Managing Dover Strait Road Traffic

Summary

1. Highways England has been tasked with finding a single site for a lorry park which can accommodate a significant proportion of the lorries which queue on the M20 during Operation Stack. Almost as a side issue, the suitability of this site for reducing random overnight roadside lorry parking and Dover TAP (issues which affect Kent all year) is being examined. The proposed solution is not ideal for either purpose, and it is far from clear how it would be used for both.

2. By starting with considering the nature of the queues, it is argued that Dover Port and Eurotunnel should be providing more queueing space, probably more than they currently have planned – it should be designed to be enough to avoid the frequent use of TAP and the use of the M20 and its hard shoulder at Junction 11A.

3. The queues for each ferry operator and Eurotunnel should be managed with information technology rather than as a physical queue which, even if off-highway, is still wasteful of physical and manpower resources. A virtual queuing system is described which is not complicated and does not, as far as is known, need the cross-channel operators to make any significant changes to the commercial arrangements with their customers.

4. With a virtual queue, and the roads to the ports kept relatively clear, trucks can park anywhere within a distance of the ports corresponding to their remaining driving time. A network of lorry parks with a range of facilities to suit the range of freight operators' and drivers' requirements can serve to replace Operation Stack as well as address the shortage of overnight parking spaces in the south-east of England.

5. Enforcement of queue discipline remains a potential concern, but it is suggested that the same queueing system is used every day, rather than having to call for a step change of system when delays at the ports are expected. This should enable everyone to familiarise themselves with how it works and fine-tune it. Experience has shown that compliance improves as drivers get used to a new system.

Introduction

6. In planning ports and associated facilities, in the author's experience it is normal to start with a statement of need (traffic flows) and an idea about how these flows are to be managed. Based on these, the physical facilities are then sized and designed to fulfill the need. In this instance however, it appears to have been decided what the facilities will be, at least the overall size, without any clear idea of how they will be used. In fact, the industry and public are being asked to decide how they will be used. The question of whether or not there are better ways to manage freight traffic flows through Kent than continuing to allow a physical queue to form (in a field, rather than on the M20) has not really been asked in this consultation. The following notes are offered as a contribution to addressing that question. They are written without access to all the detailed data available to Highways England.

7. The conventional approach to the design of transportation facilities has been followed for many years with a succession of studies managed by Kent County Council and others with input from all stakeholders in the industry. A viable solution was developed for overnight parking provision which could also operate to alleviate stack. The first stage of this for three lorry parks was defined and apparently lacked only funding. Now that funding is available, a new "solution" has suddenly appeared without the benefit of proper study and

one has to ask why such a solution has never been considered before in over 10 years of deliberations.

8. This note first considers the provision of parking/queueing spaces necessary to cater for the current arrival patterns of freight and goes on to suggest how those arrival patterns could be moderated to reduce queue lengths while retaining most of the advantages of the current "turn up and go" system for freight.

The Queueing Problem

9. Queues form when customers arrive faster than they can be serviced. There is a temporary excess of demand over supply. A port's and ferry operators' problem is that it is uneconomic to provide facilities (berths, ships) to cater for the maximum rate of arrivals at all times. A balance has to be stuck between the port operator's ideal of filling every ship and the customers' ideal of being served immediately whenever they arrive at the port. Queues are therefore inevitable, but there is an optimum rate of utilisation of berths by ships and of utilisation of ships by vehicles beyond which queues become unacceptable if there is no control over the rate at which vehicles are allowed to arrive at the port.

10. It is understood that, although ferry operators and Eurotunnel have a booking system for freight, known as "pre-lodging", the system operates as "turn up and go". That is, they would not penalise customers for arriving too early or too late.

11. A properly designed port facility should have sufficient queueing space, in the form of warehousing, container stacks, truck parking and so on, to operate efficiently without impacting the surrounding road or rail networks except in the most extraordinary circumstances. Operation Stack in 2005 and again in 2015 focussed attention on the extraordinary circumstances, but neither the Port of Dover nor (to a lesser extent) Eurotunnel have managed to avoid impacting the approach roads to their ports even on a day-to-day basis. Addressing this issue should be the first consideration before going on to address the more extreme situations.

Dover Port

12. If the system for accepting freight vehicles into Dover Port is to remain "turn up and go", more queueing space is needed in or adjacent to the port.

13. For many years, Townwall Street in Dover has been frequently congested, typically mid-week and during the afternoon to early evening which is the most popular sailing time for freight. Dover TAP has been introduced as a response and it is now proposed to embed this "solution" into the freight management system by using a more remote site in the Stanford area. TAP is in fact evidence of failure, for whatever reason, by Port of Dover and ferry operators to properly plan and develop the port fast enough and/or change their systems to minimise queues. If more queueing is required for situations which occur frequently (say, more often than 3-4 times each year) it should be provided by the port, preferably within the harbour area but anyway very near to Dover, and managed by the port and/or ferry operators. It may be that the additional 220 spaces currently being added at the Eastern Docks and the further space which will be made available by the Western Docks project will be enough to avoid TAP but we will have to see. The rejection of the proposal by Port of Dover in 2004 to develop a buffer zone next to the A20 between Court Wood and Aycliffe is regrettable. It would at least have avoided the current need for TAP. This proposal should be re-examined in the present context.

14. There is a further concern about development of the Port of Dover. The port is quite rightly proceeding to reclaim land in the Western Docks against the time when more ro-ro ferry

berths are needed. What is worrying is that the port proposes to use the area in the meantime for lift on/lift off (lo-lo) operations with associated warehousing. These operations will add further truck movements to an otherwise stressed road network. At the same time, an area of land very suitable for trucks waiting to board ferries will instead be used for storing fruit. These lo-lo activities do not have to be done at Dover, while other ports in the south-east have capacity or can be developed as alternatives.

15. For the longer term, the port needs to re-examine previous proposals to reclaim outside the breakwaters. Reclamation between the Admiralty Pier and Samphire Ho would probably have less environmental impact than development to the east of the port and could offer a by-pass for the Shakespeare Tunnel, removing its gauge constraint.

Eurotunnel

16. In this note, Eurotunnel (ET) is referred to as a port. In terms of road traffic flows it is identical to a marine terminal.

17. Not so much is known about the capacity and development plans of Eurotunnel. In particular, the frequency with which the queue spills out onto the M20 is unknown. What is known is that in the Report of the European Gateway Strategic Development Group (July 2015), the phrase "use of off-highway lorry parks is not supported by Eurotunnel" appears several times. There is no explanation for this stance but the implication is that ET intend to accommodate all queueing traffic within their facility at Folkestone or rely on the highway network for queueing. This principal would be fine if there was evidence they were planning a significant increase in parking space. It is reported that some 200 lorry queuing spaces are being added, which does not appear adequate: this number of trucks can arrive in less than half an hour at peak times. Just as for Dover, adequate parking/queueing space should be provided by and managed by ET for all "normal" circumstances.

Lorry Park Location, Size and Management

18. The proposed site at Stanford is intended to replace Operation Stack. As such, it will have to deal with traffic for Dover, with multiple ferry operators, and Eurotunnel. It is therefore likely to be managed by a "third party" organisation, much as Operation Stack is managed principally by Kent Police with input from other public bodies, principally Highways England, and the two ports. With an off-highway solution mimicking the Operation Stack queue, the necessity for warranted police officers may reduce, but the overall management task will not. It seems likely a contractor will be engaged to do this. The introduction of a third party into the vehicle movement management increases the possibility of conflicts and misunderstandings, especially if this contractor has to mobilise staff only 5 or 6 times a year. It would therefore be preferable for each port to manage its own queue according to its own systems and procedures. While this could be achieved with the two ports working side-by-side on one site, separate sites would make lines of responsibility much clearer and the physical design of each would be tailored to each port's requirements. Port of Dover, for example, once explored the concept of "remote check-in" for ferry customers at sites on the route to the port. The physical requirements for this would be different from those for a simple queue.

19. It is also not clear who would pay for such third party management – if shared by the ports, would there have to be some charging formula based on, say, the nominal time delay to services at each? Will the taxpayer continue to pick up the bill for the running costs?

20. In time, if not right away, Dover traffic will have to make more use of the M2/A2 corridor. A buffer zone on the A2 makes perfect sense for Dover but not for ET. This is another

reason why separate buffer zones for Dover and Eurotunnel are to be preferred.

21. If a lorry park is designed as a direct substitute for Operation Stack, it would be laid out with nose-to-tail lanes of lorries. Once they have joined this physical queue, drivers would then have no control over when they move, rest breaks would continue to be a problem and there would be no opportunity for them to change carrier. Such nose-to-tail parking should therefore be reduced to a minimum necessary to ensure lorries arrive at the ports in good order so that maximum utilisation of ships and shuttles is achieved – probably not more than 1000 spaces. If the site is any bigger than that, the rest of it should be laid out as conventional parking so that special loads can be dealt with appropriately (eg reefer points provided) and drivers can take their statutory rest breaks. If this accepted, the part of the site which is conventional parking has no need to be so close the port. Efficient use of the ports does not need a queue of 3600 spaces nearby.

22. In summary, there is a need for more parking/queuing space near to the ports. For efficiency, it does not have to be big enough to contain the equivalent of Phase 2 of Operation Stack. Ideally, and according to conventional port planning principles, it would at least partly be funded by the ports and ferry operators and it would be managed by them.

Regulating Demand

23. Whereas various proposals for increasing the use of rail and longer cross-channel and North Sea routes have been made for a number of years nothing substantive appears to have been achieved. For the short term at any rate there is little prospect of diverting significant amounts of traffic from the Dover Strait crossing. It was reported to the Transport Select Committee in October that in the summer of 2015 alternative routes were quickly fully booked so alternatives do start to become of interest given sufficient incentive. Capacity on these alternative routes would need to be much increased to make any difference. Then, some intervention by government would probably be needed to make these routes attractive in normal circumstances. These alternatives have been talked about for decades with very little progress but they should continue to be explored.

24. If a way could be devised to let trucks approach the ports only as fast as they can be loaded onto ferries or shuttles, disruptive physical queues could be greatly reduced or eliminated. Lorries could still cross the channel at the earliest available time but could plan their journey to arrive only when the port was ready to receive them.

25. The ferry operators and Eurotunnel all prefer to offer a "turn up and go" service for freight, unlike the booking system that tourists generally have to use. This results in an uncontrolled arrival rate which causes unacceptable day-to-day issues requiring TAP or the use of the M20 hard shoulder. A suitable management system could eliminate these problems given sufficient places for drivers to break their journey on their way to the ports. If in current conditions, the TAP queue typically reaches Court Wood (about 250 lorries) and the ET queue reaches Junction 11 (say 120), this number of lorries needs to be persuaded to wait off-highway. Even before any additional on-port queueing capacity is constructed, this number might even be absorbed by existing off-port capacity. When the supply of channel crossings is constrained by weather, strikes, etc. the "turn up and go" system greatly exacerbates the queues (about an order of magnitude bigger) at great cost to business and the community. The same management system could also address these much bigger queues. The commercial sense of "turn up and go" is understood but one has to ask why the operators should not be required to implement or at least contribute more detailed data to some sort of system to meter the flow of vehicles heading towards the ports. It need not put any operator at a commercial disadvantage – all would have to use similar systems for it to work in the Operation Stack case.

26. Tourists with a booking on a particular vessel or shuttle will be given a time slot in which to arrive at the port. If made aware of a delay, by direct message from the operator, radio announcement or perhaps by motorway signage, they will reorganise their timetable so as to arrive at the port at the revised time. Probably, they will wait at a distance from the port such that they can be confident of the remaining driving time. In effect, a virtual queue is in operation. The best way to avoid Operation Stack is to arrange for lorries to do the same. It is acknowledged that the port operators do put out information about delays, but freight operators complain that it could be more accurate and timely. It could be vastly improved by maintaining a virtual queue which would re-allocate queue positions between sailings or shuttle times as conditions change and thus provide more precise information about the time a vehicle should arrive at the port. The requirements are:

    • a system to allocate positions in the queue to each vehicle;
    • real-time information on ETDs, availability of off-port parking spaces and traffic;
    • sufficient parking spaces within a certain distance of the ports;
    • confidence that journey times will be reasonably predictable within that distance; requiring in turn
    • driver and freight company discipline to avoid queue-jumping; and
    • a method of enforcement of discipline which introduces minimum disruption to flow of vehicles which follow the rules and minimum regulatory staff.

27. Each of these aspects is discussed below.

Virtual Queuing System

28. The traditional booking system gives one a place on a particular sailing/flight/shuttle. Discipline is enforced with penalties for missing that particular place. Operators are understandably reluctant to offer customers a contract including potential penalties.

29. Suppose, though, that a vehicle's place in the queue for the port was secured electronically rather than by arriving at the port entrance or at the back of the Operation Stack or TAP queue. On receiving a request, the port/ferry operator would estimate when the vehicle should arrive at the port to take up that place in the physical queue at the port and tell the driver or freight operator. Freight operators know minute by minute where their vehicles are and the state of the drivers' working hours. Together with real-time traffic information, the operator can then plan the vehicle's journey to the port in the best way (ie allowing for the driver's statutory rest breaks and food stops) while aiming for the time window around the ETD supplied by the port. Information on delays at the port would be continuously updated and fed to the freight operators.

30. There would be no penalty for missing a place in the queue, but there may have to be some safeguards against over-booking such as a check at some point that it is feasible for a particular vehicle to arrive in time.

31. There would be scope for trading of positions in the queue – say for perishable goods to swap places with a less urgent load in times of congestion.

32. It is not expected that the virtual queue will be re-constructed exactly at the port. Drivers would be given a time window within which to arrive. It is analogous to loading an aeroplane by blocks of row numbers – when rows 50-60 are called, nobody expects all of row 60 to board before row 59. Vehicles would be given a final allocation to a particular shuttle or sailing on arrival at the port.

33. It is understood that freight operators will often leave a choice between cross-channel operators to the last minute in order to secure the best price and/or departure time. With virtual queues, they could "book" places in the queue with several operators. There is then

a danger that a rush of cancellations can result in some vehicles being too far from the port to take their revised place in the queue. Experience with the system should allow operators to fine-tune the arrival window around ETD to account for this.

34. Solutions to Operation Stack considered so far apparently assume that planning will continue to be carried out by the authorities (currently police, highways, ports) and drivers will be instructed what to do via roadside signage, police officers at roundabouts, etc, and now, presumably, unsightly overhead signage in the proposed lorry park. The phrase "called forward" keeps coming up, implying port operators are managing every truck. This is unnecessary. If drivers are given timely and reliable information about when they are likely to get a crossing, they can make their own decisions, just as they do for the rest of their journey, and management intervention on the roads and in the lorry parks can be minimised.

Real-time Information

35. Real-time information on the state of the port, length of the virtual queue and traffic on the approaches to the ports should be straightforward to collect. The larger freight operators and the cross-channel operators can be expected to be able to develop appropriate IT systems to make use of it with little difficulty. Independent owner-drivers not working for large transport groups will not have this capability but it would not be difficult to program a suitable application for a dashboard tablet or mobile phone. An example of what is achievable is available from Port of Felixstowe.

36. Port operators ought to recognise the value of providing continuous data about the state of the port and the queue to their customers as a service to help them plan their journeys. They would not have to disseminate data on traffic outside the port or be responsible for it.

37. Traffic monitoring information is improving all the time, but the sense is that it is not being provided in an accessible format. The Road Haulage Association is calling for a map of journey times, which is exactly what is needed here. The Kent trunk road network would be an excellent test bed for such a concept.

38. Drivers needing somewhere to stop will need to know availability of parking spaces at lorry parks and service areas. Some of these already provide real-time information about availability of spaces. Others should be encouraged to install suitable systems. Some subsidy may be appropriate. The information from all parking facilities needs to be brought together by one agency for informed choices to be made by drivers.

39. GPS location data for each truck could be shared with the system – probably not continuously but at the freight operators'/drivers' discretion. If, however, freight operators and drivers were willing to share real-time GPS position data, perhaps anonymously, it could provide first-class information about the state of traffic on the main roads, something similar to the popular Waze application but not needing any input from drivers.

Sufficient Parking Spaces

40. According to Highways England's South-east Truckstop Guide and on-line information on MSAs not included in the guide there are 872 lorry parking spaces in truckstops and MSAs within Kent. It has recently been reported by the CILT that there is nevertheless a shortage of overnight parking spaces in the Ashford area alone of 1500. This suggests several parks of the current size of the Ashford truckstop are required for overnight parking. There is a proposal to extend Ashford Truckstop and Stop24 is also keen to expand. These two could alone provide nearly 1500 additional spaces but for overnight parking, the best arrangement is to distribute the available spaces along the main routes, rather than concentrating it all in one or two places. This has the following advantages,

relative to one huge park off the coastbound carriageway of the M20:

- it gives drivers more flexibility as to when and where to stop to comply with their working time rules while maximising delivery efficiency;
- it can offer drivers more choice of facilities from very basic at about £5 per night to full truckstop at over £20 per night;
- the available trade in meals, other facilities and corresponding employment will be distributed to more communities;
- many, smaller parks can more easily be accommodated by the existing road system, using existing junctions;
- inbound traffic (reported to be the majority of overnight demand) can be catered for as conveniently as outbound;
- it is scaleable, by expansion of existing sites and introduction of new sites according to need;
- if used for outbound queueing, lorries "called forward" will be dispersed along the roads rather than in platoons which local traffic have to contend with – the rate at which lorries leave each park would not be a constraint; and
- smaller parks should have less environmental impact and may be more easily screened.

41. The advantages of multiple parks have been recognised by all relevant stakeholders.

42. It appears, then, that to cater for overnight parking, some 2,500 spaces could be needed. How does this help with Operation Stack, which has provision for nearly 8,000 lorries? First, it is argued above that the ports should be expanding their own queueing space to absorb week-by-week peaks in demand. Lets suppose 1000 extra spaces are provided for each of Port of Dover and Eurotunnel. On an incident at one or other port, 3,500 parking spaces would be available – equivalent to Stage 2 of Operation Stack, and the extra 1000 spaces at the other port will serve to keep the roads clear of the additional traffic which will inevitably divert from the affected port.

43. Even if the 1000 or more vehicles queued in or near each port can be loaded onto ships or trains in an hour, (the maximum is probably nearer 500) that is plenty of notice for the trucks parked up across Kent to plan the last leg of their journey to the port, if they are kept up-to-date with the state of the queue as suggested above. Vehicles at places 3000 and more in the queue will know it will be at least three hours before they can get into the port (probably much more, at least while the ports are at reduced throughput capacity). If their place in the queue is assured and the system is successful in keeping the main roads relatively clear, there is no reason for them to be waiting anywhere near Kent. They may even decide that the wait is too long and be tempted by alternative UK-Europe routes. This option would not be available if stuck in a queue on the M20.

44. According to the European Gateway Strategic Delivery Group, Phase 3 of Stack was called for the first time ever in 2015, although Faber-Maunsell reported that Phase 3 had been called once in the period 1993-2005 (Date not given but likely to have been when the tunnel was closed by fire in 1997). Phases 1 and 2 have a capacity for 2764 vehicles (EGSDG) so queues of more than 3000 are exceedingly rare.

45. It is reported that Highways England had an initial list of over 100 possible sites for lorry parks at one stage of their studies last year. If the notion of one huge lorry park is set aside, it is difficult to believe that sufficient extra spaces cannot be provided by expanding more of the nine existing sites in Kent or establishing new ones in appropriate places.

46. Hitherto, the establishment of a number of lorry parks has been championed by KCC and the strategy has been endorsed by all of the industry stakeholders and government agencies. Holding things up has been a lack of funds and a concern to develop proposals within the normal planning framework. If both of those constraints are to be removed for

Highways England's latest proposals, why can't the original agreed strategy be progressed instead within the same regulatory framework?

Enforcement

47. The system described above requires the confidence of drivers that on completing their journey, they will be able to arrive at the port within a certain time slot – not so early that they risk being turned away and not so late that they lose journey time unnecessarily. This requires everyone to follow the system so that the roads remain relatively clear. It is understood that a similar system applies in France where drivers are called forward from as much as 120km from the ports, so it clearly can work.

48. The perception is that the majority of drivers, when congestion at the ports is announced, rush towards Dover. But given sufficient and timely information they can be expected to take a more considered approach. After all, in the summer of 2015, with Stack in operation for days on end during which about 10,000 lorries would ordinarily have been expected, the queue reached only 7,000 or so. Many drivers must have been finding other places to wait.

49. It is anticipated that once confidence in a "virtual queue" can be established, the vast majority of drivers will appreciate the advantages of obeying the rules. It is therefore recommended that suitable systems are put into place and used all the time so that all parties can get used to them. This should avoid problems similar to those experienced in January 2015 when Operation Stack was called after a long period since the previous invocation and it was reported that many people involved were unfamiliar with the procedures. Similarly, it is understood that when TAP was introduced there was an initial period when many drivers sought to get round it. After drivers became familiar with the system, and presumably suffered some enforcement, compliance is now very good.

50. By using such a system all the time, there will be not be such a "jump" between different ways of operation ie Normal – TAP – Stack 1,2, 3 and 4. As currently apparently envisaged for a single, large lorry park, each elevation of the state of the queue would require extra staff to be mobilised and additional facilities brought in or opened up. This effect could be greatly reduced. Drivers will only need to know where they are in the queue and when they are likely to be accepted into the port.

51. The current system of handing out tokens to drivers as a ticket to access the ports would be replaced by the virtual queue. Their authority to enter the port and/or to be released from any near-port holding area would have to be checked by other means such as the well-established ANPR method.

52. There will nevertheless still have to be some policing to deal with physical queue-jumping, but will this be any worse than it is at present?

Implementation

53. Many of the figures used above are approximate but believed to be realistic. These need to be firmed up and adjusted for future growth. The queuing system can then be designed in greater detail with modelling to determine the proper size of the various components. Port of Dover and Eurotunnel have operational models which could be used to test the robustness of their current plans for queue space expansion and to determine any shortfall which needs to be taken up outside the ports.

54. Suitable IT systems could be programmed, tested and introduced far quicker than any lorry park can be built and far cheaper. They could immediately have an effect on TAP which would provide a good test bed.

55. In parallel with the IT solutions, proposals for Ashford Truckstop, Stop24 and, as necessary, additional queueing space for Dover and Eurotunnel can be progressed.

56. Expansion of other lorry parks in Kent and beyond is likely to be achieved quicker than establishing any new sites but planning for both should go ahead without delay. Since these smaller projects can be progressed in parallel, it should not take any longer to bring this extra capacity on than designing and building a 50ha site. There may well be some quick wins which can start to make a difference much sooner.

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