

# Statement Of Case:

## Opposition to the Proposed Upgrade of the Meldreth Road Level Crossing

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### Introduction

I am the vice-chair of Meldreth Parish Council and resident of Meldreth. My professional background and qualifications in the field of Operations Research include a background in the modelling of stochastic process – reflected here by estimated delays for traffic under the Do-Something Scenario.

Meldreth is a village with a population of 2000 from which the major exit route to the East, towards Cambridge (our nearest centre of population), is along Meldreth Road and makes use of the level crossing which is the subject of this public inquiry. As a village we have a greater than the national average of car ownership and we surmise from the 2021 census data that it is a route for many villagers working in the Cambridge district.

### Summary Objection

Our objection is not on the principle or need for additional protection at the level crossing but on the detail of proposed changes. Specifically it is a reaction to, and analysis of, the traffic modelling information provided in the Network Rail letter dated 23<sup>rd</sup> November and titled **ref: Cambridge Resignalling, Relock and Recontrol (C3R) programme – Network Rail's response to objections against proposed upgrade of the Meldreth Road level crossing**. The information in question is in the table copied here:-

These scenarios were then used to assess the network performance including the average delays that may be experienced by road users. The agreed scenarios for Meldreth level crossing are shown below with the increased barrier downtimes shown for each scenario.

Scenario	Period – AM and PM	No. of times barrier called within period	Average Barrier Downtime (seconds)
Base Model - Existing Barrier Downtime	AM Peak - 08:00 to 09:00	10	62
	PM Peak - 16:30 to 17:30	9	62
Do-Nothing scenario - No barrier upgrade and future traffic demand	AM Peak - 08:00 to 09:00	12	62
	PM Peak - 16:30 to 17:30	10	62
Do-Something Scenario - future traffic demand and proposed barrier upgrade	AM Peak - 08:00 to 09:00	12	169
	PM Peak - 16:30 to 17:30	10	169

***Our objection is that the data presented in this reply is inappropriate and inaccurate. It fails to make the case for the technical solution or to reassure residents that the changes will have a 'minor' impact on local residents and the commercial life of the area.***

## Detailed Objections

The detail of our objections are presented below. Some of these objections may be covered by the detail of the work and I am happy to receive any reports which address my concerns. At base however is that the substantive issues need to be addressed – the style and presentation of the modelling work is wrong and that the significant changes are not justified.

These are not just aspects of detail but are a fundamental challenge to the approach used by Network Rail.

Should it be necessary an alternative modelling exercise can be undertaken and realistic and appropriate findings reported to the Public Inquiry.

The Scheme is presented as an Upgrade but it represents a significant Downgrade to the local residents and users of Meldreth Road.

A simple 'multiplication' of the factors in the columns in the table – ***no of times \* downtime*** – suggests the period for which the barrier will be closed will rise from 10 minutes per hour to 33 minutes per hour.

Whilst we can assume that vehicle arrive 'at random' during the hour we already know that the arrival of the trains is not random.

If the traffic patterns of the trains is spread evenly through the hour this would produce a period of 2min 24 seconds down followed by 2 mins 25 second open). Instead we know the trains do not arrive at equal periods through the hour, there is a clustering around two 30 minute periods, if this clustering is concentrated this would produce a pattern of 16 minutes closed followed by 13 minutes open.

It is this 'synchronisation' of closures which leads directly to the problems reported at Shepreth Station (below) and there is no evidence that such realistic understanding of the train traffic patterns are incorporated in the Modelling work.

The problem of traffic delays are not amenable to definitive conclusions such as those presented in the report, it is a stochastic process and categorical reassurances cannot be given nor should averages be used

The Network Rail letter presents the modelling 'evidence' with a confidence that is unwarranted. The situation being addressed is characterised by 'nearly' random events – the arrival of cars at the level crossing likely to be delayed and the arrival of the trains which necessitate closure.

It is our common experience that traffic flows, such as gridlocks or rush hour, exhibit smooth predictable behaviour with increasing traffic loads up to a limit at which suddenly a catastrophic change is triggered and the system goes into gridlock.

In designing for the prediction of such failure from such 'random arrivals' we need to be aware of the science of stochastic processes: which are defined as – "having a random probability distribution or pattern that may be analysed statistically but may not be predicted precisely"

We are all familiar with understanding the results of such investigations – typically it is to describe the event and then the frequency of the event. In situations such as this it would be something along the lines of "delays of over 15 minutes are to be expected once in 10 days".

We are also familiar with the correct way to report estimates for a stochastic process, we do not use the mean ("average delays" are suggested in the Network Rail response) but the extremes (1 in 20 rush hour cars will be subject to a delay exceeding 10 minutes, 1 in 50 a delay exceeding 20 minutes).

All of these estimates will be reliant on the quality of the data used in the study – the old adage is garbage in garbage out and this will be discussed next.

The 'real world data' on which the modelling was based is incomplete and unrepresentative

It is assumed that the timings and duration of closures is 'as per timetable' and does not consider the drift and clustering of train arrivals/closures which are observed in practice. The consequence of this, tipping the situation into gridlock, has been discussed earlier.

The road traffic survey data is from July 2021 and April 2022, the first is markedly unrepresentative as a consequence of the pandemic. There is no data provided on the timing, duration and circumstances of the data used as representative of the situation.

We know from our experience that it is the 'extreme ends' of the distribution which drives the extremes of waiting times. It is common practice in the science of modelling stochastic processes, and the observed failures, to evaluate and report on the 'worst-case scenario'.

There is nothing in the report to provide such understanding or assurances on the validity and limitations of the modelling.

When a similar 'improvement' was made to the adjacent Shepreth Station crossing traffic chaos ensued and delay times up to 20 minutes were regularly reported

It is a matter of record for the Parish Council that when the nearby crossing adjacent to Shepreth Station was similarly 'upgraded' (2018) the traffic delays and congestion to traffic between Shepreth and Barrington were significant with delays up to 20 minutes regularly reported. There was no impact assessment from Network Rail for this earlier change and no evidence that the observed phenomenon was be predicted by the model used for Meldreth Road.

The nature of the local road topology means there are greater traffic volumes from Meldreth to Shepreth than from Barrington to Shepreth which is likely to produce worse consequences.

Under the current proposals local residents making the journey from Meldreth to Barrington will be subjected to the 'double whammy' of delays on Meldreth Road and then further delays at Shepreth Station. There is an alternative route via Orwell but this is significantly longer.

## The Report Misses Vital Technical Details

There is no evidence provided that the 'improved system' actually requires a 3 times increase in the crossing closure times. Given that, to the layperson, it is to replace the closing of a single barrier to the closing of a double barrier there is no prima facie case to be made.

If however the scheme represents a covert way of making life easier for the railway companies at the expense of the rights of way of the local population this should be openly presented and open to inspection. After all if the road were to be closed completely it would be much easier for the railway!

If indeed there is a real reason for this significance increase, and the threat to the freedoms of the road users, then an impact assessment of why this is required and the alternatives to mitigate the very real downsides should be part of the proposal.

To say there is no 'appreciable' impact on the local population has already be proved to be wrong and the case for a 3\* delay has not been made.