger to operatives/public when paving/plaining pavement due to use of heavy plant at the junction.
- Disposal of hazardous waste material following excavation/plaining of paved area materials and decommissioning.

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Signing Project	ONSS Access 11 & 12				
Sign Reference	670	Width (mm)	600	Background	White
x Height		Height (mm)	600	Border	Red
Material	Class RA2	Area (sq.m)	0.28	Legend	Black



Signing Project	ONSS Access 11 & 12				
Sign Reference	671	Width (mm)	600	Background	White
x Height		Height (mm)	600	Border	Black
Material	Class RA2	Area (sq.m)	0.28	Legend	Black

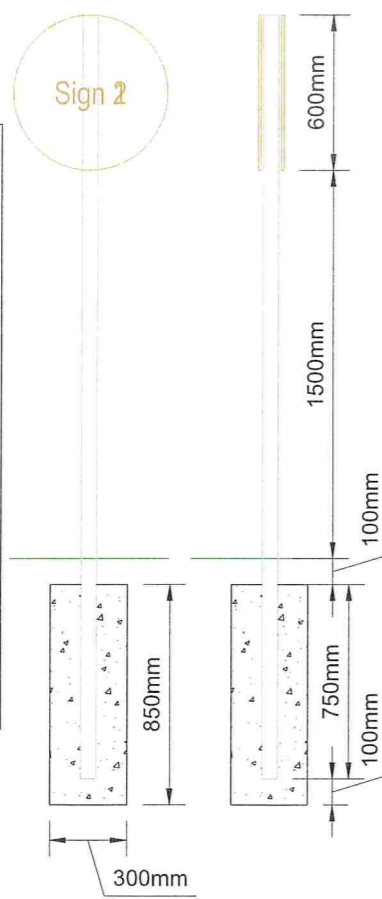
Structural Calculation Details

Signs:
 Reference: Sign 1
 Width: 300mm, Height: 600mm
 Shape: Roundel
 Orientation: Facing front
 Mounted on posts
 Mounting height: 1500mm, at post

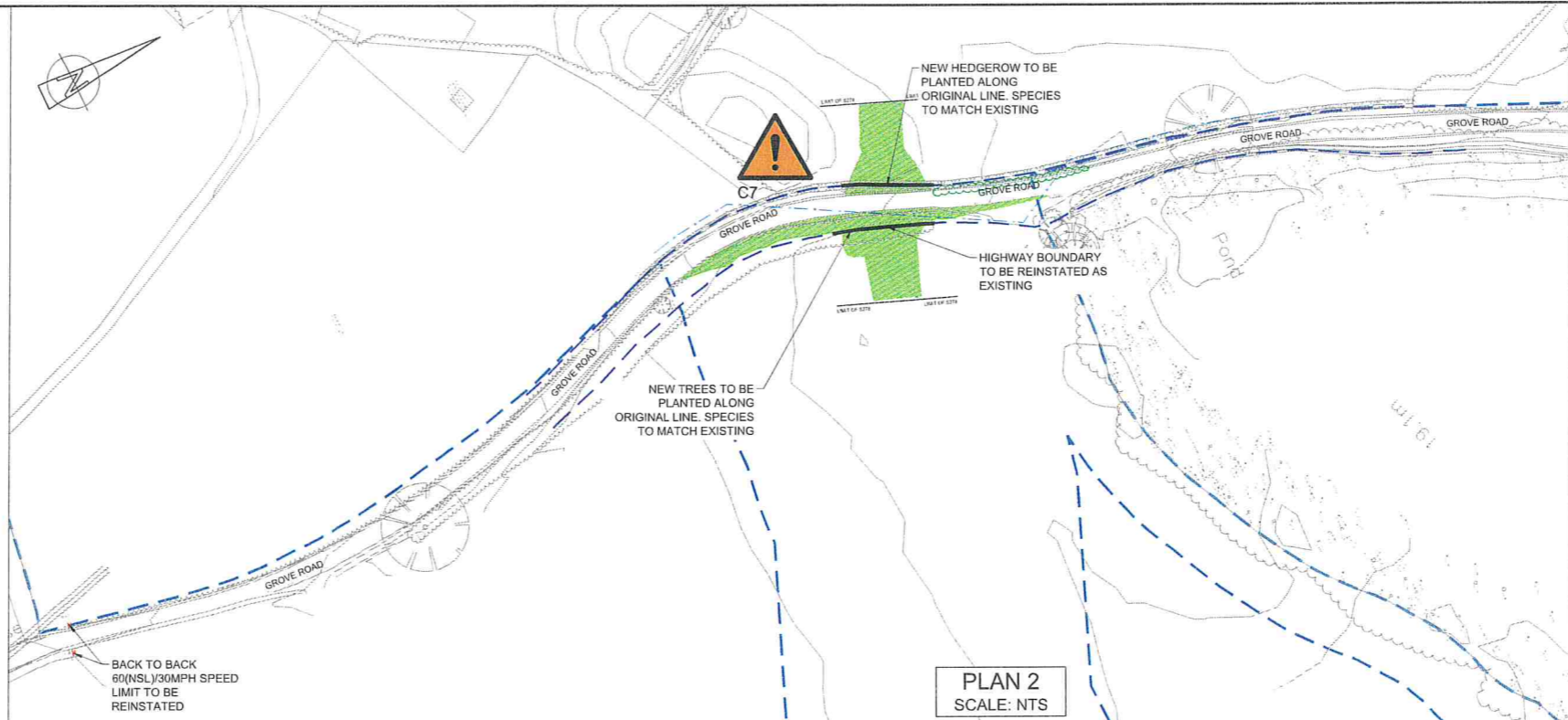
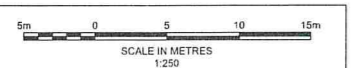
Reference: Sign 2
 Width: 300mm, Height: 600mm
 Shape: Roundel
 Orientation: Facing back
 Mounted on posts
 Mounting height: 1500mm, at post

Posts:
 Quantity: 1
 Type: 60.3 x 3.2 CHS (S355)
 Spacing: N/A
 Post 1 Length: 2950mm

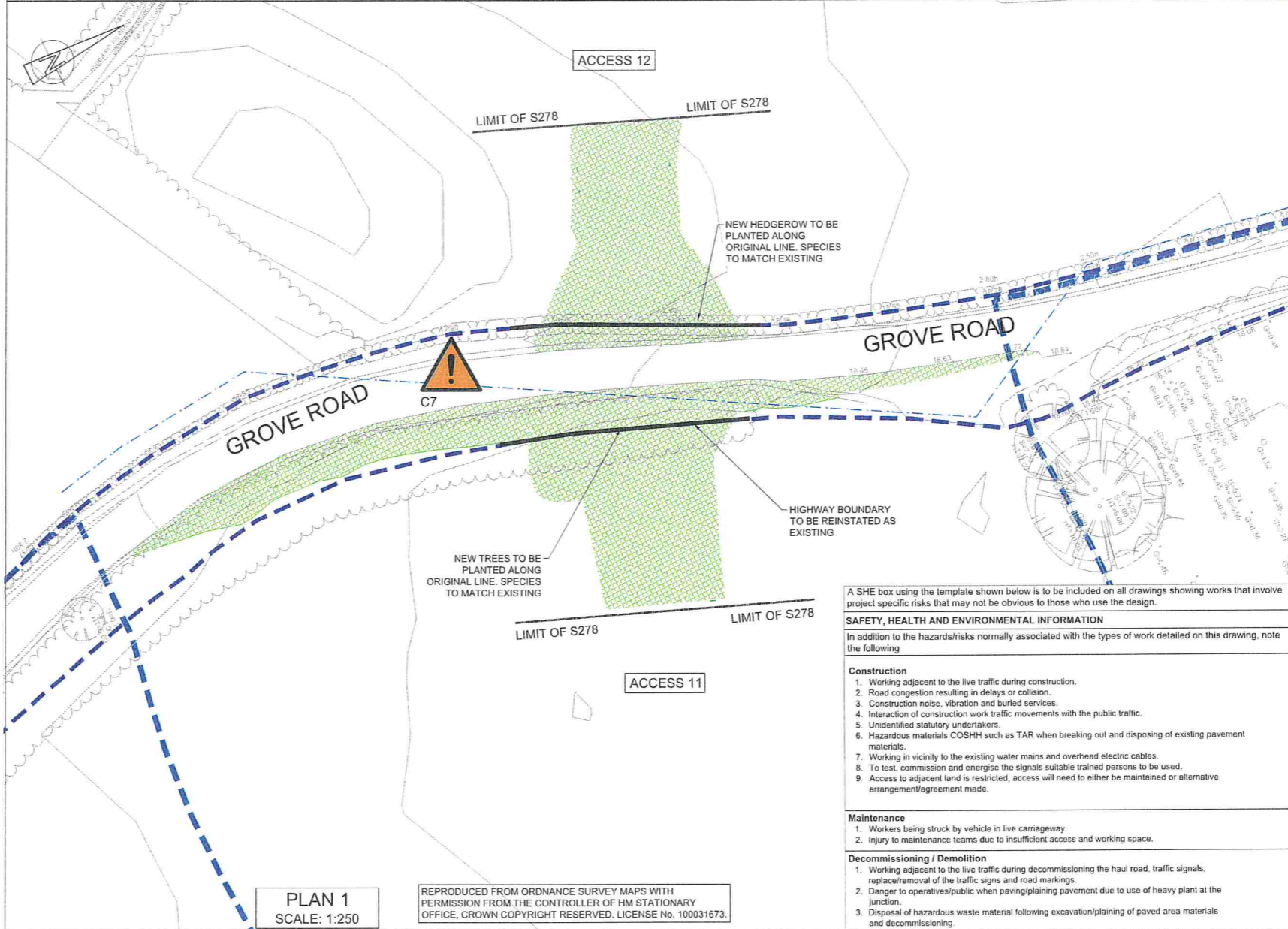
Base:
 Type: Planted
 Diameter: 300mm
 Depth: 850mm
 Volume: 0.06cu.m
 Earth cover: 100mm



SCALE: NTS



PLAN 2
SCALE: NTS



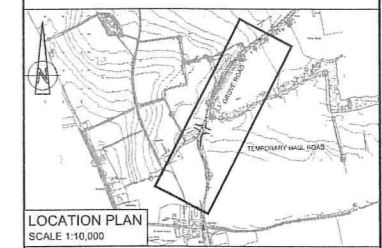
PLAN 1
SCALE: 1:250

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 - REQUIREMENT FOR ECOLOGY SITE WALKOVER SURVEYS, PRIOR TO COMMENCEMENT OF SITE CLEARANCE, TO BE MANAGED BY OTHERS.

- KEY**
- HIGHWAY BOUNDARY
 - DCO BOUNDARY
 - EXISTING TOPOGRAPHICAL SURVEY
 - VEGETATION/TOPSOIL/EXISTING MATERIAL TO BE REINSTATED SIMILAR TO EXISTING
 - ROAD SIGN FACE TO BE REINSTATED
 - WATER MAIN



LOCATION PLAN
SCALE: 1:10,000

1	TB	NJ	MD	04/07/25	FIRST ISSUE
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REV	BY	CHKD	APPD	DATE	DESCRIPTION
S4					FOR REVIEW/AUTHORISATION

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SPR EA1 & EA2

ACCESS 11 AND 12
GROVE ROAD
REINSTATEMENT PLAN

DRAWING No: EA2-ONS-CIV-DRG-TYW-000672

DRAWN: TB	DESIGNED: NJ	REVISION
SCALE: AS SHOWN	ORIGINAL SIZE: A1	1

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