SCHEDULE 19

Accrual and De-Accrual of Project Network Parts

SCHEDULE 19

Accrual and De-Accrual of Project Network Parts

Part 1

1. ADDITION AND REMOVAL OF PROJECT NETWORK PARTS

1.1 Notwithstanding any provision of schedule 18 (*Change Protocol*) and subject to the Accrual Conditions and the remaining provisions of this schedule 19:

1.1.1 the Service Provider shall accept Project Network Parts into the scope of the Services in accordance with paragraph 2.1 of this Schedule 19; and

1.1.2 the Authority is entitled to remove Project Network Parts from the scope of the Services pursuant to paragraph 3 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*).

2. ACCRUAL OF PROJECT NETWORK PARTS

2.1 Where the Authority requires the Service Provider to accept into the scope of the Services a Proposed Accruable Project Network Part or a Scheme, the following procedure shall apply:

2.1.1 the Authority, shall provide to the Service Provider written notice (**"Authority Notice of Accrual"**) stating:

2.1.1.1 that the Authority requires the Accrual of the Proposed Accruable Project Network Part or the Scheme;

2.1.1.2 the identity of the parties involved;

2.1.1.3 whether the Service Provider has provided the Authority with any commentary on the Proposed Accruable Project Network Part or the Scheme pursuant to clause 31 *(Maintainability Assessment Service)* (subject to clause 31.16) or pursuant to clause 5 *(Condition of the Project Network)* (subject to the Service Provider's compliance with clause 5.19);

2.1.1.4 if the Proposed Accruable Project Network Part or the Scheme includes a Road Section Length, which Category it belongs to;

2.1.1.5 the nature, location and extent of the works and a description of the Proposed Accruable Project Network Part or the Scheme;

2.1.1.6 when "as-built" plans of the Proposed Accruable Project Network Parts or the Scheme will be available to the Service Provider;

2.1.1.7 substantial completion certificates (where available and relevant);

2.1.1.8 details of any Underground Apparatus forming part of the Proposed Accruable Project Network Part or the Scheme intended to be taken over by the Service Provider;

2.1.1.9 information concerning any defects liability period in respect of the Proposed Accruable Project Network Part or the Scheme together with any relevant snagging list and details of any warranty and/or guarantee to be transferred or assigned to the Service Provider in accordance with paragraph 2.7 or the details of any warranty and/or guarantee to be transferred or assigned that the Authority is using reasonable endeavours to procure in accordance with paragraph 2.8;

2.1.1.10 whether the Authority considers that the Project Network Part or any Project Network Parts within a Scheme do not comply with the Output Specification, and if not, details of such failure to comply;

2.1.1.11 if paragraph 2.1.1.10 applies, that the Authority:

(a) requires the Service Provider to undertake works to the Proposed Accruable Project Network Part or any Proposed Accruable Project Network Parts so that they comply with the Output Specification and setting out a reasonable timeframe for undertaking such works having regard to the nature and complexity of such works; or

(b) the Authority shall undertake (or shall procure) the necessary works to the Proposed Accruable Project Network Parts or any Proposed Accruable Project Network Parts so that they

comply with the Output Specification and informing the Service Provider of a date by which such works shall be completed; or

(c) requires such Proposed Accruable Project Network Part or Proposed Accruable Project Network Parts to be deemed to comply with specific paragraphs of the Output Specification for the remainder of the Contract Term or until any works are carried out to the relevant Proposed Accruable Project Network Part or Proposed Accruable Project Network Parts so that they are compliant with the Output Specification; and

2.1.1.12whether the Authority considers there to be an applicable Y value set out in part 2.1 of part 2 to this Schedule 19 or whether the Authority will be relying on any Y values put forward by the Service Provider pursuant to clause 31 (*Maintainability Assessment Service*), (subject to clause 31.16) or clause 5 *(Condition of the Project Network)* (subject to compliance with clause 5.19), in determining the appropriate Y value pursuant to paragraph 4.1;

2.1.1.13 whether the Proposed Accruable Project Network Part or Scheme includes Powered Apparatus and if so providing the Service Provider with the electrical test certificates for such Proposed Accruable Project Network Part or Project Network Parts within the Scheme;

2.1.2 the Service Provider shall, from the date that the Service Provider receives the Authority Notice of Accrual (but subject to the Accrual Conditions ,), be responsible for the rectification of Category 1 Defects, the performance of obligations in order to comply with Performance Standard 4 and shall be obliged to comply with clause 6 (*Surveys and Inspections*) in respect to the relevant Proposed Accruable Project Network Part;

2.1.3 the Service Provider shall, within ten (10) Business Days of receipt of the Authority Notice of Accrual, inspect the Proposed Accruable Project Network Part or the Scheme and, within:

2.1.3.1 five (5) Business Days of such inspection, if the Authority has notified the Service Provider pursuant to clause 31.1 *(Maintenance Assessment Service)* in respect of such Accrual; or

2.1.3.2 twenty (20) Business Days, if the Authority has not notified the Service Provider pursuant to clause 31.1 *(Maintenance Assessment Service)* in respect of such Accrual,

shall serve a written notice on the Authority ("**Project Network Part Accrual Notice**"):

2.1.3.3 stating that the Service Provider (acting reasonably) considers that the Proposed Accruable Project Network Part or Scheme:

(a) meets the standard referred to in the Authority Notice of Accrual; or

(b) does not meet the standard referred to in the Authority Notice of Accrual providing details of such failure; and

(c) if the Authority has not notified the Service Provider pursuant to clause 31.1 *(Maintainability Assessment Service)* or clause 5.16 *(Condition of the Project Network)* in respect of such Proposed Accruable Project Network Part or Scheme, does or does not comply with the Service Provider's Assumptions and confirming whether the Service Provider (acting reasonably) considers that the Authority has specified the appropriate Y value(s) in the Authority Notice of Accrual; and

(d) if the Authority has notified the Service Provider pursuant to clause 31.1 *(Maintainability Assessment Service)* or clause 5.16 *(Condition of the Project Network)* in respect of such Proposed Accruable Project Network Part or Scheme stating that it:

(i) considers that the commentary and Y value(s) provided by the Service Provider pursuant to clause

31 (*Maintainability Assessment Service*) or clause 5 *(Condition of the Project Network)* remain valid; or

(ii) does not consider that the commentary and Y value(s) provided by the Service Provider pursuant to clause 31 remain valid (for the avoidance of doubt, the Parties acknowledge and agree that (without prejudice to paragraph 2.1.5) the validity of the commentary and Y value(s) may only become invalid to the extent the specification commented on by the Service Provider pursuant to clause 31 has changed or the Proposed Accruable Project Network Part or the Scheme has not been built in accordance with the specification commented on by the Service Provider pursuant to clause 31 and providing details as to why with a revised assessment of the Y value(s));

2.1.3.4 if, pursuant to paragraph 2.1.3.3(c) and/or paragraph 2.1.3.3(d)(ii), the Service Provider considers that the Proposed Accruable Project Network Parts or Scheme do not comply with the Service Provider's Assumptions, the Authority has not specified the appropriate Y value(s) in the Authority Notice of Accrual and/or the commentary and Y value(s) provided by the Service Provider pursuant to clause 31 (*Maintainability Assessment Service*) do not remain valid, the Service Provider shall (acting reasonably) state what the appropriate Y value(s) shall be calculated in accordance with the principles set out in paragraph 4.1.2 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*);

2.1.3.5 where paragraph 2.1.1.11(a) applies, the Service Provider objects to any of the matters referred to in that paragraph as proposed in the Authority's Notice of Accrual;

2.1.4 if the Service Provider fails to give written notice within the time period specified in paragraph 2.1.3 then the Service Provider shall be deemed to

have accepted that the Proposed Accruable Project Network Part or the Scheme meets the standard referred to in the Authority Notice of Accrual;

2.1.5 either Party may refer any Dispute in relation to this paragraph 2, part 1 of Schedule 19 to Dispute Resolution provided that the Parties shall not be entitled to refer any Dispute in relation to paragraph 2.1.1.12 of Schedule 19 to Dispute Resolution (subject to clause 31.16) where the Dispute relates to a Proposed Accruable Project Network Part which has been agreed in accordance with clause 31 (*Maintainability Assessment Service*), save in respect of any Y value proposed pursuant to paragraph 2.1.1.12 ceasing to be appropriate as a result of circumstances not reasonably foreseeable by the Service Provider as at the date on which the relevant Y value was originally agreed or determined;

2.1.6 if paragraph 2.1.3.3(b) applies and the Authority agrees (acting reasonably) with the standard and reasons notified to it by the Service Provider pursuant to paragraph 2.1.3.3(b), the Authority shall:

2.1.6.1 undertake (or shall procure the undertaking) of the necessary works to the Proposed Accruable Project Network Part or Proposed Accruable Project Network Parts so that they meet the Output Specification and when any failures have been rectified, inform the Service Provider of such compliance; or

2.1.6.2 provide a notice to the Service Provider requiring the Service Provider to rectify the failure to meet the Output Specification and a reasonable timeframe for undertaking such works; and

2.1.6.3 provide a notice to the Service Provider specifying in the opinion of the Authority (acting reasonably) which paragraphs of the Output Specification the Proposed Accruable Project Network Part or Proposed Accruable Project Network Parts shall be deemed to comply with and whether any relief should be provided from any other obligations on the Service Provider under the Contract:

(a) in respect of works carried out pursuant to paragraph 2.1.6.1, until the date on which the Authority informs the Service Provider that works are completed; or

(b) in respect of works carried pursuant to paragraph 2.1.6.2 until the date by which such works are due to be completed.

2.1.7 if the Service Provider receives the notice referred to in paragraph 2.1.6.2 or paragraph 2.1.1.11(a) then the Service Provider shall undertake such works in accordance with the timeframe set out in such notice. If the Service Provider considers (acting reasonably) that the time period is unreasonable having regard to the nature and complexity of such works then it shall promptly, following receipt of such notice, notify the Authority of an alternative timeframe which the Service Provider considers to be more practicable and details of why the Service Provider confirms that the Authority's timeframe is unreasonable. If the Parties fail to agree the revised timeframe, either Party may refer the Dispute to Dispute Resolution.

2.1.8 if following a notice issued by the Authority pursuant to paragraph 2.1.6.3 or paragraph 2.1.1.11(c), the Service Provider (acting reasonably) disputes the contents of such notice, the Parties shall meet within ten (10) Business Days to discuss and agree the relevant disputed matters, failing which either Party may refer the Dispute to Dispute Resolution;

2.1.9 if paragraph 2.1.1.11(b) applies, the Authority shall notify the Service Provider when the Authority is satisfied that the Project Network Part or Project Network Parts meet the Output Specification.

2.1.10 subject to the Accrual Conditions, from the Accrual Date:

2.1.10.1 the Proposed Accruable Project Network Part or Proposed Accruable Project Network Parts shall become Accrued and the Service Provider shall, subject to paragraph 2.1.6.3 and 2.1.8, provide the Services to such Project Network Part and/or Project Network Parts from such date;

2.1.10.2 the risk in such Accrued Project Network Part or Accrued Project Network Parts shall transfer to the Service Provider upon and subject to the terms of this Contract;

2.1.10.3 the definitions of Project Network or Project Network Part (or any relevant element thereof) shall be amended from time to time to the

extent necessary as a consequence of the operation of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*);

2.1.10.4the Service Provider shall update the Management Information System with information provided by the Authority or otherwise received by it in accordance with those timescales set out in part 8 of Schedule 2 (*Output Specification*);

2.1.10.5the Service Provider shall revise the energy forecast in accordance with the Payment Mechanism; and

2.1.10.6the Monthly Unitary Charge shall be revised in accordance with paragraph 4,

2.1.11 where the Authority provides notice to the Service Provider pursuant to paragraph 2.1.6.2, the Proposed Accruable Project Network Part or Scheme shall from the Accrual Date until the date specified for completion of works pursuant to paragraph 2.1.6.2 (or as agreed or determined pursuant to paragraph 2.1.7) be deemed to comply with the paragraphs of the Output Specification to which the Authority referred in its notice pursuant to paragraph 2.1.6.3 and, subject to such deemed compliance and to the Accrual Conditions, the risk in such Proposed Accruable Project Network Part or Proposed Accruable Project Network Parts shall transfer on the Accrual Date to the Service Provider. Subject to the Accrual Conditions, the Service Provider shall (i) be obliged to perform all the Services (other than those specified in the Authority's notice in paragraph 2.1.6.3 or as agreed or determined pursuant to paragraph 2.1.8) in respect of the relevant Proposed Accruable Project Network Part(s) from the Accrual Date and (ii) be obliged to perform all Services in respect of the relevant Proposed Accruable Project Network Part(s) from the completion date specified pursuant to paragraph 2.1.6.2 or as agreed or determined pursuant to paragraph 2.1.7;

2.1.12 where the Authority has notified the Service Provider pursuant to paragraph 2.1.6.2, the Service Provider shall notify, in writing, the Authority of the date on which the works referred to in paragraph 2.1.6.2 are ready for the Authority to inspect (which, for the avoidance of doubt, shall be on or before the date specified in paragraph 2.1.6.2 or the date agreed or determined pursuant to paragraph 2.1.7). The Authority shall as soon as reasonably

practicable inspect such works and provide notice in writing to the Service Provider of whether it agrees (acting reasonably) that the Proposed Accruable Project Network Part or Scheme complies with the Output Specification. If the Authority does not consider the Proposed Accruable Project Network Part or Scheme complies with the Output Specification the Service Provider shall undertake any further works necessary in order that the Proposed Accruable Project Network Part or Scheme comply with the Output Specification or refer the dispute to Dispute Resolution;

2.2 The Authority shall (when due in accordance with the relevant Invoice) pay the Service Provider for the works referred to in paragraphs 2.1.1.11(a) and 2.1.6.2 in accordance with the rates set out in the Catalogue of Low Value Changes and, where no applicable rates are included in the Catalogue of Low Value Changes, paragraph 2.3 of part 2 of schedule 18 (*Change Protocol*) (irrespective of whether such payment exceeds the amounts specified in the definition of a Low Value Change). The Service Provider shall, following completion of such works, notify the Authority of the amount calculated in accordance with paragraph 2.2. Subject to paragraph 2.5.2, the Service Provider shall include such amount in the next Invoice following completion of such works.

2.3 If the Authority instructs the Service Provider to undertake works pursuant to paragraph 2.1.1.11(a) or 2.1.6.2 (as applicable), the Service Provider shall provide the Authority with an estimate of the cost of such works ("**Accrual Works Estimate**") within five (5) Business Days of the date of receipt of the Authority Notice of Accrual or notification by the Authority pursuant to paragraph 2.1.6.2 (as applicable).

2.4 If the Accrual Works Estimate exceeds ten thousand pounds (£10,000 (Indexed)) the Service Provider shall provide the Authority with a detailed plan of the works required, the likely duration of such works and a monthly breakdown of the costs ("**Accrual Works Plan**") within a further ten (10) Business Days of the Accrual Works Estimate.

2.5 The Authority shall notify the Service Provider within five (5) Business Days that:

2.5.1 the Authority intends to procure the works itself and that the Service Provider shall have no further obligation to carry out any rectification works in respect of the relevant Proposed Accruable Project Network Part; or

2.5.2 the Service Provider shall proceed with the works and the Service Provider shall be entitled to invoice the Authority monthly pursuant to paragraph 2.2 up to the amount stated in the monthly breakdown of costs in the relevant Accrual Works Plan and only if such plan states that the duration of the works will exceed two (2) Months.

2.6 The Authority shall use reasonable endeavours to procure, when obtaining a warranty or guarantee from a third party in relation to any Accrued Project Network Part (or any Proposed Accruable Project Network Part that the Authority proposes should become an Accrued Project Network Part), that the benefit of such warranty or guarantee is assignable or transferrable to the Service Provider or any Service Provider Party.

2.7 Subject to paragraph 2.8, the Authority shall transfer or assign to the Service Provider or any Service Provider Party the benefit of any warranties or guarantees provided to it by third parties in relation to any Accrued Project Network Part where such warranty or guarantee is capable of assignment or transfer to the Service Provider or any Service Provider Party pursuant to the terms and conditions therein and the relevant third party has consented to the transfer or assignment.

2.8 Where a warranty or guarantee referred to in paragraph 2.7 is not capable of assignment or transfer to the Service Provider or Service Provider Party or the relevant third party has not consented to the transfer or assignment (where such consent is required), the Authority shall use reasonable endeavours to procure and transfer or assign to the Service Provider or any Service Provider Party (including where applicable obtaining any necessary consent) the benefit of any warranties or guarantees provided to it by third parties in relation to any Accrued Network Project Part provided that the Authority shall not be obliged to use reasonable endeavours where to do so would require the Authority to incur material expenditure.

3. DE-ACCRUAL OF PROJECT NETWORK PARTS

3.1 The Authority shall be entitled to request the De-Accrual of Project Network Parts from the scope of the Services by giving written notice to the Service Provider (**"De-Accrual Notice"**) of the following:

3.1.1 why the Authority requires the Project Network Part or the Scheme to be De-Accrued including details of whether the Authority intends to:

3.1.1.1 undertake work (or procure work to be undertaken) to such Project Network Part or Scheme); and

3.1.1.2 following such work, Accrue the Project Network Part or Scheme into the Contract and confirm whether the Project Network Part or Scheme following such work will consist of different asset types from those which were De-Accrued);

3.1.2 details of the Project Network Part or Project Network Parts to be De-Accrued;

3.1.3 if the De-Accrual includes Road Section Lengths, which Category it belongs to and whether the Authority intends such Road Section Length to be permanently De-Accrued;

3.1.4 the location of the Project Network Parts to be De-Accrued;

3.1.5 the date on which the De-Accrual of the Project Network Part and Project Network Parts is to take place (**"De-Accrual Date"**); and

3.2 Subject to the Accrual Conditions, the Service Provider may not object to the De-Accrual of any Project Network Part or Project Network Parts where the Authority has served a De-Accrual Notice. The Service Provider shall comply with all instructions of the Authority (acting reasonably) given in relation to the De-Accrual.

3.3 The Service Provider shall maintain the Project Network Part or Project Network Parts that are the subject of a De-Accrual Notice in accordance with the provisions of schedule 2 (*Output Specification*) until the De-Accrual Date.

3.4 From the De-Accrual Date:

3.4.1 the Project Network Part or Project Network Parts which are the subject of a De-Accrual Notice shall cease to be treated as Project Network Part or Project Network Parts for the purposes of this Contract;

3.4.2 risk in such Project Network Part or Project Network Parts shall transfer to the Authority upon and subject to the terms of this Contract; and

3.4.3 the Service Provider shall:

3.4.3.1 if the De-Accrual Notice includes a Road Section Length, supply to the Authority (on request) any information relating to the carrying out of the Services on (or in the area of) the Road Section Length that is the subject of the De-Accrual Notice that have taken place in the previous three months and that are due to take place in the three months following the De-Accrual Date;

3.4.3.2 update the Management Information System in accordance with those timescales set out in part 8 of schedule 2 (*Output Specification*);

3.4.3.3 revise the energy forecast in accordance with paragraph 1.7 of schedule 4 (*Payment Mechanism*) where the relevant Project Network Parts are Powered Apparatus; and

3.4.4 the Monthly Unitary Charge shall be revised in accordance with paragraph 4 of this Schedule 19 (Accrual and De-Accrual of Project Network Parts), to reflect any De-Accrual.

4. EFFECT ON ANNUAL UNITARY CHARGE OF AN ACCRUAL OR DE-ACCRUAL

4.1 With effect from the Accrual Date, an Accrual Adjustment shall be made to the Monthly Unitary Charge as follows:

4.1.1 where, in accordance with the provisions of this Contract, there is an applicable Y value, then such Y value or values shall be used for the purposes of calculating the Accrual Adjustment in respect of the Month in which the Accrual Date occurs in accordance with paragraph 2.1 of schedule 4 (*Payment Mechanism*) provided that if the Parties fail to agree any such matters either Party may, subject to paragraph 2.1.5, refer the Dispute to Dispute Resolution and paragraph 9 shall apply;

4.1.2 where, in accordance with the provisions of this Contract, there is no applicable Y value or values the Y value then for the purposes of calculating the Accrual Adjustment in respect of the Month in which the Accrual Date occurs in accordance with paragraph 2.1 of schedule 4 (*Payment Mechanism*) the Service Provider shall, as soon as reasonably practicable, notify the Authority of the Service Provider's proposed additional Y value or values

which shall be a reasonable estimate by the Service Provider (acting reasonably) of the cost having regard to all relevant factors, including the existing Y values set out part 2.1 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) and any Y values agreed pursuant to clause 31 (*Maintainability Assessment Service*) or clause 5 *(Condition of the Project Network)* and supported by a commentary on pricing assumptions, including costs of labour, actual costs of materials, overheads and any other relevant pricing assumptions;

4.1.2.1 the Authority shall consider the Service Provider's proposal for the additional Y value in determining the appropriate additional Y value or values and the Parties shall (acting reasonably) endeavour to agree an additional Y value or values proposed pursuant to paragraph 4.1.2 so as to ensure that the Service Provider is left in no better and no worse position (as that term is defined in clause 53.3.3); and

4.1.2.2 if the Parties fail to agree an additional Y value or values in accordance with paragraph 4.1.2.1 within ten (10) Business Days of the date of the Project Network Part Accrual Notice then either Party may refer the Dispute to Dispute Resolution.

4.1.3 If the Authority (acting reasonably) considers that:

4.1.3.1 an Accrual of a Project Network Part or Project Network Parts has arisen from or in connection with works referred to in paragraph 3.1.1 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*); and

4.1.3.2 in respect of an Accrual referred to in paragraph 4.1.3.1 above, there has been a financial saving to the Service Provider and/or Service Provider Party which has not been reflected by the application of the "Y" value,

then clause 53.3.4 shall apply.

4.2 With effect from the De-Accrual Date, an Accrual Adjustment shall be made to the Monthly Unitary Charge as follows:

4.2.1 to the extent that the Parties agree (acting reasonably) that a Y value or values set out in part 2.1 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) relates to or is otherwise appropriate to such De-Accrued Project Network Part or Project Network Parts or an applicable Y value or values have been agreed with the Service Provider and the Authority pursuant to paragraph 4.1 or clause 31 (*Maintainability Assessment Service*) then such Y value or values shall be used for the purposes of calculating the Accrual Adjustment in respect of the Month in which the De-Accrual Date occurs in accordance with paragraph 2.1 of schedule 4 (*Payment Mechanism*):

4.2.2 where there is no applicable Y value or values agreed pursuant to paragraph 4.2.1 or pursuant to clause 31 (*Maintainability Assessment Service*) or set out part 2.1 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*), then for the purposes of calculating the Accrual Adjustment in respect of the Month in which the De-Accrual Date occurs in accordance with paragraph 2.1 of schedule 4 (*Payment Mechanism*):

4.2.2.1 the Service Provider shall, as soon as reasonably practicable and in any event within five (5) Business Days of the De-Accrual of the relevant Project Network Part or Project Network Parts notify the Authority of the Service Provider's proposed additional Y value or values which shall be a reasonable estimate by the Service Provider (acting reasonably) of the cost having regard to all relevant factors, including the existing Y values set out part 2.1 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) and any Y values agreed pursuant to clause 31 (*Maintainability Assessment Services*) or this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) and supported by a commentary on pricing assumptions, including costs of labour, actual costs of materials, overheads and any other relevant pricing assumptions;

4.2.2.2 the Authority shall consider the Service Provider's proposal for the additional Y value in determining the appropriate additional Y value or values and the Parties shall (acting reasonably) endeavour to agree an additional Y value or values so as to ensure that the Service Provider is left in no better and no worse position (as that term is defined in clause 53.3.3); and

4.2.2.3 if the Parties fail to agree an additional Y value or values within ten (10) Business Days of the date of the Service Provider's notice of its proposed additional Y value or values referred to in paragraph 4.2.2.1 then either Party may refer the Dispute to Dispute Resolution.

4.3 If and to the extent that the Service Provider is no longer required to incur Capital Expenditure in respect of certain Project Network Parts arising as a result of a De-Accrual, the Annual Unitary Charge shall be adjusted downwards to reflect the reduction in costs in accordance with the provisions of clause 53.3.4 (*Financial Adjustments*), subject to the De-Accrual Caps.

4.4 For the avoidance of doubt, but subject to the Accrual Conditions, any dispute between the Parties in respect of compliance with the standards and specifications referred to in the Authority Notice of Accrual and in respect of the appropriate Y value or values shall not prevent the Accrual of the Project Network Part or Project Network Parts pursuant to paragraph 2 on the Accrual Date or De-Accrual of the Project Network Part or Project Network Parts pursuant to paragraph 3 on the De-Accrual Dates.

5. LIMITATION OF THE LEVELS OF ACCRUALS AND DE-ACCRUALS

5.1 Subject to the provisions of clause 5.27 to 5.30 *(Condition of the Project Network)*and paragraph 5.2 below, to the extent that:

5.1.1 the net increase in the aggregate number of Project Network Parts (including, for the avoidance of doubt any Enhanced Project Network Parts) which have been Accrued gives rise to either or both of:

5.1.1.1 more than a fifteen percent (15%) increase in the Annual Unitary Charge as at the date of the Contract; and/or

5.1.1.2 more than a two percent (2%) increase in the Annual Unitary Charge in any one (1) Contract Year

(together the **"Accrual Caps"** and each an **"Accrual Cap"**); and/or

5.1.2 the net decrease in the aggregate number of Project Network Parts (including, for the avoidance of doubt any Enhanced Project Network Parts) which have been De-Accrued gives rise to either or both of:

5.1.2.1 more than a two and a half percent (2.5%) decrease in the Annual Unitary Charge as at the date of the Contract; and/or

5.1.2.2 more than a one percent (1%) decrease in the Annual Unitary Charge in any one (1) Contract Year

(together the **"De-Accrual Caps"** and each a **"De-Accrual Cap"**),

then subject to the provisions of paragraph 7 (*Review of the Accrual and De-Accrual Procedure*) any further Accruals or De-Accruals (as the case may be) shall be dealt with as an Authority Change pursuant to schedule 18 (*Change Protocol*).

5.2 If the Accrual Cap and/or the De-Accrual Cap is reached but the Parties agree pursuant to paragraph 7 (*Review of the Accrual and De-Accrual Procedure*) a revised Accrual Cap and/or a revised De-Accrual Cap (as the case may be), the provisions of this Schedule 19 shall continue to apply in Accruals and De-Accruals.

6. ENHANCED STANDARDS

6.1 If the Authority provides written notice to the Service Provider that the Authority requires the Service Provider to install a Project Network Part to an Enhanced Standard (**"Enhanced Project Network Part"**) pursuant to the Service Provider's consultation with the Districts under clause 11 (*Service Provider Programmes*) or pursuant to the Review Procedure, then the provisions of this paragraph 6 shall apply.

6.2 The Service Provider shall, subject to the Accrual Conditions, install the Enhanced Project Network Part or Enhanced Project Network Parts in accordance with the Service Provider's Programme and ensure that it meets the Enhanced Standard and (to the extent the Enhanced Standard does not relate to the Output Specification) the Output Specification.

6.3 On installation of the Enhanced Project Network Part or Enhanced Project Network Parts (**"Accrual Date"**), the Service Provider shall provide to the Authority and during the Core Investment Period to the Independent Certifier a written notice (**"Enhancement Notice"**) stating that:

6.3.1 the Enhanced Project Network Part or Enhanced Project Network Parts have been installed;

6.3.2 the Enhanced Project Network Part meets the Enhanced Standard; and

6.3.3 the Enhanced Project Network Part or Enhanced Project Network Parts shall Accrue on the Accrual Date.

6.4 The Parties shall comply with the provisions of clause 13.7 (*Inspections in relation to Enhanced Standards*).

6.5 Where:

6.5.1 the Independent Certifier confirms pursuant to clause 13.7.1.5.3 or the Authority (or the Authority's Representative or a third party appointed by the Authority or the PFI District) confirms pursuant to clause 13.7.2.4.3 (as the case may be) that the Enhanced Project Network Part meets the Enhanced Standard (and the requirements of the Output Specification); or

6.5.2 the Service Provider pursuant to clause 13.7.2.7 does not otherwise dispute the Enhancement Notice or the Enhanced Project Network Part or Enhanced Project Network Parts within twenty (20) Business Days of receipt of the Enhancement Notice by the Authority,

then:

6.5.3 the Service Provider may invoice the Authority under clause 45 (*Payment and Financial Matters*) for the installation of the Enhanced Project Network Part or Enhanced Project Network Parts at the applicable X value or values set out at part 3 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) or as determined pursuant to paragraph 6.5.4; and

6.5.4 where there is no applicable X value set out in part 3 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*), the X value which shall be used for the purposes of calculating the X value in paragraph 6.5.3 above shall be determined as follows:

6.5.4.1 the Service Provider shall, as soon as reasonably practicable and in any event within five (5) Business Days of the Accrual Date notify the Authority of the Service Provider's proposed additional X value which it considers (acting reasonably) to be a reasonable estimate of the difference in cost of installation of the original Project Network

Part or Project Network Parts pursuant to the Investment Programme against the cost of installation of the Enhanced Project Network Part or Enhanced Project Network Parts, having regard to any analogous rates included in the Catalogue of Low Value Changes and if no such rates exist, rates which are fair and reasonable and with any material elements being charged at the cost of materials to the Service Provider or the Sub-Contractor carrying out the work (net of all discounts) and there shall be no management fee, margin, overhead, contingency or other cost applied to such costs;

6.5.4.2 the Authority shall consider the Service Provider's proposal for the additional X value in determining the appropriate additional X value and the Parties shall (acting reasonably) endeavour to agree an additional X value (which shall, for the avoidance of doubt, be the difference in the cost of installation of the Project Network Part or Project Network Parts included in the Service Provider Programmes and the cost of installation of the Enhanced Project Network Part or Enhanced Project Network Parts) so as to ensure that the Service Provider is left in no better and no worse position (as that term is defined in clause 53.3.3); and

6.5.5 if the Parties fail to agree an additional X value within ten (10) Business Days of the date of the Service Provider's notice of its proposed additional X value referred to in paragraph 6.5.4 then either Party may refer the Dispute to Dispute Resolution.

6.5.6 With effect from the Accrual Date an Accrual Adjustment shall be made to the Monthly Unitary Charge as follows:

6.5.6.1 to the extent that the Parties agree (acting reasonably) that a Y value set out in part 3 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) relates to or is otherwise appropriate to an Enhanced Project Network Part or Enhanced Project Network Parts, then such Y value or values shall be used for the purposes of calculating the Accrual Adjustment in respect of the Month in which the Accrual Date occurs in accordance with paragraph 2.1 of schedule 4 (*Payment Mechanism*);

6.5.6.2 where there is no applicable Y value set out in part 3 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*), then the Y value which shall used for the purposes of calculating the Y value of the Accrued Enhanced Project Network Part or Accrued Enhanced Project Network Parts shall be determined as follows:

(a) the Service Provider shall, as soon as reasonable practicable and in any event within five (5) Business Days of the Accrual Date of the Enhanced Project Network Part or Enhanced Project Network Parts, notify the Authority of the Service Provider's proposed additional Y value which:

(i) shall be any applicable Y values provided by the Service Provider to the Authority pursuant to clause 31 (*Maintainability Assessment Service*) and any applicable values agreed between the Parties pursuant to part 2.1 of this Schedule 19 to calculate the difference in cost of maintenance by the Service Provider of the original Project Network Part or Project Network Parts required to be replaced pursuant to the Investment Programmes and the cost of maintenance of the Enhanced Project Network Part or Enhanced Project Network Parts; or

(ii) if there are no applicable Y values under paragraph 6.5.6.1 or under 6.5.6.2(a)(i), shall be a reasonable estimate of the difference in the cost of maintenance between the original Project Network Part or Project Network Parts required to be replaced pursuant to the Investment Programmes and the Enhanced Project Network Part or Enhanced Project Network Parts supported by a commentary on pricing assumptions, including costs of labour, actual costs of materials, overheads and other relevant pricing assumptions so as to ensure that the Service Provider is left in no better and no worse position (as that term is defined in clause 53.3.3).

6.6 From the Accrual Date, and subject to the Accrual Conditions:

6.6.1 the Enhanced Project Network Part or Enhanced Project Network Parts shall become Accrued and the Service Provider shall provide the Services to such Enhanced Project Network Part and Enhanced Project Network Parts from such date;

6.6.2 risk in such Enhanced Project Network Part or Enhanced Project Network Parts shall transfer to the Service Provider, upon and subject to the terms of this Contract;

6.6.3 the Service Provider shall update the Management Information System in accordance with those timescales set out in part 8 of Schedule 2 (*Output Specification*);

6.6.4 the Service Provider shall revise the energy forecast in accordance with the Payment Mechanism; and

6.6.5 the Monthly Unitary Charge shall be revised in accordance with paragraph 2.1 of schedule 4 *(Payment Mechanism)*.

6.7 The Service Provider shall ensure that any replacement of the Enhanced Project Network Part or Enhanced Project Network Parts comply with the Enhanced Standard Specification.

7. REVIEW OF THE ACCRUAL AND DE-ACCRUAL PROCEDURE

7.1 The Service Provider shall notify the Authority, when it considers (acting reasonably), that any of the Accrual Caps and/or the De Accrual Caps will be reached within the following three (3) months of the date of such notification.

7.2 If the Authority receives notification from the Service Provider pursuant to paragraph 7.1, or in the event that the relevant Accrual Cap and/or De-Accrual Cap is reached, the Parties (acting reasonably and in good faith) shall meet and shall endeavour to agree a revised Accrual Cap and/or revised De-Accrual Cap, revised X values and revised Y values as soon as reasonable practicable so as to enable the Authority to continue Accruing and De-Accruing Project Networks Parts pursuant to the provisions of this schedule 19 (*Accrual and De-Accrual of Project Network Parts*) and so as to ensure that the Service Provider is left in no better and no worse position

(as that term is defined in clause 53.3.3) in respect of the revised X values and revised Y values.

7.3 If the Parties fail to agree a relevant revised Accrual Cap, revised De-Accrual Cap, revised X values and revised Y values, the Authority shall issue a High Value Change pursuant to schedule 18 (*Change Protocol*) and the relevant revised Accrual Cap, De-Accrual Cap, revised X values and revised Y values shall be determined pursuant to Part 4 of schedule 18 (*Change Protocol*) and paragraph 5 to this schedule 19 (*Accrual and De-Accrual of Project Network Parts*) and Parts 2, 3 and 4 shall be amended accordingly.

8. UPDATING Y VALUES

8.1 The Parties acknowledge and agree that the prices set out in column 4 in the table in part 2.1 of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) shall apply for the Contract Term.

8.2 If pursuant to the provisions of this Schedule 19 (*Accrual and De-Accrual of Project Network Parts*) and/or clause 31 (*Maintainability Assessment Service*) additional Y values are agreed or determined, the Parties shall update the table set out in part 2.1 of this Schedule 19 to include such additional Y values.

9. MAINTENANCE COSTS DURING DISPUTE

9.1 Subject to paragraph 2.1.5, the provisions of paragraphs 9.2 to 9.8 shall apply where the Service Provider refers a Dispute in respect of (i) the information provided by the Authority pursuant to paragraph 2.1.1.12 or (ii) the matters referred to in paragraph 4 or 6 to Dispute Resolution and the Service Provider considers (acting reasonably) that the relevant X and/or Y value or values, and/or the Accrual Adjustment, proposed by the Authority (the "**Authority's Proposal**") is insufficient.

9.2 The Service Provider shall act reasonably in determining whether to refer a Dispute of the nature described in paragraph 9.1 to Dispute Resolution and shall not refer such Disputes to Dispute Resolution vexatiously.

9.3 On the date the Service Provider refers the matters described in paragraph 9.1 to Dispute Resolution, the Service Provider shall also provide the Authority with written commentary and supporting evidence as to the matter(s) in Dispute, including the relevant X and/or Y value or values, and/or the Accrual Adjustment, proposed by the

Service Provider (the "**Service Provider's Proposal**") with an explanation as to why these increased values are required.

9.4 The Authority may request any additional information it may reasonably require from the Service Provider within five (5) Business Days of the receipt of the written commentary provided by the Service Provider pursuant to paragraph 9.3.

9.5 The Service Provider shall provide any additional information requested by the Authority pursuant to paragraph 9.4 within ten (10) Business Days of the receipt of such request.

9.6 The Authority shall make payments to the Service Provider of the relevant value specified in the Service Provider's Proposal in accordance with paragraph 4 until the outcome of the Dispute.

9.7 If the resolution or determination of the Dispute that is the subject of this paragraph 9 finds the relevant X and/or Y value or values, and/or the Accrual Adjustment are such that the amount which has been paid by the Authority to the Service Provider pursuant to paragraph 9.5 is greater than it would have been had the amount so resolved or determined (the "**Determined Amount**") been paid throughout the relevant period, the difference between the amount so paid by the Authority and the Determined Amount shall be deemed to be an overpayment and the next Monthly Payment shall be adjusted by an amount equal to such overpayment plus interest on such overpayment from the date that such overpayment was made to the Service Provider until the date of such adjustment at a rate equal to two per cent (2%) above the Bank of England Base Rate.

9.8 Subject to paragraphs 9.1 to 9.6 (inclusive), the Parties shall continue to perform all their respective obligations under this Contract notwithstanding the referral of a Dispute under such paragraphs to Dispute Resolution and nothing in this clause shall limit or reduce any remedies or recourse of the Authority pursuant to schedule 4 *(Payment Mechanism)*.

Part 2

2.1 Y values

***Indicates items of Apparatus for which Bidders are required to additionally provide an annual profile of forecast electricity consumption.**

Project Network Part		Description	Unit	Year 1 value (£ per annum)	Forecast Annual Electricity Consumption (kWh)
Carriageway	Strategic Route and Main Distributor	Includes full carriageway construction, friction course and ironwork	Per m2	[redacted]	[redacted]
	Secondary Distributor	Includes full carriageway construction, friction course and ironwork	Per m2	[redacted]	[redacted]
	Link Road	Includes full carriageway construction, friction course and ironwork	Per m2	[redacted]	[redacted]
	Local Road	Includes full carriageway construction, friction course and ironwork	Per m2	[redacted]	[redacted]
Footway	Prestige Walking Zone	Includes full construction (with kerbs) and ironwork	Per m2	[redacted]	[redacted]
	Primary Walking Route	Includes full construction (with kerbs and verges) and ironwork	Per m2	[redacted]	[redacted]
	Secondary Walking Route	Includes full construction (with kerbs and verges) and ironwork	Per m2	[redacted]	[redacted]
	Link Footway	Includes full construction (with kerbs and verges) and ironwork	Per m2	[redacted]	[redacted]

Project Network Part		Description	Unit	Mean [illegible] value (£ per annum)	Process [illegible] Annual Electricity Consumption (kWh)
	Local Access Footway	Includes full construction (with kerbs and verges) and ironwork	Per m2	[redacted]	[redacted]
Kerbs and Edging	Kerb		per metre	[redacted]	[redacted]
	Edging		per metre	[redacted]	[redacted]
	Combined Drainage and Kerb Blocks		per metre	[redacted]	[redacted]
Road Drainage Systems		Includes all manholes / Inspection chambers and connections	Per m	[redacted]	[redacted]
Gullies and catchpits		Includes covers, frames / gratings, connections and connecting pipe to drainage system	per item	[redacted]	[redacted]
Piped Culvert			per metre	[redacted]	[redacted]
Linear Drainage Channel System			per metre	[redacted]	[redacted]
Road Markings		All road markings and associated regulatory road studs	per metre	[redacted]	[redacted]
Road markings and Signs associated with Road Traffic regulation Orders		Includes markings, end bars and associated signing and poles	per metre	[redacted]	[redacted]

Highway Network Part		Description	Unit	Year 11 Value (£ per annum)	Energy & Annual Electricity Consumption (kWh)
Traffic Signs	Illuminated *	Includes all lamps, fixings, poles, clips etc	per item	[redacted]	[redacted]
	Non-illuminated	Includes all poles, clips etc	per item	[redacted]	[redacted]
Misc. Signs		No Ball Games / No Verge Parking / Do Not Fly Post etc.	per item	[redacted]	[redacted]
Street Name Plates			per item	[redacted]	[redacted]
Bollards		Concrete	per item	[redacted]	[redacted]
		Cast Iron		[redacted]	[redacted]
		Plastic		[redacted]	[redacted]
		Illuminated*		[redacted]	[redacted]
Traffic Calming Features		Humps, cushions, chicanes, build outs, etc.	per item	[redacted]	[redacted]
High Mast Lighting*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
High Mast Lighting fitted with equipment to enable Remote Monitoring Capability*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
12m SON*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]

Project Network Part		Description	Unit	[illegible] Value ([illegible])	Forecast Annual Electricity Consumption (kWh)
12m SON fitted with equipment to enable Remote Monitoring Capability*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
10m SON*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
10m SON fitted with equipment to enable Remote Monitoring Capability*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
8m COSMO*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
8m COSMO fitted with equipment to enable Remote Monitoring Capability*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
8m SON*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
8m SON fitted with equipment to enable Remote Monitoring Capability*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
6m SON*		Includes footings, lamps, heads,	per item	[redacted]	[redacted]

Project Network Part	[illegible]	Description	Unit	Value [illegible]	Forecast Annual Electricity Consumption (kWh)
		control gear, fuses etc			
6m SON fitted with equipment to enable Remote Monitoring Capability*		Includes footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
Traffic Signal Installations *		Includes footings, poles, drawpits, lamps, heads, back plates, control gear, fuses etc	per item	[redacted]	[redacted]
Controlled Pedestrian Crossing Installations *			per item	[redacted]	[redacted]
Zebra Crossings			per item	[redacted]	[redacted]
Signal Modifications*	Additional Signal Heads		per item	[redacted]	[redacted]
Traffic Signal feeder pillars			per item	[redacted]	[redacted]
VMS and EMS*		Includes poles, footings, lamps, heads, control gear, fuses etc	per item	[redacted]	[redacted]
Traffic Observation Camera Column / Pole*			per item	[redacted]	[redacted]
Seats			per item	[redacted]	[redacted]

Project Network Part		Description	Unit	Value (£) per unit	Forecast Annual Electricity Consumption (kWh)
Pedestrian Guardrail			per metre	[redacted]	[redacted]
Safety Barrier	Tensioned		per metre	[redacted]	[redacted]
	Untensioned		per metre	[redacted]	[redacted]
Low Height Deterrent Fencing (trip rail)			per metre	[redacted]	[redacted]
Tubular Steel Fence			per metre	[redacted]	[redacted]
Chain Link Fence			per metre	[redacted]	[redacted]
Palisade Fence			per metre	[redacted]	[redacted]
Close-boarded Fence			per metre	[redacted]	[redacted]
Feather-edged Fence			per metre	[redacted]	[redacted]
Grit Bin			per item	[redacted]	[redacted]
Landscaping	Trees		per item	[redacted]	[redacted]
Landscaping	**Trees**	**Extra Heavy Standard, 4.5-6m, 16-18cm girth**	**1 item**	[redacted]	[redacted]

Part 3

Enhanced Standards

Project Network Part	Description (Reference)	Description (Enhanced)	Total Build Cost (£ per item) X Value	Total Maintenance Cost (£ per item) Y Value	Service Provider Assumptions
Street Lighting Column	Reference Bid Column type				
	12m SON		[redacted]	[redacted]	Meets the requirement of the Output Specification, galvanised and coated finish, lantern with electronic gear
		Enhanced Standard Column (Bidder to propose)	[redacted]	[redacted]	Standard column and embellishment kit with concept type lantern
		Heritage Column (Bidder to propose)	[redacted]	[redacted]	Standard column with embellishment kit and heritage style lantern
	10m SON		[redacted]	[redacted]	Meets the requirement of the Output Specification, galvanised and coated finish, lantern with electronic gear

Project Network Part	Description (Reference)	Description (Enhanced)	Total Build Cost (£ per item) X Value	Total Maintenance Cost (£ per item) Y Value	Service Provider Assumptions
		Enhanced Standard Column (Bidder to propose)	[redacted]	[redacted]	Standard column and embellishment kit with concept type lantern
		Heritage Column (Bidder to propose)	[redacted]	[redacted]	Standard column with embellishment kit and heritage style lantern
	8m COSMO		[redacted]	[redacted]	Meets the requirement of the Output Specification, galvanised and coated finish, lantern with electronic gear
		Enhanced Standard Column (Bidder to propose)	[redacted]	[redacted]	Standard column and embellishment kit with concept type lantern
		Heritage Column (Bidder to propose)	[redacted]	[redacted]	Standard column with embellishment kit with concept type lantern
	8m SON		[redacted]	[redacted]	Meets the requirement of the Output Specification, galvanised and coated finish, lantern with electronic gear

Project Network Part	Description (Reference)	Description (Enhanced)	Total Build Cost (£ per item) X Value	Total Maintenance Cost (£ per item) Y Value	Service Provider Assumptions
		Enhanced Standard Column (Bidder to propose)	[redacted]	[redacted]	Standard column and embellishment kit with concept type lantern
		Heritage Column (Bidder to propose)	[redacted]	[redacted]	Standard column with embellishment kit and heritage style lantern
	6m SON		[redacted]	[redacted]	Meets the requirement of the Output Specification, galvanised and coated finish, lantern with electronic gear
		Enhanced Standard Column (Bidder to propose)	[redacted]	[redacted]	Standard column and embellishment kit with concept type lantern
		Heritage Column (Bidder to propose)	[redacted]	[redacted]	Standard column with embellishment kit and heritage style lantern
Equipment for Remote Monitoring Capability	N/A	Installation and capital cost	[redacted]	[redacted]	Telensa Module Used
Equipment for Dimming and Trimming Capability	N/A	Installation and capital cost	[redacted]	[redacted]	Telensa Dimming Module used Assumed compatible gear has been used

Project Network Part	Description (Reference)	Description (Enhanced)	Total Build Cost (£ per item) X Value	Total Maintenance Cost (£ per item) Y Value	Service Provider Assumptions
		Tactile Paving	[redacted]	[redacted]	100mm sub-base, 25mm sand bed & tactile flags
Pedestrian Guard Railing	Standard		[redacted]	[redacted]	Tubular pedestrian railings
		Visirail	[redacted]	[redacted]	Visirail pedestrian barrier
		Themed	[redacted]	[redacted]	Pedestrian railings with infill panels
Bollards		Concrete	[redacted]	[redacted]	Concrete bollard installed in concrete base
		Plastic	[redacted]	[redacted]	Plastic bollard installed in concrete base
		Steel	[redacted]	[redacted]	Steel bollard installed in concrete base
		Cast Iron	[redacted]	[redacted]	Cast Iron bollard installed in concrete base
Street Name Plate	Aluminium		[redacted]	[redacted]	Aluminium street name plate on posts
		Cast Aluminium	[redacted]	[redacted]	Cast aluminium street name plate on posts
		Aluminium Ornamental	[redacted]	[redacted]	Special aluminium street name plate on posts
		Plastic	[redacted]	[redacted]	Plastic street name plate on posts
Low Height deterrent fencing (trip rail)	Wooden		[redacted]	[redacted]	Timber trip rail on posts at 2000mm c/c

Project Network Part	Description (Reference)	Description (Enhanced)	Total Build Cost (£ per item) X Value	Total Maintenance Cost (£ per item) Y Value	Service Provider Assumptions
Carriageway Surfacing	Standard Surface Course		[redacted]	[redacted]	40mm thick PSV 65 wearing course
		Imprint Asphalt	[redacted]	[redacted]	150mm sub-base, 175mm base & 25mm wearing course
		High Friction Surfacing	[redacted]	[redacted]	anti-skid surfacing course (excluding cost of underlying structural carriageway courses)
Footway Surfacing	Standard Flexible		[redacted]	[redacted]	150mm sub-base, 90mm binder course & 20mm surface course
		Coloured Flexible Surfacing	[redacted]	[redacted]	--ditto-- with red coloured surface course
	Standard Flagged Surface Course		[redacted]	[redacted]	100mm sub-base, 20mm mortar bed & 50mm thick flags
		Modular Paving	[redacted]	[redacted]	100mm sub-base, 20mm mortar bed & 65mm tick 300 * 300 paviours
		Block Paving	[redacted]	[redacted]	100mm sub-base, 50mm sand bed & 65mm paviours
		Natural Stone Paving	[redacted]	[redacted]	100mm sub-base, 25mm sand base & 50mm slabs

Project Network Part	Description (Reference)	Description (Enhanced)	Total Build Cost (£ per item) X Value	Total Maintenance Cost (£ per item) Y Value	Service Provider Assumptions
		Metal	[redacted]	[redacted]	Steel tubular trip rail on posts at 2000mm c/c
Kerbing	Concrete		[redacted]	[redacted]	Standard 125 * 255mm precast concrete kerb on base c/w backing concrete
		Ornamental (i.e. Conservation)	[redacted]	[redacted]	145 * 255mm "conservation" kerb on base c/w backing concrete
		Natural Stone	[redacted]	[redacted]	Standard 125 * 255mm granite kerb on base c/w backing concrete
		Re-cycled Plastic	[redacted]	[redacted]	125 * 255mm recycled plastic kerb on base c/w backing concrete
		Kerb Drainage System	[redacted]	[redacted]	precast concrete "Beany" block kerb/drain on base c/w backing concrete

Note

- Please complete the table using the full cost for providing the item as described (X value) and the full cost for maintaining the item as described (Y value)
- For completeness full costs for providing (X Value) and maintaining (Y Value) Reference Project Network Parts should be provided

- The enhanced standard cost for each item will be calculated as the difference between the enhanced standard item selected and the item proposed in the annual maintenance programme

- The Maintenance Costs (Y Value) will be calculated using the same methodology as for the X Value above

Part 4

Trees

Species (excluding those on the Prohibited Species List)	Size (m)	Cost of Annual Maintenance of each Tree/£	Cost of Replacement/£
Acer platanoides	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Betula papyrifera (rootballed)	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Betula pendula (rootballed)	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Fraxinus excelsior	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Fraxinus oxycarpa 'Raywood'	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Malus floribunda	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Platanus acerifolia	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Prunus avium 'Plena'	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Quercus cerris (rootballed)	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Quercus robur (rootballed)	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Sorbus aria	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Sorbus hupehensis	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Tilia cordata	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]
Tilia x euchlora	(standard) 2.7-3.1m 10-12cm girth	[redacted]	[redacted]

Species (excluding those on the Prohibited Species List)	Size (m)	Cost of Annual Maintenance of each Tree/£	Cost of Replacement/£
Acer platanoides	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Betula papyrifera (rootballed)	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Betula pendula (rootballed)	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Fraxinus excelsior	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Fraxinus oxycarpa 'Raywood'	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Malus floribunda	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Platanus acerifolia	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Prunus avium 'Plena'	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Quercus cerris (rootballed)	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Quercus robur (rootballed)	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Sorbus aria	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Sorbus hupehensis	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Tilia cordata	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
Tilia x euchlora	(Heavy standard) 2.7-3.1m 12-16cm girth	[redacted]	[redacted]
rootballed Acer platanoides 'Emerald Queen'	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Aesculus hippocastanum 'Baumannii'	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Alnus cordata	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Carpinus	(Extra heavy standard)	[redacted]	[redacted]

Species (excluding those on the Prohibited Species List)	Size (m)	Cost of Annual Maintenance of each Tree/£	Cost of Replacement/£
betulus 'Fastigiata'	4.5-6m, 16-18cm girth		
rootballed Fagus sylvatica	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Fagus sylvatica 'Purpurea'	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Fraxinus excelsior	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Fraxinus oxycarpa 'Raywood'	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Malus tschonoskii	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Populus tremula	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Prunus avium 'Plena'	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Prunus Padus	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Quercus cerris	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Sorbus aria	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Sorbus aucuparia	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Tilia euchlora	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]
rootballed Tilia tomentosa	(Extra heavy standard) 4.5-6m, 16-18cm girth	[redacted]	[redacted]

Adjustment will be made +/- from a Schedule of Rates (based on the Table above) such that the Authority only pays for work delivered and this table may also provide the applicable "x" and "y" values for the purposes of Accruals and De-accruals in relation to trees.

Part 5

Service Provider Assumptions

Service Provider's Assumptions

Contents

1 SERVICE PROVIDER'S ASSUMPTIONS FOR ACCRUAL AND DE-ACCRUAL OF PROJECT NETWORK PARTS

General

1.1 These assumptions are based on the requirements of the Design Manual for Roads and Bridges (DMRB), Department of Transport Specification for Highway Works (MCDHW), good codes of practice, associated standards set by The Authority and Manufacturer's recommendation dated up to end February 2009.

Application

1.2 These Service Provider Assumptions shall apply to the Accrual and De-Accrual of Project Network Part as detailed in Schedule 19 to define the Y value:

1.3 All Project Network Parts proposed for the Accrual shall, as a minimum comply with the requirements of the Output Specification.

1.4 Other specifications/standards etc shall meet the requirements of the Output Specification and must be acceptable to the Authority.

1.5 Relevant testing shall be carried out in accordance with the MCDHW and recognised standards/codes of practice. Test results shall be made available by the Authority to the Service Provider to ensure standards are met.

1.6 It is assumed that all the Project Network Parts proposed for Accrual are new and in pristine conditions.

British Standards and other publications – Materials, Workmanship and Testing

1.7 Any reference made within this document to a British Standard/Eurocode shall mean the latest version.

Information from The Authority

1.8 All relevant information required by Legislation shall issued to the Service Provider at the date of the Accrual or within 20 business days.

1.9 All information required to accurately populate the MIS shall be issued to the Service Provider at the date of Accrual or within 20 Business Days

Disability Discrimination Act

1.10 All highway features must comply with the requirements of this Act and associated guidance.

Fencing

1.11 The Y values apply to fencing wholly within the boundaries of the Project roads

1.12 The Y values do not apply to boundary fences

1.13 Where a boundary fence is installed the boundary shall be marked by the highway face of the fence. For all post and rail fencing or other wooden fencing the posts and the rails shall be shall be on the private side and the boards on the private highway

Definitions

Authority	Birmingham City Council
Statutory Authority	Environmental Agency, Severn Trent etc
Strategic Route	Trunk and some Principal "A" roads between Primary Destinations. Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.

Main Distributor	Major Urban Network and Inter-Primary Links. Short – medium distance traffic. Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.
Secondary Distributor	Classified Road (B and C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions. In rural areas these roads link the larger villages and HGV generators to the Strategic and Main Distributor Network. In built up areas these roads have 30mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On street parking is generally unrestricted except for safety reasons.
Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions. In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two-way traffic. In urban areas they are residential or industrial inter-connecting roads with 30mph speed limits random pedestrian movements and uncontrolled parking.
Local Access Road	Roads serving limited numbers of properties carrying only access traffic. In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGV. In urban areas they are often residential loop roads or *cul de sac*.
Prestige Walking Zone	Very busy areas in Birmingham with high public space and street scene contribution e.g. New Street. (Category 1A as defined in "Well-maintained Highways).

Primary Walking Route	Busy urban shopping and business areas, and main pedestrian routes linking interchanges between different modes of transport, such as railways and bus stops, etc. (Category 1 as defined in "Well-maintained Highways).
Secondary Walking Route	Medium usage routes through local areas feeding into primary routes, local shopping centres, large schools and industrial centres, etc (Category 2 as defined in "Well-maintained Highways).
Link Footway	Linking local access footways through urban areas and busy rural footways (Category 3 as defined in "Well-maintained Highways).
Local Access Footway	Footways associated with low usage, short estate roads to the main routes and *cul de sac* (Category 4 as defined in "Well-maintained Highways).
DMRB	Design Manual for Roads and Bridges. Publications as stated during February 2009.
MCDHW	Manual of Contract Documents for Highway Works including amendments November 2008
SHW	Specification of Highway Works Volume 1.
HCD	Highway Construction Details as per the MCDHW November 2008.
TSRGD	Traffic Sign Regulation and General Directions 2002

2 SERVICE PROVIDER'S ASSUMPTIONS FOR CARRIAGEWAY WORKS

Carriageways

General Assumption

2.1 Average road widths as follows

a) Strategic and Main Distributor (H1) – 9.0

b) Secondary Distributor (H2) – 7.1

c) Link Road (H3) – 6.75m

d) Local Road – 6.5m

2.2 Designs must take account of 'Planning buildings, streets and disability equality' guidance published by the Disabled Rights Council

General Design Assumptions

2.3 No recycled material in new build except road plannings in base courses. Where these are used they must be in accordance with relevant design specifications.

2.4 No contaminated material to be used in construction.

2.5 No concrete surfacing.

2.6 No high friction surfacing (this to Accrue separately).

2.7 Use of man-holes and statutory undertakers' covers to be avoided in carriageway

2.8 Ironwork shall be set to +/- 6mm of finished surface except for gully gratings which shall be set +0mm to -10mm of finished surface

2.9 Where covers frames and grating are in carriageway, materials must be to BS EN 124.

2.10 Gully gratings shall be hinged

2.11 All carriageways to be laid between Kerbs. However Kerbs are not included and are Accrued separately.

2.12 Designs must take account of 'Planning buildings, streets and disability equality' guidance published by the Disabled Rights Council

Specific Design Assumptions

Strategic and Main Distributor (Includes full carriageway construction, friction course and ironwork)

a) No concrete pavement construction

b) Design for 40 years life – based on traffic assessments in accordance with DMRB Volume 7 (HD24/06 and subsequent updates).

c) Foundation design in accordance with IAN73/06 (and subsequent updates to DMRB).

d) Material thickness in accordance with DMRB Volume 7 (HD26/06 and subsequent updates).

e) Minimum surface course thickness 40mm – no thin pavements.

f) PSV and AAV in accordance with HD36/06 (appropriate to site category) but minimum PSV 65

Secondary Distributor (Includes full carriageway construction, friction course and ironwork)

a) No concrete pavement construction

b) Design for 40 years life – based on traffic assessments in accordance with DMRB Volume 7 (HD24/06 and subsequent updates).

c) Foundation design in accordance with IAN73/06 (and subsequent updates to DMRB).

d) Material thickness in accordance with DMRB Volume 7 (HD26/06 and subsequent updates).

e) Minimum surface course thickness 40mm – no thin pavements.

f) PSV and AAV in accordance with HD36/06 (appropriate to site category) but minimum PSV 65

Link Road (Includes full carriageway construction, friction course and ironwork)

2.13 Industrial Roads

a) Minimum surface course thickness 40mm – no thin pavements or concrete surfacing

b) No concrete pavement construction

c) PSV and AAV in accordance with HD36/06 (appropriate to site category) but minimum PSV 60

d) Foundation design in accordance with "The Design of New Streets (Industrial Areas)" – January 2005

e) Bound layer construction in accordance with "The Design of New Streets (Industrial Areas)" – January 2005

2.14 Residential Roads

a) Minimum surface course thickness 40mm – no thin pavements or concrete surfacing

b) No concrete pavement construction

c) PSV and AAV in accordance with HD36/06 (appropriate to site category) but minimum PSV 60

d) Foundation design in accordance with "The Design of New Streets (Residential Areas)" – January 2004

e) Bound layer construction in accordance with "The Design of New Streets (Residential Areas)" – January 2004

Local Road (Includes full carriageway construction, friction course and ironwork)

2.15 Industrial Roads

a) Minimum surface course thickness 40mm – no thin pavements or concrete surfacing

b) No concrete pavement construction

c) PSV and AAV in accordance with HD36/06 (appropriate to site category) but minimum PSV 55

d) Foundation design in accordance with "The Design of New Streets (Industrial Areas)" – January 2005

e) Bound layer construction in accordance with "The Design of New Streets (Industrial Areas)" – January 2005

2.16 Residential Roads

a) Minimum surface course thickness 40mm – no thin pavements or concrete surfacing

b) No concrete pavement construction

c) PSV and AAV in accordance with HD36/06 (appropriate to site category) but minimum PSV 55

d) Foundation design in accordance with "The Design of New Streets (Residential Areas)" – January 2004

e) Bound layer construction in accordance with "The Design of New Streets (Residential Areas)" – January 2004

3 SERVICE PROVIDER'S ASSUMPTIONS FOR FOOTWAYS WORKS

General Assumptions

3.1 Average footway width 1.8m

3.2 Average verge width 1.5m

Generic design assumption

3.3 Footway design in accordance with DMRB volume 7 section 2 part 5 HD 39/01

3.4 All material and testing used must be in accordance with clause 4 of HD 39/01

3.5 Footway construction shall be between Kerbs or edgings

3.6 Kerbs and edgings are included

3.7 Ironwork to be to BS EN 124

3.8 Ironwork shall be set to +/- 6mm of finished surface except for gully gratings which shall be set +0mm to -10mm of finished surface

3.9 Any trees shall be planted in accordance with the tree assumptions later in this document. Trees shall be fitted with cast iron gates and gratings to protect the surrounding footway and/or verge construction (trees shall be accrued separately)

3.10 Kerbs to be pre-cast concrete or similarly durable material but shall not be natural stone or asphalt.

3.11 Minimum finished kerb up-stand of 125mm

3.12 Designs must take account of 'Planning buildings, streets and disability equality' guidance published by the Disabled Rights Council",

3.13 Where tactile paving is used, the "Guidance on the use of tactile paving surfaces" published by the Department of Transport must be followed,

3.14 Other relevant design considerations as set out in the Department for Transport's "Manual for Streets" must be addressed.

3.15 Industrial Areas – In Industrial Areas full consideration must be given to the design of footway crossings by heavy vehicles.

Prestige Walking Zone

3.16 Surfacing materials shall be concrete block pavers to BS EN 1338:2003 installed in accordance with the manufacturers instructions

3.17 Includes full construction (with kerbs) and ironwork

3.18 No natural stone or brick pavers

3.19 Joints shall be sealed using Resiblock or similar approved.

3.20 Footway is likely to be physically separated from any carriageway; however footway shall use by cleaning and maintenance vehicles (e.g. sweepers) and possibly by delivery vehicles in shopping areas. Design as per appropriate table from HD39/01 for blocks/pavers, but table 3.2 for light-vehicle category shall be a minimum. Design shall be as table 3.3 or 3.4 if vehicle overrun can reasonably be anticipated.

3.21 Colour of blocks or pavers to be consistent with surrounding street scene.

3.22 No verge (as schedule 19)

Primary Walking Route

3.23 Surfacing materials shall be concrete flags to BS EN 1339:2003 or bituminous

3.24 Includes full construction (with kerbs and verges) and ironwork

3.25 No natural stone pavers

3.26 Footway shall be used by cleaning and maintenance vehicles (e.g. sweepers) therefore design as per appropriate table from HD39/01, but table 3.2 for light-vehicle category shall be the minimum. Design shall be as table 3.3 or 3.4 if vehicle overrun can reasonably be anticipated.

3.27 Colour of blocks or pavers to be consistent with surrounding street scene.

3.28 If "made" verge present this must also be designed as per appropriate table from HD39/01

3.29 Made verge shall not be flags unless positive measures in place to prevent vehicle overriding

Secondary Walking Route

3.30 Surfacing materials shall be bituminous

3.31 Includes full construction (with kerbs and verges) and ironwork

3.32 Surface options – Bituminous

3.33 Footway to be designed as per appropriate table from HD39/01 for bituminous surfaces with due consideration given to presence of vehicle crossovers (driveways) and likelihood of over-riding.

3.34 If "made" Verge present this must also be designed as per appropriate table from HD39/01 with due consideration given to likelihood of over-riding.

3.35 Made Verge surfacing materials shall be bituminous unless positive measures are in place to prevent vehicle overriding in which case flags are acceptable

Link Footway

3.36 Surfacing materials shall be bituminous

3.37 Includes full construction (with kerbs and verges) and ironwork

3.38 Footway to be designed as per appropriate table from HD39/01 for bituminous surfaces with due consideration given to presence of vehicle crossovers (driveways) and likelihood of over-riding.

3.39 If "made" verge present this must also be designed as per appropriate table from HD39/01 with due consideration given to likelihood of over-riding.

3.40 Made verge shall not be flags unless positive measures in place to prevent vehicle overriding

Local Access Footway

3.41 Surfacing materials shall be bituminous

3.42 Includes full construction (with kerbs and verges) and ironwork

3.43 Surface options – Bituminous

3.44 Footway to be designed as per appropriate table from HD39/01 for bituminous surfaces with due consideration given to presence of vehicle crossovers (driveways) and likelihood of over-riding.

3.45 If "made" verge present this must also be designed as per appropriate table from HD39/01 with due consideration given to likelihood of over-riding.

3.46 Made verge shall not be flags unless positive measures in place to prevent vehicle overriding.

4 SERVICE PROVIDER'S ASSUMPTIONS FOR KERBS AND EDGINGS

General

4.1 Kerbs to be laid straight on carriageway that exceed 12m radius

4.2 Precast concrete kerbs only to be used to BS EN 1340:2003

Kerbs

4.3 HB2/SP similar construction details

4.4 No quadrant kerbs.

4.5 Concrete ST4 150mm minimum thickness, with 175mm backing, and 50mm slope at the back of kerb.

4.6 25mm allowance for bedding mortar below kerb stone

4.7 Concrete to be cast against ground and on top of sub-base.

4.8 Allow for one drop kerb arrangement per 100m of Carriageway, inclusive of 2 taper kerb stones, DL1 and DR1, 2.4m length minimum for drop kerb length to be flush to the carriageway.

4.9 Finished arrangement shall be Free from Standing Water

Edging

4.10 EF/ENB similar construction

4.11 Edging to be laid on ST4 concrete 100mm thick 125mm from the centre to both sides of the edging stone with a 50mm surround.

Combined drainage and kerb blocks

4.12 ACO KerbDrain 255 for shallow 255 depths (HB2 Profile)

4.13 Installed in accordance with the manufacturers instructions

4.14 Access points shall be provided as follows: one at the start and end; one for every change in direction; and 40m centres in straight runs for jetting, rodding and maintenance.

4.15 Allow for one drop kerb arrangement per 100m of Carriageway, inclusive of 2 taper kerb stones, DL1 and DR1, 2.4m length minimum for drop kerb length to be flush to the carriageway.

5 SERVICE PROVIDER'S ASSUMPTIONS FOR ROAD DRAINAGE SYSTEMS

General

5.1 Drainage systems design in accordance with DMRB Volume 4: Geotechnics and Drainage.

5.2 Includes for carrier drain pipework up to 450mm diameter

5.3 Manholes to be located as designed in accordance with Design Manual for Roads and Bridges (DMRB) Volume 4.

5.4 Manhole shall be minimum 1200mm diameter precast concrete manholes as per HCD F5 sub type 3a - Maximum 450mm pipe diameter. Single manhole steps as per HCD F10 and chamber fittings guardrail as per F28. Max of 1 branch into chamber.

5.5 Inspection chambers shall be 1500mm diameter chamber as per HCD F4 sub type 2a – Maximum pipe 450mm diameter.

5.6 Concrete surround for pipes are as per HCD F1 type Z.

5.7 Flexible joints to be used

5.8 Gully connections shall be formed using factory made junctions

5.9 Manhole and inspection chamber covers shall be D400 600x600.

5.10 Brickwork as per clause 2406 SHW – Class B engineering.

5.11 Evidence of discharge approvals from relevant authority shall be provided.

5.12 All drainage shall be constructed in accordance with Sewers for Adoption 6Th Edition except where otherwise specified.

5.13 The K values assumed for the hydraulic design of the drainage system are:-

a) Clayware 0.6mm

b) Concrete 0.6mm

5.14 Only vitrified clay or cement lined ductile iron pipes will be permitted for foul water sewers.

5.15 Only vitrified clay, concrete or cement lined ductile iron pipes will be permitted for surface water sewers.

5.16 All joints in foul and surface water sewers shall be watertight.

5.17 The flow of ground water from existing land drains, if any, which are severed by the Works must be either reconnected across trenches/excavations after completion of the Works or otherwise connected into a new drainage system approved by the Authority or Statutory Authority.

5.18 Where a new connection is to be made to an existing sewer 300mm diameter or less it shall be by means of a factory made junction of the same material let into the pipeline and jointed by means of a suitable airtight flexible coupling. For existing sewers greater than 300mm pipe saddles are to be used, bedded in cement mortar and a mortar fillet formed to give a cover of at least 50mm to the base of the saddle. A trepanning tool is to be used for cutting hole into existing sewer to receive saddle.

5.19 Where a new manhole is to be constructed on an existing sewer or to replace an existing manhole, the existing sewer pipes are to be cut back as necessary and new short pipes built into the manhole. The connection of the new to existing pipes is to be made with suitable airtight flexible couplings.

5.20 Precast concrete manholes shall be fully surrounded with a minimum of 150mm of ST4 concrete.

5.21 All precast concrete products and in situ concrete used in the construction of sewers, drains, manholes etc. shall be manufactured with sulphate resisting cement.

5.22 Manhole covers shall comply with BS EN 124; supplied black bitumen coated and shall be as follows:

Manhole Cover	D400	150mm	600 x 600

5.23 Covers and frames on manholes located in carriageway including those on existing manholes that require adjustment shall be bedded on epoxy resin mortar.

5.24 Existing sewers, drains and service ducts to be abandoned and not removed during bulk excavation are to be sealed and grouted using foamed cement grout. The grout shall be a blend of cement, sand and water, mixed with closed cell protein foam to form a homogeneous mixture, with a specific gravity in the range 1.05 to 1.10 and minimum compressive strength at 28 days of 3N/mm^2.

5.25 All drain trenches and connections are to be backfilled with imported Type 1 granular material.

5.26 Concrete provided as a protection to pipes shall be Grade ST4 placed to the required depth in one operation.

Less than 450	18
450 – 1200	36
Exceeding 1200	54

Where pipes with flexible joints are used, concrete protection shall be interrupted over its full cross section at each pipe joint by shaped compressible filler. The compressible filler shall consist of bitumen impregnated insulating board to BS 1142 part 3 or other equally compressible material. The thickness of compressible filler shall be as follows:

6 SERVICE PROVIDER'S ASSUMPTIONS FOR GULLIES AND CATCHPITS

General

6.1 Connection of pipes to gullies and catchpits shall be twin band sealed joints and water tights. Testing is required for joints.

6.2 Evidence of discharge approvals from relevant authority shall be provided

6.3 Covers for both gullies and catchpits 434x434mm hinged class D400 to BS-EN 124

Gullies

6.4 Gullies constructed to HCD F13

6.5 Gully pot - precast concrete 450mm diameter internal dim x 900mm deep trapped(as per costing schedule)

6.6 Connection – 150mm diameter UPVC with concrete surround ST2

6.7 Gully backfilling SHW Appendix 5/1 ST2 concrete

6.8 Gully connections to be 150mm nominal internal diameter.

Catchpits

6.9 Catchpits constructed to HCD F11 and F12 and to clause 507, max pipe diameter 450mm.

6.10 Pre cast concrete chamber 1050mm diameter

6.11 Type Z concrete bed and surround as detailed on HCD F1 shall be used for gully and catchpit connections.

6.12 Gullies shall be precast concrete trapped and comply with HCD F13. Each gully shall be surrounded with a minimum of 150mm of ST2 concrete.

6.13 All precast concrete products catchpits, gullies etc. shall be manufactured with sulphate resisting cement.

6.14 Gully and catchpit gratings shall comply with BS EN 124; supplied black bitumen coated and shall be as follows:

Gully and catchpit Grates	D400	100mm	434 x 434 Side Hinged (Reversible)

6.15 Gullies shall have a minimum waterway area of 1020cm^2

6.16 All drain trenches and connections are to be backfilled with imported granular material.

6.17 Concrete provided as a protection to pipes shall be Grade ST4 placed to the required depth in one operation. Where pipes with flexible joints are used, concrete protection shall be interrupted over its full cross section at each pipe joint by shaped compressible filler. The compressible filler shall consist of bitumen impregnated insulating board to BS 1142 part 3 or other equally compressible material. The thickness of compressible filler shall be as follows:

Less than 450	18
450 – 1200	36

Exceeding 1200	54

7 SERVICE PROVIDER'S ASSUMPTIONS FOR PIPED CULVERT WORKS

General

7.1 Piped culverts to be no greater than 900mm nominal internal diameter.

7.2 Pipe bedding and backfill to clause 503 of SHW and HCD F1.

7.3 Type S, bed and backfill,

7.4 Width of trench min 1400mm max 1700mm

7.5 Depth of culvert below finished Carriageway level, maximum 2.50m.

7.6 Culvert pipework to be tested in accordance with clause 509 of SHW

7.7 No allowance made for connections to piped culverts

7.8 No allowance made for connections to catchpits / manholes

7.9 Access points (manhole or catchpit – Accrued separately) to be provided at intervals no greater than 100m

7.10 No allowance made for headwalls or gratings (Accrued separately)

7.11 All drainage shall be constructed in accordance with Sewers for Adoption 6Th Edition except where otherwise specified.

7.12 The K values assumed for the hydraulic design of the drainage system are:

a) Clayware 0.6mm

b) Concrete 0.6mm

7.13 Only vitrified clay or cement lined ductile iron pipes will be permitted for foul water sewers.

7.14 Only vitrified clay, concrete or cement lined ductile iron pipes will be permitted for surface water sewers.

7.15 All joints in foul and surface water sewers shall be watertight.

7.16 The flow of ground water from existing land drains, if any, which are severed by the Works must be either reconnected across trenches/excavations after completion of the Works or otherwise connected into a new drainage system approved by the Service Provider.

7.17 Where a new connection is to be made to an existing sewer 300mm diameter or less it shall be by means of a factory made junction of the same material let into the pipeline and jointed by means of a suitable airtight flexible coupling. For existing sewers greater than 300mm pipe saddles are to be used, bedded in cement mortar and a mortar fillet formed to give a cover of at least 50mm to the base of the saddle. A trepanning tool is to be used for cutting hole into existing sewer to receive saddle.

7.18 Where a new manhole is to be constructed on an existing sewer or to replace an existing manhole, the existing sewer pipes are to be cut back as necessary and new short pipes built into the manhole. The connection of the new to existing pipes is to be made with suitable airtight flexible couplings.

7.19 Precast concrete manholes shall be fully surrounded with a minimum of 150mm of ST4 concrete.

7.20 All precast concrete products and in situ concrete used in the construction of sewers, drains, manholes etc. shall be manufactured with sulphate resisting cement.

7.21 Manhole covers shall comply with BS EN 124; supplied black bitumen coated and shall be as follows

Manhole Cover	D400	150mm	600 x 600

7.22 Covers and frames on manholes located in carriageway including those on existing manholes that require adjustment shall be bedded on epoxy resin mortar.

7.23 Existing sewers, drains and service ducts to be abandoned and not removed during bulk excavation are to be sealed and grouted using foamed cement grout. The grout shall be a blend of cement, sand and water, mixed with closed cell protein foam to form a homogeneous mixture, with a specific gravity in the range 1.05 to 1.10 and minimum compressive strength at 28 days of $3N/mm^2$.

7.24 Existing manholes, inspection chambers and gullies to be abandoned which are not removed during bulk excavation are to have the covers, frames and brickwork as necessary removed and the chambers filled with ST1 concrete.

7.25 All drain trenches and connections are to be backfilled with imported granular material. Type 1 back fill.

7.26 All soft spots to be excavated and backfilled with granular sub-base Type 2 or acceptable material Class 2 as agreed

7.27 Concrete provided as a protection to pipes shall be Grade ST4 placed to the required depth in one operation. Where pipes with flexible joints are used, concrete protection shall be interrupted over its full cross section at each pipe joint by shaped compressible filler. The compressible filler shall consist of bitumen impregnated insulating board to BS 1142 part 3 or other equally compressible material. The thickness of compressible filler shall be as follows:

Less than 450	18
450 – 1200	36
Exceeding 1200	54

8 SERVICE PROVIDER'S ASSUMPTIONS FOR LINEAR DRAINAGE CHANNEL SYSTEM WORKS

General

8.1 Manufactured systems shall conform to BS EN 1433

8.2 Classification to be C250 Aco drain or similar as per clause 517.8 of SHW

8.3 Design flows and weathering resistance as per Appendix 5/6

8.4 Discharge via a 900mm deep sump via a 150mm diameter clay vitrified clay pipe out falling to a precast gully or manhole.

8.5 ACO Drains must be used in Prestige walking zones.

8.6 Linear drainage channel systems are to be provided as per clause 517 of the Specification for Highway Works and all other relevant standards.

8.7 The maximum width of units shall be 250mm and the maximum depth of channel units shall be 500mm. Concrete bedding and surround shall be mix ST4.

8.8 The design capacity shall be evaluated in accordance with Hydraulics Research (Wallingford) 'Charts for the Hydraulic Design Channels and Pipes'. The catchment area shall be taken as width of the drained carriageway multiplied by the length of each linear drainage run between outfalls. The capacity shall be calculated assuming a mean rainfall of 50mm/hr.

8.9 Linear drainage channel systems shall be installed in accordance with the Manufacturer's instructions and shall include for any outfall in to an existing drainage system or adjacent combined drainage and kerb system. Connection must be water tight.

9 SERVICE PROVIDER'S ASSUMPTIONS FOR ROAD MARKINGS

General

9.1 Permanent road marking materials designed to BS EN 1436 and BS EN 1871 and Appendix 12/3. No allowance for special materials.

9.2 Statutory requirements to TSRGD 2002

9.3 All lettering, figures, arrows and symbols to be in accordance with the above design codes.

9.4 All white and yellow lines are as detailed in Appendix 12/3 shown below

9.5 Temporary road markings and red route road markings are excluded.

9.6 Raised rib road markings to TSRGD 2002 and detailed in Appendix 12/3 are excluded

9.7 Retroreflective road studs to BS EN 1463-1 and Appendix 12/3

9.8 Retroreflective road studs to Traffic Signs Manual, Chapter 5 Road Markings 2003

9.9 Retroreflecting and non-retro reflecting road studs shall be permanent and comply with Regulation 31 of TSRGD, Traffic Signs Manual Chapter 5 for applications and spacing. Retroreflecting road studs and components must not be installed by any method other than that recommended by the manufacturer.

9.10 Road markings and road studs tested in accordance with Tests specified in BS 3262: part 1 (N) and the Quality management and product certification schemes apply. Sampling procedures are given in BS 3262: part 1.

9.11 For secondary link road edge line to be 150mm wide continuous to TSRGD diagram No.1012.1 and centre line marking to be 100mm wide, 2m mark and 4m gap to TSRGD diagram No.1008.

Road Markings

9.12 Road Markings to TSRGD 2002 diagram number.

9.13 Materials

Bituminous surfacing	Screed Applied or extruded Thermoplastic Material complying with BS EN 1871 and BS EN 1436	4 ± 1 Screed 3 ± 0.5 Extruded (exclusive of surface applied solid glass beads)	Class Q2 to Table 1 BS EN 1436. Class R2 to Table 3 BS EN 1436 Class B2 to Table 3 BS EN 1436 Class S3 to Table 7 BS EN 1436 (Minimum skid resistance value 55)	White

Special Requirements

9.14 All permanent road markings shall be of thermoplastic material complying with BS EN 1436 and BS EN1871 screed applied or extruded to the following thickness:

c) Extrusion Markings 3 ± 0.5mm

d) Screed Markings 4 ± 1mm

9.15 These thicknesses specified are exclusive of surface applied solid glass beads.

9.16 Raised rib markings shall be of extruded or screed applied reflectorised thermoplastic with transverse ribs not less than 8mm and not more than 10mm high at regular

intervals. The width of the raised ribs shall be a minimum of 80% of the base line width and they shall be a minimum of 40mm and a maximum of 50mm in length. The intervals of the raised ribs shall be 500mm unless directed otherwise by the Authority or Service Provider.

9.17 Raised Rib Edge Lines are to be 150mm wide and comply with the following points:

a) Drainage gaps are to be provided 25 to 50mm wide at irregular intervals to be provided as appropriate to promote free surface water drainage.

b) The spacing of the Raised Ribs is to be 500mm for Main Carriageway Lines and 250mm for Slip Road Edge Lines

Glass Beads

9.18 All glass beads to be applied to the road markings shall be certificated as being fit for purposed. A certificate, from a UKAS accredited laboratory, stating that the beads meet both statutory and Highways Agency specifications.

9.19 The test certificate will be required as part of the National Highway sector scheme 7 supplier's quality plans.

9.20 To comply with the EU hazardous waste directive the following levels shall be the upper limit of the following:

a) Arsenic Tricide 1000ppm

b) Lead 200ppm

c) Antimony 1000ppm

9.21 Any supplies of glass beads that have not been checked or do not comply with the above shall not be used.

10 SERVICE PROVIDER'S ASSUMPTIONS FOR ROAD MARKINGS AND SIGNS ASSOCIATED WITH TRAFFIC REGULATION ORDER WORKS

General

10.1 Traffic Regulation Order (TRO) applications shall be in accordance with Statutory Instrument 1990 No 1656 and issued to the Authority. All proposals shall be designed in accordance with the appropriate design codes and standards and approved by the Authority.

10.2 It is assumed that the TRO will be used for the following categories: -

a) Waiting and loading areas,

b) One way streets,

c) Speed limits,

d) Weight and width restrictions,

e) Access and turning restrictions,

f) Road and footway closures,

g) Cycle and bus lanes;

h) Parking zones; and

i) Red Routes.

10.3 Road markings and signs associated with a TRO shall be installed strictly in accordance with the approved TRO

10.4 The Authority shall procure that a copy of the approved TRO is provided to the Service Provider upon Accrual

10.5 Permanent road markings shall be designed to BS EN 1436 and BS EN 1871 and Appendix 12/3

10.6 Statutory requirements to Traffic Signs Regulations and General Directions (TSRGD) 2002

10.7 Raised rib road markings to TSRGD 2002

10.8 Retroreflective road studs to BS EN 1463-1 and Appendix 12/3

10.9 Retroreflective road studs to Traffic Signs Manual, Chapter 5 Road Markings 2003

10.10 Road studs to be permanent

10.11 Road markings and road studs shall be tested

10.12 Sign faces manufactured to BS EN 12899.

10.13 Sign post manufactured to BS 729.

10.14 Signs shall be designed to TSRGD 2002.

10.15 No allowance has been for passively safe posts.

10.16 Illuminated sign foundation to be ST4 concrete, 800mm x 800mm x 500mm deep with allowance for 900mm of UPVC ducting. Sign sized 750mm x 750mm.

10.17 Non-illuminated sign foundation to be ST4 concrete, 700mm x 700mm x 500mm deep. Sign sized 750mm x 750mm.

10.18 Letters, figures, arrows and symbols included

10.19 White, yellow and red lines included

10.20 Temporary road markings not included

10.21 Speed of the road assumed to be 40mph or less

General

10.22 Sign faces shall always be constructed using R2 retro reflective material to BS EN 12899. Any reference in the schedules to Class 1 retro reflective in the schedules to Class 1 retro reflective material shall be R2 in accordance with BS EN 12899.

10.23 Sign posts shall be circular sections constructed from steel and be hot dip galvanised to BS 729 at the fabrication factory. They shall be painted black and shall be topped with a black coloured watertight cap.

10.24 The post is to be covered in a root protection system both inside and outside up to a level of 150mm above ground level.

10.25 All posts shall be steel hollow sections, in accordance with BS 873. Posts for a lit sign unit shall have a standard base housing of 168mm outside diameter. The base housing shall be provided with a 150mm x 75mm cable entry hole. The lower end of the slot shall be 500mm below ground level.

10.26 The base housing shall contain a baseboard not less than 450mm x 100mm x 10mm thick, which shall be of substantially non-hygroscopic and rot resistant material and shall be fixed securely in the housing.

10.27 Access shall be via a door minimum size of 400mm x 90mm. All door locks shall have an application of suitable grease applied. The door lock shall consist of a replaceable brass insert and a triangular headed stainless steel screw.

10.28 A stainless steel earthing stud shall be welded inside the post near the access door, and on the door, and shall be complete with washers and nuts.

a) The back of the sign is to carry the following information

b) The Number of the British Standard.

c) The name, trademark or other means of identifying the manufacture.

d) The class of retro reflective material used.

e) The month and year of manufacture.

10.29 Affixed to each sign a label showing the sign reference number (to be provided by the Service Provider) in 75mm high black characters on white refectories background. The characters shall be arranged vertical. The label shall be located on the rear of the sign plate with the lower edge 50mm above the lower edge of the sign. Before the label is affixed the rear of the sign plate shall be cleaned and primed. After fixing the label shall be sealed. Materials and methods of fixing shall be in accordance with the manufacturer's instructions.

Road Markings

10.30 Road Markings to TSRGD 2002 diagram number.

10.31 Materials

Bituminous surfacing	Screed Applied or extruded Thermoplastic Material complying with BS EN 1871 and BS EN 1436	4 ± 1 Screed 3 ± 0.5 Extruded (exclusive of surface applied solid glass beads)	Class Q2 to Table 1 BS EN 1436. Class R2 to Table 3 BS EN 1436 Class B2 to Table 3 BS EN 1436 Class S3 to Table 7 BS EN 1436 (Minimum skid resistance value 55)	White

Special Requirements

10.32 All permanent road markings shall be of thermoplastic material complying with BS EN 1436 and 1871 screed applied or extruded to the following thickness:-

a) Extrusion Markings 3 ± 0.5mm

b) Screed Markings 4 ± 1mm

10.33 These thicknesses specified are exclusive of surface applied solid glass beads.

10.34 Raised rib markings shall be of extruded or screed applied reflectorised thermoplastic with transverse ribs not less than 8mm and not more than 10mm high at regular intervals. The width of the raised ribs shall be a minimum of 80% of the base line width and they shall be a minimum of 40mm and a maximum of 50mm in length. The intervals of the raised ribs shall be 500mm unless directed otherwise by the Authority or Service Provider.

10.35 Raised Rib Edge Lines are to be 150mm wide and comply with the following points:

a) Drainage gaps are to be provided 25 to 50mm wide at irregular intervals to be provided as appropriate to promote free surface water drainage.

b) The spacing of the Raised Ribs is to be 500mm for Main Carriageway Lines and 250mm for Slip Road Edge Lines

Glass Beads

10.36 All glass beads to be applied to the road markings shall be certificated as being fit for purposed. A certificate, from a UKAS accredited laboratory, stating that the beads meet both statutory and Highways Agency specifications.

10.37 The test certificate will be required as part of the National Highway sector scheme 7 supplier's quality plans.

10.38 To comply with the EU hazardous waste directive the following levels shall be the upper limit of the following:

a) Arsenic Tricide 1000ppm

b) Lead 200ppm

c) Antimony 1000ppm

10.39 Any supplies of glass beads that have not been checked or do not comply with the above shall not be used.

11 SERVICE PROVIDER'S ASSUMPTIONS FOR TRAFFIC SIGNS

General

11.1 All traffic signs shall comply with TRSGD 2002

11.2 Sign faces shall be manufactured to BS EN 12899.

11.3 Statutory signs shall meet the requirements to Traffic Signs Regulations and General Directions (TSRGD) 2002

11.4 Sign posts shall be manufactured to BS 729.

11.5 Sign posts shall be root protected inside and out to a height of 150mm above finished ground level.

11.6 Signs faces shall be designed to TSRGD 2002.

11.7 No allowance has been for passively safe posts.

11.8 No internally illuminated signs

11.9 Illuminated sign foundation to be ST4 concrete, 800mm x 800mm x 500mm deep with allowance for 900mm of UPVC ducting. Sign sized 750mm x 750mm.

11.10 Non-illuminated sign foundation to be ST4 concrete, 700mm x 700mm x 500mm deep. Sign sized 750mm x 750mm.

11.11 Speed of the road assumed to be 40mph or less

Sign Posts

11.12 Sign Posts shall comply with BS 729

11.13 Sign Posts will be made from tubular steel which will be Hot Dip Galvanized to the latest BS EN 1461 standard.

11.14 No allowance has been made for the requirements of passively safe posts

11.15 Sign Posts shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour Black (to BS 00 E 53);

11.16 All posts shall be steel hollow sections, in accordance with BS 873. Cable entry posts for a lit sign unit shall have a standard base housing of 168mm outside diameter. The base housing shall be provided with a 150mm x 75mm cable entry hole. The lower end of the slot shall be 500mm below ground level.

11.17 The base housing shall contain a baseboard not less than 450mm x 100mm x 10mm thick, which shall be of substantially non-hygroscopic and rot resistant material and shall be fixed securely in the housing.

11.18 Access shall be via a door minimum size of 400mm x 90mm. All door locks shall have an application of suitable grease applied. The door lock shall consist of a replaceable brass insert and a triangular headed stainless steel screw.

Sign Faces

11.19 Sign faces manufactured to BS EN 12899.

11.20 Sign diagrams shall be designed to TSRGD 2002. Signs must be de illuminated where TSRGD allows.

11.21 Sign faces shall always be constructed using R2 retro reflective material to BS EN 12899. Any reference in the schedules to Class 1 retro reflective in the schedules to Class 1 retro reflective material shall be R2 in accordance with BS EN 12899.

11.22 Affixed to each sign a label showing the sign reference number (to be provided by the Service Provider) in 75mm high black characters on white reflectorised background. The characters shall be arranged vertical. The label shall be located on the rear of the sign plate with the lower edge 50mm above the lower edge of the sign. Before the label is affixed the rear of the sign plate shall be cleaned and primed. After fixing the label shall be sealed. Materials and methods of fixing shall be in accordance with the manufacturer's instructions.

11.23 Retro reflective material manufacturer to be '3M' or similar.

11.24 The back of the sign is to carry the following information

a) The Number of the British Standard.

b) The name, trademark or other means of identifying the manufacture.

c) The class of retro reflective material used.

d) The month and year of manufacture.

11.25 Assume single post for each type of sign with two number u-shaped fixing clips on each post. The fixing details used are in accordance to the sign manufactures instruction.

Luminaire (If Illuminated)

11.26 All sign lanterns will be fitted with 9W Light Emitting Diodes (LED's).

11.27 All luminaires shall be sealed to IP 66.

11.28 All luminaires shall be fitted with a Nema socket.

11.29 All lanterns shall be fully electronic and have an approved UMSUG rating.

11.30 All control gear will have a minimum warranty of 6 years form the date of installation.

Photo Electronic Control Unit (PECU) (If illuminated)

11.31 PECU's will be manufactured to BS 5972: Specification for photo-electric control units for road lighting.

11.32 PECU's shall have an agreed maximum UMSUG rating of 0.25w

11.33 Lighting Activation Levels shall be in accordance with the Output Specification

11.34 Each PECU shall be indelibly marked with the date of installation.

Foundation

11.35 All lighting column foundations shall be in accordance with manufactures recommendations.

11.36 Illuminated sign foundation to be ST4 concrete, 800mm x 800mm x 500mm deep with allowance for 900mm of 50mm diameter UPVC ducting. Sign sized 750mm x 750mm.

11.37 Assumed no requirement for chambers

11.38 Illuminated sign foundation to be ST4 concrete. Sign foundation for illuminated sign is 700mm x 700mm x 400mm deep with allowance for 900mm of 50mm diameter UPVC ducting. Sign size 600mm x 600mm.

11.39 Non-illuminated sign foundation to be ST4 concrete. Sign foundation for non-illuminated sign is 700mm x 700mm x 400mm deep. Sign size 600mm x 600mm.

11.40 50mm black pace ducts to be installed through the foundation and cable entry to facilitate connection.

Location

11.41 For assumed speed at 40mph or less:

11.42 Sign face offset from face of kerb to be 450mm

11.43 Illuminated sign doors to be located facing to view on coming traffic

11.44 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column will have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning will have been undertaken.

11.45 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

11.46 Feeder pillar to be located at rear of footways

Electrical connection type (if illuminated)

11.47 Electrical connection shall be made by a Private Cable Network.

Electrical Tests (If Illuminated)

11.48 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load (If Illuminated)

11.49 All electrical load shall be capable of rating under BSCP520 for un-metered connections.

11.50 The assumed annual forecast electricity consumption is 85kWh per unit

12 SERVICE PROVIDER'S ASSUMPTIONS FOR MISCELLANEOUS SIGNS

Miscellaneous Signs

12.1 Miscellaneous Signs for NO BALL GAME/NO VERGE PARKING etc. shall be manufactured from 11 gauge aluminium c/w painted grey aluminium channel on the rear for post mounting. The sign shall be fixed with 2no 76mm Anti – rotational clips.

12.2 The supporting post shall be a minimum 76mm diameter at approx overall length of 2700mm with a 600mm cast in concrete footings providing a clearance from ground level of 1900mm in grass verge away from the adjacent to footpath.

12.3 Alternatively miscellaneous signs shall be fixed to a wall not less than 1900mm above ground level. Any such fixings shall have the wall owners consent.

12.4 Post to be galvanised CHS (circular hollow section) with base plate and cap as recommended by the manufacture.

12.5 Foundation as per Manufacturer's recommendations but assumed to be 600x400x400mm depth concrete ST4 for each post.

12.6 The sign face shall be treated with an anti-graffiti film.

13 SERVICE PROVIDER'S ASSUMPTIONS FOR STREET NAME SIGNS WORKS

General

13.1 All fittings for connecting sign plates to posts and fascias shall be compatible with the materials being used for framing, stiffening or purlins and shall be generally Stainless steel.

13.2 Nameplate post foundations shall be concrete class ST2, min 0.03m^3

Standard Name plates

13.3 Shall be in accordance with Authority standard detail NM\HM\2009-10\0381 dated 17/12/08.

Heritage Nameplates

13.4 Shall be in accordance with Authority standard detail NM\HM\2009-10\0381 dated 17/12/08.

Queensway Route

13.5 Queensway tunnel and Queensway route are signed in red writing on a cream background in accordance with Authority standard detail NM\HM\2009-10\0381 dated 17/12/08.

City Centre

13.6 Signs in the city centre have white writing on a blue background in accordance with Authority standard detail NM\HM\2009-10\0381 dated 17/12/08.

14 SERVICE PROVIDER'S ASSUMPTIONS FOR BOLLARDS

General

14.1 All foundations must be installed as per manufacturer's recommendations. It is assumed that ST5 concrete is used for all foundations.

Concrete Bollards

14.2 All concrete bollards shall be of proprietary manufacture with a minimum concrete strength of 30N/mm^2 at 28 days.

14.3 Type - Bridgford

14.4 Width top 150mm Ø bottom 270mm Ø,

14.5 Overall length 1370mm with embedment depth of 455mm,

14.6 Colour or finish smooth grey

Cast Iron Bollards

14.7 All cast iron bollards shall be manufactured from ductile iron.

14.8 All cast iron bollards shall be coated with a rust preventative primer and painted with a black gloss 9017.

14.9 All cast iron bollards must be manufactured to BS EN 1563 1997.

14.10 Type – Sineu Graff Classic 40.351

14.11 Width 110mm, Height above GL 1100mm or 800mm

Plastic Bollards

14.12 Recycled Plastic Composite Bollards (RPC is maintenance free)

14.13 Type - Lismore Bollard,

14.14 Width 150mm Ø overall length 1450mm with embedment depth of 400mm

14.15 Options

a) Countersunk Reflective Bands: Either two or three bands shall be installed.

b) Countersunk Reflective Strip: One large reflective strip either 50mm or 80mm can be specified.

c) Reflectors: Reflective discs may also be added.

Steel Bollards

14.16 Steel Bollards shall be hot dip galvanised to BS EN ISO 1461 (1999).

14.17 Steel bollards shall be painted gloss black 9017.

14.18 Type – Sineu Graff Classic Top Bollard 40.211

14.19 Width 89mmØ, Height above GL 1300mm or 1000mm

14.20 Colour or finish PC Body Met Grey 900/Top 8019

Illuminated – BOLLARD

14.21 Ground illuminated traffic bollard body shells shall be base lit by means of 15 watt Light Emitting Diodes (LED's).

14.22 Shells will be formed from ethylene vinyl acetate, and shall be flexible, shape recoverable; UV stabilised and resists tearing when subjected to both face on and diagonal impacts.

14.23 The bollard shall incorporate an infra red 70:35 lux Photo Electric Control Unit (PECU).

14.24 The base of the body shell shall be strengthened by either a galvanised steel or aluminium strip insert to achieve the correct fit to the plinth section of the base unit and provide functional stiffness and shape recovery. The internal and external surfaces of the body shall have smooth finishes to facilitate cleaning and shall be resistant to abrasion.

14.25 Illuminated sign faces and panels shall form an integral part of the moulding. Where required, illuminated sign faces shall display the appropriate diagrams referred to in the Traffic Signs Regulations and General Directions. The body shell shall be suitable for incorporating up to four prescribed sign aspects each of 270mm diameter.

14.26 The base units of ground illuminated traffic bollards shall be constructed from die-cast LM6 and shall incorporate a boxed out seating collar to denote finished ground level. Base units must be engineered to withstand heavy vehicular overloads, the minimum wall thickness of the enclosure shall be no less than 4mm with 8mm thickness at all load and impact bearing points to prevent distortion and breakage from typical vehicular impact.

14.27 Base units shall incorporate a hinged frame, the hinging mechanism comprising of a one-piece stainless steel rod running in a stainless steel bearing. The hinged frame shall be retained by a single standard stainless steel tri-head fixing which is captive in the frame and rebated to resist unauthorised entry. The tri-head fixing shall engage into a cast-in stainless steel fixing on the base enclosure and effectively compress the seal to ensure IP67 to BS 5490.

14.28 The gear tray and lighting unit shall be incorporated into the base unit and shall be removable for maintenance purposes. The gear tray shall incorporate amps mounted on a true parabolic reflector to illuminate the aspects in accordance with BS 873.

14.29 The assumed annual forecast electricity consumption is 89kWh per unit

15 SERVICE PROVIDER'S ASSUMPTIONS FOR TRAFFIC CALMING

General

15.1 It is assumed that traffic calming is applied where the speed limit is 20mph.

15.2 No allowance has been made for vehicle activated signs.

15.3 Traffic calming to be in accordance with 1999 No 1025: Highways, England and Wales. The Highway (Road Hump) Regulation 1999 and 1999 No 1026: Highways, England and Wales. The Highway (Traffic Calming) Regulation 1999

Speed Cushion

15.4 Width 1700mm and length 3100mm. height of the speed cushion is to be 65mm for provision of a bus route. A 300mm ramp on the width and 600mm on the leading and trailing ramp. Ramps to be 1:8 maximum. A 300mm surface course key on the leading and trailing edges, and a 150mm surface course key on the width. The plateau is to be 1050mm width and 1300mm length.

15.5 Position of the ramp is to be 0.75-1.2m from the face of kerb to the edge of the ramp and a 0.75-1.2m gap between ramps of two speed cushions.

15.6 Signs must be installed to TSRGD Diagram 557.1 with an accompanying supplementary plate to Diagram 557.2, 557.3 or 557.4 varied as appropriate with road marking(s) to Diagram 1062.

Round Top Road Hump

15.7 The length of hump to be a minimum of 3.7m with a 22m radius for the curvature of the hump. The distance between the kerb face and the road hump construction to be 200mm. 6m of edge of carriageway marking to be installed either side of the road hump, with the dragon tooth markings in the direction of traffic. Humps to be constructed 40 – 100m apart.

15.8 Signs must be installed to TSRGD Diagram 557.1 with an accompanying supplementary plate to Diagram 557.2, 557.3 or 557.4 varied as appropriate. Road markings to Diagram 1004, 1012.1 and 1062 shall be provided as appropriate.

Sinusoidal road hump

15.9 The length of hump to be a minimum of 3.7m overall length. The first point of inflection being at 925mm, the crown being at 925mm second point of inflection being 925mm to the trailing edge at 925mm. The distance between the kerb face and the road hump construction to be 200mm. 6m of edge of carriageway marking to be installed either side of the road hump, with the dragon tooth markings in the direction of traffic. Humps to be constructed 40 – 100m apart.

15.10 Signs must be installed to TSRGD Diagram 557.1 with an accompanying supplementary plate to Diagram 557.2, 557.3 or 557.4 varied as appropriate. Road markings to Diagram 1004, 1012.1 and 1062 shall be provided as appropriate.

Thermoplastic Road Humps 'Thumps'

15.11 The length of the 'Thump' is 900mm and 40mm in height with a round top. The 'Thumps' must be spaced 70m apart.

15.12 Signs must be installed to TSRGD Diagram 557.1 with an accompanying supplementary plate to Diagram 557.2, 557.3 or 557.4 varied as appropriate.

Chicanes

15.13 Assume single chicane with a staggered length of 12m, carriageway with of 3.5m and a free view of 0m. The path angle is to be no greater than 15°. Build outs must be an appropriate length to the chicane required. The approaches to chicanes shall be marked with TSRGD Diagram 1040.4. Illuminated bollards must be placed on the build out showing a sign to TSRGD Diagram 610. Signs to TSRGD Diagram 615 with supplementary plate to Diagram 615.1 and signs to Diagram 811 with supplementary plate to Diagram 811.1 must be placed on either side of the chicane to indicate traffic priorities.

Build outs

15.14 Assume that the build out is only required with no sheltered parking, crossing points or soft landscaping boxes.

15.15 Width of the build out must be 3.5m and a length of 3.5m with bollards installed at each corner to prevent run over and parking. Signs to TSRGD Diagram 615 with supplementary plate to Diagram 615.1 and signs to Diagram 811 with supplementary plate to Diagram 811.1 must be placed on either side of the build out to indicate traffic priorities. They must be accompanied by signs to Diagram 610, varied as appropriate. If located within a street lit area the regulatory signs to Diagrams 610 and 615 will require illumination. The approach to a build-out shall be marked to Diagram 1040.4 and with give way markings to Diagrams 1003 and 1023 where appropriate.

16 SERVICE PROVIDER'S ASSUMPTIONS FOR HIGH MASTS

High Mast Lighting

High Mast

16.1 The maximum height shall be 30m

16.2 All High masts shall have head frame fitted with guided runner and parachute braking system.

16.3 All High mast head frames shall be capable of being operated at wind speeds over 30mph

16.4 All High masts shall comply with the ILE Technical Report No. 7

16.5 Lighting columns shall comply with BSEN40.

16.6 High mast designs will be certified by the column manufacturer taking these parameters into account.

16.7 Lighting columns will be made from folded steel which will be Hot Dip Galvanized to the latest BS EN 1461 standard

16.8 High masts shall be self finished galvanised

16.9 A lowering tool will be provided for between 1 and 3 High Masts

Luminaire

16.10 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting

Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

16.11 Luminaires shall have a luminous intensity class of G4 or greater and G5 on roundabouts.

16.12 Disability glare and Threshold Increment (TI), as defined in BS EN 13201:2003, shall not exceed 15%.

16.13 All luminaires shall be sealed to IP 66.

16.14 All luminaires shall have variable optics which can be set on site.

16.15 All luminaires shall be fitted with a Nema socket.

16.16 All luminaires shall be suitable for both post top and side entry mounting.

16.17 Each mast shall have a maximum of 6 luminaires each with a maximum wattage of 400W.

Lamp

16.18 Lamps shall be 400W SON/T.

16.19 All lamps will be High Pressure Sodium SON-T Plus.

16.20 Light sources shall have a colour rendering index equal to or in excess of Ra20.

16.21 Each lamp shall be indelibly marked with the date of installation

16.22 Lamp shall be new or have been changed within last 6 months

Control gear

16.23 All control gear shall be fully electronic where available and have an approved UMSUG rating.

16.24 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

16.25 All control gear shall have a minimum warranty of 6 years form the date of installation.

Photo Electronic control unit (Pecu)

16.26 PECUs shall be manufactured to BS 5972: Specification for photo-electric control units for road lighting.

16.27 PECUs shall have a maximum UMSUG rating of 0.25w

16.28 Lighting Activation Levels shall be in accordance with the Output Specification

16.29 Each PECU shall be indelibly marked with the date of installation.

Location

16.30 High masts will be located so that there is minimal risk of vehicular impact, where this can not be achieved safety fences or other mitigation measures to the appropriate standards shall be provided to protect the mast.

16.31 High masts shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

16.32 High masts shall be sited where there is a suitable hard standing area for maintenance requiring no traffic management.

Lighting class

16.33 High masts shall only be used on the Strategic Route & Main Distribution Network (category 2 or 3a).

16.34 Lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below. The appropriate CE lighting class levels shall be used for design purposes where high masts are utilised:

2	Strategic Routes on the Strategic Route & Main Distributor Network	ME2	CE1
3a	Main Distributor Routes on the Strategic Route & Main Distributor Network	ME3a	CE2

16.35 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

16.36 Electricity supplies shall be unmetered

16.37 Electrical connection shall be made by the local DNO.

Electrical Tests

16.38 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

16.39 UMSUG switching regime 821

16.40 6no. 400W SON/T lamps

16.41 PECU rated at 0.25W

16.42 The assumed annual forecast electricity consumption is 10295kWh per High Mast

17 SERVICE PROVIDER'S ASSUMPTIONS FOR HIGH MASTS WITH EQUIPMENT TO ENABLE REMOTE MONITORING CAPABILITY

High Mast Lighting fitted with equipment to enable Remote Monitoring Capability

High Mast

17.1 The maximum height shall be 30m

17.2 All High masts shall have head frame fitted with guided runner and parachute braking system.

17.3 All High mast head frames shall be capable of being operated at wind speeds over 30mph

17.4 All High masts shall comply with the ILE Technical Report No. 7

17.5 Lighting columns shall comply with BSEN40.

17.6 High mast designs shall be certified by the column manufacturer taking these parameters into account.

17.7 Lighting columns shall be made from folded steel which will be Hot Dip Galvanized to the latest BS EN 1461 standard

17.8 High masts shall be self finished galvanised

17.9 A lowering tool will be provided for between 1 and 3 High Masts

Luminaire

17.10 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental

Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

17.11 Luminaires shall have a luminous intensity class of G4 or greater and G5 on roundabouts.

17.12 Disability glare and Threshold Increment (TI), as defined in BS EN 13201:2003, shall not exceed 15%.

17.13 All luminaires shall be sealed to IP 66.

17.14 All luminaires shall have variable optics which can be set on site.

17.15 All luminaires shall be fitted with a Nema socket.

17.16 All luminaires shall be suitable for both post top and side entry mounting.

17.17 Each mast will have a maximum of 6 luminaires with a maximum wattage of 400w.

Lamp

17.18 Lamps shall be 400W SON/T.

17.19 All lamps will be High Pressure Sodium MASTER SON-T Plus.

17.20 Light sources shall have a colour rendering index equal to or in excess of Ra20.

17.21 Each lamp shall be indelibly marked with the date of installation.

17.22 Lamp has been changed within last 6 months

Control gear

17.23 All control gear shall be fully electronic and have an approved UMSUG rating.

17.24 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

17.25 All control gear shall have a minimum warranty of 6 years form the date of installation.

Lighting (Remote) Monitoring & Management System (RMMS)

17.26 High masts shall be fitted with a Lighting Management and Monitoring System (remote monitoring system) supplied by Telensa

17.27 Tele cell and dimming unit to be fitted to luminaire

17.28 Configuration and commissioning shall be undertaken by the Service Provider. The Service provider shall be entitled to make a reasonable charge for this service.

17.29 It is assumed that the proposed High Mast will connect to an existing base station. Must this not be the case then the developer will be responsible for the full cost to install and maintain an additional base station.

Location

17.30 High masts shall be located so that there is minimal risk of vehicular impact, where this can not be achieved safety fences or other mitigation measures to the appropriate standards shall be provided to protect the mast.

17.31 High masts shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

17.32 High masts shall be sited where there is a suitable hard standing area for maintenance requiring no traffic management.

Lighting class

17.33 High Masts shall only be installed on the Strategic Route & Main Distribution Network (category 2 or 3a).

17.34 Lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below. The appropriate CE lighting class levels will have been used for design purposes where high masts are utilised;-

2	Strategic Routes on the Strategic Route & Main Distributor Network	ME2	CE1
3a	Main Distributor Routes on the Strategic Route & Main Distributor Network	ME3a	CE2

17.35 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

17.36 Electricity supplies shall be unmetered

17.37 Electrical connection shall be made by the local DNO.

Electrical Tests

17.38 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

17.39 UMSUG switching regime 821

17.40 6no. 400W SON/T lamps

17.41 PECU rated at 0.25W

17.42 LMMS rated at 0.5W

17.43 No allowance has been made for dimming

17.44 The assumed annual forecast electricity consumption is 10400kWh per High Mast

18 SERVICE PROVIDER'S ASSUMPTIONS FOR 12M SON

12m SON

Lighting columns

18.1 Lighting columns shall comply with BS EN40

18.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

18.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

18.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 9m	$2.0m^2$	Symmetrical or Offset

18.5 Lighting columns are standard columns and shall have a 1.5m bracket, with the same protection and final finish as the lighting column.

18.6 No allowance has been made for passively safe lighting columns.

18.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

18.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaries

18.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

18.10 Luminaires shall have a luminous intensity class of G4 or greater and G5 on roundabouts.

18.11 Disability glare and Threshold Increment (TI), as defined in BS EN 13201:2003, shall not exceed 15%.

18.12 All luminaires shall be sealed to IP 66.

18.13 All luminaires shall have variable optics which can be set on site.

18.14 All luminaires shall be fitted with a Nema socket.

18.15 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

18.16 Lamps shall be 250W SON/T.

18.17 All lamps will be High Pressure Sodium MASTER SON-T Plus.

18.18 Light sources shall have a colour rendering index equal to or in excess of Ra20.

18.19 Each lamp shall be indelibly marked with the date of installation.

18.20 Lamps shall be new or shall have been changed within last 6 months

Control gear

18.21 All control gear shall be fully electronic and have an approved UMSUG rating.

18.22 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

18.23 All control gear shall have a minimum warranty of 6 years form the date of installation.

18.24 Control gear shall be compatible with LMMS (Telensa).

Photo Electronic Control Unit (PECU)

18.25 PECUs shall be manufactured to BS 5972: Specification for photo-electric control units for road lighting.

18.26 PECUs shall have a maximum UMSUG rating of 0.25W

18.27 Lighting Activation Levels shall be in accordance with the Output Specification

18.28 Each PECU shall be indelibly marked with the date of installation.

18.29 PECUs shall be one part plug in type units.

Foundation

18.30 All lighting column foundations shall be in accordance with manufactures recommendations.

18.31 50mm black ducts shall be installed through the foundation and cable entry to facilitate DNO connection.

Location

18.32 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

18.33 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

18.34 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall take into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning will have been undertaken.

18.35 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

18.36 12m columns shall typically be installed on the Strategic Route & Main Distribution Network (category 2 or 3a).

18.37 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

2	Strategic Routes on the Strategic Route & Main Distributor Network	ME2	CE1
3a	Main Distributor Routes on the Strategic Route & Main Distributor Network	ME3a	CE2

18.38 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

18.39 Electricity supplies shall be unmetered

18.40 Electrical connection shall be made by the local DNO.

Electrical Tests

18.41 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

18.42 UMSUG switching regime of 821 provides annual burn hours of 4080

18.43 Total circuit wattage for a 250w SON lamp with electronic control gear is 263W

18.44 Annual profile forecast for electricity consumption is therefore 1075 kWh.

19 SERVICE PROVIDER'S ASSUMPTIONS FOR 12M SON FITTED WITH EQUIPMENT TO ENABLE REMOTE MONITORING CAPABILITY

12m SON fitted with equipment to enable Remote Monitoring Capability

Lighting columns

19.1 Lighting columns shall comply with BSEN40.

19.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

19.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

19.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:

Over 9m	2.0m^2	Symmetrical or Offset

19.5 Lighting columns are standard columns and shall have a 1.5m bracket.

19.6 No allowance has been made for passively safe lighting columns.

19.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

19.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

19.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

19.10 Luminaires shall have a luminous intensity class of G4 or greater and G5 on roundabouts.

19.11 Disability glare and Threshold Increment (TI), as defined in BS EN 13201:2003, shall not exceed 15%.

19.12 All luminaires shall be sealed to IP 66.

19.13 All luminaires shall have variable optics which can be set on site.

19.14 All luminaires shall be fitted with a Nema socket.

19.15 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

19.16 Lamps shall be 250w SON/T.

19.17 All lamps shall be High Pressure Sodium SON-T Plus.

19.18 Light sources shall have a colour rendering index equal to or in excess of Ra20.

19.19 Each lamp shall be indelibly marked with the date of installation.

19.20 Lamp has been changed within last 6 months

Control gear

19.21 All control gear shall be fully electronic and have an approved UMSUG rating.

19.22 Control gear shall be capable of enabling a reduction in light output of up to two lighting classes.

19.23 All control gear shall have a minimum warranty of 6 years form the date of installation.

19.24 Control gear shall be compatible with LMMS (Telensa).

Lighting (Remote) Monitoring & Management System (LMMS)

19.25 LMMS system shall be by Telensa

19.26 Tele cell and dimming unit to be fitted to luminaire

19.27 Configuration and commissioning to be undertaken by the Service Provider. The Service provider shall make a reasonable charge for this service.

19.28 It is assumed that the proposed lighting column shall connect to an existing base station. Must this not be the case then the developer shall be responsible for the full cost to install and maintain an additional base station.

Foundation

19.29 All lighting column foundations shall be in accordance with manufactures recommendations.

19.30 50mm black PVC ducts to be installed through the foundation and cable entry to facilitate DNO connection.

Location

19.31 Lighting column shall be located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

19.32 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

19.33 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

19.34 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

19.35 12m columns shall typically be installed on the Strategic Route & Main Distribution Network (category 2 or 3a).

19.36 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

2	Strategic Routes on the Strategic Route & Main Distributor Network	ME2	CE1
3a	Main Distributor Routes on the Strategic Route & Main Distributor Network	ME3a	CE2

19.37 Maintenance factors are calculated in accordance with current lamp replacement programme.

Electrical connection type

19.38 Electricity supplies shall be unmetered

19.39 Electrical connection shall be made by the local DNO.

Electrical Tests

19.40 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

19.41 UMSUG switching regime of 821 provides annual burn hours of 4080

19.42 Total circuit wattage for a 250W SON lamp with electronic control gear is 263W

19.43 Annual profile forecast for electricity consumption is therefore 1081kWh.

20 SERVICE PROVIDER'S ASSUMPTIONS FOR 10M SON

10m SON

Lighting columns

20.1 Lighting columns shall comply with BSEN40.

20.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

20.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

20.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 9m	$2.0m^2$	Symmetrical or Offset

20.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

20.6 No allowance has been made for the requirements of passively safe lighting column.

20.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

20.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

20.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

20.10 Luminaires shall have a luminous intensity class of G4 or greater and G5 on roundabouts.

20.11 Disability glare and Threshold Increment (TI), as defined in BS EN 13201:2003, shall not exceed 15%.

20.12 All luminaires shall be sealed to IP 66.

20.13 All luminaires shall have variable optics which can be set on site.

20.14 All luminaires shall be fitted with a Nema socket.

20.15 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

20.16 Lamps shall be 150W SON/T.

20.17 All lamps shall be High Pressure Sodium SON-T Plus.

20.18 Light sources shall have a colour rendering index equal to or in excess of Ra20.

20.19 Each lamp shall be indelibly marked with the date of installation.

20.20 Lamp shall be new or shall have been changed within last 6 months

Control gear

20.21 All control gear shall be fully electronic and have an approved UMSUG rating.

20.22 Control gear shall be capable of enabling a reduction in light output of up to two lighting classes

20.23 All control gear shall have a minimum warranty of 6 years form the date of installation.

20.24 Control gear shall be compatible with LMMS (Telensa).

Photo Electronic control unit (PECU)

20.25 PECU's shall be manufactured to BS 5972: Specification for photo-electric control units for road lighting

20.26 PECU's shall have an agreed maximum UMSUG rating of 0.25w

20.27 Lighting Activation Levels shall be in accordance with the Output Specification

20.28 Each PECU shall be indelibly marked with the date of installation.

20.29 PECUs shall be one part plug in units

Foundation

20.30 All lighting column foundations shall be in accordance with manufactures recommendations.

20.31 50mm black PVC ducts shall be installed through the foundation or cable entry facilitate DNO connection.

Location

20.32 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

20.33 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

20.34 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

20.35 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

20.36 10m columns shall typically be installed on the Secondary Distribution Routes on the Secondary Distribution Network (category 3b).

20.37 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

3b	Secondary Distribution Routes on the Secondary Distribution Network	ME3c	CE2

20.38 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

20.39 Electricity supplies shall be unmetered

20.40 Electrical connection shall be made by the local DNO.

Electrical Tests

20.41 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

20.42 Umsug switching regime of 821 provides annual burn hours of 4080

20.43 Total circuit wattage for a 150W SON lamp with electronic control gear is 166W

20.44 Annual profile forecast for electricity consumption is therefore 679 kWh.

21 SERVICE PROVIDER'S ASSUMPTIONS FOR 10M SON FITTED WITH EQUIPMENT TO ENABLE REMOTE MONITORING CAPABILITY

10m SON fitted with equipment to enable Remote Monitoring Capability

Lighting columns

21.1 Lighting columns shall comply with BSEN40.

21.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

21.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

21.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 9m	2.0m^2	Symmetrical or Offset

21.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

21.6 No allowance has been made for the requirements of passively safe lighting column.

21.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

21.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

21.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

21.10 Luminaires shall have a luminous intensity class of G4 or greater and G5 on roundabouts.

21.11 Disability glare and Threshold Increment (TI), as defined in BS EN 13201:2003, shall not exceed 15%.

21.12 All luminaires shall be sealed to IP 66.

21.13 All luminaires shall have variable optics which can be set on site.

21.14 All luminaires shall be fitted with a Nema socket.

21.15 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

21.16 Lamps shall be 150W SON/T.

21.17 All lamps shall be High Pressure Sodium SON-T Plus.

21.18 Light sources shall have a colour rendering index equal to or in excess of Ra20.

21.19 Each lamp shall be indelibly marked with the date of installation.

21.20 Lamp shall be new or shall have been changed within last 6 months

Control gear

21.21 All control gear shall be fully electronic and have an approved UMSUG rating.

21.22 Control gear must be capable of enabling a reduction in light output of up to two lighting.

21.23 All control gear shall have a minimum warranty of 6 years form the date of installation.

21.24 Control gear shall be compatible with LMMS (Telensa).

Lighting (Remote) Monitoring & Management System (LMMS)

21.25 The LMMS system shall be by Telensa

21.26 Tele cell and dimming unit to be fitted to luminaire

21.27 Configuration and commissioning to be undertaken by the Service Provider. The Service provider shall make a reasonable charge for this service.

21.28 It is assumed that the proposed lighting column shall connect to an existing base station. Must this not be the case then the developer shall be responsible for the full cost to install and maintain an additional base station.

Foundation

21.29 All lighting column foundations shall be in accordance with manufactures recommendations.

21.30 50mm black PVC ducts to be installed to facilitate DNO connection.

Location

21.31 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

21.32 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

21.33 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

21.34 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

21.35 10m columns shall typically be installed on the Strategic Route & Main Distribution Network (category 2 or 3a).

21.36 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

[redacted]

3b	Secondary Distribution Routes on the Secondary Distribution Network	ME3c	CE2

21.37 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

21.38 Electricity supplies shall be unmetered

21.39 Electrical connection shall be made by the local DNO.

Electrical Tests

21.40 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

21.41 UMSUG switching regime of 821 provides annual burn hours of 4080

21.42 Total circuit wattage for a 150W SON lamp with electronic control gear is 166W

21.43 LMMS is rated at 0.5W

21.44 Annual profile forecast for electricity consumption is therefore 695 kWh.

22 SERVICE PROVIDER'S ASSUMPTIONS FOR 8M COSMO

8m COSMO

Lighting columns

22.1 Lighting columns shall comply with BSEN40

22.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

22.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

22.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 6m and up to and including 9m	$1.0m^2$	Symmetrical or Offset

22.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

22.6 No allowance has been made for the requirements of passively safe lighting column.

22.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

22.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

22.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

22.10 Luminaires shall have a luminous intensity class of G1 or greater

22.11 All luminaires shall be sealed to IP 66.

22.12 All luminaires shall have variable optics which can be set on site.

22.13 All luminaires shall be fitted with a Nema socket.

22.14 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

22.15 Lamps shall have a typical wattage of between 60W and 140W Cosmopolis subject to road width. The Service Provider has assumed 90W Cosmopolis lamps

22.16 All lamps shall be Philips CPO TW or approved equivalent.

22.17 Light sources shall have a colour rendering index equal to or in excess of Ra60.

22.18 Each lamp shall be indelibly marked with the date of installation.

22.19 Lamp has been changed within last 6 months

Control gear

22.20 All control gear shall be fully electronic and have an approved UMSUG rating.

22.21 All control gear shall be manufactured by Philips lighting and from the Extreme range or approved by Philips for use in conjunction with the lamp.

22.22 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

22.23 All control gear shall have a minimum warranty of 8 years form the date of installation and shall be compatible with a LMMS system shall be by Telensa.

Photo Electronic control unit (PECU)

22.24 PECU's shall be manufactured to BS 5972: Specification for photo-electric control units for road lighting.

22.25 PECU's shall have an agreed maximum UMSUG rating of 0.25w

22.26 Lighting Activation Levels shall be on at 70 lux and off at 35 lux

22.27 Each PECU shall be indelibly marked with the date of installation.

Foundation

22.28 All lighting column foundations shall be in accordance with manufactures recommendations.

22.29 50mm black PVC ducts shall be installed through the foundation and cable entry to facilitate DNO connection.

Location

22.30 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

22.31 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

22.32 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

22.33 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

22.34 8m columns shall typically be installed on a Link Route on the Link Road Network (category 4a).

22.35 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

4a	Link Routes on the Link Road Network	S3

22.36 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

22.37 Electricity supplies shall be unmetered

22.38 Electrical connection shall be made by the local DNO.

Electrical Tests

22.39 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

22.40 Umsug switching regime of 821 provides annual burn hours of 4080

22.41 Total circuit wattage for a 90W Cosmopolis lamp with electronic control gear is 99W

22.42 Annual profile forecast for electricity consumption is therefore 406kWh.

23 SERVICE PROVIDER'S ASSUMPTIONS FOR 8M COSMO FITTED WITH EQUIPMENT TO ENABLE REMOTE MONITORING CAPABILITY

8m COSMO fitted with equipment to enable Remote Monitoring Capability

Lighting columns

23.1 Lighting columns shall comply with BSEN40.

23.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

23.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

23.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 6m and up to and including 9m	1.0m^2	Symmetrical or Offset

23.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

23.6 No allowance has been made for the requirements of passively safe lighting column.

23.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

23.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

23.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

23.10 Luminaires shall have a luminous intensity class of G1 or greater.

23.11 All luminaires shall be sealed to IP 66.

23.12 All luminaires shall have variable optics which can be set on site.

23.13 All luminaires shall be fitted with a Nema socket.

23.14 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

23.15 Lamps shall have a typical wattage of between 60W and 140W Cosmopolis subject to road width. The Service Provider has assumed 90W Cosmopolis lamps

23.16 All lamps shall be Philips CPO TW or approved equivalent.

23.17 Light sources shall have a colour rendering index equal to or in excess of Ra60.

23.18 Each lamp shall be indelibly marked with the date of installation.

23.19 Lamp shall be new or shall have been changed within last 6 months

Control gear

23.20 All control gear shall be fully electronic and have an approved UMSUG rating.

23.21 All control gear shall be manufactured by Philips lighting and from the Extreme range or approved by Philips for use in conjunction with the Cosmopolis lamp.

23.22 Control gear lust be capable of enabling a reduction in light output of up to two lighting classes and shall be compatible with a LMMS system by Telensa.

23.23 All control gear shall have a minimum warranty of 8 years form the date of installation.

Remote Monitoring & Management System (LMMS)

23.24 LLMS system shall be by Telensa.

23.25 Tele cell and dimming unit to be fitted to luminaire.

23.26 Configuration and commissioning to be undertaken by the Service Provider. The Service Provider shall make a reasonable charge for this service.

23.27 It is assumed that the proposed lighting column shall connect to an existing base station. Must this not be the case then the developer shall be responsible for the full cost to install and maintain an additional base station.

Foundation

23.28 All lighting column foundations shall be in accordance with manufactures recommendations.

23.29 50mm black PVC ducts shall be installed through the foundations to facilitate DNO connection.

Location

23.30 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

23.31 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

23.32 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

23.33 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

23.34 8m columns shall typically be installed on a Link Route on the Link Road Network (category 4a).

23.35 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

4a	Link Routes on the Link Road Network	S3

23.36 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

23.37 Electricity supplies shall be unmetered

23.38 Electrical connection shall be made by the local DNO.

Electrical Tests

23.39 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

23.40 Umsug switching regime of 821 provides annual burn hours of 4080

23.41 Total circuit wattage for a 90W Cosmopolis lamp with electronic control gear is 99W

23.42 LMMS is rated at 0.5W

23.43 Annual profile forecast for electricity consumption is therefore 421kWh

24 SERVICE PROVIDER'S ASSUMPTIONS FOR 8M SON

8m SON

Lighting columns

24.1 Lighting columns shall comply with BSEN40.

24.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

24.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

24.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 6m and up to and including 9m	1.0m^2	Symmetrical or Offset

24.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

24.6 No allowance has been made for the requirements of passively safe lighting column.

24.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

24.8 Lighting columns shall be finished using either an Abcite or Plascoat therma, polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53):

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227)

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

24.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

24.10 Luminaires shall have a luminous intensity class of G1 or greater.

24.11 All luminaires shall be sealed to IP 66.

24.12 All luminaires shall have variable optics which can be set on site.

24.13 All luminaires shall be fitted with a Nema socket.

24.14 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

24.15 Lamps shall be 100W SON/T.

24.16 All lamps shall be High Pressure Sodium MASTER SON-T Plus.

24.17 Light sources shall have a colour rendering index equal to or in excess of Ra20.

24.18 Each lamp shall be indelibly marked with the date of installation.

24.19 Lamp shall be new or shall have been changed within the last 6 months

Control gear

24.20 All control gear shall be fully electronic and have an approved UMSUG rating.

24.21 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

24.22 .

24.23 All control gear shall have a minimum warranty of 6 years form the date of installation.

24.24 Control gear shall be compatible with LMMS (Telensa).

Photo Electronic control unit (PECU)

24.25 PECU's shall be manufactured to BS 59722 Specification for photo-electric control units for road lighting.

24.26 PECU's shall have an agreed maximum UMSUG rating of 0.25w

24.27 Lighting Activation Levels shall be on at 70 lux and off at 35 lux

24.28 Each PECU shall be indelibly marked with the date of installation.

Foundation

24.29 All lighting column foundations shall be in accordance with manufactures recommendations.

24.30 50mm black PVC ducts shall be installed to facilitate DNO connection.

Location

24.31 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

24.32 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

24.33 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

24.34 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

24.35 8m columns shall typically be installed on a Link Route on the Link Road Network (category 4a).

24.36 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

4a	Link Routes on the Link Road Network	S2

24.37 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

24.38 Electricity supplies shall be unmetered

24.39 Electrical connection shall be made by the local DNO.

Electrical Tests

24.40 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

24.41 Umsug switching regime of 821 provides annual burn hours of 4080

24.42 Total circuit wattage for a 100W SON lamp with electronic control gear is 113W

24.43 Annual profile forecast for electricity consumption is therefore 463kWh.

25 SERVICE PROVIDER'S ASSUMPTIONS FOR 8M SON FITTED WITH EQUIPMENT TO ENABLE REMOTE MONITORING CAPABILITY

8m SON fitted with equipment to enable Remote Monitoring Capability

Lighting columns

25.1 Lighting columns shall comply with BSEN40.

25.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

25.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

25.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 6m and up to and including 9m	$1.0m^2$	Symmetrical or Offset

25.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

25.6 No allowance has been made for the requirements of passively safe lighting column.

25.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

25.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

25.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

25.10 Luminaires shall have a luminous intensity class of G1 or greater.

25.11 All luminaires shall be sealed to IP 66.

25.12 All luminaires shall have variable optics which can be set on site.

25.13 All luminaires shall be fitted with a Nema socket.

25.14 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

25.15 Lamps shall be 100W SON/T.

25.16 All lamps shall be High Pressure Sodium SON-T Plus.

25.17 Light sources shall have a colour rendering index equal to or in excess of Ra20.

25.18 Each lamp shall be indelibly marked with the date of installation.

25.19 Lamp shall be new or shall have been changed within last 6 months

Control gear

25.20 All control gear shall be fully electronic and have an approved UMSUG rating.

25.21 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

25.22 All control gear shall have a minimum warranty of 6 years form the date of installation.

25.23 Control gear shall be compatible with LMMS (Telensa).

Lighting (Remote) Monitoring & Management System (LMMS)

25.24 LMMS system shall be by Telensa.

25.25 Tele cell and dimming unit to be fitted to luminaire.

25.26 Configuration and commissioning to be undertaken by the Service Provider. The Service provider shall make a reasonable charge for this service.

25.27 It is assumed that the proposed lighting column shall connect to an existing base station. Must this not be the case then the developer shall be responsible for the full cost to install and maintain an additional base station.

Foundation

25.28 All lighting column foundations shall be in accordance with manufacturer's recommendations.

25.29 50mm black PVC ducts to be installed through the foundation and cable entry to facilitate DNO connection.

Location

25.30 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

25.31 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

25.32 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

25.33 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

25.34 8m columns shall typically be installed on a Link Route on the Link Road Network (category 4a).

25.35 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

4a	Link Routes on the Link Road Network	S2

25.36 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

25.37 Electricity supplies shall be unmetered

25.38 Electrical connection shall be made by the local DNO.

Electrical Tests

25.39 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

a) UMSUG switching regime of 821 provides annual burn hours of 4080

b) Total circuit wattage for a 100W SON lamp with electronic control gear is 113W

c) No allowance has been made for dimming

d) LMMS is rated at 0.5w

e) Annual profile forecast for electricity consumption is therefore 479kWh.

26 SERVICE PROVIDER'S ASSUMPTIONS FOR 6M SON

6m SON

Lighting columns

26.1 Lighting columns shall comply with BSEN40.

26.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

26.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

26.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Up to and including 6m	$0.5m^2$	Symmetrical or Offset

26.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

26.6 No allowance has been made for the requirements of passively safe lighting column.

26.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

26.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

26.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

26.10 Luminaires shall have a luminous intensity class of G1 or greater.

26.11 All luminaires shall be sealed to IP 66.

26.12 All luminaires shall have variable optics which can be set on site.

26.13 All luminaires shall be fitted with a Nema socket.

26.14 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

26.15 Lamps shall be 70W SON/T.

26.16 All lamps shall be High Pressure Sodium SON-T Plus.

26.17 Light sources shall have a colour rendering index equal to or in excess of Ra20.

26.18 Each lamp shall be indelibly marked with the date of installation.

26.19 Lamp shall be new or shall have been changed within last 6 months

Control gear

26.20 All control gear shall be fully electronic and have an approved UMSUG rating.

26.21 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

26.22 All control gear shall have a minimum warranty of 6 years form the date of installation.

26.23 Control gear shall be compatible with LMMS (Telensa).

Photo Electronic control unit (PECU)

26.24 PECU's shall be manufactured to BS 5972: Specification for photo-electric control units for road lighting.

26.25 PECU's shall have an agreed maximum UMSUG rating of 0.25W

26.26 Lighting Activation Levels shall be in accordance with the Output Specification

26.27 Each PECU shall be indelibly marked with the date of installation.

Foundation

26.28 All lighting column foundations shall be in accordance with manufacturers recommendations.

26.29 50mm black PVC ducts to be installed through the foundation and cable entry to facilitate DNO connection.

Location

26.30 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

26.31 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

26.32 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

26.33 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

26.34 6m columns shall typically be installed on a Local Access Routes on the Local Access Road Network (category 4b).

26.35 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

4b	Local Access Routes on the Local Access Road Network	S3

26.36 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

26.37 Electricity supplies shall be unmetered

26.38 Electrical connection shall be made by the local DNO.

Electrical Tests

26.39 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

26.40 UMSUG switching regime of 821 provides annual burn hours of 4080

26.41 Total circuit wattage for a 70W SON lamp with electronic control gear is 79W

26.42 Annual profile forecast for electricity consumption is therefore 325kWh

27 SERVICE PROVIDER'S ASSUMPTIONS FOR 6M SON FITTED WITH EQUIPMENT TO ENABLE REMOTE MONITORING CAPABILITY

6m SON fitted with equipment to enable Remote Monitoring Capability

Lighting columns

27.1 Lighting columns shall comply with BSEN40.

27.2 Lighting column designs shall be certified by the column manufacturer taking these parameters into account.

27.3 Lighting columns shall be made from tubular steel which shall be Hot Dip Galvanized to the latest BS EN 1461 standard.

27.4 Lighting columns shall in addition to any lighting equipment to be attached be designed in order to carry signs of such size as set out in the table below:-

Over 6m and up to and including 9m	1.0m^2	Symmetrical or Offset

27.5 Lighting columns are standard columns and shall not have an outreach bracket (unless site conditions dictate e.g. trees, wide footpaths).

27.6 No allowance has been made for the requirements of passively safe lighting column.

27.7 Lighting columns shall comply with the requirements of Appendix 13/1 – Road Lighting Columns and Brackets

27.8 Lighting columns shall be finished using either an Abcite or Plascoat thermal polymer bonded protection system to the approved colour appropriate for the Constituency. Approved colours are:-

a) Grey (to BS 18B25);

b) Black (to BS 00 E 53);

c) Light green (to BS 12C39);

d) Dark green (to BS 381C Ref 227);

e) Dark blue (to BS 20C40); and

f) Red (to BS 04D45).

Luminaire

27.9 All luminaries shall have adequate optical control to minimise light pollution and obtrusive light to properties and shall conform to the requirements of Environmental Zone E3 as detailed in Table 1 - Obtrusive Light Limitations for Exterior Lighting Installations, contained within the ILE Guidance Notes for the Reduction of Obtrusive Light – GN01:2005.

27.10 Luminaires shall have a luminous intensity class of G1 or greater.

27.11 All luminaires shall be sealed to IP 66.

27.12 All luminaires shall have variable optics which can be set on site.

27.13 All luminaires shall be fitted with a Nema socket.

27.14 All luminaires shall be suitable for both post top and side entry mounting.

Lamp

27.15 Lamps shall be 70W Son/T.

27.16 All lamps shall be High Pressure Sodium SON-T Plus.

27.17 Light sources shall have a colour rendering index equal to or in excess of Ra20.

27.18 Each lamp shall be indelibly marked with the date of installation.

27.19 Lamp shall be new or shall have been changed within last 6 months

Control gear

27.20 All control gear shall be fully electronic and have an approved UMSUG rating.

27.21 Control gear must be capable of enabling a reduction in light output of up to two lighting classes.

27.22 All control gear shall have a minimum warranty of 6 years form the date of installation.

27.23 Control gear shall be compatible with LMMS (Telensa).

Remote Monitoring & Management System (LMMS)

27.24 LMMS system shall be by Telensa.

27.25 Tele cell and dimming unit to be fitted to luminaire.

27.26 Configuration and commissioning to be undertaken by the Service Provider. The Service provider shall make a reasonable charge for this service.

27.27 It is assumed that the proposed lighting column shall connect to an existing base station. Must this not be the case then the developer shall be responsible for the full cost to install and maintain an additional base station.

Foundation

27.28 All lighting column foundations shall be in accordance with manufacturers recommendations.

27.29 50mm black PVC ducts to be installed through the foundation and cable entry to facilitate DNO connection.

Location

27.30 We assume that the lighting column is located where it can be accessed safely with vehicular mounted towers; we have made no allowance for the maintenance of raise and lower lighting columns.

27.31 Lighting column shall be located at the rear of footpath / verge with a minimum clearance form the carriageway in accordance with Table 2 - Recommended minimum clearances from edge of carriageway to face of lighting column of BS 5489-1.2003.

27.32 Where the location of the lighting column is affected by the presence of trees, the final position of the lighting column shall have taken into account the inevitable growth in height and spread of any relevant trees and where necessary any necessary pruning shall have been undertaken.

27.33 Lighting columns shall be sited so as to minimise, insofar as is reasonable and practicable, nuisance, danger and obstruction to all residents, businesses and users of the Project Network.

Lighting class

27.34 6m columns shall typically be installed on a Link Route on the Link Road Network (category 4a).

27.35 Typical lighting classes shall meet the requirements of BS EN 13201:2003 and BS 5489:2003 and be in accordance with the table below:-

4b	Local Access Routes on the Local Access Road Network	S3

27.36 Maintenance factors shall be calculated in accordance with current lamp replacement programme.

Electrical connection type

27.37 Electricity supplies shall be unmetered

27.38 Electrical connection shall be made by the local DNO.

Electrical Tests

27.39 Electrical tests shall be carried out to ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and BS 7671, Regulations for electrical installations. IEE Wiring Regulations 17th Edition.

Electrical Load

27.40 UMSUG switching regime of 821 provides annual burn hours of 4080

27.41 Total circuit wattage for a 70W SON lamp with electronic control gear is 79W

27.42 LMMS is rated at 0.5W

27.43 Annual profile forecast for electricity consumption is therefore 326kWh

28 SERVICE PROVIDER'S ASSUMPTIONS FOR APPENDICES FOR ALL STREET LIGHTING

Road Lighting Columns and Brackets

28.1 Road Lighting columns and brackets shall be designed, constructed, assembled, located and erected in compliance with Series 1300 of the Specification.

28.2 Each column shall be fitted with an identification badge, numbered in accordance with a numbering schedule to be provided by the Service Provider, which shall clearly display:-

28.3 The unique reference number for that item of Apparatus;

28.4 The logo jointly developed by the Authority and Service Provider for the Project; and

28.5 The telephone number for the Helpdesk;

a) The labels shall be manufactured from yellow self adhesive vinyl tape and be secured directly to the lighting column.

b) The numerals and letters shall be black, 56mm in height for numerals and 7mm in height for letters.

c) Labels shall be positioned at a height of 2 metres above the ground.

d) The service provider can provide individual identification badges at a cost of £1 per unit plus delivery.

e) Columns shall be constructed from galvanised steel and be of the planted root type unless otherwise agreed in writing by the Authority. The shaft shall consist of one continuous length of tube without transverse weld.

28.6 All surfaces of the column, bracket arm and door shall be as specified in Appendix 19/1.

28.7 Columns shall be of straight circular shaft type with a single step at the top of the base compartment.

28.8 Refer to the requirements detailed in Table A13/1/3 - Table of Columns.

6m Fold down column					
6m Column post top					
8m Column post top					
10m Column post top					
12m Column post top					
8m Column bracket arms					
10m Column bracket arms					
12m Column bracket arms					
6m Column – Heavy Duty					
8m Column – Heavy Duty					
10m Column – Heavy Duty					
12m Column – Heavy Duty					

Table A13/1/3 - Table of Columns.

28.9 No brackets shall be used on new lighting columns in residential areas except for column heights of 8m and above unless agreed in writing in advance by the Authority.

a) Columns shall be provided with non-hygroscopic baseboards, minimum thickness 15mm, secured in the base compartment. Baseboard fixings shall be recessed below the surface of the board so as not to impede the fixing of electrical equipment to the baseboard.

b) The bottom of the door opening shall not be less than 400mm above ground level. The door opening shall be free from sharp edges and burrs. The door orientation of lighting columns shall be that operatives shall face oncoming traffic when opening.

c) Foundations for plated columns shall be as per the manufacturer's instructions.

d) Columns to be mounted on bridge parapets shall be fitted with a door-retaining device to ensure that the door cannot be dropped over the parapet. Any steel wire or chain used shall be cadmium plated or galvanised.

e) 6mm diameter brass (or stainless steel) earthing terminal complete with two brass washers and a brass nut and locknut shall be located both in the base compartment (so positioned as to be readily accessible through the door opening) and on the door, (to be supplied fitted).

f) Raising and lowering lighting columns shall be provided where access and or health and safety considerations demand. Such columns shall be mid-hinged.

g) All door locking mechanisms shall be lubricated and doors secured in position.

28.10 The Developer shall obtain the Authority's prior written approval (not to be unreasonably withheld or delayed) in respect of the aesthetics and appearance of all

Apparatus to be replaced or installed in any heritage area (as designated by the Authority), Prestige Walking Zone or in, on, or about any listed building, civic building, monument, place of worship or other place or location requiring special lighting treatment.

28.11 All Apparatus, where painted or otherwise coated in a protective system, shall be painted or otherwise coated in the colours of the Authority as set out in Appendix F to part 1 of schedule 2 (*Output Specification*).

28.12 The accrual for street lighting shall have all relevant information detailed on the table below.

Type of column base:	Planted root	Base Plate	Flange Plate
Bracket Protection: (m)	Single	Double	Post top fitting
Size, Length and Angle of lantern fixing:	Spigot	(mm)	
Location / Wind Factor	(k)		
Exposure class:			
Size of door opening: (m)	Length	Width	
Number of door openings	(nr)		
Backboard size: (mm)	Length	Width	
Planting Depth (mm)			
Size of cable entry slot (mm)	Length	Width	

Identification and Location marking			
Type of corrosion treatment for planted root			
Lantern weight (kg)			
Lantern windage area (m^2)			
Lantern size (mm)	Length	Width	Depth
Number of door keys (nr)			
Embellishments	Yes	No	

Table: Column and bracket details

28.13 Sign posts shall be circular sections constructed from steel and be hot dip galvanised to BS 729 at the fabrication factory. They shall be topped with an Aircraft Grey coloured watertight cap. The posts shall be painted in accordance with Appendix 19/4

28.14 The post is to be covered in bitumen both inside and outside the post up to a level of 150mm above ground level.

28.15 All posts shall be steel hollow sections, in accordance with BS 873. Cable entry posts for a lit sign unit shall have a standard base housing of 168mm outside diameter. The base housing shall be provided with a 150mm x 75mm cable entry hole. The lower end of the slot shall be 500mm below ground level.

28.16 The base housing shall contain a baseboard not less than 450mm x 100mm x 10mm thick, which shall be of substantially non-hygroscopic and rot resistant material and shall be fixed securely in the housing.

28.17 Access shall be via a door minimum size of 400mm x 90mm. All door locks shall have an application of suitable grease applied. The door lock shall consist of a replaceable brass insert and a triangular headed stainless steel screw.

28.18 A stainless steel earthing stud shall be welded inside the post near the access door, and on the door, and shall be complete with washers and nuts.

28.19 The back of the sign is to carry the following information

a) The Number of the British Standard.

b) The name, trademark or other means of identifying the manufacture.

c) The class of retro reflective material used.

d) The month and year of manufacture.

28.20 Affixed to each column a label showing the sign reference number (to be provided by the Service Provider) in 75mm high black characters on white reflectorised background. The characters shall be arranged vertical. The label shall be located on the rear of the sign plate with the lower edge 50mm above the lower edge of the sign. Before the label is affixed the rear of the sign plate shall be cleaned and primed. After fixing the label shall be sealed. Materials and methods of fixing shall be in accordance with the manufacturer's instructions.

29 SERVICE PROVIDER'S ASSUMPTIONS FOR TRAFFIC SIGNAL INSTALLATIONS

Generic design assumption

29.1 The Y value is based on an assumed:

a) 4 arm junction (simple cross roads)

b) with no filter lanes

c) no allowance has been made for communications associated with SCOOT

d) with pedestrian push button facilities

29.2 All installations shall comply with Series 1200 of the Manual of Contract Documents for Highway Work, and specifically clauses: -

a) 1217 – Traffic signals

b) 1218 – Detector loops

c) 1219 parts 1, 3, 4 and 5 – Controlled and un-controlled crossings

29.3 In accordance with the Electricity at Work Regulations 1989 the Authority, upon completion of the electrical work, shall provide the Service Provider with a set of as-built drawings.

29.4 All installation work shall be carried out in accordance with IEE 17th Edition Regulations (or latest standard), and in particular where modifications are carried out to existing equipment there shall remain continuous compliance.

29.5 All work shall be undertaken by operatives, installers and engineers trained and accredited to standards set out in the National Highway Sector Schemes for Quality Management in Highways Work Part 8.

29.6 All controller installations shall have the base / pedestal sealed in a way that achieves IP66 or greater compliance.

29.7 All installations shall be served via a Haldo Pillar or similar feeder pillar device capable of housing a mains termination.

29.8 For the avoidance of doubt, all cables shall be installed in ducts and all ducts shall be fitted with a draw cord

29.9 Controller equipment shall be provided to BS EN 12675:2001 – Traffic Signal Controllers. Functional Safety Requirements.

29.10 Signal heads shall be provided to BS EN 12368:2006 – Traffic Control Equipment, Signal Heads – and shall be LED illuminated

29.11 Where inductive loops are used they shall be installed to MCE0108: Siting of inductive loops for vehicle detecting equipment at permanent road traffic signal installations.

29.12 Installation information shall be relayed by the Authority to the Service Provider in the format set out in MCH1827: Works specification and configuration forms.

29.13 For the avoidance of doubt, the installer shall accurately record the position of all ducts and as-constructed drawings shall be provided to the Service Provider

29.14 The specification for the Traffic Signal Controller shall be via TR2500: Specification for Traffic Signal Controller, a copy of which shall be provided to the Service Provider

29.15 Installation work shall conform to Birmingham City Council's design guide: Traffic Signal Design and Installation Standards, October 2004.

29.16 Installation work shall conform to the following sections of the Design Manual for Roads and Bridges: -

a) Volume 8, Section 1, Part 1: TA82/99 (and incorporating DETR Local Transport Note 1/98) – The installation of traffic signals and associated equipment

b) Volume 8, Section 1, Part 1: TA15/07 (and incorporating DfT Traffic Advisory Leaflet 5/06) – Pedestrian facilities at signal installations.

c) Volume 8, Section 1, Part 1: TA16/07 (and incorporating DfT Traffic Advisory Leaflet 1/06) – General principles of control by traffic signals.

d) Volume 8, Section 1, Part 2: TA84/06 – Code of practice for traffic control and information systems for all-purpose roads.

e) Volume 8, Section 5, Part 1: TA68/96 (and incorporating DoT Local Transport Notes 1/95 and 2/95) – The assessment and design of pedestrian crossings.

29.17 We have assumed that each pedestrian signal installation consists of the following equipment to calculate the annual forecast electricity consumptions.

Posts	8	
3 Aspect LED head	8	860
2 Aspect LED pedestrian head	4	430
Microwave vehicle detector	4	280
Detector packs	2	22
Haldo Pillar	1	

Signal Controller @50W	1	439
Push Button Units with Tactile Unit	4	232
Outstation Transmission unit	1	265
Annual Electricity consumption		2528kWh

30 SERVICE PROVIDER'S ASSUMPTIONS FOR CONTROLLED PEDESTRIAN CROSSING INSTALLATIONS

Generic design assumption

30.1 The Y value is based on an assumed:

a) Simple crossing of a straight, single carriageway road not exceeding 9.3m wide

b) No SCOOT connection

c) Crossings are of the Puffin type

d) No central refuge island

30.2 All installations shall comply with Series 1200 of the Manual of Contract Documents for Highway Work, and specifically clauses: -

a) 1217 – Traffic signals

b) 1218 – Detector loops

c) 1219 parts 1, 3, 4 and 5 – Controlled and un-controlled crossings

30.3 In accordance with the Electricity at Work Regulations 1989 the Authority, upon completion of the electrical work, shall provide the Service Provider with a set of as-built drawings.

30.4 All installation work to be carried out in accordance with IEE 17th Edition Regulations (or latest standard), and in particular where modifications are carried out to existing equipment there shall remain continuous compliance.

30.5 All work to be undertaken by operatives, installers and engineers trained and accredited to standards set out in the National Highway Sector Schemes for Quality Management in Highways Work Part 8.

30.6 All controller installations must have the base / pedestal sealed in a way that achieves IP66 or greater compliance.

30.7 All installations must be served via a Haldo Pillar or similar feeder pillar device capable of housing a mains termination.

30.8 Controller equipment to be provided to BS EN 12675:2001 – Traffic Signal Controllers. Functional Safety Requirements.

30.9 For the avoidance of doubt, all cables shall be installed in ducts and ducts shall be fitted with a draw cord

30.10 Signal heads to be provided to BS EN 12368:2006 – Traffic Control Equipment, Signal Heads.

30.11 Where used inductive loops shall be installed to MCE0108: Siting of inductive loops for vehicle detecting equipment at permanent road traffic signal installations.

30.12 Installation information shall be relayed by the Authority to the Service Provider in the format set out in MCH1827: Works specification and configuration forms.

30.13 For the avoidance of doubt, the installer shall accurately record the position of all ducts and as-constructed drawings shall be provided to the Service Provider

30.14 The specification for the Traffic Signal Controller shall be via TR2500: Specification for Traffic Signal Controller.

30.15 Installation work shall conform to Birmingham City Council's design guide: Traffic Signal Design and Installation Standards, October 2004.

30.16 Installation work shall conform to the following sections of the Design Manual for Roads and Bridges: -

a) Volume 8, Section 1, Part 1: TA82/99 (and incorporating DETR Local Transport Note 1/98) – The installation of traffic signals and associated equipment

b) Volume 8, Section 1, Part 1: TA15/07 (and incorporating DfT Traffic Advisory Leaflet 5/06) – Pedestrian facilities at signal installations.

c) Volume 8, Section 1, Part 1: TA16/07 (and incorporating DfT Traffic Advisory Leaflet 1/06) – General principles of control by traffic signals.

d) Volume 8, Section 1, Part 2: TA84/06 – Code of practice for traffic control and information systems for all-purpose roads.

e) Volume 8, Section 5, Part 1: TA68/96 (and incorporating DoT Local Transport Notes 1/95 and 2/95) – The assessment and design of pedestrian crossings.

In addition we shall include the following assumptions specifically in relation to controlled crossing: -

30.17 Installations shall be accrued by the Service Provider on the basis of all statutory functions and processes having been concluded and where applicable signed and sealed by the Authority.

30.18 All works shall be carried out in compliance with BVPI165: Pedestrian crossings with facilities for people with a disability.

30.19 All works shall be in accordance with SI1997:2400: The Zebra, Pelican and Puffin Pedestrian Crossings Regulations and General Directions 1997; and any other applicable legislation that will be introduced from time to time.

30.20 We have assumed that each pedestrian signal installation consists of the equipment shown overleaf to calculate the annual forecast electricity consumptions.

Posts	4	
3 Aspect LED head	4	430
2 Aspect LED pedestrian head	2	215
Microwave vehicle detector	2	240
Person Detector	2	22
Detector packs	2	22
Haldo Pillar	1	
Signal Controller @ 50W	1	439
Push Button Units with Tactile Unit	2	232
Annual Electricity consumption		**1578**

31 SERVICE PROVIDER'S ASSUMPTIONS FOR ZEBRA PEDESTRIAN CROSSING

ASSUMPTIONS

31.1 Design shall be in accordance with Zebra Pedestrian Crossing Regulations 1971, TSRGD and chapter 5, Zebra, Pelican and Puffin Pedestrian Crossings Regulations and General Directions 1997, The road traffic act

31.2 All road markings shall be laid in white thermoplastic screed with applied solid glass beads.

31.3 Zig Zag lines shall extend a minimum of 8m including terminal lines

31.4 Width of crossing shall be determined by number of pedestrians. Min 2.4m for black and white markings plus 0.5m for each 125/hr footfalls, max width 10m.

31.5 Globes shall be in accordance with BSEN 12899:2007 and 13422:2004 Zebra crossings have yellow globes, mounted on an alternate black and white pole. The use of white class 0 diamond grade reflective material shall be used on a black pole to achieve the required pattern.

31.6 Lighting for the crossing is assumed to be provided by the adjacent street lighting.

31.7 Product name for globe and pole Belisha Beacon 2 or 3 Band supplied by Jerol or Zebrite.

31.8 All beacons are to be illuminated using LEDs.

31.9 Zebra crossings shall not be installed:

a) Where the 85th percentile speed is more than 30 mph

b) Where there is congestion owing to high flows of either cars or pedestrians.

c) Where there are areas of poor visibility for the motorist (e.g. within 5 m of a roundabout or junction).

31.10 Studs shall be either white, silver or light grey and shall not project beyond 20mm of the road surface.

31.11 We have assumed that the annual electricity consumption to be 132kWh per annum

32 SERVICE PROVIDER'S ASSUMPTIONS FOR SIGNAL MODIFICATIONS (ADDITIONAL HEADS)

Generic design assumption

32.1 It is assumed that the additional head is an extension to an existing installation

32.2 All signal heads shall be:

a) To BS EN 12368:2006 – Traffic Control Equipment – Signal Heads; and be of a High Intensity LED lamp type.

b) Compliant with MCDHW Series 1200 documentation clause 1217 part 14.

32.3 Additional head does not include pedestrian push button facilities

32.4 Any additional head is either fitted on an existing pole or is fitted to a new straight pole. No allowance has been made for cranked poles

32.5 Any additional installation work, or subsequent removal of redundant signal heads, shall be carried out to such as way as to ensure continued compliance with Local Transport Note 1/98 – The Installation of Traffic Signals and Associated Equipment; and specifically sections: 7.04.

32.6 Any additional underground cables shall be installed in ducts and all ducts shall be fitted with draw cords

32.7 The installer shall accurately record the position of ducts and shall provide the Service Provider with as-constructed drawings

32.8 All installation work to be carried out in accordance with IEE 17th Edition Regulations (or latest standard), and in particular where modifications are carried out to existing equipment there shall remain continuous compliance.

32.9 All work to be undertaken by operatives, installers and engineers trained and accredited to standards set out in the National Highway Sector Schemes for Quality Management in Highways Work Part 8.

32.10 The Authority will provide written confirmation that design process has ensured sufficient power loading (to each signal head) will be maintained in normal operation.

32.11 We have assumed equipment to calculate annual electricity consumptions is a three aspect LED lamp type therefore the usage is forecast to be 108kWh per annum

33 SERVICE PROVIDER'S ASSUMPTIONS FOR TRAFFIC SIGNAL FEEDER PILLAR

Traffic Signal Feeder Pillar

33.1 Installation of feeder pillar shall be in accordance with manufacturer's specification.

33.2 The feeder pillar dimensions are to be 1000mm overall height, 300mm root, 160mm wide and 100mm deep. The door aperture is to be 144mmx560mm.

33.3 The feeder pillar is to be of 3mm HR4 mild Steel plate, with a hot dipped galvanised finish BS EN ISO 1461. The backboard is 12mm external grade plywood treated with water repellent. The Earth Stud fitted must be M8 brass earth bolt, nuts & washers and must be on both body & door.

33.4 Anti-vandal locks must be fitted to the door.

33.5 Foundation is to be 460mm x 400mm and 150mm deep. The feeder pillar is to be secured by 4 no ragbolts/rawbolts as per manufacturer's specification.

34 SERVICE PROVIDER'S ASSUMPTIONS FOR EMS/VMS

EMS / VMS

34.1 All Enhanced Message Signs and Variable Message Signs shall be UTMC compliant units that are compatible to the latest UTMC specification (currently TS003.002.2008 published December 2008). All signs shall be designed and manufactured to meet either free standing requirements or integrated to standard TSRGD plate signs.

34.2 VMS and/or EMS shall be UTMC compliant and in accordance with the following:

Variable Message Sign

34.3 Weight: 215kg

34.4 Colour: Black

34.5 Size: 1200 (H) x 2050 (W) x 360mm (D)

34.6 Description: UTMC (Urban Traffic Management & Control) Free text signs

34.7 Text Capacity: 4 lines of 15 Characters

General Characteristics:

34.8 The sign shall have 100mm text height sign (suitable for use on roads with traffic speeds up to and including 40mph)

34.9 Text based variable message signs shall be to EN12966 (TR2136)

34.10 Signs shall be compatible with current communication standards and interfaces typically allowing fixed wire, wireless, GSM and fibre optic communications.

34.11 Sign communications are not included

General Requirements

34.12 Estimated electricity consumption is based on a continuous load of 50W giving and annual consumption of 439kWh.

Mounting Posts:

a) Posts and foundations shall be designed for the applied loads, including wind.

b) A design certificate shall be provided for the posts and foundations.

c) Posts shall be steel, hot dipped galvanised and painted black.

d) Posts shall have a factory applied root protection system, factory applied both inside and out, to a height of 150mm above finished ground level.

e) No allowance has been made for passively safe posts

f) Posts shall be set in pre cast foundations provided they are held in position by a stainless steel pressure distribution ring locked in place by 4-6 locking bolts.

Electrical Works

34.13 The installer shall carry out all electrical tests and ensure satisfactory results as set out in the ILE Code of Practice for Electrical Safety and the 17th Edition of Institute of the Electrical Engineers Wiring Regulations.

34.14 A completion certificate as detailed in the 16th Edition of the IEE Wiring Regulations shall be issued following the inspection and testing of the installation and any corrective action found necessary and a copy provided to the Service Provider.

Electricity Supplies

34.15 Electricity supplies shall be unmetered

34.16 Connections shall be arranged by the installer

34.17 The installer shall provide the Service Provider with all relevant information required for unmetered supplies to BSCP520

34.18 Labels shall be provided to indicate the ownership of the service point and the type of supply, for instance "looped from PME Service". This label shall be displayed near the cut out.

34.19 All underground cable routes shall be accurately recorded and as constructed drawing provided to the Service Provider

35 SERVICE PROVIDER'S ASSUMPTIONS FOR TRAFFIC OBSERVATION CAMERAS, COLUMNS AND POLES

Generic design assumption

35.1 Cameras shall be digital colour units to [•] standard]

35.2 Communications to the UTC Centre are not included

35.3 Cameras shall be fixed (not pan, tilt and zoom)

35.4 Posts, columns and masts shall be in accordance with MCDHW: Road Lighting Columns and Brackets, CCTV Masts and Cantilever Masts; 1300 Series documentation; and subject to the clauses listed below.

35.5 For the avoidance of doubt the following clauses shall be specifically included as being directly relevant to our assumptions in respect of TRAFFIC OBSERVATION CAMERAS – COUMNS AND POLES: -

a) 1301

b) 1302

c) 1303

d) 1305

e) 1306

f) 1307

g) 1308

h) 1310

i) 1311

j) 1312

35.6 Likewise, for the avoidance of doubt the following clauses shall be specifically excluded as being directly relevant to our assumptions in respect of TRAFFIC OBSERVATION CAMERAS – COLUMNS AND POLES: -

a) 1309

b) 1313

c) 1314

35.7 The assumed annual electricity consumption is 649kWh per camera installation

36 SERVICE PROVIDER'S ASSUMPTIONS FOR SEATING

Seating

36.1 BROXAP BX14 110/S Weyburn or similar approved system ensuring it is in keeping with the surrounding area.

36.2 Length 1830mm, height 820mm and width 533mm.

36.3 Mild steel welded construction, hot dipped galvanised.

36.4 Painted in one of the Authority's approved colours.

36.5 Legs shall be fixed into foundations.

36.6 Each leg shall be cast into 400mm x 400mm x 400mm ST 5 concrete.

36.7 Paving shall be finished around the legs

37 SERVICE PROVIDER'S ASSUMPTIONS FOR PEDESTRIAN GUARD RAIL WORKS

Department for Transport (2002) Inclusive Mobility A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure.

The Pedestrian Guard Rail is to be used at all pedestrian crossings and school entrances.

Standard PGR

General

37.1 Assumed panel length 2m

37.2 No allowance for raked or non standard panels.

37.3 Materials – Grade 43C steel hot dip galvanised welds 5mm. Surface welds to be cleaned flush

37.4 Not painted/self coloured.

37.5 Foundations 100mm bed surround in ST4 concrete

37.6 Set backs from kerbs 30mph or below speed limit 450mm, 40mph speed or above 600mm

37.7 Min fixing length depth in foundation 300mm from GL

37.8 Current BS EN for galvanised sections and welds

Rail

37.9 Horizontal rail 50x25x2.5mm mild steel RHS tube handrail

37.10 Vertical rail 50x25x3mm mild steel RHS tube standard

37.11 Bottom rail from GL 150mm max

37.12 Bottom rail to have 10mmØ drainage holes

37.13 For top rail corners to be mitred and welded to allow for a length of section 150mm vertical member to attach to a 610mm rail.

37.14 Connectors 12mmØ hole for bolting together the vertical member with a M10 bolt washers to be used.

Internal posts

37.15 12mmØ solid mild steel infill bars @ 116mmc/c.

Visirail PGR

General

37.16 Assumed length 2m

37.17 No allowance for raked or non standard panels.

37.18 Materials – Grade 43C Steel hot dip galvanised welds 5mm. Surface welds to be cleaned flush

37.19 Foundations 100mm bed surround in ST4 concrete

37.20 Set backs from kerbs 30mph or below speed limit 450mm, 40mph speed or above 600mm

37.21 Min fixing length depth in foundation 300mm from GL

37.22 Current BS EN for galvanised sections and welds

Rail

37.23 Horizontal members' 70x8mm mild steel RHS tube handrail

Panel Types

V2	2.5° to 5°	Straight roads moderate to high speeds
V4	5° to 14°	Straight roads low to moderate speeds curves.
V8	14°	Curves less than 15m radius

37.24 No allowance has been made for sections 2.5° or less Offside guard rails.

Themed PGR

General

37.25 Assumed panel length 2m

37.26 No allowance for raked or non standard panels.

37.27 Materials – Grade 43C Steel hot dip galvanised, welds 5mm. Surface welds to be cleaned flush

37.28 Foundations 100mm bed surround in ST4 concrete

37.29 Set backs from kerbs 30mph or below speed limit 450mm, 40mph speed or above 600mm

37.30 Min fixing length depth in foundation 300mm from GL

37.31 Current BS EN for galvanised sections and welds

Supplier Furnitubes

End Post	**Intermediate Post**	**Guardrail Panel With Balls**
OKR 301 End Posthttp://www.furnitubes.com/technical-post-steel.php - note1#note1	**OKR 302** Intermediate Post	**OKR 306** Panel for 2m post pitch. 70 x 8 horizontal rails with balls on top. 12 square vertical infill bars **Options:** High visibility panel

37.32 Finishes in either green or gold for the balls and circular sections.

37.33 Balls on fencing 25mm

37.34 BCC OBG 10

38 SERVICE PROVIDER'S ASSUMPTIONS FOR SAFETY FENCING

General

38.1 Designs shall be in accordance with TD19 of the DMRB 2.2.8 and relevant current BS EN codes.

38.2 The installer shall provide the Service Provider with as-constructed drawings

38.3 Where systems with posts are to be Accrued, the drawings shall show the type(s) of post foundation which have been used

38.4 The installer shall provide the Service Provider with details of the ground conditions encountered, including any test results to support the choice of foundations

38.5 Design approval shall have been obtained from the Authority in accordance with series 400 of the SHW (MCDHW)

38.6 The installer shall provide to the Service Provider a copy of the completed and approved Appendix 4/1

38.7 No allowance has been made in the Y values for crash cushions, anchorages or terminals.

38.8 Assumed single height. No allowance has been made for double rail on OBB

38.9 ST5 concrete foundation size 310x310x950mm

38.10 Beams single sided only

38.11 No allowance has been made for transitions between OBB and TCB.

Tensioned Corrugated Beam (TCB)

38.12 Single sided Tensioned Corrugated Beam (TCB) has been assumed.

38.13 Minimum offsets from the carriageway to be 600mm from front face of kerb.

38.14 TCB shall be installed in accordance with the manufacturers instructions and to the design approved by the Authority

38.15 The installer shall provide the Service Provider with details of the tensioning undertaken and a copy the manufacturers maintenance instructions, including re-tensioning recommendations

Open Box Beam (OBB)

38.16 Single sided Open Box Beam (OBB) has been assumed

38.17 Minimum offsets from the carriageway to be 600mm from kerb

38.18 OBB shall be installed in accordance with the manufacturers instructions

39 SERVICE PROVIDER'S ASSUMPTIONS FOR LOW HEIGHT DETERRENT FENCING

Timber fencing

Overall height 400mm \ Length of 1000mm

Location used for grass verges where no access is allowed.

39.1 All timber is to be supplied and treated to the requirements of clause 304 (timber quality) and 311 (Preservation of Timber) of the SHW

39.2 All timber to be treated with two coats of wood stain and preservative

39.3 Mild steel parts shall be galvanised

39.4 Horizontal timber section 100x100 softwood

39.5 Two vertical posts 600mm long V cut at the top, 200mm below GL

39.6 Connection mild steel strap held in position with four number 25mm sheradised screws.

39.7 Foundations 300mm x300mmx300mm ST4 concrete mix

Steel Fencing

Overall height 585mm

To be installed for grass verges where no access is allowed.

39.8 All steel posts and rail are supplied in steel with a galvanised finish.

39.9 Posts are to be 75mm diameter 835 in length with 250mm set in 300mm^3 of ST4 concrete. Posts are to be spaced at 2m.

39.10 Cross rail is to be 48mm diameter steel rail 2m post pitch length with a finished rail height of 475mm.

39.11 All posts and rails must be painted after installation with a protective paint system as per manufacturer's recommendations.

39.12 All posts and rails are to be painted black in colour.

40 SERVICE PROVIDER'S ASSUMPTIONS FOR TUBULAR STEEL FENCING

Tubular Steel Fencing

40.1 Kee Systems Ltd – Kee Klamp Tubular Steel Fencing or similar approved system ensuring it is in keeping with the surrounding area.

40.2 Standard installation

40.3 Assume the ground is flat, straight run, and is being installed into an asphalt pavement. Assumed length of 100m

40.4 Assume loading of the fencing to be 714N.

40.5 All material galvanised steel grade 850/85.

40.6 Tubes dia. 48.3mm external

40.7 Standard fence height is 1100mm with an intermediate cross rail. Uprights to be placed every 1.5-1.8m centres in a ST4 concrete foundation 300x300x300mm.

40.8 Uprights must be 850/85 grade steel with a 5mm wall thickness. Product 8/5

40.9 Crossbars must be 3.2mm wall thickness. Product 8/6

40.10 Start and end of the run, 90° angle key sockets on the top cross bar to the upright. Key sockets for the intermediate cross bar at the start and end. Product 15/8

40.11 At every upright section a through fixing t-bar product 25/8 key socket for the top cross bar and a two socket cross fixing for the intermediate section product 26/8

40.12 Key socket start and end sections product 10/8

41 SERVICE PROVIDER'S ASSUMPTIONS FOR CHAIN LINK FENCING

Chain link fencing

41.1 Assume fencing is used to form a boundary between parts of the Project Roads.

a) Fencing to be constructed in accordance with the MCDHW, Highway Construction details H11 and BS1722-1:2006 Table 1.

41.2 Details include all arrangements and foundation requirements.

41.3 Assumed height of fencing is 1400mm

41.4 Concrete post must be used for fencing construction

41.5 Chain link infill is to be zinc alloy metal wire with powder coating treatment in green/black.

42 SERVICE PROVIDER'S ASSUMPTIONS FOR PALISADE FENCING

Palisade Fencing

42.1 Fence is not a boundary fence

42.2 Fencing panel length assumed to be 2750mm

42.3 Assumed height 2.40m above GL

42.4 All fencing must be in accordance with BS1722-12:2006 Tables 1,5,7,8 and 10.

Foundations

42.5 2 number 300mm² ST4 concrete footings with 150x100mm base plat

42.6 1 number 150mm² ST4 concrete footing – for immediate vertical pole embedded

Fencing

42.7 All palisade fencing must be in accordance with BS1722-12:2006

42.8 All metal parts to be mild steel grade 43C hot-dip galvanised

42.9 2 number 100x44mmx length greater than 2m RSJ post

42.10 1 number 30x10mm flat steel x 1800mm approx post

42.11 Fishplates 6mm thick connected with 12mm dia. Bolts

42.12 Corrugated angle pale at 150mm centres

42.13 2 number horizontal members 45x45x6mm angle rails with fishplate joints at post.

42.14 Arrangements as per manufacturer's details

42.15 No allowance for non standard sections.

43 SERVICE PROVIDER'S ASSUMPTIONS FOR CLOSE BOARDED FENCING

Closed Boarded Fencing

43.1 Assumed location for the fencing is wholly within the boundary of Project Roads and is not a boundary fence.

a) Height assumed to be 1.2m above finished ground level

b) Fencing to be constructed in accordance with the MCDHW, Highway Construction details H14 and BS1722-5:2006.

c) Posts shall be recessed concrete 1.75m in height for a 1.2m fence height above GL.

d) Timber shall be sawn finish

e) All timber is to be supplied and treated to the requirements of clause 304 (timber quality) and 311 (Preservation of Timber) of the SHW

44 SERVICE PROVIDER'S ASSUMPTIONS FOR FEATHER EDGED FENCING

Feather Edged Fencing

44.1 Assumed location for the fencing is wholly within the boundary of Project Roads and is not a boundary fence.

a) Height assumed to be 1.2m above finished ground level

b) Fencing to be constructed in accordance with the MCDHW, Highway Construction details H14 and BS1722-5:2006.

c) No fewer than 12 feather-edged boards shall be provided per metre. They shall be lapped by approximately 18 mm.

d) They shall rest on top of the gravel board, if any, and be nailed to each main rail with 50 mm × 2.65 mm nails. They shall be nailed to the counter rail, if any, with 40 mm × 2.65 mm nails if the counter rail is of 65 mm × 25 mm section or with 50 mm × 2.65 mm nails if the counter rail is of 50 mm × 32 mm section.

e) Timber shall be sawn finish.

f) All timber is to be supplied and treated to the requirements of clause 304 (timber quality) and 311 (Preservation of Timber) of the SHW

g) Posts used must be concrete posts with top and bottom rails installed.

45 SERVICE PROVIDER'S ASSUMPTIONS FOR GRIT BINS

Grit Bins

45.1 Grit bin Glasdon – Nestor 370 litre capacity – 1163 x 802 x 746mm or similar. Fixings 4 no bolts as per Manufacturer's recommendation if required. Markings to detail GRIT.

45.2 The installation must not contradict the requirements for the width of a footpath in accordance with the DDA and Inclusive Mobility Guidance.

46 SERVICE PROVIDER'S ASSUMPTIONS FOR LANDSCAPING OF TREES (SUPPLY, PLANTING AND AFTER-CARE)

Landscaping of Trees

46.1 Feathered, light standard trees (6-8 cm girth, 2.0-2.5m height) planted within paved or hard landscaped areas such as pedestrian walkways and urban shopping areas.

Generic design assumption

46.2 Representative species – Carpinus betulus 'fastigiata' –chosen for its suitability in such locations due to its less expansive crown, overall growth habit, management requirements and size at maturity;

46.3 Tree specifications to be as follows; ball- or bare-rooted, feathered, light standard trees (6-8 cm girth, 2.0-2.5m height, root plate dimensions approx 400mm diameter) with mycorrhizal inoculation root treatment to aid early establishment and promote development;

46.4 Specifications to be in accordance with guidance found in MCDHW Landscape and Ecology 3000 Series documentation, Appendix 30/6 and BS4043, BS4428, BS5837, BS3998;

46.5 Ground preparation to be carried out in accordance with MCDHW 3000, Clause 3004;

46.6 Square tree pit to be constructed in accordance with MCDHW 3000 table 30/1 and to allow for root irrigation system –to be installed prior to planting; BS4043, BS4428, BS5837;

46.7 Planting medium to be as specified in MCDHW 3000, Clause 3006, items 12-16 and/or BS3882;

46.8 Staking to be installed in accordance with MCDHW 3000, Clause 3006, items 38- 42 and BS4043;

46.9 Tree protection, in the form of a grille and stem guard from reputable supplier, to be installed and maintained in accordance with manufacturer's guidelines;

46.10 Cast iron heavy duty grille and frame capable of taking maintenance and emergency vehicles.

46.11 Stem guard are to be fully welded, galvanised and powder coated mild steel encages and attached to the tree grille.

46.12 All cast iron must be finished with proprietary anti-corrosion and anti-slip treatments such as the 'Trimite' or 'Dacmix' systems

46.13 Subsequent maintenance to be in accordance with BS3998 and MCDHW 3000, Clauses 3008 and 3010.

47 SERVICE PROVIDER'S ASSUMPTIONS FOR LANDSCAPING EXTRA HEAVY STANDARD TREES 4.5 - 6M BY 16 - 18CM GIRTH (SUPPLY, PLANTING AND AFTER-CARE)

Landscaping Extra Heavy Trees 4.5 – 6m by 16 – 18cm Girth

47.1 Extra-heavy standard trees (16-18 cm girth, 4.5-6.0m height) planted within grassed and soft landscaped areas, usually adjacent highways.

Generic design assumption

47.2 Representative species – Platanus x hispanica –chosen for its suitability in such locations due to its architectural impact, screening, shading, pollution mitigation and noise attenuation properties;

47.3 Tree specifications to be as follows; ball-rooted, extra-heavy standard trees (16-18 cm girth, 4.5-6.0m height, rootball dimensions approx 600mm diameter);

47.4 Specifications to be in accordance with guidance found in MCDHW Landscape and Ecology 3000 Series documentation, Appendix 30/6 and BS4043, BS4428, BS5837, BS3998;

47.5 Ground preparation to be carried out in accordance with MCDHW 3000, Clause 3004;

47.6 Square tree pit to be constructed in accordance with MCDHW 3000, table 30/1 and to allow for root irrigation system –to be installed prior to planting; BS4043, BS4428, BS5837;

47.7 Planting medium to be as specified in MCDHW 3000, Clause 3006, items 12-16 & 46 and/or BS3882;

47.8 Anchoring system to be installed in accordance with MCDHW 3000, Clause 3006, items 43-45 and BS4043;

47.9 Tree protection, in the form of mulching, to be as specified in MCDHW 3000, Clause 3006, items 53-57;

47.10 Subsequent maintenance to be in accordance with BS3998 and MCDHW 3000, Clauses 3008 and 3010.