



I H I E

## **IHIE Professional Certificate in Traffic Signal Control**

### **Levels and Statements of Competence and the Assessment Criteria**

#### **LEVELS OF COMPETENCE**

The IHIE Professional Certificate is awarded at three levels.

#### **1. Foundation**

You should be able to apply proven techniques and procedures and know where to access relevant legislation and best practice. You may have detailed knowledge of specific areas and/or you may exercise supervisory responsibilities.

Your submission should demonstrate your experience of applying knowledge gained.

#### **2. Practitioner**

You should be managing the application of current technologies, be able to solve complex problems and lead the specification, design or implementation of schemes ensuring effective delivery and quality.


#### **3. Expert Practitioner**

You should be exercising significant leadership and management and have policy responsibilities. You will be responsible for developing in depth and original responses to complicated and unpredictable problems or applications and may be a recognised industry expert.

## STATEMENTS OF COMPETENCE: A SUMMARY

Statement of Competence	Client	Design	Operation & Control
<i>Traffic Signal Control Engineers should be able to:-</i>			
1. Undertake a risk assessment	X	X	X
2. Manage health and safety requirements	X	X	X
3. Determine the need for Traffic Regulation Orders and action their implementation	X	X	X
4. Apply DfT and other technical advice and guidance	X	X	X
5. Identify factors affecting delivery of traffic signals schemes	X		
6. Commission and interpret traffic flow survey	X	X	
7. Carry out site and traffic movement inspections	X	X	
8. Commission and conduct consultations internally and externally with stakeholders	X		X
9. Write a design brief	X		
10. Prepare tender documents	X	X	X
11. Conduct or respond to a Safety Audit and/or Safety Review	X	X	X
12. Establish and maintain effective communication with various stakeholders (e.g. elected members)	X	X	X
13. Conduct post-project appraisal	X		
14. Prepare technical reports associated with traffic signal control	X	X	X
15. Present and discuss traffic signal control proposals	X	X	X
16. Contribute to establishing relevant Local Authority policies or apply Local Authority policies	X		
17. Use of LinSig or equivalent software for analysing single junctions	X	X	X
18. Use of TRANSYT or equivalent software for analysing a network		X	X
19. Plan and manage the implementation of traffic signals schemes	X	X	X
20. Apply quality control and maintain Design File	X	X	X
21. Maintain financial control	X	X	X
22. Calculate intergreens and explain different types of phases	X	X	X
23. Design a traffic signals scheme (including facilities for pedestrians or cyclists) to operate in VA and FT and one other mode e.g. UTC		X	
24. Calculate manually the Practical Reserve Capacity	X	X	
25. Interpret, evaluate and apply microsimulation software e.g. Paramics	X	X	X
26. Evaluate a Traffic Impact Assessment report	X		
27. Prepare controller specification forms		X	X
28. Conduct Factory Acceptance Tests for traffic signal schemes		X	X
29. Conduct Site Acceptance Tests for pedestrian crossings or traffic signal schemes, including timing adjustments		X	X

Statement of Competence	Client	Design	Operation & Control
30. Explain a system specification for the supply and installation of traffic signal equipment		X	X
31. Develop or implement traffic signal strategies	X	X	X
32. Prepare the principal Terms and Conditions within a maintenance contract	X	X	
33. Monitor maintenance contracts and list Key Performance Indicators	X		X
34. Determine priorities for the planned maintenance, updating and replacement of equipment	X		X
35. Calculate CLF, UTC and SCOOT plans		X	X
36. Assist with operating UTC/SCOOT Systems including amending the database or validating a SCOOT network		X	X
37. Introduce MOVA control, apply fine tuning and adjustment		X	X
38. Link signals on arterial routes		X	X
39. Operate a Fault Management System	X		X
40. Operate a Remote Monitoring System	X		X
<b>TOTAL</b>	<b>30</b>	<b>30</b>	<b>30</b>

 = Core competences

Awareness or Knowledge	Client	Design	Operation & Control
<i>In order to demonstrate these competences, Traffic Signal Engineers should be aware or know:</i>			
A. Relevant legislation eg CDM, Highways Act, TSRGD	X	X	X
B. Contract law and similar legislation	X	X	X
C. DfT and other technical standards, advice and guidance	X	X	X
D. Health and safety legislation and codes of practice	X	X	X
E. The standard modelling software and their outputs	X	X	
F. How to prepare controller specification forms	X	X	
G. Relevant local authority policies	X	X	
H. Own organisation's financial regulations, procedures and OJEC requirements	X		
I. Methods of control (VA, FT etc)		X	X
J. How detection systems operate		X	X
K. How FATs, SATs are conducted	X	X	X
L. Traffic management techniques	X	X	X
M. Traffic signal theory and junction design	X	X	X
N. Electrical safety	X	X	X

## ASSESSMENT

Your selection must include the 9 statements which are deemed to be **CORE: 1, 2, 4, 7, 11, 12, 15, 20 and 22** and you must pass all the core competences, **at the relevant level** at which you have submitted.

Each of the 40 competences will be marked to reflect the three levels of competences.

- 0 = Not achieved**
- 1 = Foundation level**
- 2 = Practitioner level**
- 3 = Expert Practitioner level**

The minimum and maximum number you can choose depends on the **Pass Mark** for the level you are applying for. Hence, to gain a Professional Certificate at Practitioner level you need to choose and pass in 20 competences, including the 9 core ones, at Practitioner level (2Marks). To give you some leeway, you can submit up to 27 competences. If you do not achieve the level at which you applied, you will not be awarded any lesser mark i.e. you cannot apply for a Practitioner level (2) competence and be awarded a Foundation level mark(1).

Level	Pass Mark	Number of Competences to be submitted	
		Minimum	Maximum
Foundation	15 (15 @ level 1)	15	20
Practitioner	40 (20 @ level 2)	20	27
Expert Practitioner	75 (25 @ level 3)	25	34

The 3 **categories** (client/designer/operations and control) are indicative only. You can choose from any of the 40, mixing the categories as necessary to reflect your experience. For example, a Foundation level application might cover:

Statement	Client	Design	Operation & Control
<b>1. Undertake a risk assessment</b>		√	
<b>2. Manage health and safety requirements</b>	√		
<b>3. ....</b>		√	
<b>4. ....</b>		√	
<b>5. ....</b>	√		
<b>Total</b>	12	5	-

Your certificate will list the Competences achieved.

## STATEMENTS OF COMPETENCE - IN FULL

### 1. UNDERTAKE A RISK ASSESSMENT

**Evidence:** Understanding and managing risk and potential hazards.

**Examples of evidence to be considered:**

Risk Assessments, traffic/pedestrian flow, width of carriageway/footway, speed survey, classified vehicle count, night time working, lone working.

**Demonstrate:** How to minimise and manage the effect of risks and hazards during the whole life cycle of the scheme.

**Foundation**

Knowledge of the risks and hazards associated with works during the whole life cycle of a scheme.

**Practitioner**

As Foundation - together with risk management and reduction of the likelihood of incidents occurring.

**Expert Practitioner**

As Practitioner - formulation and review: policy, procedures, method of working and changes in legislations.

### 2. MANAGE HEALTH AND SAFETY REQUIREMENTS

**Evidence:** Understanding and managing Health and Safety requirements in accordance with statutory regulations and good practice.

**Examples of evidence to be considered:**

Sector 8 Scheme and CSCS cards, PPE, type of traffic management, position of controller, vehicle hard standing, voltage types, G39 training.

**Demonstrate:** knowledge and implementation of the relevant health and safety at work regulations.

**Foundation**

Knowledge, implementation and understand of relevant Health and Safety at work regulations.

**Practitioner**

As Foundation - together with the management of the application of Health and Safety at work regulations.

**Expert Practitioner**

As Practitioner - with in-depth knowledge of relevant Health and Safety at work regulations and be able to review policy and procedures.

### 3. DETERMINE THE NEED FOR TRAFFIC REGULATION ORDERS AND ACTION THEIR IMPLEMENTATION

**Evidence:**

Understanding of the need for and requirements of Traffic Regulation Orders.

**Examples of evidence to be considered:**

Preparation of a Traffic Regulation Order, reports, consultation documentation, preparation of notices.

**Demonstrate:** statement of reasons, Statutory requirements, process for implementation, schedule of restriction.

**Foundation** Knowledge of the information required to implement a TRO eg a parking restriction such as no waiting at any time.

**Practitioner** As Foundation – Carry out statutory consultation on the Traffic Regulation Order and be able to assist others. Knowledge of the information required to implement an Experimental TRO.

**Expert Practitioner** As Practitioner - explain the procedures in accordance with other types of Traffic Regulations Orders e.g. no loading at any time.

#### 4. APPLY DFT AND OTHER TECHNICAL ADVICE AND GUIDANCE

**Evidence:**

Knowledge of technical advice and guidance on good practice.

**Examples of evidence to be considered:**

Reports, design documentation, audits.

**Demonstrate:** An understanding of how to apply technical advice and interpret guidance on best practice. Make reference to DMRB, Technical Directive, Traffic Advisory Leaflet, Statutory Requirements.

**Foundation**

Apply existing technical advice together with detailed knowledge of relevant areas.

**Practitioner**

As Foundation - together with the analysis of more complex designs ensuring effective delivery and quality. Advise others on these issues. Understand and know implications of departures from Codes of Practice. Know how to seek site approval for departures from standards.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

#### 5. IDENTIFY FACTORS AFFECTING DELIVERY OF TRAFFIC SIGNALS SCHEMES

**Evidence:**

Knowledge of factors likely to affect the design, implementation or operation of a traffic signal scheme.

**Examples of evidence to be considered:**

Reports, design documentation, audits, consultation, utility survey, traffic impact assessment report. Make reference to TIA, consultation, conservation area, source of funding (LTP/Section 106/Section 278), statutory requirements, Traffic Management Act.

**Demonstrate:** An understanding of the effect of various factors on a scheme.

**Foundation**

Identify factors which would affect a scheme and demonstrate how to overcome any issues.

**Practitioner**

As Foundation - together with the analysis of more complex designs ensuring effective delivery and quality. Advise others on these issues. Good understanding of Highway Law.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities. Full understanding of highway law, Traffic Management Act and relevant regulations. Able to interpret legal rulings as applied to highways.

#### 6. COMMISSION AND INTERPRET TRAFFIC FLOW SURVEY

**Evidence:**

Knowledge of technical advice and guidance on good practice for conducting surveys.

**Examples of evidence to be considered:**

The need for traffic flows, conversation to pcu's, swept paths, number of pedestrians/cyclists, pedestrian desire line, determine the peak hours periods, the need for O&D flows, speed of traffic.

**Demonstrate:** An understanding of what surveys are appropriate and how to interpret.

**Foundation**

Be able to interpret results of a link based traffic surveys or a simple junction surveys.

**Practitioner**

As Foundation - together with the analysis of more complex networks. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

## 7. CARRY OUT SITE AND TRAFFIC MOVEMENT INSPECTIONS

### **Evidence:**

Knowledge of technical advice and guidance on good practice for carrying out inspections.

### **Examples of evidence to be considered:**

Visibility, gradient, street furniture, utility services, parking issues, saturation flow, private vehicle accesses.

**Demonstrate:** An understanding of how to apply technical advice and interpret guidance on best practice and apply.

### **Foundation**

Be able to carry out an inspection in a safe manner.

### **Practitioner**

As Foundation - together with the analysis of more complex network. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

## 8. COMMISSION AND CONDUCT CONSULTATIONS INTERNALLY AND EXTERNALLY WITH STAKEHOLDERS

### **Evidence:**

Knowledge of internal and statutory processes for conducting consultations.

### **Examples of evidence to be considered:**

Purpose of consultation, process to follow, timescale, choice of consultation method, meetings, questionnaires, letters, public notice, web-based information.

**Demonstrate:** How to capture and interpret feedback from stakeholders to add value to schemes.

### **Foundation**

Knowledge of appropriate processes and methods for carrying out consultation.

### **Practitioner**

As Foundation - together with the analysis of more complex consultations. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with strategy development and policy responsibilities.

## 9. WRITE A DESIGN BRIEF

### **Evidence:**

Knowledge of information required to prepare a design brief to ensure effective delivery and quality.

### **Examples of evidence to be considered:**

Objective of the scheme, determine the benefits, timescale, cost, statutory procedures

**Demonstrate:** An understanding of how to prepare a brief reviewing the options available and making recommendations.

### **Foundation**

Knowledge of the information to be incorporated into the brief summarising the options and making recommendations.

### **Practitioner**

As Foundation - together with the preparation of a more complex brief. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with the presentation of a brief to clients, stakeholders or management team.

## 10. PREPARE TENDER DOCUMENTS

### **Evidence:**

Knowledge of tender and procurement processes and assessment.

### **Examples of evidence to be considered:**

Financial requirement, type of tender, timescale, selective list, tender assessment.

**Demonstrate:** An understanding of how to prepare and to let a tender (including terms and conditions) together with carrying out tender assessments.

### **Foundation**

Knowledge of the information required in a tender document and letting the contract in accordance with financial controls and assessment procedures.

### **Practitioner**

As Foundation - with tenders to a higher value (over £100,000)

### **Expert Practitioner**

As Practitioner - experience of OJEU tender requirements.

## 11. CONDUCT OR RESPOND TO A STAGE 2 SAFETY AUDIT AND/OR SAFETY REVIEW

### **Evidence:**

Knowledge of technical advice and guidance on audits.

### **Examples of evidence to be considered:**

Objective of Safety Audit and Safety Review, able to explain the procedures to follow for various stages within the Safety Audit, departure from standards and exception report or explain the procedures to follow for Safety Review.

**Demonstrate:** An understanding of how to conduct or respond to Audits/Safety Review.

### **Foundation**

Apply existing technical advice together with detailed knowledge of relevant areas.

### **Practitioner**

As Foundation - together with the analysis of more complex designs. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

## 12. ESTABLISH AND MAINTAIN EFFECTIVE COMMUNICATION WITH VARIOUS STAKEHOLDERS (e.g. elected members)

### **Evidence:**

Knowledge of methods for effective communication with stakeholders.

### **Examples of evidence to be considered:**

Purpose for consultation, process to follow, timescale, type of questionnaires, objective of communication, method of communication used, evidence of feedback.

**Demonstrate:** How to communicate effectively with stakeholders and how feedback is used.

### **Foundation**

Understanding processes and methods for communicating with stakeholders.

### **Practitioner**

As Foundation - together with the facilitation of more diverse methods of communication with senior management and elected members.

### **Expert Practitioner**

As Practitioner - together with high-level communication with the media.

### 13. CONDUCT POST-PROJECT APPRAISAL

**Evidence:** Knowledge of how to evaluate project delivery and operational effectiveness.

**Examples of evidence to be considered:**

Review Safety Audits Stage 3 and 4, project management, financial information, feedback.

**Demonstrate:** An understanding of how to carry out a post-project appraisal including any necessary data collection. Ability to interpret the results of the appraisal and formulate an action plan if required.

**Foundation**

Apply proven techniques to carry out post project appraisal. Maintain records in order that PPAs can be conducted.

**Practitioner**

As Foundation - and review more complex post project appraisal and advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities. Establish PPA procedures and implement lessons learnt.

### 14. PREPARE TECHNICAL REPORTS ASSOCIATED WITH TRAFFIC SIGNAL CONTROL

**Evidence:**

Knowledge of the development and evaluation of options for traffic signal control.

**Examples of evidence to be considered:**

Evaluation of preliminary designs, signal calculations.

**Demonstrate:** How to evaluate the most appropriate layout for traffic signal control to achieve the aims of the scheme.

**Foundation**

Use of proven techniques to produce layouts for control by traffic signals together with evaluation of operation.

**Practitioner**

As Foundation - for more complex junctions and advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

### 15. PRESENT AND DISCUSS TRAFFIC SIGNAL CONTROL PROPOSALS

**Evidence:**

Knowledge of factors likely to affect the design, implementation and operation of a traffic signal scheme.

**Examples of evidence to be considered:**

list the beneficiaries and the impacts of the schemes, audits, consultation, traffic impact assessment report. Make reference to policies and objectives, statutory requirements, TMA.

**Demonstrate:** how to present proposals so that decisions can be made.

**Foundation**

Prepare report on proposals for a simple traffic signal controlled crossing or junction.

**Practitioner**

As Foundation – for a complex traffic signal controlled junction. Advise others on these issues.

**Expert Practitioner**

As Practitioner - with strategy development and policy responsibilities.

## **16. CONTRIBUTE TO ESTABLISHING RELEVANT LOCAL AUTHORITY POLICIES OR APPLY LOCAL AUTHORITY POLICIES**

### **Evidence:**

Knowledge of existing policies.

### **Examples of evidence to be considered:**

Local policies for the introduction or design of traffic signal schemes.

**Demonstrate:** An understanding of local policies and objectives.

### **Foundation**

Knowledge of existing local policies for implementing traffic signal schemes.

### **Practitioner**

As Foundation - together with the responsibility for implementing policies. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with strategy development and policy responsibilities.

## **17. USE OF LINSIG OR EQUIVALENT SOFTWARE FOR ANALYSING SINGLE JUNCTIONS**

### **Evidence:**

Knowledge of the application and use of junction analysis software.

### **Examples of evidence to be considered:**

Data used to produce the model and interpretation of the results obtained.

**Demonstrate:** An understanding of how to evaluate different layouts for signal control junctions.

### **Foundation**

Evaluate the output, understand the numerical results, and make recommendations as to whether the model performs as expected and identify any areas in the output which might give cause for concern.

### **Practitioner**

As Foundation - plus the ability to prepare a junction model. Should also be able to carry out complete checks on models prepared by others.

### **Expert Practitioner**

As Practitioner - but also be able to model unusual junctions and give advice where required. Should have the technical confidence to challenge work carried out by others.

## **18. USE OF TRANSYT OR EQUIVALENT SOFTWARE FOR ANALYSING A NETWORK**

### **Evidence:**

Knowledge of the application and use of network analysis software.

### **Examples of evidence to be considered:**

Data used to produce the model and interpretation of the results obtained.

**Demonstrate:** An understanding of how to evaluate the layout for the network.

### **Foundation**

Evaluate the output, understand the numerical results, and make recommendations on any areas in the output which might give cause for concern.

### **Practitioner**

As Foundation - plus the ability to prepare a network model. In addition the Practitioner should be able to examine the integrity of coordinated signal timings with particular regard to safety issues at closely spaced successive stop lines within a network.

### **Expert Practitioner**

As Practitioner - should have the technical confidence to challenge work carried out by others. Able to assess scheme results against policy objectives.

## 19. PLAN AND MANAGE THE IMPLEMENTATION OF TRAFFIC SIGNALS SCHEMES

### **Evidence:**

Ability to prepare a plan for implementation of schemes and to track progress of the scheme.

### **Examples of evidence to be considered:**

Project management, critical path analysis, design, tender, delivery of equipment, booking the road space and power supply / BT line.

**Demonstrate:** An understanding of the issues associated with planning, associated timescales and implementation of a scheme. Together with how to resolve and mitigate any problems encountered.

### **Foundation**

Prepare a basic project plan and track progress of the scheme.

### **Practitioner**

As Foundation - together with the implementation of more complex scheme ensuring effective delivery and quality. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

## 20. APPLY QUALITY CONTROL AND MAINTAIN THE DESIGN FILE

**Evidence:** Knowledge of processes for applying quality control and being aware where the information is stored.

### **Examples of evidence to be considered:**

The reasons for having a design file method of tracking documents, type of filing system, recording information.

**Demonstrate:** An understanding of the issues associated with quality control and maintaining the design file.

### **Foundation**

Apply proven techniques for quality control and maintaining the Design file.

### **Practitioner**

As Foundation - and review existing systems. Providing assistance to others.

### **Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

## 21. MAINTAIN FINANCIAL CONTROL

### **Evidence:**

Knowledge of the financial control system of the organisation and guidance on good practice.

### **Examples of evidence to be considered:**

Applying existing standards, methods of recording income and expenditure, reviewing costs, forecasting, time management.

**Demonstrate:** An understanding of the financial control system.

### **Foundation**

Knowledge of the information required for the financial control system and how to monitor costs on an individual scheme.

### **Practitioner**

As Foundation – plus reviewing costs and forecasting. Providing assistance to others.

### **Expert Practitioner**

As Practitioner – plus demonstrate cost control of a number of budgets. Wider understanding of capital and revenue streams. Able to forecast budget requirements to meet capital programmes and evaluate revenue implications.

## 22. CALCULATE INTERGREENS AND EXPLAIN DIFFERENT TYPES OF PHASES

### **Evidence:**

Knowledge of technical advice and guidance on good practice.

### **Examples of evidence to be considered:**

Stage diagrams with the appropriate phases, calculation all intergreens including pedestrian phases.

**Demonstrate:** An understanding of technical advice and guidance and how to apply technical advice and interpret guidance on best practice and apply.

### **Foundation**

Must understand the concept of Phases, Stages, Intergreens and Interstages and must be able to explain what is meant by these terms. Be able to calculate intergreen values and be able to check these items within a project proposal for a traffic signal controlled crossing.

### **Practitioner**

As Foundation - the ability to carry out junction design using the full range of phase types available. Must also understand the application of phase delays and when they might be used. Providing assistance to others.

### **Expert Practitioner**

As Practitioner - involving a complex junction.

## 23. DESIGN A TRAFFIC SIGNAL SCHEME (INCLUDING FACILITIES FOR PEDESTRIANS OR CYCLISTS) TO OPERATE IN VA AND FT AND ONE OTHER MODE eg UTC

### **Evidence:**

Ability to design a traffic signal scheme.

### **Examples of evidence to be considered:**

Produce a detailed design of a junction showing all traffic signal equipment, tactile paving, chambers and ducting reports, design documentation, audits.

**Demonstrate:** An understanding of how to apply technical advice, interpret guidance on best practice and apply. Make reference to DMRB, Technical Directive, Traffic Advisory Leaflet, Statutory Requirements.

### **Foundation**

Apply existing technical advice together with detailed knowledge of relevant areas to design a simple junction. Able to implement different modes and describe their differences and operation.

### **Practitioner**

As Foundation - together with the design of more complex junctions, ensuring effective delivery and quality. Advise others on these issues.

### **Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

## 24 MANUAL CALCULATION OF PRACTICAL RESERVE CAPACITY

### **Evidence:**

Knowledge of theory and technical advice on how to calculate these figures.

### **Examples of evidence to be considered:**

Stage diagrams with the appropriate phases including pedestrian phases. Manual calculation showing saturation flows, lost time and Practical Reserve Capacity

**Demonstrate:** An understanding of these figures and their importance.

### **Foundation**

Understand the terms Saturation Flow, Lost time and Practical Reserve Capacity.

### **Practitioner**

Calculate Saturation flows using calculator or spread sheet and enter appropriate parameters into appropriate software packages. Perform signal calculations for a simple signal junction using calculator or spreadsheet to determine degrees of saturation, Practical Reserve Capacity and signal timings.

**Expert Practitioner**

As Practitioner – should be able to train others in these techniques.

**25. INTERPRET, EVALUATE AND APPLY MICROSIMULATION SOFTWARE E.G. PARAMICS****Evidence:**

Knowledge of how to use the output of microsimulation models.

**Examples of evidence to be considered:**

Set up small network and/or explain data required for the model. Explain the results

**Demonstrate:**

An understanding of how to apply the results of microsimulation models in traffic signal schemes.

**Foundation**

Evaluate the output, understand the numerical results, and make recommendations on any areas in the output which might give cause for concern.

**Practitioner**

As Foundation - plus the ability to prepare a small network model.

**Expert Practitioner**

As Practitioner - should have the technical confidence to challenge work carried out by others. Able to demonstrate results to more senior managers. stakeholders etc.

**26. EVALUATE A TRAFFIC IMPACT ASSESSMENT REPORT****Evidence:**

Knowledge of the expected content of a TIA.

**Examples of evidence to be considered:**

Explain the purpose of the TIA, what information is required within the report and what needs to be checked.

**Demonstrate:** An understanding of how to evaluate a TIA and make comments.

**Foundation**

Evaluate a simple TIA and make comments on it.

**Practitioner**

As Foundation - together with the analysis of more complex TIA and make comments on it. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities. Has the confidence to challenge work carried out by others. Able to work with Development Control colleagues and developers on issues of policy, law, design and standards

**27. PREPARE CONTROLLER SPECIFICATION FORMS****Evidence:**

Knowledge of technical advice and guidance on good practice for the preparation of controller specifications.

**Examples of evidence to be considered:**

Complete the forms and explain the various data sheets.

**Demonstrate:** An understanding of how to complete controller specification forms.

**Foundation** Knowledge of information required for a simple junction.

**Practitioner** As Foundation - be able to complete the forms for a more complex junction together with the ability to assist others.

**Expert Practitioner** As Practitioner - be able to complete the forms for a highly complex multi-stream junction or Traffic control scheme involving more than one junction.

## 28. CONDUCT FACTORY ACCEPTANCE TESTS FOR TRAFFIC SIGNAL SCHEMES

**Evidence:** Knowledge of how FATs should be carried out.

**Examples of evidence to be considered:**

Explain the purpose of FAT, what tests need to be carried out and how is the check list used.

**Demonstrate:** An understanding of how to carry out and document FATs.

**Foundation**

Apply proven test techniques when conducting a FAT for a simple junction and document results.

**Practitioner**

As Foundation – together with the testing of more complex junctions analysis of the results and recommend any necessary changes.

**Expert Practitioner**

As Practitioner - together with the testing a highly complex junction with facilities such as LRT, UTC, or MOVA modes. Establish procedures for FATs.

## 29. CONDUCT SITE ACCEPTANCE TESTS FOR PEDESTRIAN CROSSINGS OR TRAFFIC SIGNAL SCHEMES, INCLUDING TIMING ADJUSTMENTS

**Evidence:** Knowledge of the purpose of SATs.

**Examples of evidence to be considered:**

Explain the purpose of SAT, what tests need to be carried out including electrical testing and how the check list is used.

**Demonstrate:** An understanding of how to carry out a SAT and make adjustments.

**Foundation**

Apply proven test techniques when conducting a SAT for a pedestrian crossing or a simple traffic signal junction make adjustments and document results.

**Practitioner**

As Foundation – together with the testing of more complex junctions and analysis of any problems and make any necessary changes.

**Expert Practitioner**

As Practitioner - together with the testing a highly complex junction with facilities such as LRT, UTC, or MOVA modes. Establish procedures for SATs.

## 30. EXPLAIN THE SYSTEM SPECIFICATION FOR THE SUPPLY AND INSTALLATION OF TRAFFIC SIGNAL EQUIPMENT

**Evidence:**

Knowledge of the contents of a system specification.

**Examples of evidence to be considered:**

Explain the purpose of the system specification, what information is provided within this document.

**Demonstrate:** An understanding of how to apply technical advice and interpret guidance on best practice and apply. Make reference to DMRB, Technical Directive, Traffic Advisory Leaflet, Statutory Requirements.

**Foundation**

Be able to prepare a system specification for a simple crossing or junction.

**Practitioner**

As Foundation – for a more complex designs. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together ability to check the work of others.

### 31. DEVELOP OR IMPLEMENT TRAFFIC SIGNAL STRATEGIES

**Evidence:**

Work relating to a scheme with strategies such as emergency hurry call or developing/customising existing strategies to meet specific client requirements.

**Examples of evidence to be considered:**

Understanding of control strategies and how to implement appropriately.

**Demonstrate:** An understanding of how to implement traffic signal strategies.

**Foundation**

Understanding different types of traffic control signal strategies.

**Practitioner**

The ability to interpret customer requirements and implement the required strategies.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities for the development traffic signal control strategies. Wider understanding of traffic signal strategies as they relate to overall policy, the legal position and the TMA.

### 32. PREPARE THE PRINCIPAL TERMS AND CONDITIONS WITHIN A MAINTENANCE CONTRACT

**Evidence:**

Work relating to a maintenance contract

**Examples of evidence to be considered:**

Prepare the principal Terms and Conditions within a maintenance contract.

**Demonstrate:** An understanding of contract preparation, how to apply technical advice and interpret guidance on best practice and apply. Make reference to DMRB or Manual for Streets, Technical Directives and Statutory Requirements.

**Foundation**

Contribute to the preparation of the term and conditions.

**Practitioner**

As Foundation – responsibility for the preparation of the term and conditions.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities. Understands the full range of requirements including budget implications of any terms and conditions

### 33. MONITOR MAINTENANCE CONTRACTS AND LIST KEY PERFORMANCE INDICATORS

**Evidence:**

Knowledge of service level agreement, the purpose of KPIs.

**Examples of evidence to be considered:**

Regular meetings with the maintenance contractors to discuss KPIs.

**Demonstrate:** Understanding of KPIs and the effect of these on the Contract performance.

**Foundation**

Review the existing Contract using established methods and also have knowledge of relevant KPIs.

**Practitioner**

As Foundation – Specify KPIs and monitor progress.

**Expert Practitioner**

As Practitioner – ensure contractors are performing and address areas of concern. Devise contract monitoring procedures over and above the statutory requirements eg BV1165.

### 34. DETERMINE PRIORITIES FOR THE PLANNED MAINTENANCE, UPDATING AND REPLACEMENT OF EQUIPMENT

**Evidence:**

Knowledge of technical advice and guidance on good practice for determining priorities.

**Examples of evidence to be considered:**

Plan for the maintenance, update and replacement of equipment. Make reference to annual inspections.

**Demonstrate:** understanding of Asset Management, equipment life cycle, the need for planned maintenance, modernisation and replacement of damaged equipment.

**Foundation**

Monitor progress on the plan in accordance with the priorities which have been set.

**Practitioner**

As Foundation – prepare priorities for the maintenance, update and replacement of equipment. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities. Understands the issues surrounding the Asset Management Process (TAMP) and funding.

### 35. CALCULATE CLF, UTC AND SCOOT PLANS

**Evidence:**

The preparation of CLF, UTC and SCOOT plans.

**Examples of evidence to be considered:**

CLF, UTC and SCOOT plans.

**Demonstrate:** How to construct and write plans from basic timings.

**Foundation**

Understand and interpret either a CLF, UTC or SCOOT plan.

**Practitioner**

Compile a CLF, UTC and SCOOT plan for a set of junction timings which have been obtained from an output from a standard network modelling package.

**Expert Practitioner**

As Practitioner - should also have an understanding of the relative operational benefits and impacts of the three modes of coordinating signals.

### 36. ASSIST WITH OPERATING UTC/SCOOT SYSTEMS INCLUDING AMENDING THE DATABASE OR VALIDATING A SCOOT NETWORK

**Evidence:**

The operation of a UTC/SCOOT System

**Examples of evidence to be considered:**

The day to day operation of a UTC/SCOOT System. Preparation of database forms. Carrying out validation work on site.

**Demonstrate:** The preparation of UTC/SCOOT plans timing reviews contingency plans and timetables. An understanding of how a UTC system functions together with techniques to validate and assess performance. Make reference to measuring various parameters on site.

**Foundation**

Able to carry out routine day to day operation.

**Practitioner**

As Foundation - together with the validation of networks. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

### 37. INTRODUCE MOVA CONTROL, APPLY FINE TUNING AND ADJUSTMENT

**Evidence:**

Knowledge of the principles of MOVA control and how to make adjustments to it's operation.

**Examples of evidence to be considered:**

MOVA data sheets, MOVA setup and on site validation.

**Demonstrate:** An understanding of how MOVA works together with techniques to validate and assess performance. preparation of MOVA data set. Make reference to measuring various parameters on site.

**Foundation**

Have understanding of MOVA method of control and the necessary data collection required for a dataset.

**Practitioner**

As Foundation - be able to prepare a dataset and carry out site validation. Advise others on these issues.

**Expert Practitioner**

As Practitioner – for a more complex junctions and analysis of on site faults and problems.

### 38. LINK SIGNALS ON ARTERIAL ROUTES

**Evidence:**

Knowledge of technical advice and guidance on good practice for linking signals. An understanding of how to measure the performance of a network.

**Examples of evidence to be considered:**

Traffic signal plans.

**Demonstrate:** Documentation of timing review for a network and recommendation to improve or mitigate any issues arising.

**Foundation**

Understanding the benefit of linking signals and how it can be achieved.

**Practitioner**

As Foundation - together with the implementation on an arterial route, ensuring effective delivery. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

### 39. OPERATE A FAULT MANAGEMENT SYSTEM

**Evidence:**

Knowledge of how to operate a Fault Management System.

**Examples of evidence to be considered.**

Set up of a site on the FMS, how the system works and obtaining fault history records.

**Demonstrate:** An understanding of fault management systems and the documentation of fault analysis. Investigation other methods of monitoring and recording potential faults for signals.

**Foundation**

Able to monitor the FMS and ensure the faults are passed to the contractor.

**Practitioner**

As Foundation – Maintaining the database, together with the analysis of faults to ensure effective delivery and quality of service. Advise others on these issues.

**Expert Practitioner**

As Practitioner - together with management and policy responsibilities.

#### **40. OPERATE A REMOTE MONITORING SYSTEM**

**Evidence:**

Knowledge of how to operate a remote monitoring system.

**Examples of evidence to be considered:**

Set up of a site on the RMS, how the system works, monitoring a site.

**Demonstrate:** Knowledge of remote monitoring systems and how to implement and use to monitor and capture operational data.

**Foundation**

Able to monitor the system and take action in response to faults/events.

**Practitioner**

As Foundation – Maintaining the database, together with the analysis of data to ensure effective delivery and quality of service. Advise others on these issues.

**Expert Practitioner**

As Practitioner together with management and policy responsibilities.