

Appendix C Station Site Surveys

Allan Rail Solutions

East Lothian Access STAG – Pre-Appraisal

East Lothian Stations – Operational Issues Report

Reference 18/010

Date – May 2019

Results of Site Visits Tuesday 5 March 2019

Objectives of this report

This report is intended to identify operational constraints surrounding the North Berwick line stations, focussing on potential train length limitations and car park capacity expansion opportunities.

This is to identify the maximum size (i.e. length) of ScotRail trains that could be operated on the North Berwick route. Longer trains has been the traditional response to demand growth on this route for the past 30 years with train length growing from 4 x 20m coaches to 6 x 23m coaches over that period and it remains Transport Scotland policy to consider extending train lengths to provide capacity rather than running more trains. However, this is potentially limited by the infrastructure and this report seeks to establish the longest trains that could reasonably expect to be operated, should demand growth require it and thus at what point more trains will be required based solely on the demand exceeding capacity.

It is recognised that there may be other ways of providing extra capacity, as required including stops in the ScotRail Dunbar services and also stops in other operators cross border services.

Additionally it is known that car park capacity is over-subscribed, so each station has been assessed for possible car park expansion.

Methodology

This report summarises the current position at each station on the North Berwick line to assess the options for platform lengthening and possible sites for additional car parking. Additionally the capability of Edinburgh Waverley being able to handle longer trains from North Berwick is assessed.

It is based on site surveys undertaken in early March 2019.

Summary of the Outcome

The operation of longer trains

It is suggested that the east end of Edinburgh Waverley station is the major constraining factor on extending train lengths on the North Berwick train services. The cramped space between the ends of the platforms and the Calton Tunnels, coupled with the existing, listed, station building at the buffer ends of the platforms restricts the maximum train length to 8 or possibly 9 x 23m coaches in the long term, unless major works are undertaken at Waverley which are beyond the scope of this work.

The rest of the stations appear to have the space to extend platforms to cater for 8 or 9 car trains, if required, with the exception of Drem, where no feasible platform extensions options are available. Further appraisal will be needed to decide whether individual platforms need to be extended to cope with the additional volumes of passengers. In future, any new stations to serve Blindwells, Haddington or other locations will need to have platform for the longest regular trains that will call there – so potentially 8 or 9 cars long.

This is an initial observation of the possible options for lengthening platforms. In all cases the overhead line equipment will need to be modified, with the generally single track cantilevers requiring to be replaced by a single twin track cantilever to remove live equipment from above the new platform and meet modern standards.

The ideal platform extension is one on straight track, with sufficient space to provide the required extra length and which does not impact on signalling equipment or structures.

It should be noted that the use of Selected Door Operation (SDO) would enable trains that are longer than the platform to call at an intermediate station. This is not permitted at terminal stations but may negate the need to extend platforms at some other stations. This would be a railway industry decision based on demand and risk assessments. The class 385 emus used on the route are fitted with Automatic Selective Door Operation (ASDO) so are already equipped to be able to serve short platforms.

It is probable that at least some, most probably the busier, stations would need to have their platforms extended, otherwise the extra coaches will be substantially under used and potentially station dwell times will increase. The objective should be to extend platforms in a manner that as far as possible ensures all coaches are used to the maximum possible extent.

With the introduction of longer trains, both the current 6 car trains and any potential 8 or 9 car trains the provision of passenger information screens, waiting shelters and access points will need to be reassessed to ensure that passengers are well distributed along the longer platforms. This will help to minimise localised overcrowding on busy trains and potentially extended station dwells resulting from congestion around some doors.

The report is only a visual assessment of what might be possible and perhaps more significantly what is going to be more difficult to achieve. In line with the Pre-appraisal concept it is looking at what appears to be feasible to reject options that are not feasible.

Assessment

The maximum length of a North Berwick train is 8 or possibly 9 x 23m coaches and this figure should be used in capacity modelling.

Car Parking

This assessment was only an initial view as to whether there is open space available close to and accessible to the station. The outcomes are:

Musselburgh

There is space adjacent to the current car park, but local car park demand driven by the university is so high that it will be swamped by non-rail use. Consequently any car park expansion here would need to include provision to limit use to rail users. Otherwise car park extension may not offer good value.

Wallyford

The only spaces available to expand car parking at Wallyford are on either side of the station, where to the south there are playing fields and public open space and to the north there are agricultural fields which are part of the Green Belt. The site to the north is adjacent to the existing Park and ride site, so better located to link with the bus services that call here.

Pressure here is likely to rise so potentially a solution is needed.

Prestonpans

There is no significant space to the north of the railway, but there is agricultural land to the south of the station adjacent to the existing station car park. The access roads to this site are poor.

With housing growth all around including at Tranent a car park extension is likely to be required, but the access from Tranent may also need to be reassessed and upgraded.

Longniddry

A new car park has been built to the east of the existing car park, which will use some of the remaining space on the north side of the railway. Space will remain for more car parking right up to the underpass that leads to the step free access to the down (Edinburgh bound) platform, which could be quite attractive to some users. The Local Development Plan includes a site (PS1) to the south of the station as a mixed use site and this could be a potential site for a significant expansion of car parking with access from the B6363 which would provide park and ride from the west end of Haddington, which may well be required.

Drem

There is some scope to increase the car parking space by removing the redundant (reported as out of use) engineers siding. However this will not create a lot of extra space.

North Berwick

There is no realistic scope to increase car parking to serve North Berwick station. But demand appears to be high.

Drem and North Berwick

There are significant constraints with both Drem and North Berwick stations, with the former having short platforms, limited car parking and creating operating constraints by its location on the East Coast Main Line. North Berwick is well located for passengers on foot but has limited and over-subscribed car parking.

There were suggestions at one time that removing Drem platforms from the main East Coast route would ease some of the capacity and pathing constraints of the North Berwick services. However, these may reappear if any new stations are introduced at, for example, Blindwells or Haddington.

If this is required one possible option could be to relocate the station to approximately the site of the former Dirleton station (closed 1954) but as a Park and Ride station serving North Berwick, Dirleton and Gullane.

Detailed Station Information

Information sheets have been produced for each station to support the summary conclusions above:

Musselburgh

Passenger Numbers ORR data:

2017/18	488,636
2016/17	463,690
2015/16	478,100
2014/15	456,718
2013/14	438,670

Current Platform Lengths - Up 120m, Down 120m

Future possible required platform lengths:

6 car 143m	Up & Down 23 m - required for current train plan
7 car 166m	Up & Down 46m
8 car 189m	Up & Down 69m
9 car 212m	Up & Down 92m

Potential for platform extensions:

Up platform Edinburgh end

The track at the Edinburgh end of the up platform is straight and there is no signalling equipment located in the likely area of any platform extension.



Musselburgh – Edinburgh end of the platforms

Up Platform North Berwick end

Extension is limited to about 10 metres at this end of the station due to the overbridge. It would not be possible to create sufficient new platform to cater for 6 car 23m long vehicles solely by lengthening at this end. Consequently all platform extension is recommended to take place at the Edinburgh end.



Musselburgh- North Berwick end of the platforms showing the road overbridge

Down platform Edinburgh end

The track at the Edinburgh end of the up platform is straight and there is no signalling equipment located in the likely area of any platform extension.

Down Platform North Berwick end

The same constraints due to the overbridge apply here as apply to the North Berwick end of the up platform. No extension could be delivered at this end.

Summary – Platform Lengths

The best site for any platform extensions is at the Edinburgh end of the station where there is little impediment to extending the platforms. As there are apparently significant boarding delays currently due to the numbers of passengers, it may be prudent to extend at least the down platform for a full 6 car length to allow all train doors to be used.

Current Car Parking Capacity – 122

Possible Car Park extension

The most likely area available for a car park extension is to continue the existing car park along the solum of the former Wanton walls lines, on which the existing car parks are built. If this were combined with platform extensions it would limit the walk to an Edinburgh bound train, but it would be a long walk from a train arriving from Edinburgh.



Musselburgh – area for possible car park extension

Wallyford

Passenger Numbers ORR data:

2017/18	316,948
2016/17	296,996
2015/16	311,890
2014/15	295,884
2013/14	268,110

Current Platform Lengths - Up 150m, Down 150m

Future possible required platform lengths:

7 car 166m	Up & Down 16m
8 car 189m	Up & Down 39m
9 car 212m	Up & Down 62m

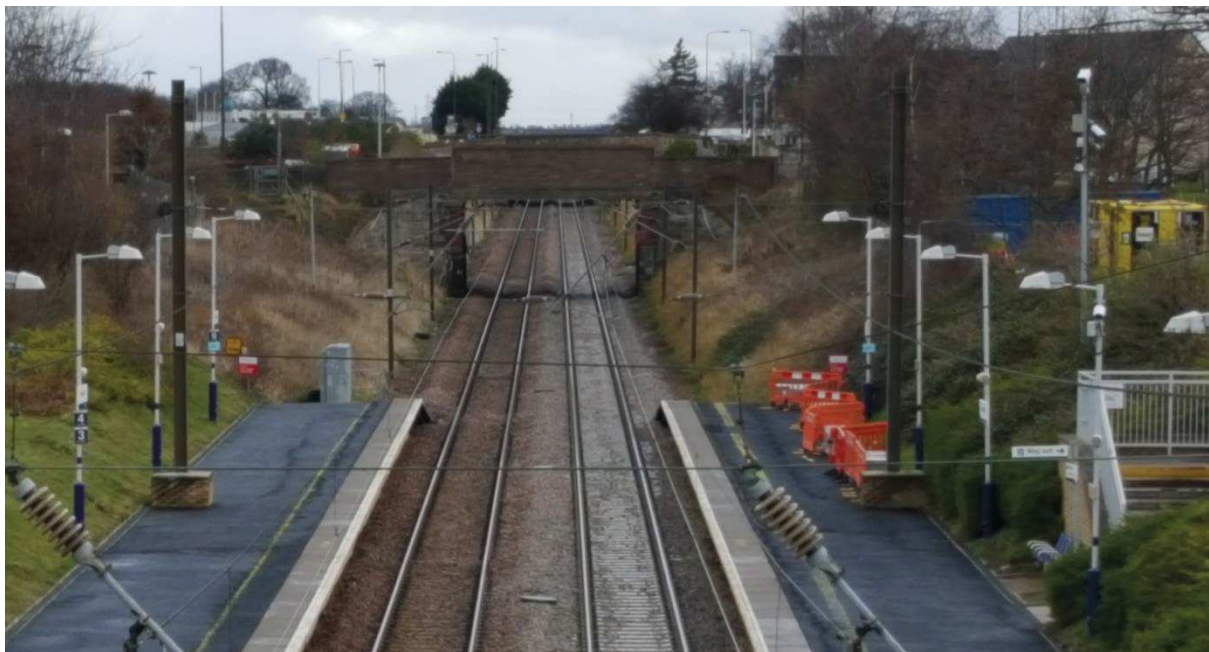
Potential for platform Extensions:

Up Platform North Berwick end

The track is straight and there is no signalling equipment up to the road overbridge. The distance to the road overbridge is approximately 100m, which would be sufficient for any required platform extension up to 9 car trains.

Down Platform North Berwick end

The track is straight and there is no signalling equipment up to the road overbridge.



Wallyford – North Berwick direction

Up platform Edinburgh end

The track is straight here and there is no signalling equipment along this section of track.

Down platform Edinburgh end

The track is straight here and there is no signalling equipment along this section of track.



Wallyford – Edinburgh direction.

It would appear that it is possible to extend the platforms at Wallyford in either direction, so the design choice will depend on more detailed engineering issues such as the nature and height of the cuttings. Extension of the up platform in the North Berwick direction would slightly reduce the walking distance to the new Park & Ride site, and potentially the same applies in the Edinburgh direction, but additional access steps would be required.

Current Car Parking Capacity - 389

The only realistic potential car park expansion area is the field adjacent to the up platform, as all the surrounding area is playing fields and housing. It is also only the other side of The Loan to the new Park and Ride site and already has access onto the platform. There is space here for potentially several hundred spaces. This area is designated as Green Belt, so any car parking would need to be designed with that in mind.



Wallyford – possible new car park site on up side

Prestonpans

Passenger Numbers ORR data:

2017/18	270,028
2016/17	257,518
2015/16	274,344
2014/15	271,460
2013/14	252,244

Current Platform Lengths - Up 134m, Down 185m

Future possible required platform lengths:

6 car 143m	Up 9m for current train service,
7 car 166m	Up 32m
8 car 189m	Up 55m, Down 4m
9 car 212m	Up 78m, Down 27m

Potential for platform Extensions:



Prestonpans – Edinburgh direction

Up platform Edinburgh end

The Edinburgh end of the up platform is already on a curve but any extension towards Edinburgh is likely to be on a gradually tightening radius as it gets further away from the existing platform. This platform was realigned onto the curve when the new deviation was built. It would be desirable to limit extensions in this direction.

Up Platform North Berwick end

The track here is straight, but the position of the pointwork leading into the loop limits the length of any potential platform extension. The Up platform is shorter than the down platform, so lengthening to cater for the current 6 car trains and probably 7 car trains might be best carried out in this direction.

Down platform Edinburgh end

This end of the platform is on a curve so not ideal for an extension, but there is no signalling equipment in the way

Down Platform North Berwick end

The track is straight and there is no signalling equipment in the way, so this seems the better place for the small extension required to accommodate the longest trains, which for 8 car trains may only require the replacement of the ramps with modern fenced flat ends and provide a relatively inexpensive solution.



Prestonpans – North Berwick end, including up side car park

Current Car Parking Capacity – 165

The upside car park beside the station building is completely hemmed in by the railway lines, the B1361 and the signalling relay room. There is no further room for expansion. There is space for additional car parking beside the new down side car park which was built after the new Dolphinstone Deviation was built 2003.

However, the access road to this car park, including from Tranent, is narrow and has severe bends.



Prestonpans - Down side car park looking west



Prestonpans - Down side car park looking north toward entrance and road to Tranent

Longniddry

Passenger Numbers ORR data:

2017/18	195,290
2016/17	189,578
2015/16	193,626
2014/15	191,620
2013/14	183,560

Current Platform Lengths - Up 131m, Down 131m

Future possible required platform lengths:

6 car 143m	Up and Down 12 m required for current 6 car trains now
7 car 166m	Up and Down 35m
8 car 189m	Up and Down 56m
9 car 212m	Up and Down 83m

Potential for platform Extensions:

Up platform Edinburgh end

The ECML track is on a curve – so this is not a preferred option if it can be avoided

Up Platform North Berwick end

The track is straight, but automatic signal EA 554 is located right at the end of the platform. This would require moving, with potentially large cost implications, if more than one signal requires to be moved. This signal may drive a requirement for a longer platform lengthening than required by purely the train length to provide a “stand back” to modern standards.

Down platform Edinburgh end

The track is on a curve – so this is not a preferred option if it can be avoided.

Down Platform North Berwick end

The track is straight, with no obvious signalling equipment.

Summary

It is likely that the up platform extension will need to be in the Edinburgh direction on the curve. However, the down platform would be better extended in the North Berwick direction on the straight track. This may require additional waiting shelters and customer information screens to spread passengers further away from the footbridge and along the train for quicker boarding.



Longniddry Station – Edinburgh end – showing curve (which starts in the platform), no signalling equipment and sufficient land available.



Longniddry Station – North Berwick end showing straight track and up line signal and new car park under construction on the up side, which might be a constraint on the width for any up platform extension beyond the existing signal.

Current Car Parking Capacity: 73

Future potential for car parking capacity increases:

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New capacity is currently being provided to the east on the existing car park which will create ~60 new spaces.

There appears to be a further site for c20 spaces beyond the new north side car park which will take the car parking up to the under pass that is used to provide step free access to the down (Edinburgh bound) platform. This may be quite attractive to some users offering a quick access to Edinburgh bound trains in the morning.

There could also be possible sites on the south side as part of the new housing (c 459) shown as site PS1 in the LDP, which (para 2.55 page 28) includes reference to additional car parking and active travel access to the station.



Longniddry - New Up side car park under construction from the existing car park

Drem

Passenger Numbers ORR data:

2017/18	120,316
2016/17	123,354
2015/16	164,154
2014/15	123,254
2013/14	116,040

Current Platform Lengths - Up 123m, Down 135m

Future possible required platform lengths:

6 car 143m	Up 20 m, Down 8m: Both required for current trains
7 car 166m	Up 43m, Down 31m
8 car 189m	Up 66 m, Down 54m
9 car 212m	Up 89m, Down 77m

Potential for platform Extensions:



Drem Road overbridge at Edinburgh end of the station

Up and Down platforms Edinburgh end

Both these platforms end at the road overbridge which is on a very constrained site with right angle bends on either side of the railway. There does not appear to be any signalling equipment in the vicinity.

Up and Down platforms North Berwick end

The point work for the up and down loops is located right at the ends of the platforms which prevents significant extension of the existing platforms.



Drem – General view of North Berwick end on the station

Summary - Platform lengthening

Drem station is completely constrained with the road overbridge at the west end and the pointwork at the east end. There is no practical option for extending the platforms for this, the lowest used station on the route.

Current Car Parking Capacity - 68

Future potential for car parking capacity increases:

The current car park is full. There is space to extend the car park by taking up the redundant engineers sidings on the north east corner of the car park.

General Comment

The constrained site of Drem station prevents the simple provision of longer platforms or a great deal of additional car parking.

It has been suggested in the past that one option to improve the flow of trains on the ECML was to relocate Drem station onto the North Berwick branch. If considerable expenditure is required at Drem this may offer a more overall cost effective solution to providing a full length platform and additional car parking, either near Drem Junction or at / near Dirleton

AllanRail

old station. Site choice would be dictated by the configuration of the future network, especially if a new station at is constructed at Haddington and the origins of the current users of Drem station.



Drem - General view of car park on up side, showing redundant, but still extant siding.



Drem – Redundant siding from the car park looking east.

North Berwick

Passenger Numbers ORR data:

2017/18	599,788
2016/17	566,362
2015/16	571,702
2014/15	550,170
2013/14	512,246

Current Platform Lengths - 148m

Future possible required platform lengths (N.B. As a terminal station the platforms must be sufficiently long to accommodate the longest train):

7 car 166m	18m
8 car 189m	41m
9 car 212m	64m

Potential for platform Extension:

Single platform Edinburgh end

The bridge carrying Ware Road over the railway is a constraint on platform lengthening. Observation suggests that a 7 car platform could probably be provided without reaching the bridge. Longer platforms would require the platform to extend through the bridge, for which there may be sufficient room for a narrower platform, which should be acceptable here as the train speeds are low. The track is slued through the centre of the arch and the wire height may be too low to meet modern standards, so there is potentially a cost for a complete bridge reconstruction, in which case a full width platform would be provided.

If the platform extends to the bridge it may create an opportunity to provide a further pedestrian access from Ware Road to the station, improving the local connectivity for active travel, especially for the housing that is spread along both sides of the railway line south of the station.

Current Car Parking Capacity - 96

Future potential for car parking capacity increases:

The station car park at North Berwick is completely surrounded by houses, roads and other buildings. There is no scope for additional spaces to be provided. This may re-inforce the need to provide for more spaces at Drem to permit access from both the east end of North Berwick via the B1347 and B1377 and from the west side and Dirleton and Gullane via the B1345, effectively providing a Park and Ride facility for this area.



North Berwick – Ware Road bridge – general view



North Berwick - Bridge carrying Ware Road over the railway taken from the end of the platform.

Edinburgh Waverley – East end

Platform lengths for east end trains

The platforms at the east end of Waverley station are limited in number and constrained between the station and the North and South Calton Tunnels. The bay platforms, numbers 3, 4, 5, 6 are only accessible from the east end of the station, but the through platforms are accessible from both east and west ends of the station, so are used by west end trains as well as east end trains.

The number of trains using the west end of Waverley station is considerably larger than the number using the east end (20 vs 8) so this is where the pressure on platforms is the greatest.

The current platform length (from the Network Rail Train Planning Rules for the December 2020 timetable) are shown below.

Edinburgh (east end)		Length metres	6 car capable 143m	7 car capable 166m	8 car capable 189m	9 car capable 212m	10 car capable 235m	12 car capable 281m
1	Through	156	Yes	No	No	No	No	No
2	Through	261	Yes	Yes	Yes	Yes	Yes	No
3	Bay	119	No	No	No	No	No	No
4	Bay	206	Yes	Yes	Yes	No	No	No
5	Bay	275	Yes	Yes	Yes	Yes	Yes	No
6	Bay	275	Yes	Yes	Yes	Yes	Yes	No
7	Through	222	Yes	Yes	Yes	Yes	No	No
8	Through	293	Yes	Yes	Yes	Yes	Yes	Yes
9	Through	289	Yes	Yes	Yes	Yes	Yes	Yes*
10	Through	221	Yes	Yes	Yes	Yes	No	No
11	Through	239	Yes	Yes	Yes	Yes	Yes*	No
19	Through	261	Yes	Yes	Yes	Yes	Yes	No
20	Through	156	Yes	No	No	No	No	No

- Platform 7 east end is too narrow to deploy ramps, so not normally used, for more than 6 car trains
- Platforms 9 & 11 may not have sufficient length for signal stand-back, inaccurate stopping and other operational requirements.

It is not considered that 11, 19 and 20, which are the west ends of platforms 7, 2 and 1 respectively, are going to be able to support regular east end services because they are likely to be required for west end trains. This assumption is based on the recent investment to create two new long bay platforms (5 & 6) to accommodate East Coast long distance trains, thus removing them from platforms, 8, 9 and 11 – the latter of which has been slightly shortened to provide more flexible working on the south side of the west end. Also note that platforms 8 & 9 are the only west accessible platforms that can take 11 car Pendolino trains as operated by Virgin West Coast.

It can be seen that the number of east end platforms capable of taking 8 car trains is only one (or two if No7 is discounted for trains longer than 6 cars) less than those currently able to take 6 car trains, and that platform No 1 is capable of relatively easy extension to possibly the same length as platform 2 (235m) but perhaps more likely to nearer 200m permitting 8 car trains (9 cars may be possible) to use it. However, this may lead to the loss of some operation flexibility for trains arriving from the west.

This is based on the original design for the remodelled Waverley station which included a full length No 1 platform to mirror No 2. However, this resulted in the signal overlap running onto the single line through Calton North tunnel and it was considered, at that time, that a better balance was achieved by shortening the platform and giving greater east end operational flexibility. This can be reviewed during the reassessment of the east end of the station and the access through Calton tunnels to Abbeyhill Junction.

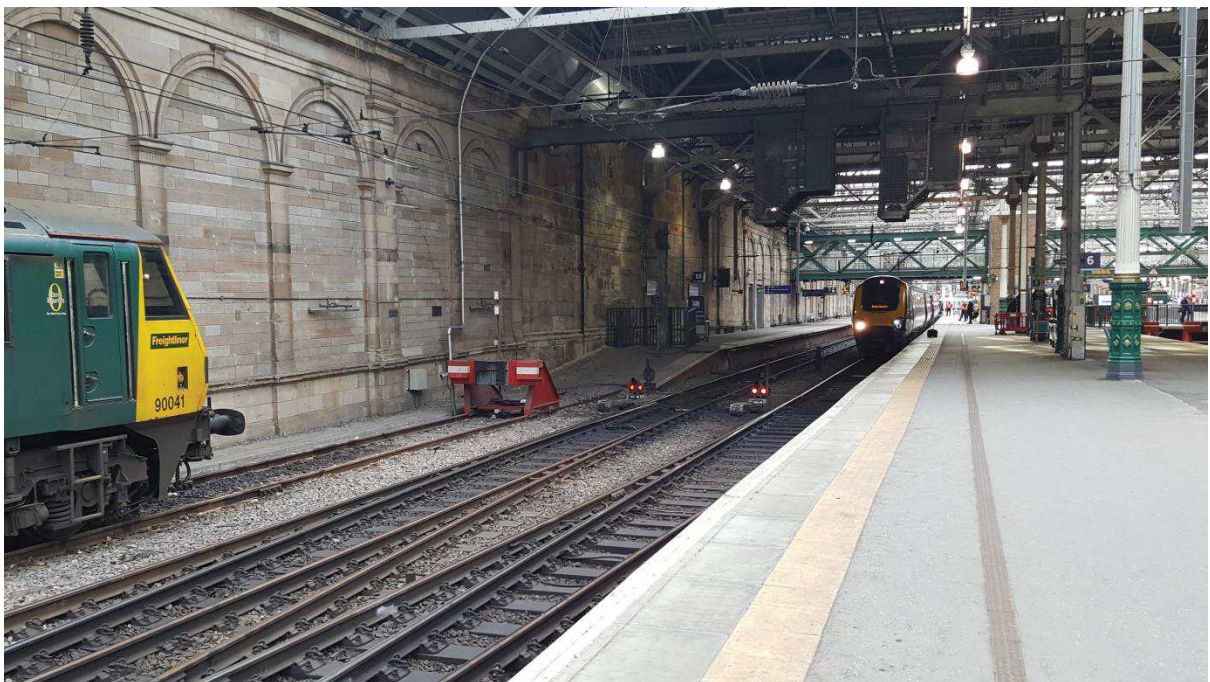
An early assessment of the options to increase the width of No 7 platform to permit its use to its full length could be an early relatively low cost option to progress, permitting the operation of 8 car peak trains to and from North Berwick.



Edinburgh Waverley – General View of the East end throat showing the constrained space available.



Edinburgh Waverley – Showing the constraints at the country end of platforms 3, 4, 5 & 6.



Edinburgh Waverley – Showing east end of platform 10, scissors crossover and south loop siding buffer



Edinburgh Waverley – Platform 4 viewed from the buffers near the station building

Platform 4 is constrained by the main station building which is only across the former access road from the buffers shown above. It is only 6 metres too short to hold a 9 car train, but by the time the signalling and buffer standbacks and allowance for splitting/joining have been added in this is likely to be more like 20m short. However, it may be possible to squeeze a 9 car train into an extended platform, but this would need to be subject to detailed design.

Platform 3 is already too short for peak North Berwick line trains. Extending it still further would require the removal of the ScotRail operations centre. This has significant ramifications and it not for this project to consider, but may be the subject of the Waverley Masterplan which is being developed by Network Rail.

Platform 10 is not capable of extension to the east because of the location of the scissors cross-over and related signalling, but in theory it could be extended into a completely new platform in place of the South Loop Sidings to partly mirror platform 7 opposite. It would be shorter though, so only capable of holding possibly 6 car trains. There would need to be a whole new passenger access/egress route provided as the existing access to platform 10 has a limited passenger handling capability.

In summary, if platform 1 is extended there would be no more platform restrictions (Platform 7 excepted, which could be reassessed to see if there are options to increase the width sufficiently for it to cater for 8 car trains), for the operation 8 car trains, compared with the current operation. The operation of 9 car trains may be more restricted, but both platforms 1 and 4 may be capable of being altered to cater for 9 car trains if that is the requirement.

However, beyond 9 car trains the longer platforms which are used substantially by LNER trains would have to be used and this becomes considerably more restrictive and difficult to plan.

Consequently it is suggested that 8 car trains could probably be operated into Edinburgh Waverley on the North Berwick services and that 9 car trains may be possible but 10 car and longer trains are not considered as practical for the operation of the North Berwick services into Waverley. It is suggested that these outcomes are included in the consideration of the future design of Waverley station that the rail industry is undertaking. This decision sets the limit (8 or 9 cars) on the length of trains on the North Berwick route in the future.

David Prescott

27 May 2019