

IHIE Professional Certificate in **Traffic signal control**

**IHIE supporting professional development
in traffic signal control**



The IHIE Professional Certificate enables traffic signal engineers to demonstrate their knowledge and competence in the conception, design, installation, operation and maintenance of pedestrian crossings and traffic signals.

The Professional Certificate is awarded at three levels: Foundation, Practitioner, Expert Practitioner.

All competent engineers are able to gain the certificate whatever their academic background and number of years experience.

To gain the certificate, applicants must submit a report of their experience focused on recent projects and present the report at an interview.



Developed by

Supported by

IHIE Professional Certificate in Traffic Signal Control



The Certificate is open to all. You do not need to be, or to become, a member of IHIE nor do you have to complete a training course or have specific academic qualifications. You are required to prove that you meet the standards of competence.

This leaflet explains

- The routes to the Certificate
- how to apply some with useful advice
- The levels and statements of competence which sets out what you are expected to know and to be able to show that you can do at the assessment interview (Annex 1)
- how to gain IEng and EngTech registration at the same time as the Certificate (Annex 2)

**Endorsed by CSS TS Goup
and Transport for London**

There are two routes to the IHIE Professional Certificate.

Route A Compile a Project report and portfolio of your work matched to the Traffic Signal Control Statements of Competence. Present your work at an interview with two assessors. You will be judged against the Statements of Competence.

Successful candidates will be awarded the **IHIE Professional Certificate in Traffic Signal Control**. With the FOUNDATION Certificate and an HNC/D or a degree, or if you have ten years' experience, you can join IHIE as a Member. With a PRACTITIONER Certificate and similar qualifications or experience you may be able to join IHIE as a Fellow.

If you have an approved engineering qualification at National Certificate level or similar, you may also be able to register as an **Engineering Technician** without further assessment. IHIE will advise you on eligibility once you are successful.

Route B You can apply simultaneously for the Practitioner or Expert Certificate and the IHIE Professional Review at **Incorporated** or **Chartered** level if you meet the Engineering Council's academic entry requirements. First, apply to IHIE to follow this route. Your submission will need to be cross matched using Evidence Summary Forms to both the Signals' competence statements and the Engineering Council roles in *Document IE3 or CE3*. You present your project report at an interview where your signals knowledge and competence will be judged alongside the normal professional review criteria.

There are four interview sessions for the Certificate and Professional Reviews each year.

The closing dates are listed here: <http://www.ihie.org.uk/membership/costs-and-dates/>

Interviews can be arranged in various UK locations, depending on take up.

Further details

Membership Manager, Institute of Highway Incorporated Engineers, 58 Russell Square, London WC1B 4HSt: 020 7436 7487, f: 020 7436 7488, e: membership@ihie.org.uk

How to Apply



- **What you need to submit and how applications are processed**
- **How to prepare your submission**
- **How to prepare for your interview**

YOUR SUBMISSION

Compile three copies of

- The application form (*Document PC 10*)*
- Photocopies of any educational qualifications and a list of training completed since you left school*
- A CV (not more than two A4 pages)*
- Your current job description or job profile
- An organisation chart (showing your line Manager and any subordinate staff)
- A Report of your experience focused on recent projects or schemes (six to ten A4 pages)
- Documents you produced for these schemes (with a covering list)
- A matrix listing the Documents against your chosen competences.

Send one copy of the asterisked papers* and a CD of the full submission to IHIE with the **assessment fee (Foundation: £ 90.00, Practitioner: £120.00 or Expert practitioner: £150.00).**

IHIE will acknowledge receipt of your documents and give you the details of two assessors.

Send your submission portfolio to the two assessors by the Post Office. The assessors will decide if the application meets the entry standards. They may ask for additional information.

IHIE will tell everyone the time and date of the interview once we have clearance from the assessors and give you details of the venue.

After the interview, the assessors make a recommendation to the IHIE Steering Group.

You should receive your results within six weeks. **If you do not succeed** you will be told why and may normally re-submit the Competences not achieved when you gain the extra experience or knowledge. The re-sit fee is £75.00. If you are dissatisfied with how the assessment was conducted, for example, if the format, procedure or style of the assessment significantly compromised your ability to convince the assessors that you met the Standards, – you may appeal. Ask the Membership Manager for details.

If you are successful, why not apply to join IHIE. It's the best way to keep in touch and ahead in your profession and is a public demonstration of your worth.

NOTE: *If you have attended the **JCT course 'Essentials of Traffic Signals'** and passed the assessment post-May 2008, you will be deemed to have met the Knowledge Statements C,I,J and M and have the underpinning knowledge for Competences 15,22,23 and 24 but you still need to show you can perform in these areas.*

PREPARING YOUR SUBMISSION

Report

The report describe your work experience in reverse chronological order (explain what you did and, briefly, why, the cost of the project and programming aspects then focus on two or three recent schemes with supporting documents showing that you have the knowledge and experience demanded in traffic signal control at Foundation, Practitioner or Expert Practitioner level. It is not enough to explain how an inter green, for instance, works, you need to show how you have applied this knowledge.

Alternatively, you can write a report which explains your experience under each Statement of Competence.

Your chosen schemes will need to show that you have applied your signals knowledge in the 9 core competences and the additional ones you chose. If this is not possible, cover these others in the earlier sections of the report; just be sure you have Documents which match all the competences.

You will need to refer explicitly in the Report to relevant regulations, standards, policies and codes and the sustainability and public interest issues highlighted in the Statements of Knowledge.

We recognise that you work in a team but remember that it is your contribution which is being assessed, hence explain clearly what work was your responsibility and the actions you took.

The assessors will be looking for the work you have done to show that you are performing competently.

Select schemes or projects in which you played a major part. For Practitioners this includes taking the lead in some or all elements and showing that you exercised independent professional and technical judgement. Explain your role clearly giving sufficient background on the decisions for which you were responsible.

Aim to write about six to ten pages describing the relevant schemes chronologically, the options you considered, your contribution and explain why you acted as you did. Applicants for Expert level will need to submit longer Reports than those for Foundation level.

Your Report must be cross referenced on the right hand side to the processes and skills listed in the Statements of Competence and the Knowledge Statements and you must tick your chosen Competences on the Application Form which your Employer will countersign.

Planning

Set yourself a programme with objectives and milestones. It will help to work with your line manager or a mentor.

Start by reading the Knowledge expectations and Statements of Competence in *TSC Document 4 Annex 1*. Make notes on the Statements about recent jobs which are relevant. Find reports, designs, correspondence which you produced or to which you contributed to demonstrate your knowledge and competence..

Comparing your experience to date against the Statements and the role profiles for Client, design and operation engineers will allow you to identify if you need to gain additional experience or knowledge. There's guidance on relevant courses in the **Training Directory (TSC Document 2)**.

Discuss your progress with your line manager or a mentor to check you are on the right track or if you've missed something.

Style Guide for Written Work

In preparing your portfolio, it is good practice to:

- word process the text using one and a half line spacing on one side of A4
- leave a line between paragraphs
- use headings and subheadings
- number the sections, paragraphs and pages
- number all photos and tables in the text
- number all attachments and prepare a list of attachments
- get the Report bound or use a ring binder
- reduce plans if possible and/or fold them into a plastic wallet
- include photos, sketches or plans to help to explain the site (before and after)
- start with a list of contents
- justify your reasoning, comments and recommendations by reference to national and local standards or practice advice
- make clear the extent of your responsibilities.
-

Make sure your submission is easy to handle and to find your way around: index tabs are a good idea.

Supporting documents

You do not need to produce a separate piece of evidence for each of the Competences. Communication skills may well be evidenced by correspondence or reports related to safety issues.

Make clear which documents are your own work or add a note to explain what you contributed.

Seek clearance from your employer and warn IHIE if the submission is confidential or commercially sensitive. We do not expect you to breach confidentiality.

There is no need to include copies or extracts from any standards or manuals (unless you wrote them); just refer to them in the text to show you know and use them.

Putting numbered tags on each document or using dividers will help the assessors find them more easily.

Preface your documents with a list and draw up a grid listing the supporting documents against the Statements of Competence showing which of your chosen Statements are covered by particular schemes and documents.

Competence	1	2	3	4	5	6	7
Document							
1. Risk Assessment for High Street improvements	√	√		√			
2.		√	√				

PREPARING FOR YOUR INTERVIEW

The Assessors will set you at your ease. The interview is not an examination: but is a discussion with senior colleagues. No one interview is the same as another. The assessors have their own styles but their conduct must be fair and proper. Their assessment will be based entirely on your submission and your performance on the day.

Beforehand,

- Identify significant or interesting aspects to talk about
- Find out any updates on the projects
- Practice talking about your work for an hour including questions and answers
- Write prompts on cards or your copy of your documents
- Refresh your knowledge of the abilities and policies listed in the Competence Statements
- Revise your technical knowledge

On the day,

You will be asked to talk about your schemes. The assessors will ask questions about your work and test your knowledge. Your Portfolio will have been read by the assessors. They will look to you to expand on the information, not repeat it. A good approach is to talk through a few key documents to bring out the extent of your experience perhaps also using an A4 flip portfolio. Laptops are permitted but can be unwieldy.

The assessors need to be satisfied that you meet the Statements of Competence and the Knowledge statements. Allow for this when timing your presentation.

Remember to,

- Listen to the questions
- Present your work logically and clearly
- Start with your most significant scheme
- Take comments objectively, not as a personal slight
- Stop digging if you get into a hole and don't waffle

After the Interview

The Assessors complete a detailed assessment form. Their recommendation, plus your submission will be considered by the IHIE TSC Steering Committee.

You should receive your results within six to eight weeks of your interview. Your certificate will list your achievements and you will be invited to receive it at an IHIE meeting.



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
TOTAL	30	30	30

 = 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
1. Undertake a risk assessment		√	
2. Manage health and safety requirements	√		
3.		√	
4.		√	
5.	√		
Total	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, conversion 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.