



Review of Glyne Gap Station Business case

A report to Campaign for Better Transport's
East Sussex branch

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Contents

Contents	2
Background.....	4
JRC approach to the review.....	4
<i>Project specification</i>	6
<i>Previous assessment reports</i>	6
<i>Project reporting sequence</i>	6
<i>JRC review of project brief</i>	7
Assessment of the Mott MacDonald (MMD) documentation and reportage	8
MMD Stage 1: Review and Updating of Existing Studies	9
<i>No Metro specification</i>	9
<i>A 2 TPH service</i>	9
<i>Glyne Gap station context</i>	10
<i>Funding and franchising context</i>	11
<i>The local travel context</i>	11
MMD Stage 2: Infrastructure Assessments and Recommendations.....	13
<i>Factors influencing station specification</i>	13
<i>Station location and costs</i>	14
MMD Stage 3: Operational Assessment.....	15
<i>Key assumptions for operational parameters</i>	15
<i>Reliance on an unchanged railway</i>	15
<i>Contrasts with outcomes of a 4 TPH railway</i>	16
<i>Further limitations on operational modelling</i>	17
<i>Consequence of tight operational restrictions...</i>	18
<i>...An hourly service</i>	18
<i>No respecification of railway between Eastbourne and Ore</i>	19
MMD Stage 4: Demand Forecasting.....	20
<i>General impact of low frequency on passenger demand</i>	20
<i>Weaknesses of 'PDFH' forecasting</i>	20
<i>Different outcomes with large-scale service changes</i>	21
<i>Local comparators to model passenger demand</i>	21
<i>Adjusting travel rates for an hourly service</i>	22
<i>Modelling demand at Ravenside Retail Park, and Bexhill College</i>	23
<i>Abstraction of passenger flows from Bexhill station</i>	24
<i>Exclusion of new passenger volume in Bexhill/Glyne Gap catchment overlap</i>	24
<i>Double-subtraction of abstracted Bexhill passenger flows</i>	26
<i>Details of abstraction modelling</i>	26
<i>Other refinements of passenger demand</i>	27
<i>Revenue modelling</i>	27
MMD Stage 5: Business case	29
<i>Demand forecasts</i>	30
<i>Revenue forecasts</i>	30

<i>Rail user benefits and disbenefits</i>	32
<i>Non-rail gains and losses</i>	35
<i>Other final MMD observations</i>	35
Wider issues and opportunities – how things can be different	37
<i>Taking stock</i>	37
<i>Defining a 2 TPH service</i>	38
<i>Network Rail Long Term Planning Process (LTPP)</i>	39
<i>CBT East Sussex station count</i>	41
<i>Specific local characteristics to consider</i>	42
<i>Local terrain</i>	42
<i>Station access quality</i>	43
<i>Wider strategic opportunities</i>	43
Conclusion	45

Background

- 1 JRC Ltd was commissioned in November 2013 by the East Sussex branch of the Campaign for Better Transport, to review the published business case for a Glyne Gap station on the East Coastway line between Bexhill and Hastings.
- 2 This followed a poor business case reported by consultants Mott McDonald in a recent 2012/13 series of reports which were commissioned by Rother District Council (the local planning authority), supported by East Sussex County Council and Land Securities.
- 3 CBT East Sussex wanted an independent opinion on the validity of Mott's process and findings, and advice on any possible ways forward in the light of the report.
- 4 JRC was commissioned for a limited time period, both because CBT's resources were constrained and because a report was requested to be complete in time for the inspector's assessment of Rother District Council's forward Local Plan.
- 5 JRC had been approached because of an earlier strategic report it had prepared in 2013 for Railfuture, and which had been reported to East Sussex County Council. It set out an evidence base and rail development options in East Sussex, to underpin the county's and districts' future economic growth.
- 6 JRC is recognised for its station and railway project expertise:
 - a. The company was commissioned as an expert witness by Newham Council in Autumn 2012, to help the Council in a planning appeal case lodged by Crossrail on a station design issue at the intended Custom House station. Newham Council's position was eventually accepted by Crossrail.
 - b. It is currently advising Ealing Council on other station design and passenger volume estimates in relation to Crossrail, at Ealing Broadway station.
 - c. JRC has also worked with local authorities and the North London Strategic Alliance consortium in 2013, to prepare a business plan and successfully secure £27.5m from the Greater London LEP for track extension and station improvements along the Upper Lee Valley, to achieve local economic growth.
 - d. JRC undertakes station passenger counts and analyses of these, for the West Anglia Routes Group. 17 stations were surveyed this Autumn.

JRC approach to the review

- 7 JRC has therefore focused on three assessment processes in relation to Glyne Gap station, and then drawn some conclusions:
 - a. Review the **project brief** from Rother District Council and whether this represents a reasonable and balanced instruction to the consultants.

- b. Review the extensive **documentation and reportage** prepared by Mott MacDonald to respond to the project brief, and identify whether there are matters arising which might merit further coverage, or were not addressed, and in either case are sufficiently important to influence the outcome of the business case.
- c. Consider whether there are **wider externalities** which could influence the outcome of the business case in future years (recognising these might be negative as well as positive), and which also merit inclusion to 'weight' the longer-term context of the numerical assessment covered in (2).

Assessment of the project brief

Project specification

- 8 The project brief was initially confidential when issued in June 2012, but was made public by Rother District Council following an FOI request by CBT East Sussex.
- 9 The primary tasks were to produce “a detailed and definitive study identifying whether or not the a new station at Glyne Gap is [a] technically feasible [b] commercially viable”. Assessment quality in accordance with Network Rail’s GRIP stage 2 process was required, for possible minimum, intermediate and full scale schemes including relative levels of service provision costs.
- 10 A full capital and operating cost assessment was requested, along with demand variables including induced demand, user/non-user and some wider benefits of a new station, plus alternative investment options. The headlines were to focus on station feasibility, station potential, opportunities for delivery, and an outline business case which should take into account current Network Rail and Department for Transport practice and guidance.

Previous assessment reports

- 11 Mott MacDonald had previously concluded in 2000 and 2004 that in outline terms there was merit for a new station at this location, but that a business case was required. Rother District Council observed that Ravenside leisure centre and retail park, proposed new housing at NE Bexhill, Combe Valley Countryside Park, Bexhill College, and other elements could assist the business case.
- 12 Consultants Steer Davies Gleave had similarly reported favourably in outline, in 2000, while a Bexhill to Ore Metro including 4 new stations (including Glyne Gap) was advocated in the South Coast Multi Modal Study published by the Government Office for the South East in 2002. Another consultancy, The Railway Consultancy, had reported in 2003 on capacity topics arising with the Eastbourne-Hastings-Ashford railway corridor.

Project reporting sequence

- 13 The required work was to follow a set sequence: review existing studies; infrastructure assessment; operational assessment including demand and operability; business case; leading to a conclusion, including the timescale for implementation and tasks to take a station project to the next Network Rail design level, GRIP stage 3. Work output would be reviewed with the client on an sequential basis, before the consultant could proceed to the next stage of

assessment. In practice there was a work overlap between the operational case and the demand modelling, but for clarity the stages are discussed sequentially below as five different stages.

JRC review of project brief

- 14 JRC has reviewed the project brief and makes the following points:-
- 15 This was a competitive brief. Mott MacDonald were selected by Rother District Council in competition with other consultancies who also have strong reputations.
- 16 The context of the brief demonstrates a positive historical background to the intended station, and with instructions that – should the business case prove worthwhile – then work should include taking the project towards the next stages of delivery.
- 17 The brief includes a requirement to assume that the Bexhill to Hastings Link Road will be open by the end of 2014. This is reasonable for a report modelling future travel demand, as the road was official council policy and the Department for Transport had provisionally awarded funding grant-aid in March 2012 (the DfT funding was confirmed in April 2013). If the demand analyses had ignored the road, they would have needed to be reworked after April 2013.
- 18 As any reasonable authority should do, the project brief allows for the potential that the station business case might be adverse. There is a further rationale for that which JRC considers appropriate at this location, that a proportion of the nominal station catchment is either seascape or open land, therefore the actual demand levels could be lower than if fully surrounded by a built environment.
- 19 **Where the brief might be considered to be narrow, is that the client's instructions are focused on a particular new station, though much of the preceding contextual work was predicated on a package of investment including other potential stations and better local rail services – eg the Bexhill to Ore Metro.** Consequently this could denude the station of other potential passenger volume, where all together might secure a better business case rather than a single piece of infrastructure in isolation – potentially a case of all stand together or fall separately?
- 20 A study to further refine the Metro proposition as a totality was not undertaken. Independently, JRC has recommend study of an Eastbourne-Hastings (Ore) East

Sussex Metro, in its 2013 report to Railfuture which has been reported to East Sussex County Council.¹

- 21 **As we shall see, Mott MacDonald did adopt a slightly wider context in a sensitivity test for its demand modelling – such as the impact of an integrated smartcard – but the underlying strategy for the study remained incomplete in this respect. This is the initial shortcoming which JRC has identified.**

Assessment of the Mott MacDonald (MMD) documentation and reportage

- 22 The scale of Mott's studies is extensive, and shows the care in how the reports' arguments lead from one element to another. Taken as a whole this is an impressive range of casework. This does not mean that there are 'no stones unturned', but in order to show how the cumulative reports might not represent a full realistic potential for a station at Glyne Gap, it is important to take the reader through the reports in the sequence with which they were assembled, starting with the study on existing evidence.

¹ http://www.railfuture.org.uk/tiki-download_file.php?fileId=603

Access and Connections: East Sussex: Opportunities to align railway investment to the economic growth requirements of East Sussex, JRC, July 2013, see East Coastway conditional outputs EC4 and EC5, pp44-45.

MMD Stage 1: Review and Updating of Existing Studies

No Metro specification

- 23 This November 2012 report reviewed previous work, to provide “the foundation on which the subsequent stages of this study will bring the earlier work up to date and cover additional areas”.
- 24 The business case was potentially vulnerable, because MMD observed in its summary in para.1.1, page 1, of the key project indicators, that “we are assuming for the new work that the Metro service will not be going ahead and will not be assessed”.
- 25 **There was no other current public policy or railway project evidence that such a Metro would proceed in the short term. The immediate circumstance was that the studies were to be about a new local station, but without a high frequency local service to underpin its business case.** Other nearby Coastway stations experienced 2-3 trains per hour (TPH) as a mix of longer distance and trains, with a ‘stopping service’ 2 TPH, so that might be a practical operational limit, at any rate in the short term.

A 2 TPH service

- 26 In JRC’s view, a 2 TPH railway is not a plausible Metro-style ‘walk on’ service. It might nevertheless form an adequate basis for a new local station if, taken together, the projected costs, train services and passenger demand all came together positively. It is clear from the MMD reports that the lack of a Metro service was not a reason to stop work, either by MMD or its clients. There was still a case to be explored.
- 27 A 15-20 minute interval is the least service level that will make a *major* difference in urban corridor passenger demand, from JRC’s professional experiences ranging from the North London Line in the 1970s to Transport for London’s suburban London planning for a minimum of 4 tph in the 2000s and 2010s.

Glyne Gap station context

- 28 The early reduction in the overall business case, comparing studies in the early 2000s, is clear from this table in the MMD Stage 1 report:

Study	SDG 2000		MM 2002 ¹		MM 2004 ²		Notes
	4 tph 'With Metro'	4 tph 'With Metro'	4 tph 'With Metro'	2 tph 'Without Metro'	4 tph 'With Metro'	2 tph 'Without Metro'	
Capital cost	£1.036m		£1.0m		£3.3m		Including optimism bias, contingencies etc.; prices in nominal terms in year of report
Daily trips	767/607	772/612	538/427		855/695 [†]	640/517 [†]	Including/excluding trips abstracted from other stations (particularly Bexhill)
Implied additional rail journeys/yr	151,000*	153,000*	104,000*		174,000* [†]	129,000* [†]	Net of abstraction from other stations
Additional revenue/yr	£191k	£193k*	£135k* [£330k]**		£610k* [†]	£450k* [†]	Net of abstraction from other stations
Benefit:cost ratio	3.8	n/a	[2.09]**		>2.0	>1.5	2004 report did not quote exact BCR figures
Net present value	£2.873m	n/a	[£4.34m]**		>£7m	>£4m	NPV of benefits (i.e. benefits less costs)
Operating ratio	1.1	n/a	[1.53]**		n/a	n/a	i.e. ratio of revenue to operating costs (not given in 2004)

¹ From MM technical note dated 16 August 2002.

² The main work was reported in May 2004 but the business case appraisal was added, together with slightly revised demand and revenue forecasts, in a presentation dated 7 October 2004. The revised figures are quoted here.

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Glyne Gap Stage 1 Review and Update rev B.doc

- 29 MMD noted (section 2.1) that Glyne Gap station was not referenced in Network Rail's planning documents dated March 2010 (route plan for the Sussex Route Utilisation Strategy), nor in the Second Generation London & South East RUS, July 2011. This should not have prevented Network Rail from noting the previous aspirations, because RUSes were expected to take account of local planning policies, where Glyne Gap station was a part of the local authority thinking.
- 30 In section 2.2 (Changes on the Railway), MMD noted small changes in the local 2-3 tph railway service structure (primarily some service extensions to Ore), and also that Bexhill residents aiming for London might choose to go directly to a Hastings-Tonbridge-London line railhead or travel via Ashford onto HS1, in neither case using a local stopping service.
- 31 In section 2.3, MMD also observed that station construction costs could have increased adversely, and the Department for Transport's appraisal methodology (WebTAG) was a more severe test than the previous processes, although values of travelling time were now more favourable.

- 32 A reason for higher revenues was set out, that the ticket pricing policy had changed since 2002 to favour increases above, not below, RPI. Even if this priced off some demand, the revenues might be greater.
- 33 Infrastructure improvements and the physical capacity to accommodate more TPH was noted, with re-signalling under way and the potential for higher speeds. MMD hoped that the re-signalling specification would build in an allowance for a new station at Glyne Gap.
- 34 MMD confirmed that strong growth in passenger demand had been taking place consistently, over a number of years, along the Coastway Route and at other relevant stations. JRC re-confirms this observation, from its own analyses in its July 2013 report for Railfuture on Access and Connectivity in East Sussex, where rail passenger demand has been surveyed from 2001-02 to 2011-12.

Funding and franchising context

- 35 Changes in the rail funding and franchising frameworks up to autumn 2012 were observed by MMD. They also saw scope for CIL funding (ex Section 106) to support new rail schemes, such as new stations.
- 36 JRC comments that the Government-led situation will continue to change. Government priorities currently include permission for Local Enterprise Partnerships (LEP) to bid for significant additional funding over a 6-year period until 2021-22, overall just under £50m per LEP per year. The first draft bids will be submitted by 19 December 2013. The Government stresses there will be winners and losers, so there will *not* be an average given to each LEP.
- 37 From an end-2013 viewpoint, Glyne Gap station is not currently part of a LEP bid. East Sussex and the South East LEP are focusing on a higher strategic level of input, at a route upgrading and modernisation level, including Ashford-Hastings electrification, according to the November 2013 East Sussex county rail strategy. This is a starter 'building block', fundamental across the eastern half of East Sussex, from which can flow other more localised priorities and schemes.

The local travel context

- 38 In sections 2.4 – 2.6, MMD took stock of the local range of travel options and emerging changes in travel demand. Forecast housing increases were potentially a positive, subject to some of the catchment overlapping with existing stations. Bexhill College was a possible source of some rail travel, though it was not much further to reach Bexhill station. MMD would try to model this in some detail, along with potential rail demand at Ravenside retail park and other journey attractors.

Rail had a low percentage of journeys to work, while most commuting was local to East Sussex. This would be studied further. Transport factors and trends in travel by different modes were also noted, most of these appeared to be slightly negative for the station's business case.

- 39 Overall MMD recommended that the project should continue to the next stage, instead of running a complete re-appraisal of the existing evidence.

MMD Stage 2: Infrastructure Assessments and Recommendations

- 40 MMD reviewed the infrastructure requirements of a station to Network Rail's 'GRIP 2' level. This is a 'feasibility' stage of assessment, defining the scope of investment and identifying constraints, and then to confirm that the outputs can be economically delivered, are aligned with organisational strategy, and that solutions are identified in response to the requirements. 'GRIP 2' is broadly equivalent to RIBA Level B.

Factors influencing station specification

- 41 Three scales of station and facilities were considered, as requested by the brief: do-minimum, intermediate and full scheme. The study preferred a basic station with fewest passenger facilities. The line's local design characteristics were noted – its gradient was steeper than now permitted for station platforms, 1 in 264 instead of 1 in 500, so a derogation would be required from the Office of Rail Regulation, and Network Rail. Maximum line speed was currently 70 mph, and the line was electrified on with 750V DC third-rail. It would not be a terminal station, and complexities about train uncoupling or railway pointwork should not arise here. It would be served by East Coastway services, which run at up to 3 TPH.
- 42 In section 3.1, MMD "are aware of proposals to upgrade the overall line speed to 90mph maximum once the current re-signalling is complete, though have not seen details of the limits to apply at this location, and **our assessment is based on the capability of the infrastructure in its current state**". [JRC emphasis] The new signalling did not build in provision for a new local station, so signalling alterations might arise, though the assumption (section 7.4) was that "no significant signalling works will be required".
- 43 The full range of station design elements were considered. The primary specification was for an unstaffed station, with pedestrian ramps to reach the railway embankment. Derogation would be required as the vertical height from pathway level was greater than 2 metres, otherwise lifts would be required as well. Trains were a combination of 2, 4 or 8-cars long. With the use of Selective Door Operation on the trains, a 4-car platform would be the minimum requirement in each direction. This is adopted elsewhere along this railway.
- 44 Cycle parking would be provided. Car parking for up to 50 vehicles could be allowed for, but was not included in the basic specification. For every 2 persons parking at the station, another 1 person might be arrive by car as 'kiss and ride'. Access would be arranged off the nearby A259 road, along with a pedestrian/cycle access which could use an existing underbridge (no. 214) to reach the westbound platform.

Station location and costs

- 45 The station entrance would be close to the Ravenside retail park, and three options for platform location were identified (one on the west side of the underbridge, one on the east side, and a third with staggered platforms, WB west and EB east). If the station were to be staffed (not recommended), options were considered for location of a station building, close to the A259/Ravenside retail park. A bus interchange was considered but for a basic station the use of existing stops would be the most economical.

- 46 Costs including GRIP 2 pricing at 30% risk plus 50% project optimism bias ranged from £3.36m basic 4-car, to £6.59m full facilities with 8-car platforms. There were some engineering risks arising with excavation and adaptation of existing embankments, and with overlaying a station on existing structures. Overall the east-facing station (option 2) was preferred, combining best accessibility with some reduced construction risks.

MMD Stage 3: Operational Assessment

- 47 MMD undertook extensive analysis for its operational assessment. Version 3A was issued in draft in late November 2012, but the final Version 3B was not issued until late March 2013.

Key assumptions for operational parameters

- 48 The key assumptions were made early on, including at a meeting with stakeholders including Network Rail and Southern (the train operating company) on 2nd November 2012. These have influenced the outcome of the project. These were:
- a. **To rely on the May 2012 timetable rather than one respecified and rewritten** – for example, no attempt was made to anticipate the rewriting of the Brighton Main Line timetable which would have knock-on impacts. Stage 3B Section 2.1 said “it has not proved possible to consider future timetables as the major Thameslink upgrade will lead to a major remapping of the Brighton Main Line and would have a major impact on the West [*JRC: surely East?*] Coastway service, but has not yet been specified”.
 - b. Similarly there was **no allowance for resignalling and consequential changes to possible train headways on the lines along with different top linespeeds, although this work was underway**. MMD did not find out what was planned, for example:
 - Stage 2 Section 3.1: “We are aware of proposals to upgrade the overall line speed to 90mph maximum once the current re-signalling is complete, though have not seen details of the limits to apply at this location, and our assessment is based on the capability of the infrastructure in its current state”.
 - Stage 3B Section 2.1: “No changes have been made to linespeeds, sectional running times or signalling/junction headways, reoccupation times and similar as against current specifications. As with the previous assumption, this is as agreed in the 2 November 2012 stakeholder discussion meetings, i.e. that current timetables and infrastructure would form the basis of our analysis”.

Reliance on an unchanged railway

- 49 So, although change in many ways represented the future of this railway, the project validation process was going to rely on the existing disposition of resources. This is counter-intuitive! It was these assumptions which limited the possible range of service options and permutations at Glynde Gap.

- 50 It is one thing to be aware that the three main routes serving the area cause complex timetabling and pathing along East Coastway:
- a. The Brighton Main Line with its multiple junctions and intense services will have a timetable planning imperative along the East Coastway at least as far as Willingdon Junction and Eastbourne, for the timing slots which its trains require. It will also have some timetable knock-on requirement between Eastbourne and Hastings.
 - b. The Hastings-Tonbridge '1066' line with its single track sections to Tunbridge Wells, and its own tight scheduling to and from London on the South East Main Line, will also impose constraints on the coastal line between Bo-Peep Junction and Ore.
 - c. The Ashford-Brighton service with its single track section between Ore and Appledore, will also incur and in turn impose its own limitations.
- 51 However, with these sometimes tight interactions, the studies appear to have missed out that the Eastbourne-Bexhill-Ore section of railway might require respecification, in order to facilitate the required outputs (the quality of local rail services) and the desired outcomes (improved access and connectivity). Instead, the analysis relied entirely on what might be feasible within the existing level of train service – and with further limitations on how those could be adjusted.
- 52 At that point in the process, Glyne Gap as a new station became further removed from the original concept of a Bexhill-Ore Metro (or a similar 'walk-on' frequency coastal service). For that to be achieved, it would indeed require a review *and if necessary a respecification* of the infrastructure, signalling, line speeds etc, along with other latent suggestions for stations, such as St Leonards Marina. **While the review of flexing the timetabling with existing services did take place, no respecification was considered even though infrastructure changes were under way.**

Contrasts with outcomes of a 4 TPH railway

- 53 It is fair to note that at stations such as Cooden Beach and Collington, to the west of Bexhill, there are generally 2 and occasionally 3 TPH each way with the present timetable. Did this imply a client acceptance that a 2 TPH service was a reasonable specification to aim for, in the 2 November 2012 discussions?
- 54 The previous modelling until 2004 included 4 tph as a option, which showed a higher benefit-cost ratio. 4 tph would have required some respecification of services and/or infrastructure.

- 55 There are occasions when an increase from 2 to 4 TPH with local rail services can grow passenger business by a factor of 3 to 4 times ², even in a low density, partly commercial/industrial catchment. The example of Lea Bridge station is quoted below, and the Government has (15 May 2013) approved a £1m contribution to open this station in East London in 2014.
- 56 It would have been a larger study to model higher frequency local services, and we shall see that MMD did show that it was possible to run additional trains *in one direction* broadly within the existing timetable.

Further limitations on operational modelling

- 57 Based on the agreed assumptions, the primary timetabling process undertaken was a conflict analysis around the existing May 2012 timetable, to try to fit in stops for existing trains at Glyne Gap after allowing for current signalling and train headway and train reversing constraints, and junction interworking, throughout the main East Coastway sections and junctions.
- 58 The main exclusion was the Brighton-Ashford service. This was ruled out for three reasons: it is a semi-fast service focussing on the main travel centres; the trains have poor acceleration so would incur higher journey time penalties; they are 2-car trains with limited spare capacity.
- 59 JRC agrees with this exclusion, with the first reason the most relevant, to achieve fast inter-urban times. Indeed the JRC July 2013 report on rail in East Sussex favours quicker journey times between Brighton and Hastings. The other topics are less material, at least in the medium term, with electrification desired between Ashford and Ore, and at that point the train capacity could also be addressed. Southern and Network Rail also wanted no change to the Ashford-Ore timings because of its single-track section and its planned connections at Ashford International.
- 60 The primary services reviewed for an additional stop were the hourly London-Eastbourne-Hastings-Ore via Eastbourne, and the hourly Brighton-Eastbourne-Hastings Ore. However their timings were not to be varied west of Eastbourne, nor should 1066 line timings (Southeastern trains) be varied. Overall this was a very prescriptive limitation, taken in combination with the Ashford-Ore constraint.

² Estimates by Transport for London (TfL) show 352,000 entries and exits annually by 2031 with 2 tph, many more if 4 tph: 1.2-1.3 million yearly depending on growth forecasts. See p6 of Railfuture report "Lea Valley Rail – Better Access to Jobs and Homes", written by JRC, June 2012.
http://www.railfuture.org.uk/tiki-download_file.php?fileId=505

- 61 These are electric trains, and allow selective door operation so that a 4-car platform could be served by an 8-car train. This is standard operating procedure at some other East Coastway stations. A 2 minute additional journey time was defined in each direction, to enable trains to stop, allow passengers to alight and board, and return to line speed.

Consequence of tight operational restrictions...

- 62 Rewriting the Brighton Main Line timetable for the benefit of one local station would have been the tail wagging the dog – though timetables *may* flex to absorb variations. However the lack of consideration of different running speeds and headways with the improved infrastructure meant there was no way to mitigate the additional minutes within the Eastbourne-Ore railway.
- 63 Therefore, for a round trip, this causes trains to arrive eastbound at Bo-Peep Junction 2 minutes later, while westbound they need to leave Ore or Hastings 2 minutes earlier, if they are to present themselves at Willingdon Junction at the existing timings. This leads to local junction pathing pressures, and with new train platforming and reversing requirements at Hastings and Ore where there was roundly 4 minutes less available, and also for train movements to and from carriage sidings.
- 64 The upshot was that, with the current timings fixed on the main lines, and by excluding the potential for journey time savings on East Coastway with a higher 90 mph top speed plus closer train headways with re-signalling, MMD found that acceptable slots were only available for a call by one train per hour at Glyne Gap in both directions. See Section 3 of the Stage 3B report.
- 65 Some slots were provisional (5 eastbound, 1 westbound) and subject to more work on flexing times. It was a varied set of origins and destinations west of Eastbourne, with most trains arriving from London via Eastbourne, but with most westbound trains heading for Brighton. This was thought not to be a major problem as the bulk of journeys would be local in nature, but the point was noted again in the demand modelling stage. Eastwards, virtually all trains ran through to and from Ore.

...An hourly service

- 66 The proposed service specification was in outline roughly hourly, not remotely a 'walk-on' service, nor even at a consistent regular interval throughout the day. The worst gap between trains would have been 1½ hours, from 20:15 to 21:45 towards Hastings and Ore.

- 67 MMD recognised this wasn't the output that was wanted. They observed in Section 3: "We are aware that stakeholders have expressed a desire for Glyne Gap to be served by two trains per hour.
- 68 While some additional train slots were identified as possible eastbound, operationally, this would be difficult westbound "because of physical line constraints". Westbound Coastway trains had to follow 1066 Line trains with a five minute gap between them – the allowed headway – as far as "Bo Peep Junction, meaning that the Coastway trains could not leave early enough to allow a Glyne Gap stop. Nor could these trains arrive later into Eastbourne: they would then not have sufficient time to couple to the additional coaches they acquire there, before changing direction to continue their journey towards London."
- 69 Then MMD said: "As such, given that it would not be sensible to have a half-hourly service from Glyne Gap in one direction and an hourly service in the other, we have proposed the above services as a compromise which gives a reasonably regular service throughout the day, at the cost of the unevenness of destinations described above."

No respecification of railway between Eastbourne and Ore

- 70 So, there was no intervention on respecifying line speeds or headways between Eastbourne and Ore, nor other infrastructure changes, and no consideration at that point of a different structure of Coastway services east of Eastbourne. Nor did the client require the consultant to explore such options in order to achieve the required output or outcomes.

MMD Stage 4: Demand Forecasting

General impact of low frequency on passenger demand

- 71 The broadly hourly service had implications for demand forecasting, whose report was also published in March 2013. The publication timing means that the hourly service had been known about for some while, as the demand report was published in the same month as the Stage 3B operational assessment.
- 72 The low frequency would mean that passenger demand would be scaled back. This general point is considered now before moving onto the localised demand details. The topic was in practice discussed by MMD towards the end of the Stage 4 report, in page 21, under the heading of “frequency of train service impacts”.
- 73 MMD said: “The most noticeable difference between the 2000, 2002 and 2004 studies is that of a very much lower service frequency than previously envisaged. The impact of such a reduction may be assessed via application of PDFH [Passenger Demand Forecasting Handbook] elasticities to Generalised Journey Time, and these have shown an approximate 22% reduction in demand resulting when moving from a four trains per hour service to only hourly (based on GJT adjustments for Polegate as an example) and an approximate reduction in demand of 17% when moving from a two trains per hour service to only hourly (based on GJT adjustments for Collington as an example).”

Weaknesses of ‘PDFH’ forecasting

- 74 “However, at a frequency of four trains per hour as envisaged under the Metro concept the service operates at a walk on level of demand with “turn-up and go” usage. This is a very different proposition to that of an hourly train service, and as such the reduction in demand as a result of providing an hourly service compared to four trains per hour at Glyne Gap would be far greater than 22%. There is little firm guidance in PDFH over such a matter, but it would be expected that the impact of the frequency reduction would be far greater than 22% in moving from four trains per hour to only one train per hour.”
- 75 JRC agrees with MMD’s judgment that there is a fundamental difference between a ‘walk on’ service and an hourly service (and even then, erratic in destination and intervals, as shown in Stage 3). The impact will be far greater than 22%. The problem is that PDFH as a forecasting tool can be good for ‘micro’ changes between options, but is reckoned poor at ‘macro’ changes. It is one reason why other rail reopening studies before the event have been shown to under-estimate the actual outcomes.

Different outcomes with large-scale service changes

- 76 For studies such as those undertaken for reopening the entire Aberdare line to passenger services, it was considered more realistic to take existing proxy stations as a planning guide to expected passenger levels, and accept they wouldn't be perfect but that the risk of error was reasonably balanced. MMD had undertaken that approach in some respects, in using examples of nearby stations to derive some of the traffic generation data for Glyne Gap.
- 77 Practical experience in London since 2007 has shown one dramatic effect of station and line upgrading to a 'walk on' service. The conversion of the former Silverlink local diesel line from Barking to Gospel Oak began in November 2007, when it was an unstaffed, 2 TPH 2-car unmarketed local diesel service in NE London, with fewer than 2 million passengers per annum one way. By 2009 it was 4 TPH with new trains, within the Oyster network and on the Underground map. Passenger business rose to 8.1m by 2011, so at least a 4-fold increase. It is forecast to continue to double, to 13.1-17.1m in the next 20 years, and this is before the effect of the 2011 census which shows faster population growth.
- 78 Higher rates of growth are forecast on the West, North and East London Line, also ex-Silverlink. There, demand is expected to rise 3-4 times from 2011 to 2031. While this is also the effect of a growing capital city, the perceived worth of a walk-on service is clearly very high, and the worth of one which is well marketed and has easy-to-use, trusted click-in/out ticket schemes is greater still.
- 79 This has implications for further prospects of Glyne Gap station and for the wider East Coastway corridor, which are discussed later.

Local comparators to model passenger demand

- 80 MMD developed an approach to modelling local demand which took account of three main elements:
- a. A baseline passenger demand derived from trip rates at nearby urban East Coastway stations.
 - b. Demand from other local attractors was considered, such as Bexhill College and Ravenside Retail Park, and from foreseen new housing development.
 - c. Allowance was then made for abstraction from Bexhill station, which affected the net revenue generated and the net changes in generalised journey time.
- 81 With the absence of a 'walk-on' service, and mainly 2 TPH except at Bexhill, there was considerable sensitivity to the distance from the station. Bexhill station data were not adopted, because the station acts as much more of an area railhead. At

other urban stations, a three-stage catchment divided into 5, 10 and 20 minutes walking times (at 3 mph, 4.8 km/h, these are distances of 400, 800 and 1600 metres – the latter equivalent to 1 mile), and other values for car, and cycle proportions. Methodology then derived the level of demand at each station (based on 2011/12 demand – see page 18 of the Stage 4 report) allied with an actual 2005/06 spread of passengers in distance from each station.

- 82 The stations used as comparators were: Collington, Cooden Beach, Pevensey & Westham, Glynde and West St Leonards. It is not clear why Glynde was adopted, as it is a rural railhead with a small walking distance catchment. Inclusion of West St Leonards, on the 1066 Line, at least replicated some urban journeys through hilly terrain to St Leonards, Hastings and Ore, although it does not allow passengers to travel along the East Coastway line, and shows a low growth rate (unlike East Coastway which is an increasingly popular railway).

Adjusting travel rates for an hourly service

- 83 Travel (trip rates) was then factored down to an equivalent hourly demand level by using PDFH ratios, from the higher demand associated with 2 TPH or higher. Based on the earlier discussion, JRC assumes that a 17% reduction was applied at a 2 TPH station such as Collington. The final numbers were trip rates (a single rail journey) per 1,000 population based on an hourly train service, in the three-stage catchment. A 13% allowance was added for trips starting further than 20 minutes walk from the station (most probably in a car).

- 84 Understanding the impact of the trip rates by distance is important, as Glyne Gap has few houses within the 0-5 minute walking distance. The bulk of its housing is more distant, where a ‘walk on’ service can succeed but not necessarily an hourly or even half-hourly one.

- 85 For example, the basic trip rates adopted, versus existing population numbers, were:

Station walking time	0-5 mins	5-10 mins	10-20 mins	Further
Catchment population	59	718	2651	
Glyne Gap trip rate/day	0.257	0.066	0.009	13%
Derived demand/day	15	48	24	12
Total daily boarders	99			
Annual boarders x 312	30,800			

- 86 We shall discuss later the implications of different growth rates in more detail. However if these rates were readjusted for a 2 TPH service by removal of the assumed 17% reduction factoring down to hourly – only a modest change – then the baseline output would be 119 daily boarders, a 20% increase in demand:

Station walking time	0-5 mins	5-10 mins	10-20 mins	Further
Catchment population	59	718	2651	
Glyne Gap trip rate/day	0.310	0.080	0.011	13%
Derived demand/day	19	57	29	14
Total daily boarders	119			
Annual boarders x 312	37,100			

- 87 The annualisation rate adopted (x312) is similar to that observed throughout London Underground as an average, 315 journeys a year. JRC uses similar but station specific rates on its annual station counts throughout the West Anglia system.
- 88 National Rail Travel Survey data for the comparator stations showed percentages using different modes of access in 2005/06 to be: Walk 63.57%, Drive: 34.96%, Other incl cycle: 1.47%.

Modelling demand at Ravenside Retail Park, and Bexhill College

- 89 MMD then undertook extensive localised analyses of additional passenger flows that merited study of trip rates and potential rail demand at:
- Ravenside Retail Park.** MMD reviewed retail parks with similar characteristics to Ravenside, avoiding those in London or other major city regions where higher public transport use was expected. Trip rates were scaled to fit the Ravenside staff and customer numbers. This was a change in methodology compared to previous analyses, and reduced the rail mode share.
 - For public transport proportions, generalised journey time was adopted, for the sector from Cooden Beach to Ore. With an hourly rail service, the bus proportion was much higher than rail, and quoted later in the report as 16.5% of total travel, with rail travel at 2.5% of trips.
 - A weekday factor at about 80% of a Saturday, was also calibrated. Overall MMD estimated 58 rail boarders on a Saturday and 47 on a weekday, fewer on Sunday, and an overall annual boarding volume of 14,600 passengers.
 - Bexhill College.** The College has relocated, between the 2004 and 2013 passenger travel estimates. Estimated passenger volume is now only about a quarter of those previously forecast with 4 TPH. The new modelling allows a more precise estimate of the accessibility of Bexhill station compared to Glyne Gap.

- e. The methodology took as a proportioned number the 2011 College staff and students who used rail via Bexhill station, increased slightly for 2012/13 to allow for the new intake. Generalised journey times were then calculated to estimate a forecast volume of rail-based journeys, from which Glyne Gap usage was subtracted from the Bexhill group.
- f. The low hourly frequency at Glyne Gap was taken into account. Also the method did “not take account of any subjective, qualitative differences between the routes from Bexhill College to Bexhill station and that to Glyne Gap”.
- g. An annualisation factor was 195, to reflect the academic year. User numbers were reduced pro rata to 312, to provide a simple multiplier when adding this flow to the other all year estimates. The final numbers emerged as 24 (at 195 days per year) via Glyne Gap, including abstracted from Bexhill, and 47 (at 195) continuing to use Bexhill.

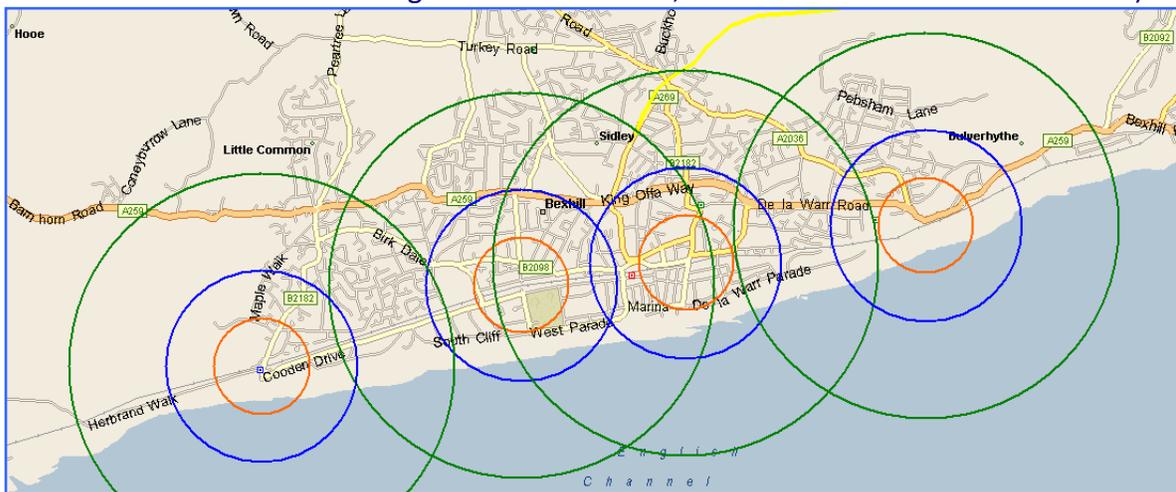
Abstraction of passenger flows from Bexhill station

- 90 Finally, abstraction from Bexhill station was estimated, to avoid double-counting the new revenues attributed to Glyne Gap. Depending on the methodology, it could also affect the net journey time savings for some passengers, if they were already using rail and found Glyne Gap easier to use than Bexhill.
- a. Abstraction was excluded from Ravenside Retail Park, as it “cannot sensibly be reasonably reached by train”.
 - b. The Bexhill College overlap had already been estimated.
 - c. This left the overlap between the Bexhill catchment and the new Glyne Gap catchment, where two calculations were made:
 - A switch of station by people walking to Bexhill station.
 - A switch of station by people driving to Bexhill station.
- 91 The process calculated the number of boardings predicted at Glyne Gap from the overlap areas. These were then subtracted from the Glyne Gap numbers.
- 92 MMD explicitly “assumed that there would be no new trips from the overlap area, so in effect preventing double counting of trips; it also assumed that the only change to forecast demand from the overlap area would be the choice of station between Bexhill and Glyne Gap.” This was unduly harsh – a Glyne Gap station closer to properties in the overlap area should increase rail usage.

Exclusion of new passenger volume in Bexhill/Glyne Gap catchment overlap

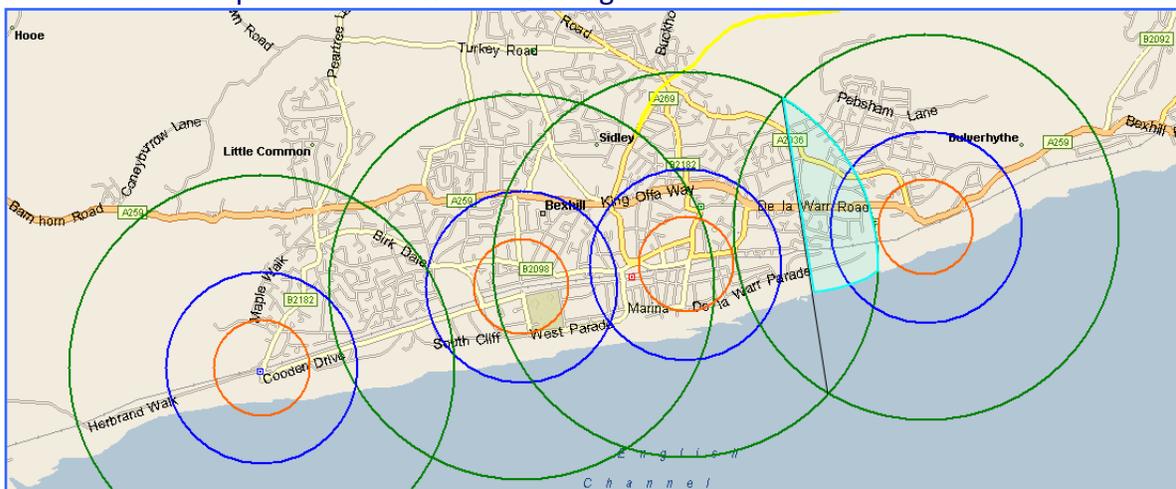
- 93 The situation is shown below using MMD’s standardised station catchments, highlighted here as: orange 400m/5 minutes, blue 800m/10 minutes, and green

1.6km/20 minutes, plus a factor adopted for beyond 20 minutes:- (actual walking routes should use an along-the-roads distance, so the real catchments are smaller)



94 By taking abstraction as being all that within the 1.6km Bexhill green catchment boundary, and allowing for no new trips from the catchment area, a perverse outcome is obvious at once: that the properties closer to Glyne Gap may well be stimulated to use a rail service more often – ie, become more ‘rail-minded’ for their travel because in total there is a better rail offer (and more so if there were a better service), yet no allowance is made for that in Glyne Gap’s favour.

95 **In practice, whether or not residents then choose to use Bexhill or Glyne Gap stations for the first time or more frequently than before, the additional user and revenue benefits should be assigned to the presence of Glyne Gap station.**
The area in question is shown below in light blue:



96 With the report’s methodology, Glyne Gap station was further driven down in passenger generation, from its once-aspired ‘walk on’ Metro service with potential higher volume user.

Double-subtraction of abstracted Bexhill passenger flows

- 97 The averaging method adopted for defining the original passenger demand, between different East Coastway catchment stations, would have already excluded Collington's potential overlap distribution with Bexhill, because there would have been a stated preference in terms of user numbers between those who chose to use Collington and those who chose to use Bexhill. Collington therefore does not represent the total potential demand from the overlap catchment.
- 98 Similarly Cooden Beach's catchment would overlap with Collington's, and again the existing passenger numbers at these two stations would represent a stated preference about station choices – though we would not expect much difference in trip rates between these stations because they had a similar service level.
- 99 **Consequently a further overlap reduction as applied by MMD to the East Coastway averaged volumes for Glyne Gap will cause some double-subtraction, rather than removal of double-counting.** It is appreciated that there should be an estimate of the trip rate of numbers who may currently use Bexhill station in the absence of a Glyne Gap station, but that trip rate should be factored down to take account of the lower average estimate of take-up already influenced by Collington.
- 100 It should also be recognised that if passengers do subsequently choose to use a Glyne Gap station rather than Bexhill, this is because there will be generalised journey cost benefits, such as shorter journey times. The benefits for these passengers should be included in the appraisal calculations, and not excluded because they are abstracted from Bexhill – such benefits were calculated by MMD.

Details of abstraction modelling

- 101 Modelling for passenger abstraction took account of station access time, train headways, journey times and costs for typical eastbound and westbound journeys – so another generalised journey time model relying on PDFH processes.
- 102 Paradoxically, the hourly frequency adopted in modelling for Glyne Gap protected it from higher estimates of abstraction with higher frequencies, using MMD's assumptions, although the total volumes might have been significantly higher.
- 103 Cumulatively, and after allowing for some passengers transferring between different types of access modes if they switched station, 82 weekday boarding passengers (35.8%) were considered to have transferred from Bexhill to Glyne Gap, leaving 147 daily new journeys, **229** in total. This includes travel diverted from Bexhill College, at an all-year rate.

- 104 All these single origination journeys would need to be multiplied by 2 for return travel.

Other refinements of passenger demand

- 105 MMD also undertook estimates for:
- a. **Station quality** – low, average, or high – with the intended station specification considered average. Lower quality was valued as -14 daily boarders (so 215 passengers, not 229), higher quality as +2, so 231.
 - b. **Benefits of integrated smart ticketing.** This was considered minimal when using PDFH forecasting, with the variations (when separated from station quality) being -1 / average +7 / high +0 additional boarders.
 - c. This is a completely different outcome in contrast to how Londoners have responded to Oyster and Pay-as-you-go linked to effective branding and marketing and reasonable ‘walk on’ services, which PDFH cannot address.
 - d. These estimates may in themselves been valid within PDFH, but not if there is a comprehensive integrated smartcard ticketing capability along East Coastway, in association with ‘walk on’ services.
 - e. **Population growth.** Forecast changes in housing and population volume were allocated around Bexhill and Bulverhythe, including the Glyne Gap catchment, and increased by 16% to reflect changes in housing requirements arising in the January 2013 Local Core Strategy. The three-stage catchment analysis was then applied in the same way as the existing residential areas. An additional 18 daily boarders were estimated at Glyne Gap.
 - f. **Employment growth.** Modelling for additional office and industrial volume looked at comparable trip rates elsewhere, and concluded that that 19% of office-related jobs might use public transport, with 16.5% on bus, 2.5% of rail. This was the same rate as applied for general travel to/from Ravenside Retail Park. No comparable industrial jobs elsewhere used rail, so no rail journeys were modelled. An additional 23 daily boarders were estimated at Glyne Gap, from retail users.

Revenue modelling

- 106 The final part of the Stage 4 Demand Forecasting was to assess the net revenue from the modelled passenger flows, after removing the abstracted revenue flows from Bexhill.
- 107 MMD assigned flows and therefore revenues according to Collington’s travel split, which was the nearest comparator local station. This was 39.5% to/from London and 60.5% non-London. Revenue per journey averaged £9.24 for London travel based on 2011/12 MOIRA data (assigned journeys within the rail industry sales

database), and £2.01 for non-London journeys. Gross revenue for boarding journeys was £446,160, approximately £334,600 for London journeys and £111,500 for non-London journeys.

- 108 The percentage of Rother District population's travel to work by all modes over 20 kilometres was 17% in East Sussex in Figures, 2001. This highlights that even local rail stations, not just area railheads, have a disproportionately high volume of travel to/from London, and conversely underplay their role in local and county travel. This is why the concept of a 'walk on' Metro along the East Coastway remains relevant.
- 109 The abstracted demand from Bexhill, and also the modelled impact of 2 minute longer journey times on existing trains deterring some passengers, 112 per day in 2012, worth £221 per day, were set against the total revenue. This resulted in an estimated annual net new revenue at Glyne Gap, of £377,160, in 2012.
- 110 MMD observed that this was a higher revenue outcome, for a 1 TPH service, compared to earlier forecasts in 2000-2004 for a 2 TPH service. This was due to recognising the larger-than-average London revenue element, and having a different daily-to-annual multiplier. We shall see in Stage 5 that these estimates were then modified to a lower estimate.
- 111 Concluding the Stage 4 work, MMD observed: "Given the lower forecast demand for the station at Glyne Gap, the business case for the scheme is likely to be affected; however, this is more than offset by the increased revenue which is calculated by the new forecasts. We would therefore suggest that the next step would be to update the business case for the scheme in order to investigate the combination of these impacts."

MMD Stage 5: Business case

- 112 The final MMD report brought together the work of the previous stages, and summarised the business case. It was published in August 2013.
- 113 It was primarily a summary of the previous work, but clearly had to reach a conclusion about whether the station had a viable business case.
- 114 A Present Value (PV) assessment was developed, to bring the flow of benefits and costs over a 60 year period into present day values, and summarised as gross benefits dividend by gross costs. A 1 : 1 ratio would mean 60 years of benefits would balance similar costs, while 2 : 1 would show there were twice as many benefits as costs.
- 115 A 2 : 1 ratio (twice as many benefits as costs) is commonly a yardstick to define a good scheme worth taking forwards, though there are sometimes occasions when a lower ratio is still considered worthwhile, generally for external reasons.
- 116 With the PV assessment for a central case reporting a 0.28 : 1 ratio, MMD had no doubt in reporting unfavourably on the station scheme. A higher benefit case reported 0.49 : 1, still much too low.
- 117 Additional reasons headlined by MMD were:
- a. Increases in housing numbers would not have a pro-rata increase in travel at Glyne Gap.
 - b. The imbalanced train service (mostly from London, but to Brighton) could be less attractive.
 - c. The extent of abstraction from Bexhill to Glyne Gap.
 - d. Additional demand at Glyne Gap would increase the demand for car parking, so increase station capital costs.
 - e. If more trains could call at Glyne Gap, there would be additional user disbenefits on existing trains.
 - f. "two trains per hour at Glyne Gap is unlikely to be feasible, due to operating constraints".
- 118 The main business case appraisal methodology built in the following specifications:
- a. DfT WebTAG methodology which has a standardised way of assembling economic, environmental, user and non-user benefits, and revenue flows and costs, normally over a project period of 60 years, and expressed these all in a consistent price base in current day values. This requires complex calculations of factors such as GDP, fares, population growth, environmental values etc.

- b. Key elements are the project costs versus revenues; how the project is funded (eg government or commercial or third party sources which will influence the public accounts case); the broad transport case which includes user numbers benefited or disbenefited over the project period; net journey time savings and valuation of those; and impact on indirect tax revenues, eg if car travel diverts to rail. Optimism bias (the likelihood of a project under-estimating costs or over-estimating benefits) is also included.
- c. Each of the key areas in the MMD analysis is now discussed.

Demand forecasts

- 119 A cautious approach was adopted, assuming that a station would take several years to build to full volume: 70% in year 1, 85% in year 2, 90% in year 3, and 100% reached in year 4. This is relatively generous as a scaling-up factor.³
- 120 Base year demand forecasts for 2012 were inflated to 2016 (the presumed opening date) and then over the next 60 years to 2075, by factors including the impact on rail passenger travel of GDP, general population growth and employment growth. Deflationary factors would include higher fares (RPI + 1% was assumed for the first 20 years from 2012), and an increase in car ownership and lower car fuel costs in real terms. WebTAG and PDFH have factors to be applied for these.
- 121 Only GDP and population growth were continued beyond the first 20 years. A central case and a high growth option were modelled, the latter including additional development close to the Bexhill-Hastings Link Road and assumed to generate some additional trips to Glyne Gap station.

Revenue forecasts

- 122 Simultaneously net revenue forecasts were estimated for the same 60 year period. Instead of using the estimated revenues already developed, MMD considered that those were over-estimated as the station would not have regular trains to London, whose revenue levels were much higher than non-London travel (see para. 106 above).
- 123 Additionally, because of this operational feature, MMD chose to use a station with only an hourly service which was not to/from London, Glynde (which is a deep

³ Other models use different scaling-up, eg BDCM applies 30% in year 1, 70% in year 2, 90% in year 3 and 100% in year 4.

rural station), to proportion the London/non-London user numbers, and then apply the relevant London/non-London fares.

- 124 **The attempt to model an hourly frequency with limited London access is understood, but not the choice of Glynde which is a rural catchment.**
- 125 **However the process also reinforces the underlying operational baseline discussed earlier, of failing to review the operational ability to flex the new infrastructure (track and signalling) to see if a 2 tph service would be feasible. The further consequences of that decision have now undermined the basic revenue estimates.**
- 126 JRC modelled permutations of growth factors on passenger demand and net revenues, and then discounted those back to present values in a similar way to MMD. We concluded that, on an absolutely minimal growth of 0.5% per annum from attributable factors, and applying the initial revenue estimates defined in MMD Stage 4, the cumulative Present Value of net revenue would be roundly £11 million – and this just for boarding journeys, not for return travel.
- 127 This contrasts with the MMD estimate of net fares revenue Present Value, of £6.46m, with its new revenue basis.
- 128 Even a 2% p.a. growth rate for 60 years should generate a cumulative Present Value revenue of roundly £19m, while WebTAG GDP factors are mostly above this growth rate, before allowing for population growth.
- 129 So there has been roughly a minimum 40% reduction of revenues as a consequence of the revised revenue basis of revenue estimation, and plausibly a 200% reduction if a roundly 2% growth were adopted. The earlier revenue starting point is of course lower than would be achieved with a 2 tph service.
- 130 This also leads JRC to question whether MMD had allowed for return travel *in its PV and BCR estimates*, even though we have checked and can confirm that MMD had allowed for that in its revenue estimates. MMD had acknowledged in its earlier stage reports that its journey calculations were for single outward journeys, not for the complete two-way flow where the generative effect of Glyne Gap should also be included in usage, revenue and benefit estimates.
- 131 More realistic estimates of rail user growth and revenue growth are shown across East Coastway and Marshlink with 50% more users over the 10 years from 2001/02 to 2011/12 (nearly 4% p.a. compound), with season ticket sales up 66% (over 5% p.a. compound). Faster revenue at RPI + 1% annually would rise faster.

- 132 Rates of rail usage growth at Bexhill and Collington have been higher still in the same period: Bexhill + 102% all journeys, +181% season ticket travel; Collington + 96% all journeys, + 112% season ticket travel.
- 133 **Consequently we consider that while MMD had understandably been cautious about demand and revenue estimation looking forwards, this is not justified on the scale that it has adopted, for the Glyne Gap forecasts.**

Rail user benefits and disbenefits

- 134 A rule-of-a-half for benefit calculations has been applied by MMD to new-to-rail trips.⁴ With the initial 2012 volume of 147 daily boarding journeys (return journeys will also be derived), this rule makes those equivalent in benefit terms to 73½, while the full net benefits are applied to existing rail users who transfer from Bexhill (82 daily boarding journeys).
- 135 Simultaneously, there will be journey time disbenefits not just for the 112 daily passengers identified as deterred from travelling by rail by an extra stop in the service with an additional journey time of 2 minutes, but also for the proportion of all rail users whose trains stop additionally at Glyne Gap even if they aren't deterred from making the journey. (It isn't clear in the MMD report whether the 112 represents one-way journeys deterred from rail, or the combined out-and-return flow – if two-way, there would be 56 daily passengers on a comparable basis to the 147 above.)
- 136 It is the relative difference between access times from the potential Glyne Gap catchment to that station or to Bexhill, plus willingness to plan around an hourly service or to prefer higher frequency, which will determine the attractiveness of Glyne Gap station. The choice of walking or car access will also influence the relative time disbenefits. The bulk of Glyne Gap's population catchment is within the 5-10 and 10-20 minute time zones on foot, the latter particularly being a reason for the significant proportions of car access modelled by MMD.
- 137 JRC modelled representative journeys within the 'solo' Glyne Gap catchment beyond the Bexhill 20 minute walking zone, compared to car access to Bexhill. We saw a difference of 2½-6 minutes for car access. This assumed no road congestion, 17 mph average to Glyne Gap, and 12 mph to Bexhill with more road junctions and

⁴ The rule-of-half is an equivalent version of the modelling rule in BDCM:

1. Estimate value of passenger benefit, B.
2. Revenue R is calculated as B x conditional elasticity, which takes a value of 0.27.
3. Trips is R divided by average yield for the mode / line in question.

In the Glyne Gap reports, MMD have defined revenues in advance of passenger benefit calculations, so the rule-of-half has been adopted instead.

circulation in a denser urban area. For the same locations, the walking time difference at 80 metres per minute was 4-17 minutes.

- 138 The point of this sampling exercise was to identify the typical savings in access time – which clearly would be lower in the overlap area between Bexhill and Glyne Gap. The savings are likely to be significant for the passengers modelled as travelled via Glyne Gap, as in general only a good access time saving would overcome the inhibition caused by an hourly frequency (which would normally be modelled as a waiting time penalty within the total journey time).
- 139 With walking time modelled at twice the actual time elapsed (and waiting time at $\times 2\frac{1}{2}$), compared to in-vehicle times which are actual times, it is possible to appreciate the order of magnitude of user benefits vs disbenefits, though not precise numbers:
- 112 daily deterred journeys (as queried above, are these return journeys?) where a two minute increase in journey time deters them from going by rail (-224 disbenefit minutes daily, overall).
 - Other rail journeys inconvenienced but not deterred by the additional two minutes – not quantified in detail in the MMD report, but representing roundly a third of all daily rail passengers travelling between Bexhill or further west and St Leonards or further east, whose trains would call additionally at Glyne Gap – based on a third of the 3 tph service (-x,xxx disbenefit minutes daily, overall, figure not known).
 - 147 daily new users, halved to $73\frac{1}{2}$ for new-to-rail, from the ‘solo’ Glyne Gap catchment. Their weighted access time savings will need to be high, as noted above, to have been modelled as willing to use an hourly service. If 10 minutes were adopted as a catchment average based on the JRC journey samples (weighted by car and walking proportions), then this would be weighted also $\times 2$ to 20 minutes, with normal modelling rules: ($73\frac{1}{2} \times 20 \times 2$ for return journey = +2,940 benefit minutes daily, overall).
 - 82 daily diverted users, ex Bexhill, where journey times savings are also strong enough to attract these passengers despite the low frequency. The same 10 minutes’ saving could therefore apply, but in view of the overlap catchment being closer, is taken here as a weighted 15 minute time saving with no rule-of-half ($82 \times 15 \times 2$ for return journey = 2,460 benefit minutes daily, overall).
 - The rail-based time benefits as modelled represent 90 hours per day, from which the rail-based disbenefits need to be subtracted. This should then be valued at broadly £9.40 an hour, based on a current weighted value of time, so £845 per day benefits.

- 140 The MMD analysis shows a Present Value net disbenefit of £647,900 over 60 years, in rail passenger journey time. The time disbenefits to a third of existing passengers on this section of railway are considered to outweigh the benefits gained by the new or diverted Glyne Gap passengers.
- 141 JRC has undertaken retrospective calculations which re-convert this £647,900 value to a current year value for each of the 60 years, after allowing for the difference in journey time values at 2010 prices between business, commuting and other non-work time, and de-Present-Value-ing the 60 years back to individual years, then converting the yearly to daily values using MMD's factor of 312 days.
- 142 The outcome is that, in the early years after 100% of benefits are being achieved, the order of magnitude of net disbenefits is about £55-60 per day. This in turn implies that the current year gross disbenefit for rail users by stopping one in three trains is broadly £905 per day, with an offset of benefits of about £845 per day. It does mean that a local station – if the through passenger disbenefits could be avoided, as suggested later with the possibility of additional inter-urban Coastway services – would x312 days be generating over £250,000 worth of rail travel benefits a year in current prices, even on MMD's constrained forecasts.
- 143 Paradoxically the train operator, Southern, would lose only £221 per day in 2012 for the additional hourly stop if relying on MMD's estimates. In JRC's calculations, this might be worth £300 per day in cash terms by 2022, at a 2% passenger growth rate and RPI + 1% on fares.
- 144 This loss can be contrasted against a net revenue gain by 2022 (after omitting abstraction) of over £500,000 a year – over £1,600 a day – also by 2022, based again on MMD's own initial low level estimates of demand – **providing that a service can offer a to-and-from London train which ensures that the critical London-related fares income is secured and can continue to be included at the Stage 4 proportions.**
- 145 **Clearly this would depend on flexing the future East Coastway timetable, even with 1 tph, along the lines discussed earlier. 2 tph would be preferable to include a Brighton service as well.**
- 146 **JRC concludes that in the right circumstances – not the restricted service pattern defined by MMD – the opportunity can exist for a Glyne Gap station to start paying its way as a commercial transport investment by the early 2020s.** The investment costs of a basic Glyne Gap station at an MMD-estimated GRIP 2 cost of £3m (core cost + 30% under-estimated), could be recouped from the early 2020s even with a 10% annual return on investment required (£0.3m p.a.) on top of operating costs.

147 This is because of the disparity between net impacts of benefits and the net impacts of revenue, and despite the outline benefits vs disbenefits being unfavourable.

Non-rail gains and losses

148 In its business case analysis, MMD had also estimated the change in user costs and journey time gains and losses of existing car users swapping to rail via Glyne Gap – which also has some decongestion and environmental/safety benefits. However because total passenger numbers are low, the net gains are not large: net user benefits amount to £716,000 PV over 60 years, after allowing for 26% of deterred rail passengers transferred to car. For the same reason, the net environmental/safety benefits are also small, roundly £170,000 PV.

149 Against these gains, MMD had to subtract the £647,900 net rail disbenefits.

150 Indirect tax effects are also important in the BCR calculation, and these days count as a benefit to the project. Primarily these will be the benefits to government of taxing the train company's profits and other participating suppliers, and the additional transactions also stimulated in the taxable economy, less the reduction in 'tax take' from motoring.

151 MMD estimated the net indirect tax gain as over £1.8m PV, and this turns out to be the main net benefit (because of the low net gain on other 'plus' parameters such as journey time benefits). This is set against the broad transport costs, and produces the 0.28 to 1 Benefit-Cost Ratio identified earlier. This is separate from any revenue-based commercial case.

152 MMD also reviewed a higher growth forecast which relied on higher development rates in the locality, and this remained below 0.5 to 1 BCR.

Other final MMD observations

153 MMD noted various emerging sources of capital funding for a station. JRC notes that, to the extent that these would rely on a positive BCR case to secure government approval, they are not yet relevant, and would need to be revisited in due course with a differently specified set of services and stopping patterns. However the direct economic growth case was neither tested nor valued in its own right in the MMD modelling – it was a standardised transport appraisal.

154 MMD observed that with 2 tph – if this were possible – the scale of disbenefits incurred by through rail passengers would also rise, if 2 of the existing 3 tph were

to stop at Glyne Gap. While the outcome was not calculated, the implication was the net disbenefits could also rise and that the BCR could remain well below 1 to 1, let alone 2 : 1.

- 155 JRC observes that this implication depends on no frequency or service pattern change to the East Coastway timetable. In that circumstances MMD might well be right, but the available evidence (partly highlighted above, and some points discussed in the next section) is that there are good reasons for considering there will be future developments in demand and in services.
- 156 If the journey time disbenefits could be held at the modelled 2012 level, or reduced from that level through timetable and service pattern changes, then the BCR position could change substantially. There may separately be a stronger commercial case, at a service level of 2 tph or higher.
- 157 MMD surprisingly comment in their concluding section that: “The only possible means of achieving a business case for Glyne Gap station in isolation would be to develop the station as a major Park and Ride site for Bexhill, with a level of service comparable to that at Bexhill and an associated downgrading of the current Bexhill station site to an hourly service. This would in effect be relocating Bexhill station to Glyne Gap, a prospect unlikely to achieve political or public support.”
- 158 It will be clear from the complete JRC commentary above, that MMD’s “only possible means of achieving a business case for Glyne Gap station” is far from being the case.
- 159 It is not credible that Bexhill would be downgraded from being the area railhead for main inter-urban services – it would indeed be daft to propose that, and we are not aware that anyone is planning it! **It is far more credible that Glyne Gap could take on the role of an east-side Collington or Cooden Beach - both of these are west of Bexhill and similarly serve the wider urban hinterland.**

Wider issues and opportunities – how things can be different

Taking stock

- 160 The underlying cause of much of the low numbers forecast in the present series of reports, was recognised by MMD as the choice of a 1 tph service limited by present-day operating constraints - even though those are being modified by current investment in signalling and line speeds.
- 161 This is also a fundamentally different situation to the earlier 2000s multi-modal thinking of a Bexhill-Ore Metro, where a 4 tph ‘walk-on’ service was conceived.
- 162 To a large extent, the analytical outcomes reported now are a consequence of the ‘*reductio ad absurdum*’ of a station project, originally conceived as an integral part of a rail Metro service, now being attempted on a solo basis on a less-than-consistent hourly timetabled stop.
- 163 The preceding JRC analysis and dissection of the MMD reports highlights the following primary points:
- a. We agree with MMD that a less-than-2 tph service imposing an additional stop for one in three through trains is likely to produce a poor benefit to disbenefit outcome for travellers, in a circumstance when the new station is forecast to have low passenger numbers. (Whether the station *will* have low passenger numbers might turn out to be wrong, that depends on future demand, but the standardised forecasting points that way.)
 - b. We do not agree with MMD that an hourly-or-so service with variable origins and destinations is all that is achievable.
 - c. Neither MMD nor the client appear to have explored seriously the scope for flexing the existing East Coastway service stops and timings and use of higher line speeds and new signalling, between Eastbourne and Bo-Peep Junction (St Leonards) that the *current* Network Rail investments may permit shortly. This is surprising, and most disappointing. The issues are discussed in JRC’s review of the MMD Stage 3 analysis.
 - d. We consider that MMD’s station design analysis is robust, and points to a low-cost station with 4-car platforms which permit Selective Door Operation. This is a feature of other local stations on East Coastway.
 - e. MMD defined a fairly high level of abstraction from Bexhill station’s existing ridership, for a new Glyne Gap station. JRC has identified two analytical areas where this may be excessive – in respect of an overlap catchment where Glyne Gap’s presence should *stimulate* additional travel (eg, see paras 93-96 above); and in respect of some double-subtraction of abstraction (discussed in paras 97-100).

- f. We respect the cautious basis for MMD’s 60-year demand and revenue forecasts, which are based on standardised methodology. However the scale of local changes in actual rail demand during the past 10 years, and some specific elements such as finally modelling London/non-London revenues by relying on data from an entirely different rural station, do not sit alongside the standardised approach.
- g. Consequently we believe that higher growth levels in rail demand should be reconsidered.
- h. There appear to be specific opportunities to define a commercially-based station proposal – potentially supported by funding sources such as LEP and local transport board funding – because the station revenues even on a limited user basis appear to start being positive during the early-mid 2020s.

164 Several questions merit answering:

- a Assuming that **2 TPH** were possible, with no other change in context such as demand or revenue forecasting, does the outcome change enough to make the case for a station sufficiently positive in a reasonable timescale, eg by the late 2020s? What changes in demand or revenue forecasting would be reasonable to anticipate? Do these make a sufficient difference?
- b Are there **specific local characteristics** which should also be considered in more detail, which may prove relevant to the demand or revenue cases, and in turn the BCR and economic growth cases?
- c Are there **wider strategic opportunities** emerging, which allow discussion about a Glyne Gap station to proceed not as a narrow ‘solo station’ basis, but as part of a larger package of transport (or wider economic) measures along the Sussex Coast?

165 Funding and timescale have not allowed JRC to make a full exposition of these matters, so the topics will be discussed as elements contributing factual evidence, and so assisting better understanding of likely outcomes within the Rother Local Plan period.

Defining a 2 TPH service

166 JRC agrees with MMD that non-stopping the Brighton-Ashford inter-urban service is the right thing to do. This leaves an hourly service to/from London, and one to/from Brighton, making a basic 2 TPH. These are the services which call at Cooden Beach and Collington, so are the elements most relevant for Glyne Gap.

167 We have noted extensively above that a 2 TPH service may be feasible with the improved infrastructure, and that this would have considerable effects on local demand and revenue modelling. The commercial opportunities for a train operator could be greater with a higher level of local demand for both London and non-

London destinations, offset by relatively few local revenue impacts caused by passengers lost or diverted to other routes. See paras. 143-146 above.

- 168 The BCR case may however still be disadvantaged, because of the impacts seen with just 1 TPH stopping instead of 2 TPH, and discussed in the previous section. This would put the case for a station into the private sector domain, and would be unlikely to secure government funding support. So an investor would be taking a commercial risk with a 'solo' project, even if they were guaranteed a regular train service.
- 169 The BCR case would start to change if a high level of local demand could be assured. This appeared to be the case with the earlier rounds of studies in 2000-2004, even with just 2 TPH, though the studies' modelling was not so localised.
- 170 What evidence of future large-scale changes in demand are there, for London and the South East, and more particularly on East Coastway?

Network Rail Long Term Planning Process (LTPP)

- 171 In October 2013 Network Rail published its final LTPP reports, including for the London & South East area.⁵ This took 2011 as a baseline, and looked forward to 2043 for commuting travel requirements. Non-London flows were also reviewed, and the role of the railway assessment to ensure it was as relevant as possible for such travel needs.
- 172 For services via Croydon to/from London Victoria and London Bridge, Thameslink and Sussex fast train passenger flows inbound in the morning peak 3 hours were seen as growing from 27,300 passengers in 2011 to 42,600-47,600 in 2043. 2031 flows had previously been assessed (in 2011 modelling) as 43,900, so this points to rapid expansion of demand in the 20-teens and 2020s.
- 173 On East Coastway and Marshlink, the all-year and commuting period volumes in 2001/02 to 2011/12 are set out in the accompanying table, and show a very rapid increase in use of rail as a core means of travel, and more so as a travel mode to reach jobs, training and studies in the commuting periods.

⁵ Network Rail London & South East LTPP Market Study, October 2013:
<http://www.networkrail.co.uk/improvements/planning-policies-and-plans/long-term-planning-process/market-studies/london-and-south-east/>

Million passengers entry+exit yearly						Season
Station	Local authority	2001-02	2006-07	2011-12	All jnys 10yr +/-	ticket usage 10yr +/-
EAST COASTWAY & MARSHLINK						
Ashford	Ashford	2.01	2.61	3.31	+65%	+52%
Ham Street	Shepway	0.05	0.07	0.09	+86%	+99%
Appledore	Shepway	0.02	0.03	0.03	+100%	+70%
Rye	Rother	0.21	0.31	0.38	+80%	+131%
Winchelsea	Rother	0.01	0.00	0.00	-20%	+15%
Doleham	Rother	0.00	0.00	0.04	+2188%	+24254%
Three Oaks	Rother	0.01	0.00	0.01	-6%	+4%
Ore	Hastings	0.02	0.03	0.11	+486%	+578%
Hastings	Hastings	1.43	1.85	2.01	+41%	+51%
St Leonards WSq	Hastings	0.48	0.57	0.67	+39%	+32%
Bexhill	Rother	0.82	1.09	1.65	+102%	+181%
Collington	Rother	0.09	0.12	0.18	+96%	+112%
Cooden Beach	Rother	0.09	0.10	0.12	+33%	+48%
Norman's Bay	Rother	0.01	0.01	0.01	+63%	+55%
Pevensey Bay	Rother	0.00	0.00	0.00	+135%	+276%
Pevensey & W'ham	Rother	0.12	0.14	0.16	+37%	+92%
Eastbourne	Eastbourne	2.65	3.27	3.59	+35%	+56%
Hampden Park	Eastbourne	0.51	0.55	0.58	+13%	+64%
Polegate	Eastbourne	0.70	0.84	0.94	+35%	+24%
Berwick	Wealden	0.08	0.09	0.08	+2%	-28%
Glynde	Wealden	0.04	0.06	0.07	+79%	+70%
Seaford	Lewes	0.46	0.70	0.78	+68%	+64%
Bishopstone	Lewes	0.02	0.02	0.03	+63%	-5%
Newhaven Harbour	Lewes	0.09	0.06	0.04	-48%	-94%
Newhaven Town	Lewes	0.18	0.26	0.32	+73%	+27%
Southease	Lewes	0.01	0.01	0.01	+149%	+101%
Lewes	Lewes	1.93	2.56	2.75	+42%	+48%
Falmer	Lewes	0.73	0.92	1.25	+72%	+76%
Moulsecomb	Brighton & Hove	0.17	0.28	0.37	+118%	+78%
London Rd Brighton	Brighton & Hove	0.31	0.45	0.47	+51%	+63%
Cooksbridge	Lewes	0.02	0.03	0.04	+70%	+63%
Plumpton	Lewes	0.06	0.10	0.14	+111%	+77%
Total (excluding Ashford)		11.31	14.51	16.93	+50%	+66%

174 As noted earlier, these Sussex growth rates for use of rail are greatly in excess of the expectations of national standardised models, for growth in rail usage. The local results appear relatively impervious to national economic pressures. With a highly localised modelling process adopted by MMD for the latest studies, it might have been reasonable also to adopt localised demand forecasting. We have noted in paras. 131-132 the growth rates that such figures imply.

CBT East Sussex station count

175 CBT East Sussex also counted in November 2013 the usage of Ore station over two typical working days, and reported 834 daily entries and exits. This count has been reviewed by JRC and modified as set out below, grossed to an annual basis after allowing for half of all users potentially being students and staff at the nearby College so travelling on a lower frequency than regular commuters and other passengers:

ORE station count Autumn 2013							
277	entries and exits	Thu 14/11	AM first train 05:20 to 13:22				
557	entries and exits	Tue 19/11	PM first train 15:20 to 20:22				
834							
	Multiply to annual:						
81,315	if 50% at 195 days/year (students/college staff)						
130,104	if 50% at 312 days/year (MMD annual multiplier)						
211,419	TOTAL yearly entries and exits excluding late evening, and intermission 13:22-15:20						
210,000	rounding down to be cautious, also period excludes seasonal South Coast/holiday travel						
	This contrasts with						
112,458	ORR station entry/exit assessment in 2011/12 year						

- 176 The doubling of actual volume from ORR’s own estimates within 2 years might be high – or it might not, as the Sussex Coast College has enlarged significantly in the last few years and is now a major travel destination from communities within Rother district.
- 177 The JRC report on rail access and connections for East Sussex gives close attention to the opportunity for rail to become the travel mode of choice for travel to/from Sussex Coast universities and colleges – it is very well placed to do so. (See reference 1 on page 8 of this report).
- 178 JRC does not assume that these evidential reports and counts automatically make the case for a Glyne Gap station to progress to approval, funding and completion in the immediate few years – at least in terms of BCR analysis because of the level of disbenefits incurred if it is intended that two existing services are the only ones to stop there – but the trend in possible usage is unmistakable.
- 179 The potential non-Government funded commercial case looks as though this could be viable by the early 2020s, if not sooner.

Specific local characteristics to consider

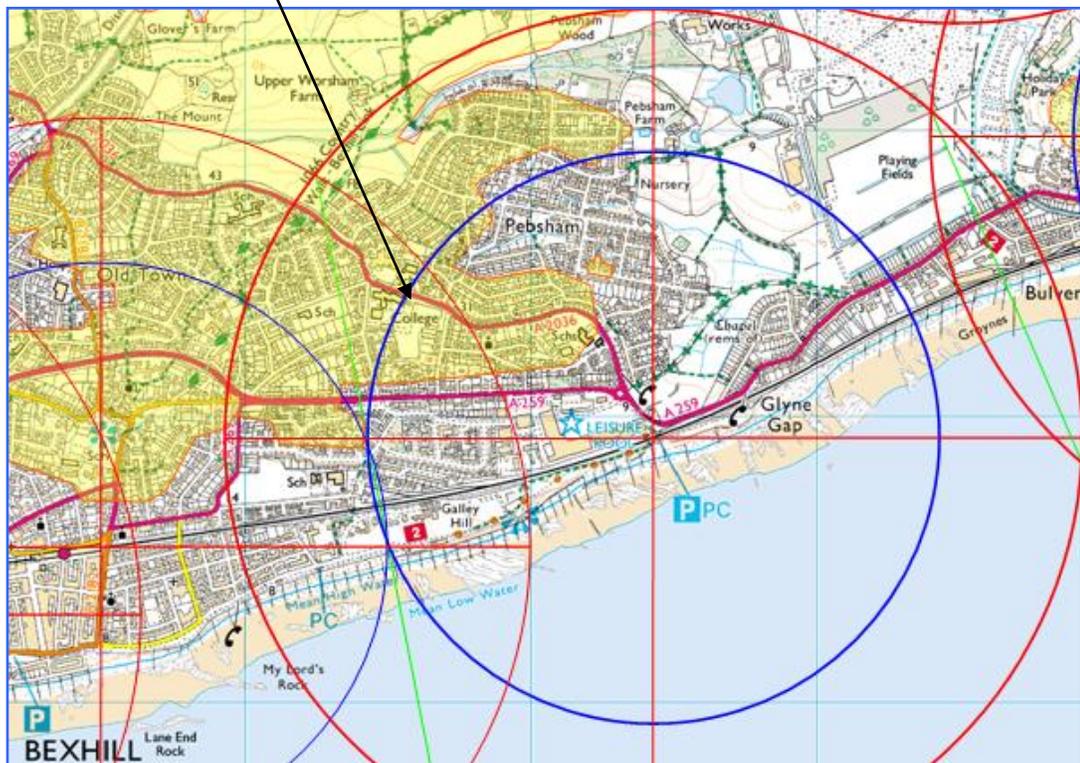
180 There are two significant local characteristics which JRC considers should be given greater weight in analysis:

- a. The local terrain, which is quite hilly and will influence the preference of potential passengers to head towards different stations, including a Glyne Gap station.
- b. The quality of local walking and cycling access to a potential Glyne Gap station.

181 CBT East Sussex has also noted the presence of the County Park and the attractions of the beach at Glyne Gap – neither in themselves high-density destinations but where a station could make such destination choices much easier to make.

Local terrain

182 The terrain is illustrated below, taking a 25m contour (it is higher closer to Bexhill College arrowed below), with an overlay of station catchments. In an ideal world, roads and paths would assist travellers to follow the natural contours and make the travel choice easy.



- 183 The terrain should encourage Pebsham residents and business users, and Bexhill College students and staff, to make easy use of a Glyne Gap station nearby at the bottom of a hill, in contrast to accessing Bexhill which is literally over the hill! The modelling does not appear to have taken this into account.

Station access quality

- 184 In practice the arrangements of roads and pedestrian paths is not aligned to support a Glyne Gap station, but no-one seems to have considered that a new station might merit improvements to local surface access at the same time. That might not make a large difference in total, but the policy of taking in hand station vicinity improvements as part of a total station project is one which is quite common elsewhere.
- 185 As part of a wider package of quality improvements to public transport, it can count for rather more, and assist a user's choice towards walking, cycling, buses and trains, rather than car use.
- 186 Overall it appears that MMD had not modelled the impact of terrain or improved station access (other than car parking) on the localised demand case for a Glyne Gap station in its recent reports, including its effects for abstraction and future trip rates.

Wider strategic opportunities

- 187 The fact that East Sussex County Council has now (November 2013) adopted a rail strategy with the high-priority building blocks of electrification and other improvements to the Marshlink (Ashford-Hastings) and Uckfield lines.
- 188 These improvements are intended as the start of an investment and rail improvement strategy across East Sussex, with the objective of local economic growth uppermost in the minds of decision-makers. It looks further towards better inter-urban rail along the whole East Coastway, and other features including a Willingdon Chord to accelerate London-Hastings and Brighton-Hastings services. East Coastway is also seen as a potential destination for a new High-Speed Javelin service from St Pancras via Ashford to Hastings in 1¼ hours and then on towards Bexhill and Eastbourne.
- 189 Cumulatively, this represents the baseline for a radical transformation of the Coastway route, along with changes to service structures which in themselves represent both opportunities and risks to the concept of a Glyne Gap station and to any wider development of an East Sussex Metro, as JRC has proposed in its July

2013 report. The ESCC report also favours other investments such as better ticketing, facilities and marketing.

- 190 So what is clear, is that the service status quo on East Coastway will be due for review and transformation during the 2020s – possibly co-inciding with future franchising and main line timetable respecifications (eg during the 2020/22 period).
- 191 The potential exists for a different service specification for intermediate local catchments, as part of these strategic moves towards rail as a key umbilical for East Coastway.
- 192 A ‘walk-on’ local Metro service remains ambitious though possible if the overall strategic case is considered valid. Alternatively a tightly-specified stopping pattern for through trains which transform within the Coastway route from a through to local service (such as a London-Eastbourne-Hastings train which performs a local service function east of Polegate), could attract useful levels of local patronage **without the time disbenefits to inter-urban passengers of a Glyne Gap stop because there would be more inter-urban trains performing that role. Glyne Gap can then be judged more precisely on the localised gains and impacts of such a station.**
- 193 Specifically within the whole Bexhill area catchment, including Cooden Beach, Collington and Glyne Gap, the characteristics of the forecast passenger generation at Glyne Gap – which are derived partly from the other stations – point to the need to offer much greater marketing and accessibility attraction from the hinterland to the coastal railway.
- 194 It is notable at Glyne Gap that the potentially largest sources of passenger volume are currently furthest from the railway station – and with an hourly service will not easily be attracted to use the station. A combination of a higher frequency plus marketing (an Oyster-like offer), and targeted destinations, including London and Brighton, could make the required difference to validate new stations not just at Glyne Gap but also Stone Cross and St Leonards Marina.
- 195 This is ‘chicken and egg’ – more than one new station would require a wider service respecification, but it is the wider respecification which is required in any case and, if thought through for its impacts and implications, can also help make the case for a more intensive rail presence in the Eastbourne-Bexhill-St Leonards-Hastings corridor.

Conclusion

- 196 A Glyne Gap station cannot be justified on the modelling basis adopted by MMD. However there are good prospects that a local station can be justified in the new circumstances facing the East Coastway railway during the 2020s, if not sooner.
- 197 The main factors leading to this conclusion are:
- MMD's exclusion of 2 TPH service modelling along the Eastbourne-Hastings railway even though there are current infrastructure investments which may permit this – and all the consequential modelling impacts of this decision.
 - The visible and continuing latent growth in local rail demand, above and beyond the standardised national modelling techniques.
 - Some specific local modelling factors to be addressed in any future analysis.
 - The medium and long term strategic impacts of the new East Sussex Rail Strategy, and its downstream implications for East Coastway rail travel demand and future service patterns.
- 198 JRC accordingly considers that the current Rother Local Plan policy of including the prospect of a Glyne Gap station, should be retained for the next planning period.