IMPROVING TRAFFIC SIGNAL DESIGN, IMPLEMENTATION AND OPERATION BY BETTER COMMUNICATIONS WITH PLANNERS, CIVIL ENGINEERS AND THE WIDER ENGINEERING COMMUNITY

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1   Introduction

Problems with traffic signal designs and the associated modelling work produced by transport planners have been discussed at recent JCT Symposia. At the 2011 Symposium we volunteered to look into this problem, liaise with transport planners and report back to the 2012 Symposium. This paper presents the results of our investigations and puts forward ideas to go forward which we can discuss at the Symposium.

2   Results of our Investigations in the Last Year

When we started our investigations the assumption was that transport planners were the problem but in fact they are just a 'symptom' of a bigger underlying issue, i.e. problems in the overall process from design through to implementation, commissioning and maintenance of traffic signals. Examples of what we have seen include:

- Transport planners producing poor designs and justifying them using badly developed and inaccurate models (one of the original problems);
- Modelling work that completely fails to model the existing and proposed design correctly resulting in implementation of very poor solutions (one of the original problems);
- Traffic engineers believing they have the expertise to develop complex traffic signal designs but in practice rarely have the necessary understanding or knowledge;
- Highway engineers designing signal schemes and being oblivious to practical signal operation, implementation or maintenance issues;
- LA highway engineers/development control staff agreeing to significantly 'flawed' schemes and incorporating them into legal agreements;
- LA signal engineers not being party to an 'authority's' acceptance of a traffic signal scheme;
- Consultants specifying MOVA loop locations without cruise speeds and without any intention to undertake cruise speed surveys; and
- Civil engineers failing to correctly implement agreed designs thus negating all the work done to produce safe and efficient solutions.

What has been more positive is those involved in the design and implementation process we have spoken with, including transport planners and road safety auditors, agree things are not what they should be and that the process is currently disjointed and failing to produce designs that are fit for purpose. There was, however:

- General agreement that current problems are a principally a failure of 'communications' between the parties in the overall 'process'; and
- A willingness to try to work together to find a solution.

For completeness we have to say signal engineers are not always perfect and can be pompous, self opiniated and rude plus also do produce the odd less than perfect solution.

3   Going Forward

We believe that the way forward is to:
- Identify the steps in the process and key groups; and
- Work on improving communications between the different groups.

Table 3.1 shows our initial ideas for the steps in the 'process' and key players. This focuses on signal design aspects and obviously there will be other key activities at each step which we have ignored. The steps in the process may not be applicable in every scheme.

| TABLE 3.1: THE TRAFFIC SIGNAL DESIGN 'PROCESS' AND KEY PLAYERS | | |
Ref	Steps in the 'Process'	Key Groups
1	Design concept (including modelling);	• Transport planners/traffic engineers; • Development control staff; and • LA signal engineers/consultant signal engineers
2	Outline design to provide a framework for detail design (including legal agreements as part of the development control process)	• Transport planners/traffic engineers; • LA signal engineers/consultant signal engineers • Development control staff
3	Detail design	• Highway engineers; • LA signal engineers/consultant signal engineers; and • Safety auditors
4	Implementation	• Highway engineers; • LA signal engineers/consultant signal engineers; and • Safety auditors
5	Commissioning and validation	• LA signal engineers/consultant signal engineer
6	Operation and maintenance	• LA signal engineers

Table 3.2 show ideas for improving communications between the differing groups in order to improve that the different groups understand their role and the roles of others. Sometimes understanding what a different group does helps, for example do development control staff understand why traffic signal solutions have to comply with various standards?

Briefing notes could be very helpful and distributed electronically – in theory all this information is readily available but in practice perhaps we need to emphasise critical items. Our initial ideas are:
• Key dimensions, e.g. pedestrian and Toucan crossing widths (minimum and maximum), pole setting out information, island widths etc;
• Benefits of Puffin crossings and how to model Puffins;
• Phase lettering strategy;
• Modelling to produce UTC plan data; and
• Why development control staff should liaise with their in house traffic signal colleagues.

Specifically in short term also we have:
• Agreed with the TPS that they will highlight and support what we are trying to do and circulate electronically briefing notes and other material to their members; and
• Agreed with the CIHT NE region to support their initiative to improve training through local seminars. We have agreed to do a presentation in November but a volunteer is needed to speak at a seminar in the North East early in 2013.

Another key area to progress is involving:
• Road safety auditors (who are concerned and supportive); and
• Civil engineers who appear to have lost the ability to correctly site traffic signal poles no matter how much information they are provided with.

TABLE 3.2: IDEAS FOR IMPROVING COMMUNICATIONS		
Area	**Description**	**Comments**
Informing colleagues	• Seeking to inform and educate those we work with; • Briefing notes; and • In house training	• Through projects, in house seminars etc
Understanding roles	• Understand the roles and objectives of other groups	• Briefing notes or in house seminars
Free information	• Briefing notes (e.g. capacity and safety benefits of Puffins, modelling Puffins, requirements for modelling networks to provide UTC plan data etc) available to all on the web; • Examples of good and bad schemes; • Case studies showing evolution of designs; • Published papers and articles on the design process and successes achieved; and • Explain where to find information	• Available on line; and • Distributed internally or by institutions
Conferences	• Papers and presentations at conferences	• Can get real support from a large audience
Courses	• Developed to meet emerging market demands	• In house or commercial
Institutions	• To raise and highlight the issues; and • Encourage their members to participate.	• Potentially institutions should take some ownership
Government	• To put in process actions to improve standards	• Making best use of existing advice

4   What Next

We will present this report to the Symposium, discussions option and then finalise how we can go forward.

Finally we think that the load needs to be spread a little and or idea is that 'champions' could volunteer to lead specific areas:
• We would be happy to coordinate; and
• John Barrel of CIHT has offered to lead on safety aspects from the CIHT viewpoint.