Tracsis plc
Operations and Planning Systems

TRACSIS RAIL CONSULTANCY REPORT – TRIP LOT2 SE5 TECHNICAL REPORT ON HEADWAYS, PLATFORM REOCCUPATIONS AND JUNCTION MARGINS

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Author	David MacQuarrie, Emma Liversage
Reviewed By	Ian Smith

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Any questions or queries regarding the content of this report should be directed to:

Tracsis Plc: Operations and Planning Systems Division
Unit 6, The Point
Pinnacle Way
Pride Park
Derby
DE24 8ZS

T 01332 226 860
E info@tracsis.com

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Abbreviations	Description
BPLAN	Train planning data, including locations and sectional running times
CIF	Timetable file, “Common Interface Format”, which can be read by different train planning systems, as well as in text.
CP5	Control Period 5
CTD	Comprehensive Track Diagrams
CTRL	Channel Tunnel Rail Link
DMU	Diesel Multiple Unit
DPL	Down Passenger Loop
ELR	Engineers line of Route code
EMU	Electric Multiple Unit
JTA	Journey time analysis
LTP	Long Term Plan (standard Timetable)
MAR	Main Approach release at red
MAY	Main Approach release at yellow
NESA	National Electronic Sectional Appendix
OTMR/OTDR	On Train Monitoring Recorder aka On Train Data Recorder
Performance allowance	Additional running time added into a schedule to allow a service to recover from delay
PPM	Public Performance Measure, the percentage of trains which arrive within a given margin of their scheduled times (5 minutes for local services and 10 minutes for long distance services).
PTT	Public Timetable – the timetable which is advertised to the public with times rounded to the nearest minute and passing times at intermediate locations omitted
Right Time Running	The percentage of trains arriving within 1 minute of their scheduled times.
SAT	Systems Analysis Team within Network Rail or Systems Analysis Tool (produced by the same Team)
SRT	Sectional Running Time. Industry agreed running time between timing points for a given traction with start, stop, and pass constraints.
TIPLOC	Timing Point Location (where a train has a specified time in the timetable). This usually includes stations and Junctions. There is a specific point within each location where a train is timed.
TPR	Timetable Planning Rule(s)
TRIP	Timetable Rules Improvement Program
UPL	Up Passenger Loop
VISION	Software package used to model the railway in terms of signalling, gradients, speeds and exact distances. It includes traction data. It is used to calculate running times, headways and junction margins.
WTT	Working Timetable – this includes times at all TIPLOCs, including passing times, which are excluded from the PTT (Public Timetable). WTT is to the nearest 30s and is used internally within the railway industry.

Table 1 – Glossary

1. Introduction

Tracsis is working with Network Rail to support the Timetable Rules Improvement Programme (TRIP).

As part of TRIP, Tracsis has been contracted to provide technical data for certain routes in the South Eastern area.

The geographical scope of this assessment, SE5, starts with Paddock Wood and runs from there along a double track section, through several two platform stations on the Up and Down Main lines. Despite being out of scope, Tonbridge Station and the branch lines from it has been modelled for routing purposes. The route then passes through Ashford International, where several branches and the CTRL join the model. After Ashford the route passes through several more 2 platform stations, until it reaches Dover Priory, the model boundary. Despite being out of scope the model extends as far as Deal and Shepherds Well for routing purposes.

1.1 Planning Rules concepts

Signalling systems are designed to protect safe train movements. Key to this is the concept of margins between trains. There are three types of margin:

- Headway – the running line (the way) ahead of a train which must be protected in order for the train to proceed safely
- Platform re-occupation – the time between one train departing a platform and another train arriving
- Junction margin – the time between two trains' movements using some of the same track or points at a junction

To protect the route of a train movement, the signalling systems ensure that there is no infringement of the route ahead of the train by any other obstacle (including other trains). The distance protected needs to be at least equivalent to the braking distance of the train. If the headway in front of the train reduces, the speed of that train must reduce so that its braking distance remains within the protected route. This is known as running on restrictive aspects (Yellow or Double Yellow).

Signalling margins are protected in the timetable by the Planning Headway and Junction Margins rules in TPR. Whilst the signalling system ensures that the movements cannot take place too close to each other, planning them sufficiently far apart in the timetable prevents the second train being delayed (until outside factors are taken into account). Planning rules are usually simplified and are higher than technical signalling values for the same margins to allow for some robustness under minor perturbation.

Current planning margins are documented in Timetable Planning Rules online.

Reference: http://www.networkrail.co.uk/aspx/3741.aspx

2. Notes about Terminology

A great number of technical terms and acronyms are used in timetable planning. Train planning conventions and terminologies are susceptible to confusion. TRIP's VISION methodology defines specific categories for junction margins and headways.

2.1 Headway Terminology

Headway can have various meanings which we outline here for the avoidance of confusion:

- *Technical or calculated headway* is a signalling concept. It is specified, for each signal the train passes, as the number of seconds the signal takes to return to a particular aspect.
- *Non-stopping headways* are calculated with a non-stopping train, measuring the amount of time required in order for a following train to see a particular aspect.
- *Stopping headways* are calculated with a stopping train being followed by either a stopping or a non-stopping train, measuring the amount of time required in order for a following train to see a particular aspect.
- *Green headway* is the technical headway calculated so that the following train sees only green aspects.
- *Restricted headway* is the technical headway calculated so that the following train sees restrictive aspects, one less than green (i.e. Yellow on 3 –aspect signalling, and YY on 4-aspect signalling).
- *Planning Headway* is a simplification of technical headways to give a uniform value over a longer section of route, usually based on the highest green technical headway on that route, and then rounded up to the nearest half minute. These are documented in TPR.
- *Service interval* (how far apart trains are actually planned on the same route, regardless of signalling capacity) is sometimes referred to as headway, but we are not using this definition, to avoid confusion.

3. Summary of the Paddock Wood to Dover Priory area

3.1 Scope and Infrastructure

The in-scope SE5 model area begins at Paddock Wood and runs from there along a two track section through a number of two platform stations including: Marden, Staplehurst, Headcorn* and Pluckley. The route passes through Ashford International, here the number of lines increases to 8. Ashford International is a complex 6 platform station with several different branching lines including the Channel Tunnel Rail Link (CTRL). Continuing from Ashford, the in-scope route becomes two track once more. It passes the 2 platform stations of Westenhanger and Sandling before reach Saltwood Junction and branching to Dollands Moor Depot. Past Saltwood Junction the route calls at Folkestone West, Folkestone Central and Folkestone East, ultimately ending at the 3-platform station of Dover Priory.
*Headcorn has two loop platforms as well as an Up Fast Loop.

The model area has been extended along several branch lines to include a further 3-4 signals and the next mandatory timing point, for routing purposes. These include:

- The Medway lines to Beltring. This is a simple 2 track branch and Beltring consists of 2 platforms. These lines are controlled by 2 aspect signalling.
- The Maidstone lines to Charing. This is a simple 2 track branch and Charing consists of 2 platforms. These lines are controlled by a mixture of 3 and 4 aspect signalling.
- The Canterbury lines to Wye. This is a simple 2 track branch and Wye consists of 2 platforms. These lines are controlled by a mixture of 3 and 4 aspect signalling.
- The Rye lines to Appledore. This is a simple 2 track branch with both Ham Street and Appledore consisting of 2 platforms. This branch also includes the East Berthing Sidings of Ashford International. These lines are controlled by a mixture of 2 and 3 aspect signalling.
- The Chatham lines to Shepherds Well and Deal. The Chatham lines are 2 track with the stations along them consisting of 2 platforms. These lines are controlled by a mixture of 2 and 3 aspect signalling.

The model has also been extended back to include part of the SE4 model area for routing purposes. The station of Tonbridge has been included as well as its branches and the first mandatory timing point on each of them.

The main line from Paddock Wood to Saltwood Junction is controlled by 4 aspect signalling. Once the route branches towards Dover Priory it becomes controlled by 3 aspect signalling.

The route is electrified with 650 – 750 V DC top contact Third rail throughout. There is also 25 kV AC overhead wires in Ashford platforms 3 to 6 and at Saltwood Junction.

3.2 Traction

The main passenger type on this route is Southeastern Class 375 EMU. The specification detailed that the passenger stock types to be modelled were Class 375 12, 8 and 4 car 100mph, Class 395 6 Car 140mph* and Class 171 2 car 100mph with various freight also to be modelled (see Table 2 Traction Types). All passenger trains were modelled as Southeastern Class 375 except four trains; two trains

from Ramsgate to St Pancras International were modelled as Southeastern Class 395 and two trains from Hastings to Ashford International were modelled as Southern Class 171.

Train Type	TOC	Max speed (mph)	Braking category	Resistance	Coeff. A (v*v) (km/hr) (n/t)	Coeff b. (v) (km/hr) (n/t)	Coeff. C (const.) (km/hr) (n/t)
12 car class 375	Southeastern	100	11	User formula 24	0.0029	0.02791	12.0
8 car class 375	Southeastern	100	11	User formula 24	0.0029	0.02791	12.0
4 car class 375	Southeastern	100	11	User formula 24	0.0029	0.02791	12.0
6 car Class 395	Southeastern	100*	11	User Table 1	n/a	n/a	n/a
2 car Class 171	Southern	100	11	User formula 5	0.00313	0.04368	12.00002
66 +13=1800T 75MPH	DB Schenker	75	6	System defined 11	n/a	n/a	n/a
66 +13=1800T 60MPH	DB Schenker	60	1	System defined 11	n/a	n/a	n/a
66 +24=700T 60MPH	Direct Rail Services	60	1	System defined 11	n/a	n/a	n/a
66 +23=2400T 60MPH48	DB Schenker	60	1	System defined 11	n/a	n/a	n/a
60 +21=2000T 45MPH	DB Schenker	45	1	System defined 11	n/a	n/a	n/a
66 +20=1600T 75MPH	DB Schenker	75	6	System defined 11	n/a	n/a	n/a
66 +20=1600T 60MPH	DB Schenker	60	1	System defined 11	n/a	n/a	n/a
92 +20=1600T 75MPH	DB Schenker	75	6	System defined 11	n/a	n/a	n/a
66 LD	GB Railfreight	75	1	System defined 1	n/a	n/a	n/a
37 +2=100T 60MPH	DB Schenker	60	1	System defined 11	n/a	n/a	n/a

Table 2 Traction Types

Notes

*SE5 specification stated a maximum speed of 140mph but since we have modelled the DC version, this was capped at 100mph.

The specification stated that the braking rate to be used for analysis, for all passenger traction types, was 6.8%g. Therefore in VISION braking category 11 (1.5 mph/sec or 6.839%g) was applied.

Observed braking rates have been set up for the Class 375, Class 395 and Class 171 stock types in scope.

The VISION parameters of the stock types used can be found in Appendix B of “Tracsis Rail Consultancy Report - TRIP LOT2 Model Quality Report v2.0 20160711.docx".

4. Methodology

4.1 Introduction

A model of the area and stock types was built in VISION.

A specification of stock types and stopping patterns for trains used to calculate platform re-occupations and junction margins was provided by Network Rail in “Appendix B Train Headway Stopping Patterns” of the specification document “TRIP SE5 Ton to Dov via Ash Final.3.pdf” (dated 21/12/2015), with subsequent updates provided in Excel format, the latest version being “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)”.

Junction margins and platform re-occupations, referencing trains detailed in Appendix B, were specified by Network Rail in Appendix C and Appendix D respectively of the specification document “TRIP SE5 Ton to Dov via Ash Final.3.pdf” (dated 21/12/2015), with subsequent updates provided in Excel format, the latest version being “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)”.

These specification tables can be found in Appendix F.

Exports from the VISION simulation were used to calculate the signalling margins on green aspects for both standard braking rates and observed (OTMR) braking rates.

4.2 Model Build

VISION is a railway modelling tool widely used in the UK. VISION modelling was carried out using version RN-025.

VISION requires a considerable amount of data about infrastructure, traction and driving standards.

The VISION model has been built from data captured by the Tracsis team from the latest signalling diagrams (Appendix A), signalling control tables (as supplied by Network Rail) and the NESA (National Electronic Sectional Appendix).

Approach Control locations were identified using the Control Tables and spreadsheet supplied by Network Rail and incorporated into the model at the appropriate locations (Ashford West, Ashford, Folkestone East, Tonbridge West, Postern Substation, Paddock Wood, Staplehurst, Headcorn, Hothfield Substation, Wye, Ashford Substation, Sevington Substation, Herringe Substation, Dollands Moor Substation, Saltwood Junction, Dollands Moors Yard Junction and Dover Priory). A list of approach control entered into the model was then compiled by Tracsis and verified by Network Rail. The list of approach control modelled in version 1.0 of this report was incomplete but this has been addressed in version 2.0. A list of all the approach control from red (MAR) within the model area can be found in Appendix E.

Further information regarding the data used to build the VISION model can be found in “Tracsis Rail Consultancy Report - TRIP LOT2 Data Quality Report 20160524.docx."

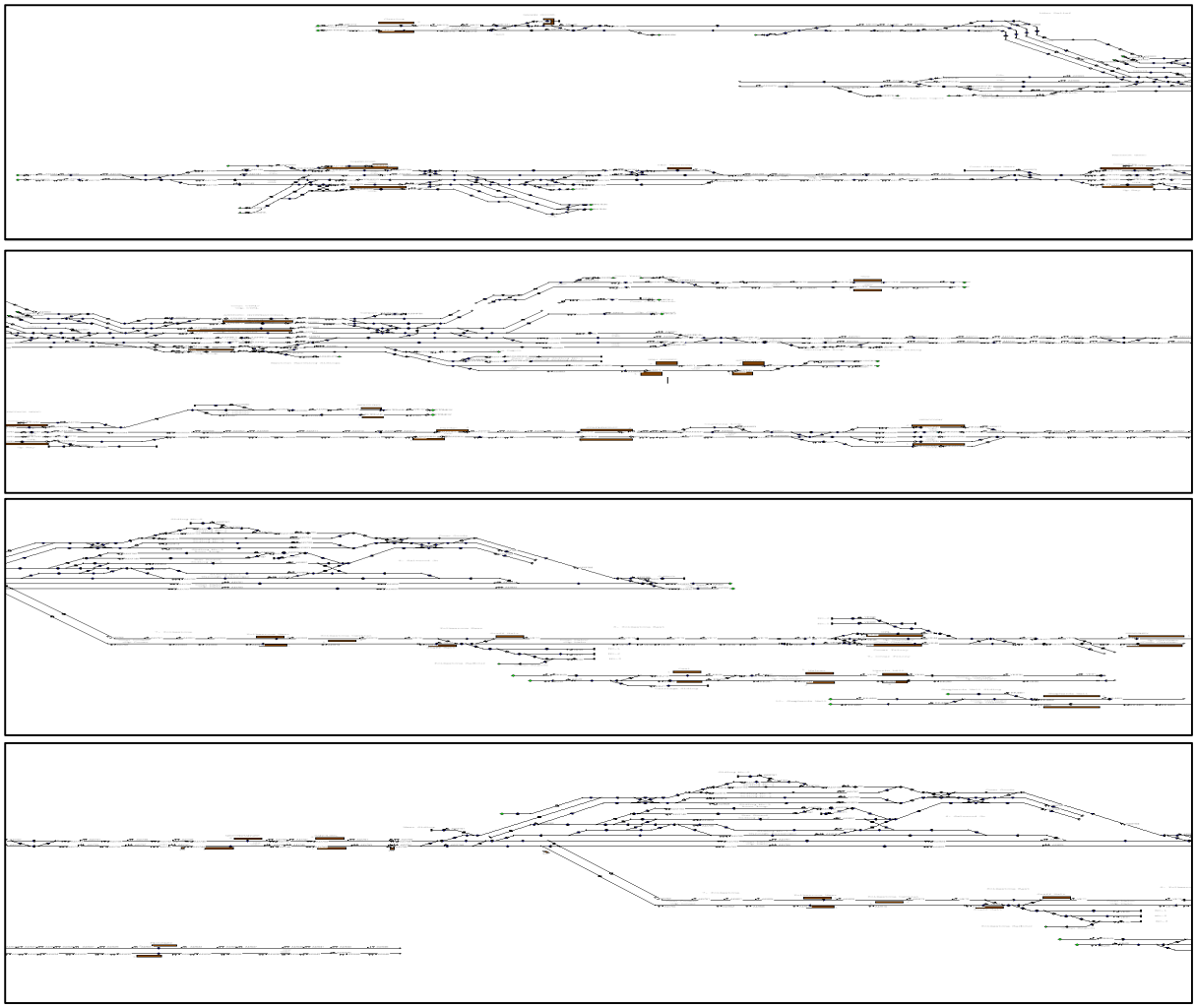


Figure 3-1 VISION model layout

The traction data was supplied by Network Rail and modelled with the parameters summarised in section 3.2 and detailed in “Tracsis Rail Consultancy Report - TRIP LOT2 Model Quality Report v2.0 20160711.docx". Specific professional driving rules for Southeastern, Southern and the relevant freight operators were incorporated into the model based on the data provided by Network Rail.

To calculate running times and margins we ran individual trains in VISION (i.e. without any interaction with other services) and recorded the amount of time they took to clear certain points and locations.

Further information regarding the VISION model build can be found in “Tracsis Rail Consultancy Report - TRIP LOT2 Model Quality Report v2.0 20160711.docx".

4.3 Service Set-up

Trains were created and routed manually through the VISION model with their route and stopping patterns assigned according to the updated specification document “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR)” provided on the 17/06/16. This timetable was run for individual trains, using unspecified times at each location and one second dwell times. This ensures that train runs are based on minimum technical times.

4.4 Headway

Network Rail define headways as either “non-stopping” or “stopping”, depending on whether the first train is passing or stopping at each location. Network Rail have different methods for calculating non-stopping headway and stopping headway, as described below.

4.4.1 Non-stopping headway

Technical non-stopping headways are calculated from VISION and the Network Rail SAT Tool v 3.0i by calculating how long a non-stop train takes at maximum speed to clear block sections, and adding on signal setting time of three seconds and sighting time of eight seconds so that the driver of the second train will not see restrictive aspects. The headway time reported at a specific signal is based on how long train 1 takes to clear the route ahead, not the time train 2 takes to approach that signal.

The SAT Tool does not report headways at 2-aspect repeater signals. In addition, to ensure the correct results, the 3-aspect repeater signals were excluded from the calculations using the option in the tool.

The calculation takes into account traction and line speed, therefore technical values are defined for each signal, and for each traction type. Services set up in VISION either start from a stand at origin or at speed from the point where they enter the model, and run either to the destination, or through the point where they exit the model. Entry points on the model are at line speed. Data is exported from VISION for each train-run individually, including time, speed, positon, signal aspects and overlap clearance. From these exports, a graph is then produced by the SAT tool for each route and train type to display the headway, line speed and train speed, to which gradient information has been added.

4.4.2 Stopping headway (Depart-Pass platform re-occupation)

Network Rail methodology stipulates that Depart-Pass platform re-occupations are calculated from VISION and the SAT Tool by taking the time the first train takes to clear the overlap of the platform departure signal after *departing* the TIPLOC, then the time the second train takes to *pass* the TIPLOC from the last point it would not see any restrictive aspects whilst the platform or conflict point is occupied. Three seconds signal setting, five seconds points movements (if required) and eight seconds sighting-time is added.

The methodology incorporates train 1 pulling out of a station at its slowest speed, only the first part of train 1 acceleration curve is considered, therefore the margin is more dependent on the (non-stopping) *train 2* speed, signal spacing and type on the route *prior* to the station. If train 1 were to clear far enough along the route beyond the station for train 2 to see a green signal immediately prior to the station, then more of train 1 acceleration curve (and any stops at subsequent stations) would be considered. The margin would therefore be more dependent on *train 1* speed, signal spacing and type on the route *beyond* the station, so could be significantly different.

The platform re-occupation margins in the same direction (see section 4.5.1) use the same method but are based on Depart-Arrive.

The stopping headways required were specified by Network Rail in the updated Excel specification document “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)” in terms of route, stopping pattern and stock types.

This timetable was run for individual trains, using unspecified times at each location and one second dwell times to ensure that train runs are based on minimum technical times. From these exports, a column bar chart is produced in Excel showing unrestrictive Depart-Pass values along the specified route.

4.5 Platform Re-occupation

Headways are used for governing the regulation of trains which follow each other on the same line. Platform re-occupations are used to define the margin between trains which start/stop in the same platform. At terminal stations, or where trains reverse, there are platform reoccupation margins in the opposite direction.

Platform re-occupation margins are calculated with VISION and the SAT tool by taking the time the first train takes to clear the platform signal (same direction) or conflict point (opposite direction) after the TIPLOC, then the time the second train takes to reach the TIPLOC from the last point it would not see any restrictive aspects whilst the platform or conflict point is occupied. Three seconds signal setting, five seconds points movements (if required) and eight seconds sighting-time is added. This gives the technical margin for the platform re-occupation.

The platform re-occupations required were by provided by Network Rail in the updated Excel specification document “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)” which referenced the route and stopping patterns of trains also shown in the workbook.

This timetable was run for individual trains, using unspecified times at each location and one second dwell times to ensure that train runs are based on minimum technical times. The relevant pairs of trains are selected at each platform based on the NR specification.

4.5.1 Platform Re-occupation Margins in the same direction

Platform re-occupation margins are between two trains, the first starting from a platform and the second following in the same direction and coming to a stop in the same platform. It is calculated in the same way as junction margins, with the exception that points’ movement time is excluded. Train 1 clearance will be the overlap of the platform departure signal. Train 2 signal will be identified by counting back along the route for the necessary number of block sections.

Where train 2 stops at another station between the green sighting signal and the stop at the platform, the deceleration, the 1 second VISION dwell time and acceleration is included in the calculation, with a note added that the required dwell time would need to be added to timer 2 and therefore the technical margin. This may not be realistic because:

- Stopping train speeds, especially where stops are so close together, are more constrained by the stop than by the signal aspects.

- Trains often depart a station on a restrictive aspect, instead of waiting for a green aspect to be displayed.

For this reason, when train 2 stops within the sighting point, the restrictive margin may be more appropriate. However, restrictive margins are not in the scope of this report.

4.5.2 Platform Re-occupation Margins in the opposite direction

This is calculated in the same way as crossing margins. The calculated time includes the amount of time between train 1 departing the platform at the TIPLOC and clearing the conflict point, plus the time for train 2 to arrive at the platform via the conflict point from the last signal at which it would not get a green aspect whilst the conflict point is occupied. The conflict point is usually within the TIPLOC, so the majority of the margin is dependent on train 2 speed, signal spacing and signal types on train 2 approach. The further the clearance point is from the platform, the longer the platform re-occupation value will be.

4.6 Junction Margin

For other kinds of train movements the TPR include Junction Margins to further protect the signalling system's capability in the timetable.

Junction margins are defined between pairs of train movements where the first must be completed before the second can progress. As with headways, they are calculated by establishing the amount of time which must elapse between the two train movements for the second train movement not to see a restrictive signal aspect. There are three types: Crossing Junction Margins, Converging Junction Margins, and Diverging Junction Margins.

Junction margins are calculated with VISION and the SAT tool by calculating the time the first train takes to clear the conflict point after the TIPLOC, then the time the second train takes to reach the TIPLOC from the last point it would not see any restrictive aspects whilst the conflict point is occupied. Three seconds signal setting, five seconds points movements and eight seconds sighting is added. This gives the technical margin at the TIPLOC.

Using VISION and the SAT Tool we create technical values for the intervals required between a pair of train movements. These cover the following:

- Junction margins for services crossing each other's route
- Junction margins for following services converging onto the same route
- Junction margins for following services diverging onto different routes
- Junction margins for re-occupation of single lines (counts as crossing)

VISION creates data for each train-run individually, including time, speed, position, signal aspects and overlap clearance.

The junction margins required were provided by Network Rail in the updated Excel specification document “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)”, which referenced the route and stopping patterns of trains also shown in the workbook.

The technical junction margin is determined by the following factors for train pairs with conflicting moves:

- Type of Junction margin
- TIPLOC – timing point at which the junction margin is defined
- Train 1 clearance – the signal overlap or set of points which must be cleared by the first train to release the conflict point
- Train 1 clearance distance – the distance beyond a set of points which must be passed by the train before the set of points is released by the signal system for use by another train.
- Train 2 signal - the first signal which would not be green when the conflict point is occupied; the sighting point of train 2 signal is as far as train 2 can get without seeing any restrictive aspect signals when the conflict point is occupied by train 1.
- Train 2 previous signal – required for diverging only. The signal before Train 2 signal, to ensure they have correct headway before diverging.

With this information technical junction margins are calculated by the SAT Tool which are then exported to an Excel spreadsheet. The margin is an addition of ‘Timer 1’ and ‘Timer 2’ defined as follows:

- **Timer 1** is the time taken by train 1 to clear the conflict point after being timed at the TIPLOC (note this can be negative if the conflict point is before the timing point). Train 1 clearance point depends on the type of margin, as described in the following sections.
- **Timer 2** is the time train 2 takes to reach its timing point from the last point at which it would see green signals whilst the conflict point is occupied – this is the sighting point of train 2 signal. The conflict point is usually within the TIPLOC, so the majority of the margin is dependent on train 2’s speed, as well as signal spacing and signal types on approach.

The following constants are added as appropriate at this stage:

- 3 seconds signal setting time
- 8 seconds sighting distance
- 5 seconds points movement time only if the points move (i.e. not for platform re-occupation in the same direction when following trains are on the same route)
- 30 seconds dispatch allowance if train 2 is a passenger train departing from a station signal which has cleared from red to green following a crossing or diverging move. If train 2 departure signal has shown a restrictive aspect for less than 30s (converging) this is made up to 30s to complete the dispatch procedure. This was calculated manually from the *.scp* file.

4.6.1 Converging Junction Margins

These are where two trains use separate routes prior to the junction and then converge and follow the same sequence of signals onwards. Converging margins are calculated by the addition of ‘Timer 1’

and ‘Timer 2’ with the constants as described above for general junction margins. Timer 1 clearance will be the overlap of the first signal after the convergence.

An exception is when train 2 is starting from a stop in the platform at the same TIPLOC as the conflict location, when train 1 must clear far enough along the converged route for train 2 to depart on a green aspect. In this case the margin is more dependent on train 1 speed, signal spacing and type on the converged route, in a similar way to headway.

When train 2 is subject to approach control from red at the junction-protecting signal the technical margin does not indicate that the trains could run at this margin apart on the route beyond the converging points. In this scenario train 2 is able to run as far as the sighting point or release track-circuit of the junction-protecting signal, under the MAR sequence of signals, without being affected by the presence of train 1. For this reason, the headway is also calculated separately, based on train 1 from the signal after the convergence. Where the headway beyond is higher than the converging margin, this will be more realistic.

4.6.2 Diverging Junction Margins

These are where two trains follow the same sequence of signals approaching a junction and then diverge onto two separate routes.

Diverging margins are calculated by the addition of ‘Timer 1’ and ‘Timer 2’ with the constants as described above for general junction margins. Timer 1 clearance will be 75 metres (82 yards) beyond the diverging points, as agreed with Network Rail on 01/04/2016.

The diverging junction margin itself is based on the diverging points, so does not indicate that the trains could have run at this margin apart on the route up to the diverging points. For this reason, the headway is also calculated separately – this is based on train 1 only and is the time taken by train 1 to run from the signal that would turn green following clearance of the overlap of the junction-protecting signal, to clearing the overlap of the junction-protecting signal before the divergence (plus 8 seconds signal sighting time and 3 seconds signal response time), and this value is also reported. Where the headway on approach is higher than the diverging margin, this will be more realistic.

When train 2 is subject to approach control from red at the junction-protecting signal the technical margin does not indicate that the trains could run at this margin apart on the route approaching the diverging points. Again, in this scenario the headway is also calculated separately as outlined in the previous paragraph.

4.6.3 Crossing Junction Margins

These measure margins between pairs of train movements which do not follow the same route either before or after the conflict point, but do use some of the same track or set of points. Examples include ‘platform end conflicts’ at terminal stations and pairs of trains which are travelling in opposite directions along a route.

The margin is an addition of 'Timer 1' and 'Timer 2' with the constants as described above for general junction margins. Timer 1 clearance will be 75 metres (82 yards) beyond the crossing point.

An exception is when train 2 is starting from a stop at the platform within the TIPLOC and will cross train 1's route on the platform end (usually at terminal stations). In this case the platform end signal may clear from red to green and there are no previous signals on approach. The margin is the time for train 1 to clear the crossing point and the time for train 2 to be dispatched after the signal clears from red (notionally 30s). Arrive-depart margins may even be negative as the points are cleared before train 1 reaches the buffers. Where the conflict point is close to the platform end the 30s dispatch time can create a slightly positive margin, but where the conflict point is further from the platform the technical margin may still be negative after adding the 30s dispatch time.

4.7 Using OTMR to review Braking rates

The default braking rates come from the specification document "TRIP SE5 Ton to Dov via Ash Final.3.pdf" (dated 21/12/2015) (referred to as 'default braking' in the results tables). We've also calculated technical values using observed braking rates.

OTMR was provided for the Class 375, Class 395 and Class 171 stock types which operate within the SE5 model area.

Observed braking rates were extracted by finding the location at which the train starts braking prior to a stop, and the location at which it stopped (in the station). Journey data is used to identify which stops are within the study area. The speed at the start of braking and the distance travelled between starting braking and stopping are used to calculate the braking rate for the stop. These rates are then averaged to give the values for average braking rate below.

The average braking rates were calculated and amended in VISION as follows:

stock type	Default			OTMR		
	%g	mile/h/s	cat	Average mile/h/s	Used mile/h/s	cat
171	6.839	1.50	11	0.76662	0.76	3 VCN
375	6.839	1.50	11	0.74735	0.76	3 VCN
395	6.839	1.50	11	0.81324	0.81	4 VCN

Table 3 Observed braking rates from OTMR

Using observed braking rates predominantly affects train 2 for the re-occupation margin: the reduced braking rate means it must start braking earlier, so the running time into the platform (or timing point) increases.

An example graph plotting the train speed as modelled in VISION (using default and observed braking) and from an actual train service within the observed train running data is shown in Appendix D. It can be seen that there is a difference between the VISION train speed curves when using standard and observed braking rates, but that applying the observed braking rate in VISION gives a train speed curve that is comparable to that of the observed train running data.

5. Headway Graphs

This section presents the non-stopping headway graphs and Depart-Pass platform re-occupation column bar charts based on the Network Rail methodology provided (described in sections 4.4.1 and 4.4.2).

5.1 Non-stopping Headway Graphs

The non-stopping headway graphs show the technical headways for non-stop trains covering the route between Tonbridge and Dover Priory for Class 375 12 car 100mph and the route between Ashford International and Dover Priory for Class 395 6 car 100mph.

Additionally, following communication with Network Rail, non-stopping headway graphs for freight services F1-F4 and F6-F14 in the updated Excel specification document "SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)" are also provided. Note that these trains remain routed as per the specification document but with stops removed (except where trains are specified to originate or terminate).

In addition to the technical headway the non-stopping headway graphs show the "fast" planning headway, line speed and train speed profile which are colour coded:

- Black = 'fast' planning headway (in seconds)
- Blue = technical headway (green signals)
- Red = line speed (mph)
- Yellow = train speed (mph)
- Green = gradient profile (yards)

Sometimes the train speed appears higher than the line speed. This is an issue known to the SAT team and becomes more obvious on short headway graphs. The reason is that data is extracted from VISION in miles (to 1 decimal place), whilst values in the *.trp file are in yards and this where a phase shift is introduced. SAT tool converts the miles into yards and then plots all in one graph.

The SAT tool plots the technical headway chart up until the last signal that is able to clear to green. In cases where the train is terminating or exiting the model area, the signal sequence behind the train is not able to display a green aspect until 3 or 4 signals before. This means that the headway charts stop several signals short of the final TIPLOC to which the train is routed in VISION.

Commentary is provided on non-stopping headway graphs where the route is long enough to warrant it, or where there are particular points to note. The shaded area on the graphs denote sections that are shown on the graph but are out of scope. Section 10 Appendix C – Non-Stop Headway Values shows the same data in tabular form.

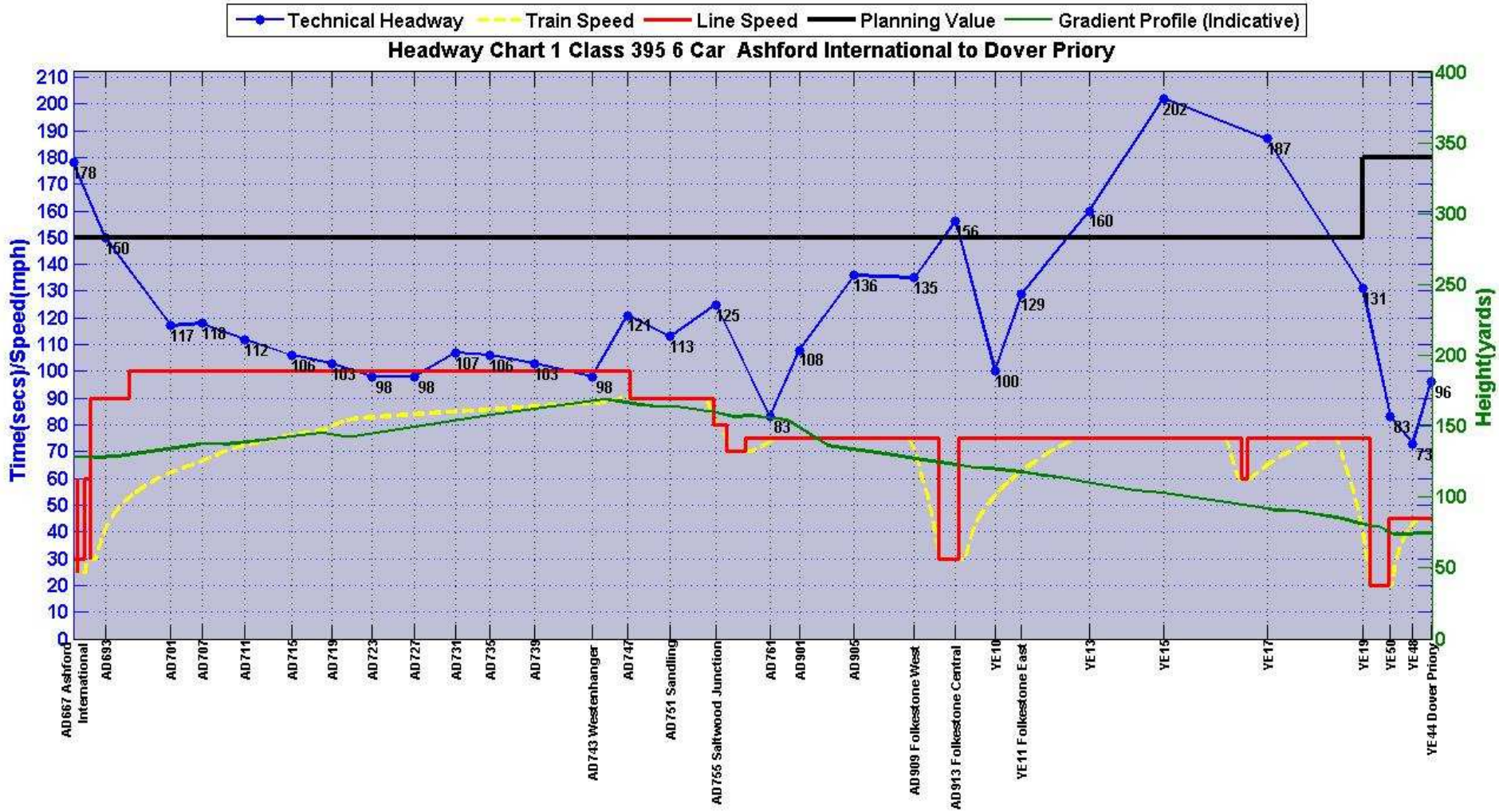


Figure 5-1 Non-Stop Class 395 6 car 100mph Ashford International to Dover Priory

Headway Chart 1 Commentary

The signalling is 4-aspect from Ashford International to Saltwood Junction, which means 3 sections (plus overlap) need to be clear to allow them to return to green. From Saltwood Junction the signalling is 3-aspect, which means two sections (plus overlap) need to be clear to allow them to return to green.

The technical headway peaks above the 'fast' planning headway values at three locations: Ashford International, Folkestone Central and between Folkestone East and Dover Priory.

At Ashford International, on entry from the Down West Control Chord, the lower line speeds through platform 5 and on crossovers to the Down Fast cause trains to take longer to clear signal sections which increases the technical headway. There is a rising gradient between Ashford and Westenhanger which means that it takes longer for the train to reach line speed.

Due to double red on YE10 and YE11, in order for signal AD913 to return to green the train must clear an additional section, i.e. clear the overlap of the YE13, at which point the signals sequence will be: YE13 (3-aspect) Red->Red, YE11(3-aspect) Red->Yellow, YE10 (3-aspect) Red->Green, AD913 (3-aspect) Yellow->Green) – this value of 156 seconds was calculated manually from the *.scp* file due to the SAT Tool being unable to accommodate this.

When the train reaches YE13 the signal spacing increases, which results in trains taking longer to clear sections and means the technical headway exceeds the planning value. The planning value increases from 2½ minutes at Archcliffe Junction, near to signal YE19.

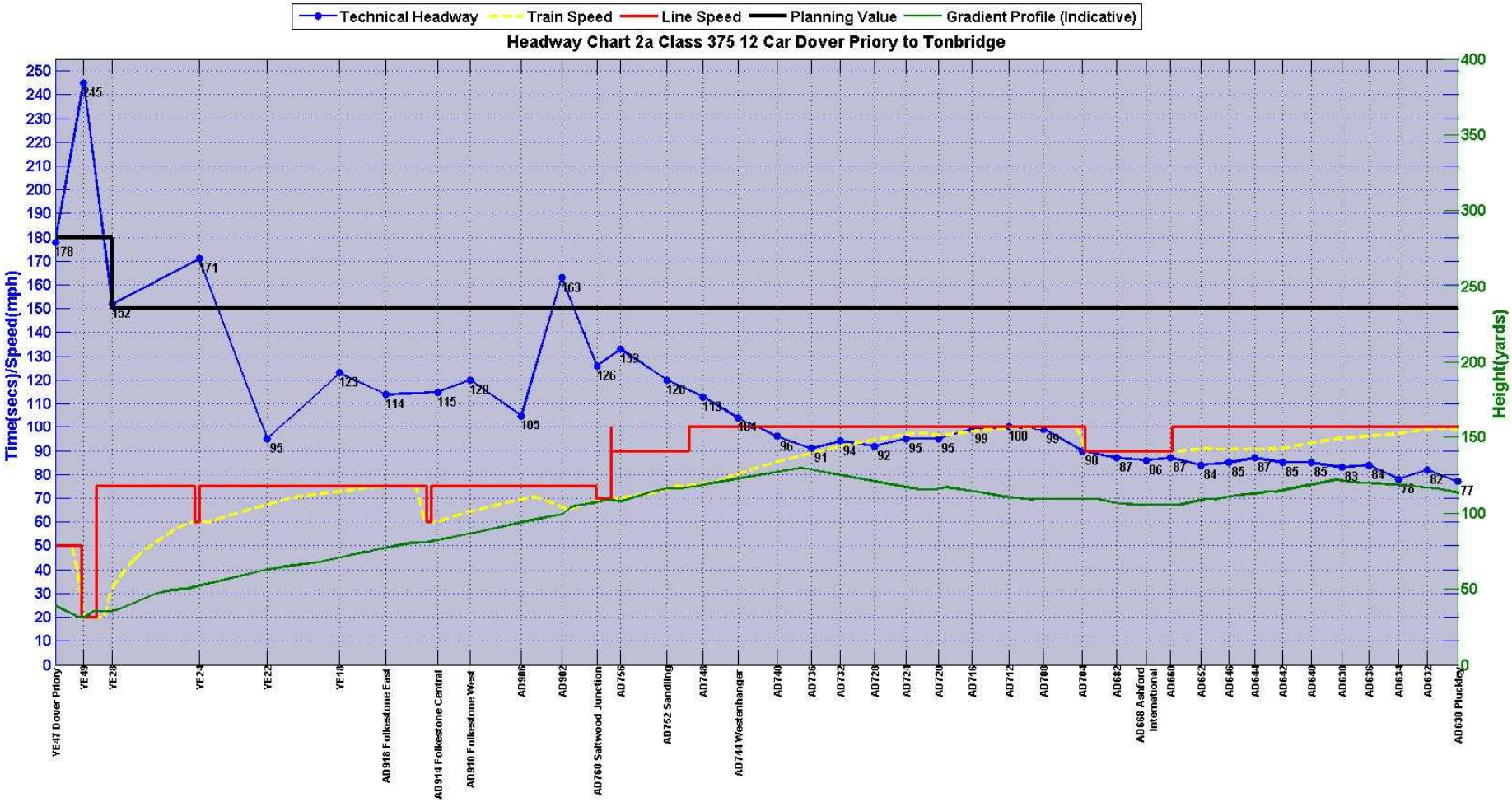


Figure 5-2a Non-Stop Class 375 12 car 100mph Dover Priory to Tonbridge

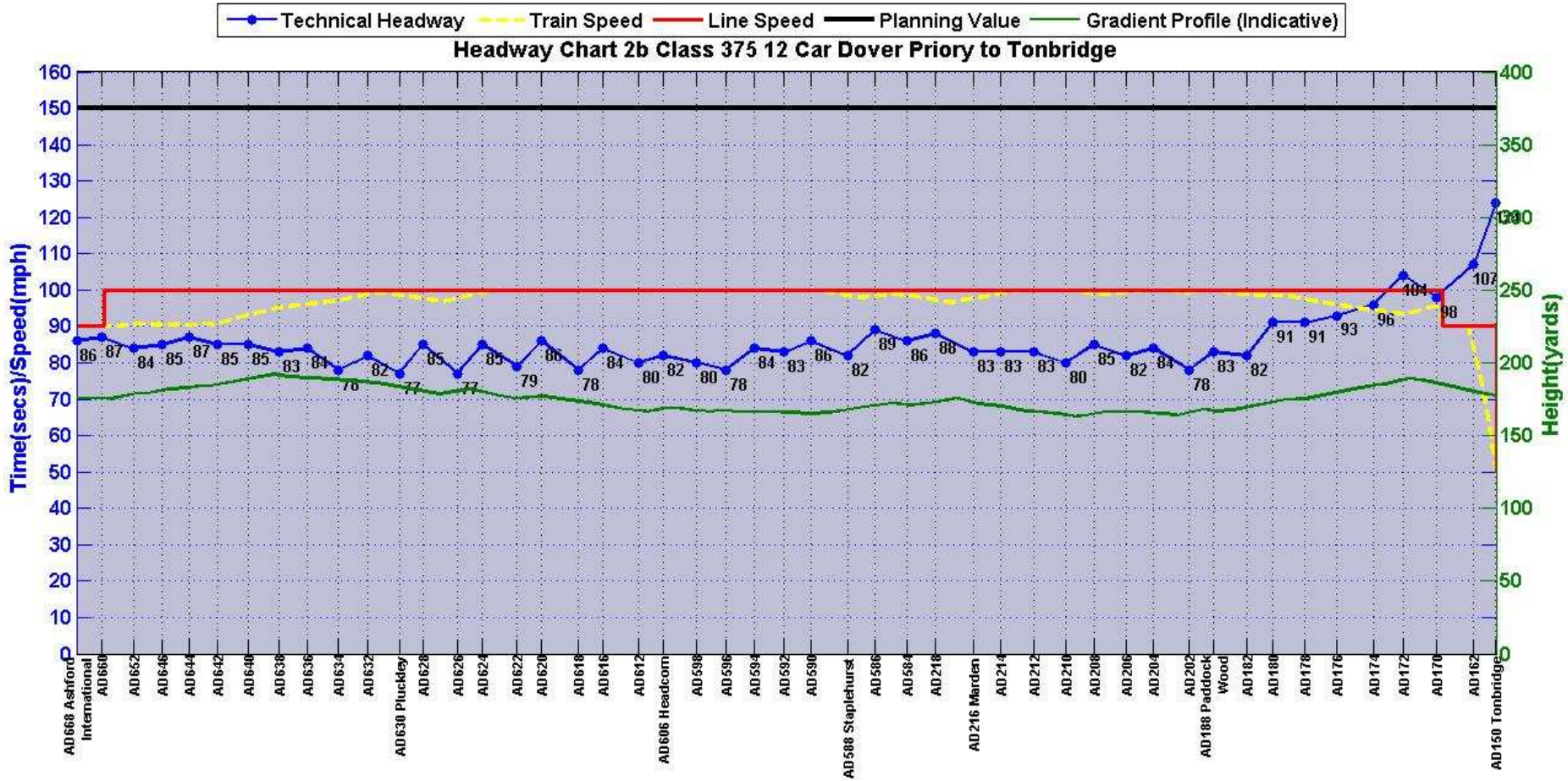


Figure 5-2b Non-Stop Class 375 12 car 100mph Dover Priory to Tonbridge

Headway Chart 2 Commentary

From Dover Priory to Saltwood Junction the signalling is 3-aspect, which means two sections (plus overlap) need to be clear to allow them to return to green.

The technical headway exceeds the 'fast' planning value after passing through Dover Priory. At YE49 this is due to the 20mph line speed and the increased signal spacing from YE28 (2-aspect) to YE24 (3-aspect, with YE26 repeater signal in between which is not shown on the graph), which means that the train takes longer to clear the two subsequent sections.

In order for signal YE28 (2-aspect) to return to green, the train must clear the overlap of YE24 – this was calculated manually from the *.scp* file to be 152 seconds (the SAT Tool produced an erroneous value of 319 seconds, which was noticed due to being significantly above the planning headway and adjacent technical values).

In order for signal YE22 (2-aspect) to return to green, the train must clear the overlap of YE18 – this was calculated manually from the *.scp* file to be 95 seconds (the SAT Tool produced an erroneous value of 215 seconds, which was noticed due to being significantly above the planning headway and adjacent technical values).

Due to two double reds on AD752, AD756 and AD760, in order for signals AD902 and AD760 to return to green the train must clear the overlap of the AD748, at which point the signals sequence will be: AD748 (4-aspect) Red->Red, AD752 (4-aspect) Red->Yellow, AD756 (4-aspect) Red->Double Yellow, AD760 (3-aspect) Red->Green and AD902 Yellow->Green – these values of 126 seconds and 163 seconds respectively were calculated manually from the *.scp* file due to the SAT Tool being unable to accommodate this.

The signalling is 4-aspect from Saltwood Junction to Tonbridge, which means 3 sections (plus overlap) need to be clear to allow them to return to green.

Once the train has reached line speed, the technical headway remains fairly constant from Ashford International to beyond Paddock Wood due to the fairly consistent 4-aspect signal spacing and line speed. The technical headway rises approaching Tonbridge due to the increased signal spacing and subsequent 50mph line speed on the Up Fast through Tonbridge (which is just visible on the edge of graph).

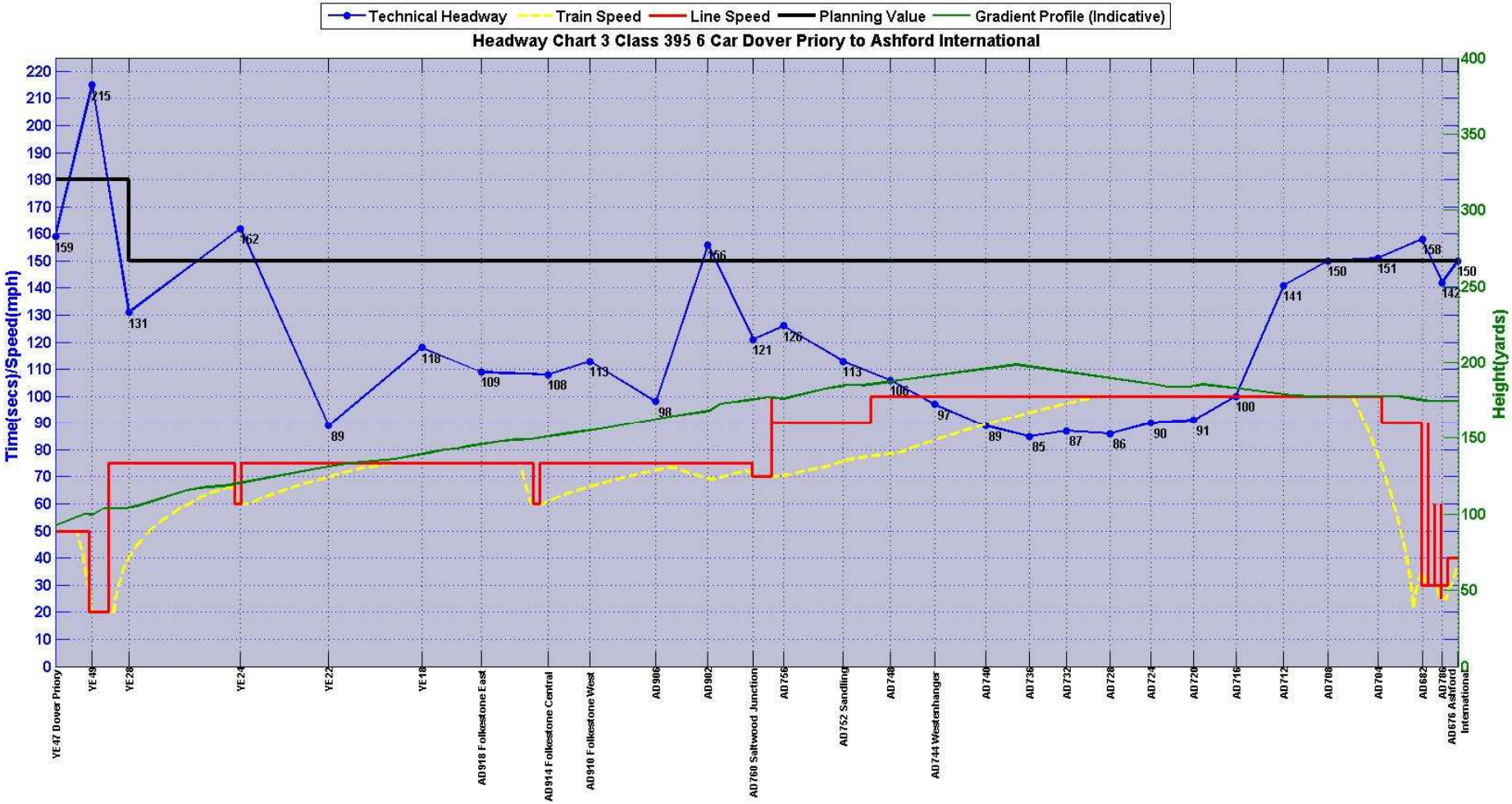


Figure 5-3 Non-Stop - Class 395 6 car 100mph Dover Priory to Ashford International

Headway Chart 3 Commentary

From Dover Priory to Saltwood Junction the signalling is 3-aspect, which means two sections (plus overlap) need to be clear to allow them to return to green.

The technical headway exceeds the 'fast' planning value after passing through Dover Priory. At YE49 this is due to the 20mph line speed and the increased signal spacing from YE28 (2-aspect) to YE24 (3-aspect, with YE26 repeater signal in between which is not shown on the graph), which means that the train takes longer to clear the two subsequent sections.

In order for signal YE28 (2-aspect) to return to green, the train must clear the overlap of YE24 – this was calculated manually from the *.scp* file to be 131 seconds (the SAT Tool produced an erroneous value of 287 seconds, which was noticed due to being significantly above the planning headway and adjacent technical values).

In order for signal YE22 (2-aspect) to return to green, the train must clear the overlap of YE18 – this was calculated manually from the *.scp* file to be 89 seconds (the SAT Tool produced an erroneous value of 206 seconds, which was noticed due to being significantly above the planning headway and adjacent technical values).

Due to two double reds on AD752, AD756 and AD760, in order for signals AD902 and AD760 to return to green the train must clear the overlap of the AD748, at which point the signals sequence will be: AD748 (4-aspect) Red->Red, AD752 (4-aspect) Red->Yellow, AD756 (4-aspect) Red->Double Yellow, AD760 (3-aspect) Red->Green and AD902 Yellow->Green – these values of 121 seconds and 156 seconds respectively were calculated manually from the *.scp* file due to the SAT Tool being unable to accommodate this.

The signalling is 4-aspect from Saltwood Junction to Tonbridge, which means 3 sections (plus overlap) need to be clear to allow them to return to green.
Due to the uphill gradient the train does not reach the 100mph line speed until beyond Westenhanger. The technical headway rises approaching Ashford International due to the increased signal spacing and subsequent line speed reductions due to the train being routed via platform 5. The MAR from AD682 to AD786 can be seen in the train speed curve.

Note that the infrastructure has been extended onto the High Speed Lines (line speed assumed to be 100kph, signals modelled as 4-aspect) in order that the signals approaching Ashford International will clear to green and can be plotted on the graph. Therefore the technical headway values for signals AD682, AD786 and AD676 are based on these assumptions.

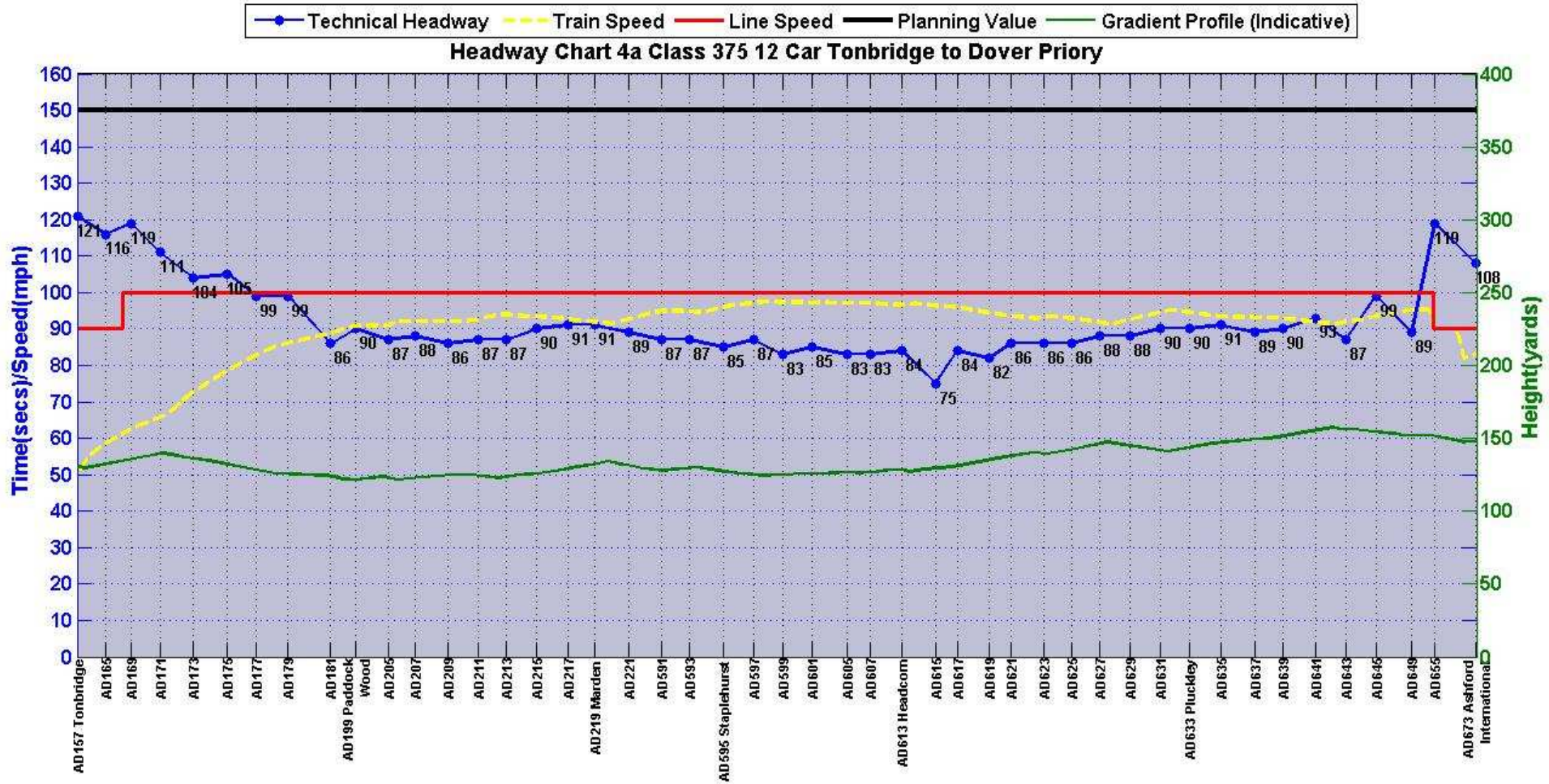


Figure 5-4a Non-Stop - Class 375 12 car Dover Priory to Tonbridge

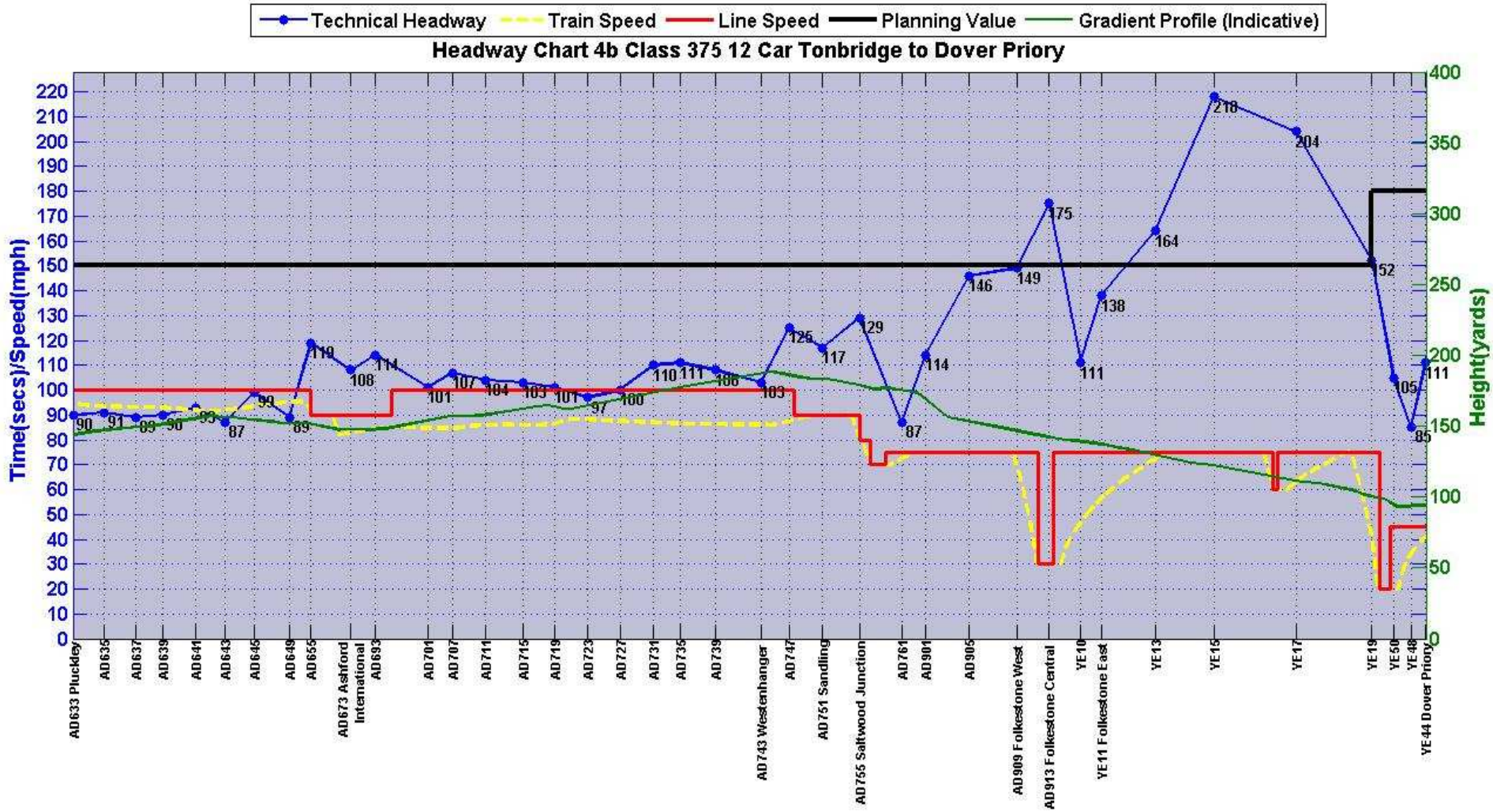


Figure 5-4b Non-Stop - Class 375 12 car Dover Priory to Tonbridge

Headway Chart 4 Commentary

From Tonbridge to Saltwood Junction the signalling is 4-aspect, which means 3 sections need to clear in order for signals to return to green.

The technical headway remains fairly constant from Paddock Wood to Ashford International due to the fairly consistent 4-aspect signal spacing and line speed, with the technical headway remain below the 2½ minutes 'fast' planning value for the majority of this section.

From Saltwood Junction the signalling becomes 3-aspect and signal spacing increases. This means 2 sections need to clear for signals to return to green. The technical headway increases approaching Folkestone West due to the upcoming 30mph section which means trains take longer to clear the subsequent sections.

Due to double red on YE10 and YE11, in order for signal AD913 to return to green the train must clear an additional section, i.e. clear the overlap of the YE13, at which point the signals sequence will be: YE13 (3-aspect) Red->Red, YE11(3-aspect) Red->Yellow, YE10 (3-aspect) Red->Green, AD913 (3-aspect) Yellow->Green) – this value of 175 seconds was calculated manually from the *.scp* file due to the SAT Tool being unable to accommodate this.

When the train reaches YE13 the signal spacing increases, which results in trains taking longer to clear sections and means the technical headway exceeds the planning value. The planning value increases from 2½ minutes at Archcliffe Junction, near to signal YE19.

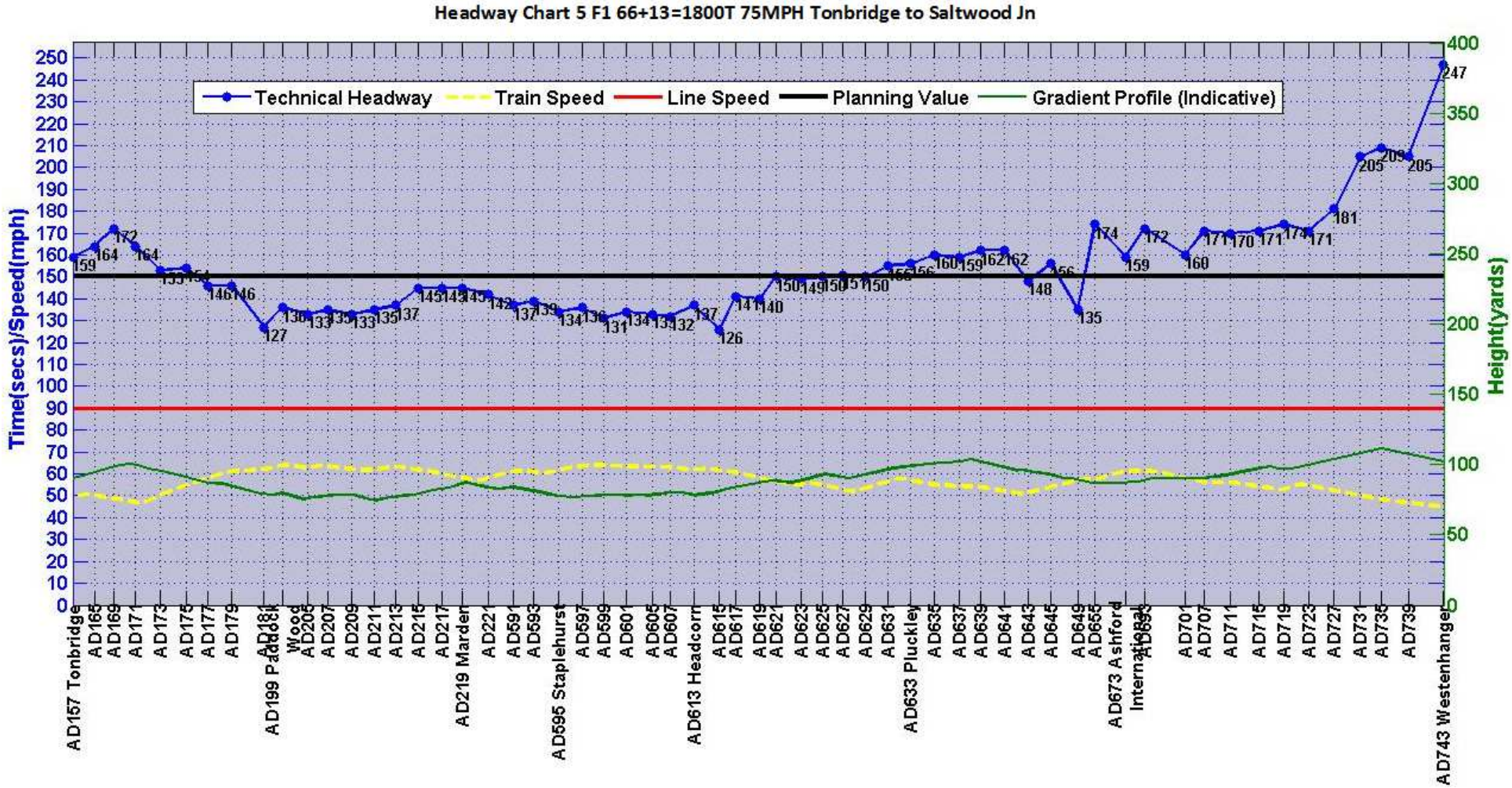


Figure 5-5 Non-Stop – F1 Tonbridge-Saltwood Jn

Headway Chart 5 Commentary

From Tonbridge to Saltwood Junction the signalling is 4-aspect, which means 3 sections need to clear in order for signals to return to green.

The technical headway rises above the 2½ minutes 'fast' planning value where the train speed dips due to uphill sections – beyond Tonbridge, around Pluckley and in particular, on the uphill section from Ashford International to Westenhanger. The graph ends at AD743 because this is the last signal that will turn to green. The technical headway rises further at AD743 due to the train speed slowing ahead as it diverges into Dollands Moor.

Headway Chart 6 Commentary

From Tonbridge to Saltwood Junction the signalling is 4-aspect, which means 3 sections need to clear in order for signals to return to green.

The technical headway rises above the planning value approaching Cranmore Down Loop due to the train speed slowing ahead as it passes through the 40mph loop. The train speed then remains between 40-50mph until the end of uphill gradient (approaching Ashford International). The train speed then drops and the technical headway rises on the uphill section from Ashford International to Westenhanger. The graph ends at AD743 because this is the last signal that will turn to green. The technical headway rises further at AD743 due to the train speed slowing ahead as it diverges into Dollands Moor.

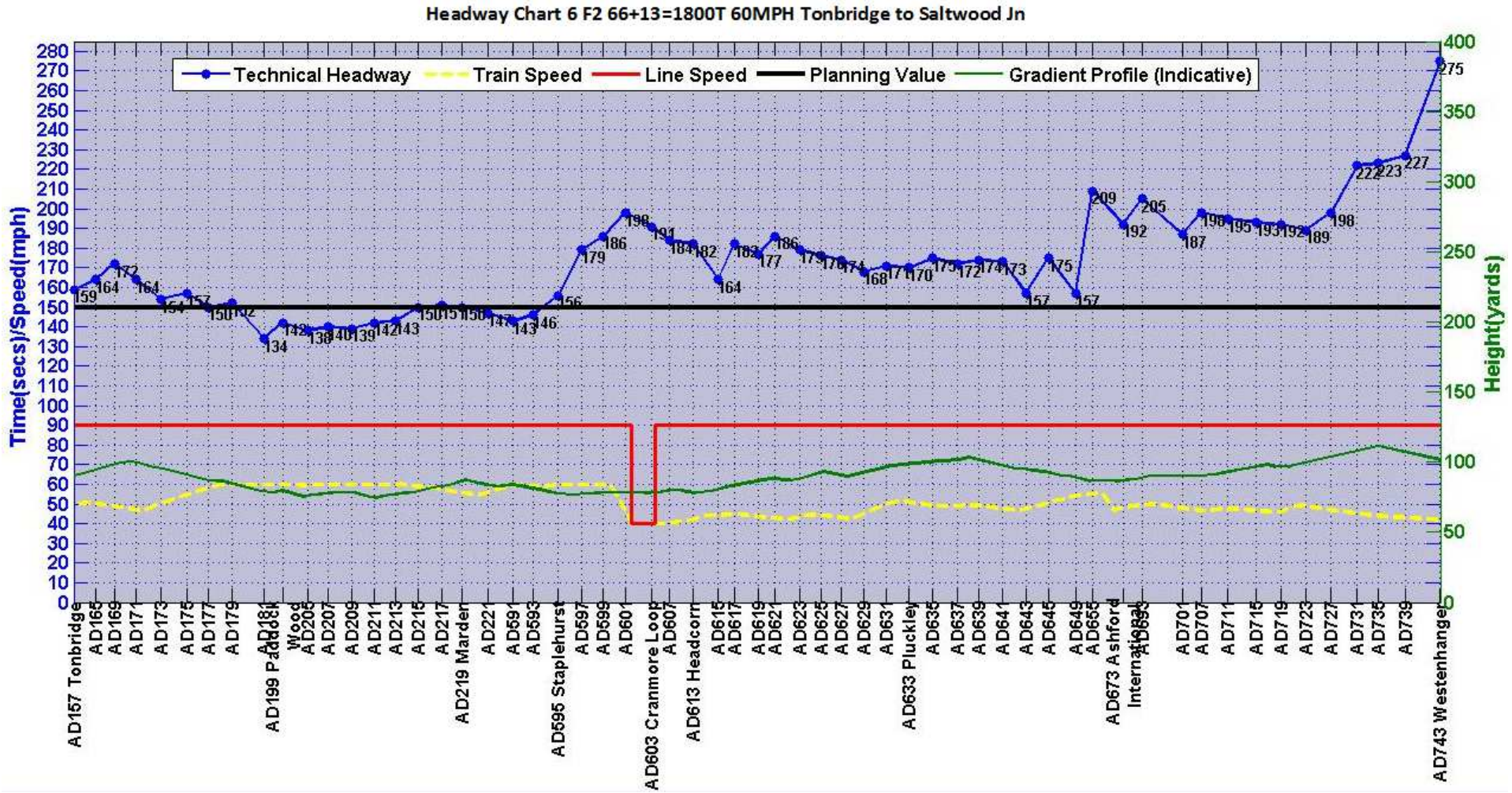


Figure 5-6 Non-Stop – F2 Tonbridge-Saltwood Jn

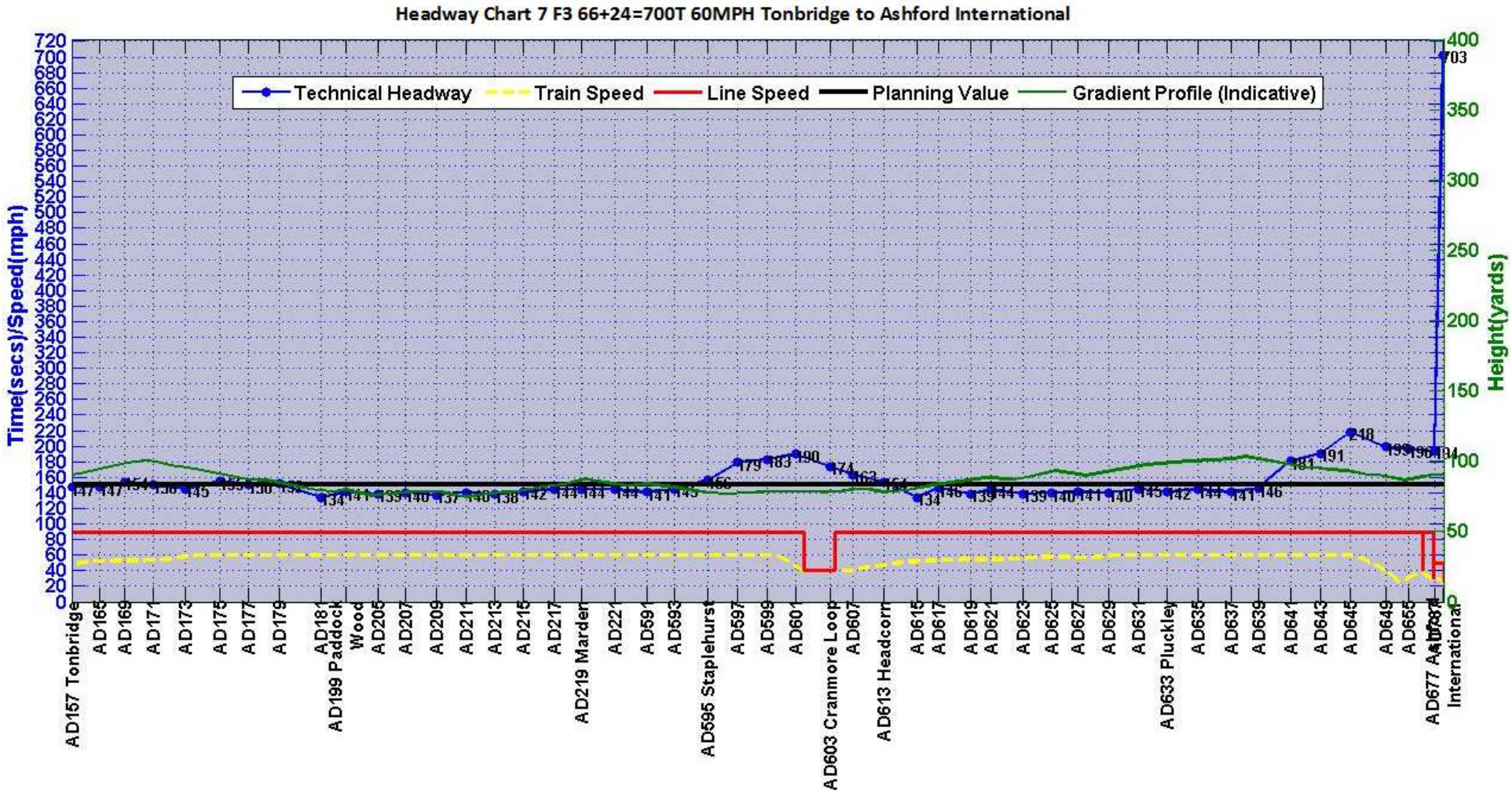


Figure 5-7 Non-Stop – F3 Tonbridge-Ashford International

Headway Chart 7 Commentary

From Tonbridge to Ashford International the signalling is 4-aspect, which means 3 sections need to clear in order for signals to return to green. Beyond Ashford International, on the Down Hastings, it is a mixture of 2-aspect and 3-aspect signalling.

The technical headway rises above the 2½ minutes 'fast' planning value approaching Cranmore Down Loop due to the train speed slowing ahead as it passes through the 40mph loop.

The technical headway shows a large spike at T677 (Ashford International platform end signal) due to the increased signal spacing beyond Ashford International on the Down Hastings – for AD677 to return to green, the train must clear the overlap of AD895. This is because, at the instant before/after a train clears the overlap of AD895, the signal sequence is: AD985 (3-aspect) Red->Red, AD895R (2-aspect repeater) Yellow->Yellow, AD893 (2-aspect) Red->Green, AD891 (3-aspect) Yellow->Green, AD677 (4-aspect) Double Yellow-> Green.

Headway Chart 8 Commentary

From Tonbridge to Paddock Wood the signalling is 4-aspect, which means 3 sections need to clear in order for signals to return to green. Beyond Paddock Wood, on the Down Medway, it is a mixture of 2-aspect and 3-aspect signalling.

The technical headway is above the 2½ minutes 'fast' planning throughout the Tonbridge-Paddock Wood route.

The technical headway spikes at AD179 due to the train speed slowing ahead (due to the 40-25-35mph line speeds through Paddock Wood DPL and onto the Down Medway) and the increased signal spacing on the Down Medway. For AD179 (and AD181 and AD197) to return to green, the train must clear the overlap of AD252 – at the instant before/after a train clears the overlap of AD252, the signal sequence is: AD252 (2-aspect) Red->Red, AD252R (2-aspect repeater) Yellow->Yellow, AD197 (4-aspect) Red->Green*, AD181 (4-aspect) Yellow->Green, AD179 (4-aspect) Double Yellow->Green.

*Note that this value of 170 seconds was calculated manually from the *.scp* file due to the SAT Tool being unable to accommodate this.

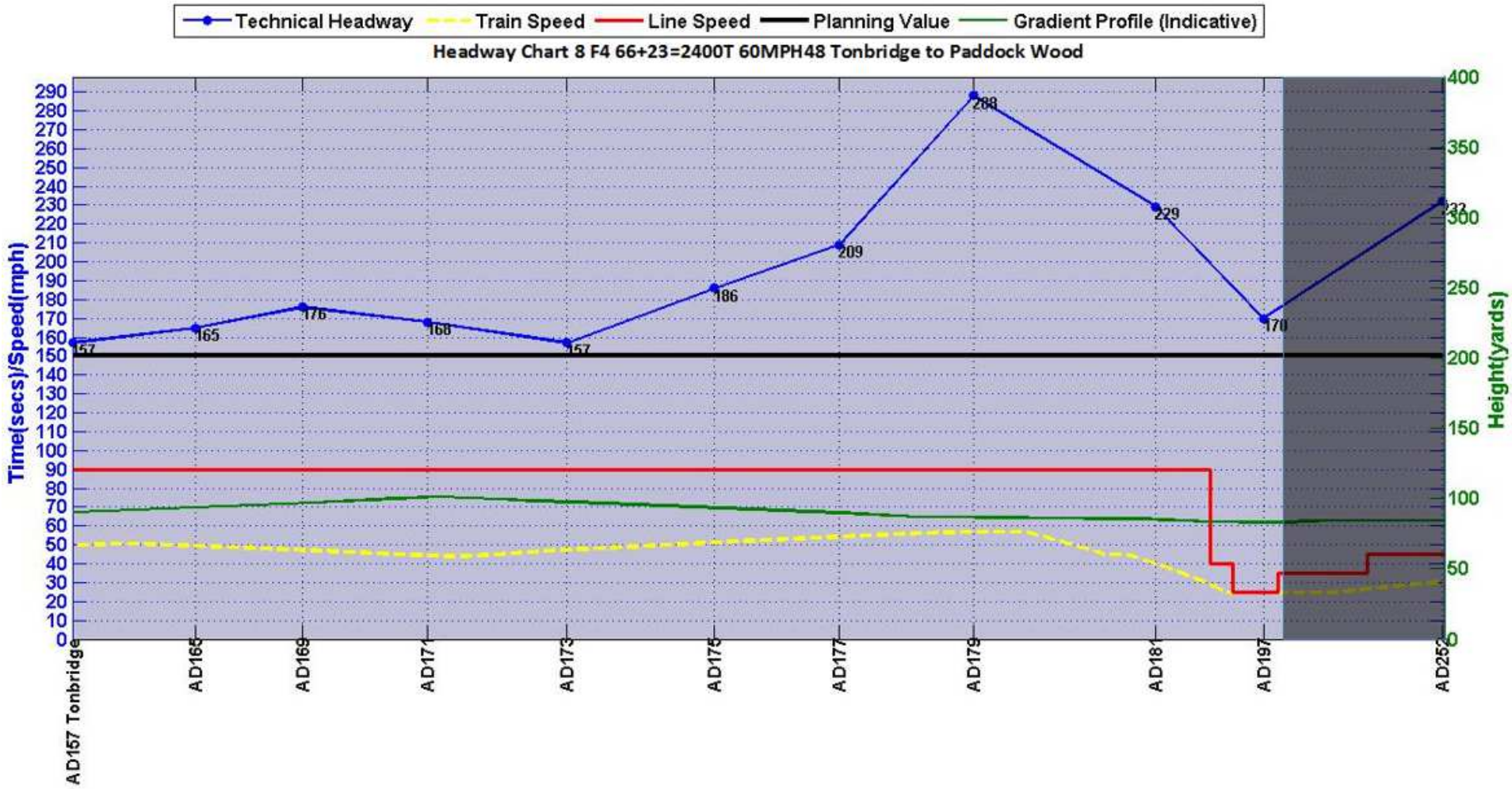


Figure 5-8 Non-Stop – F4 Tonbridge-Paddock Wood

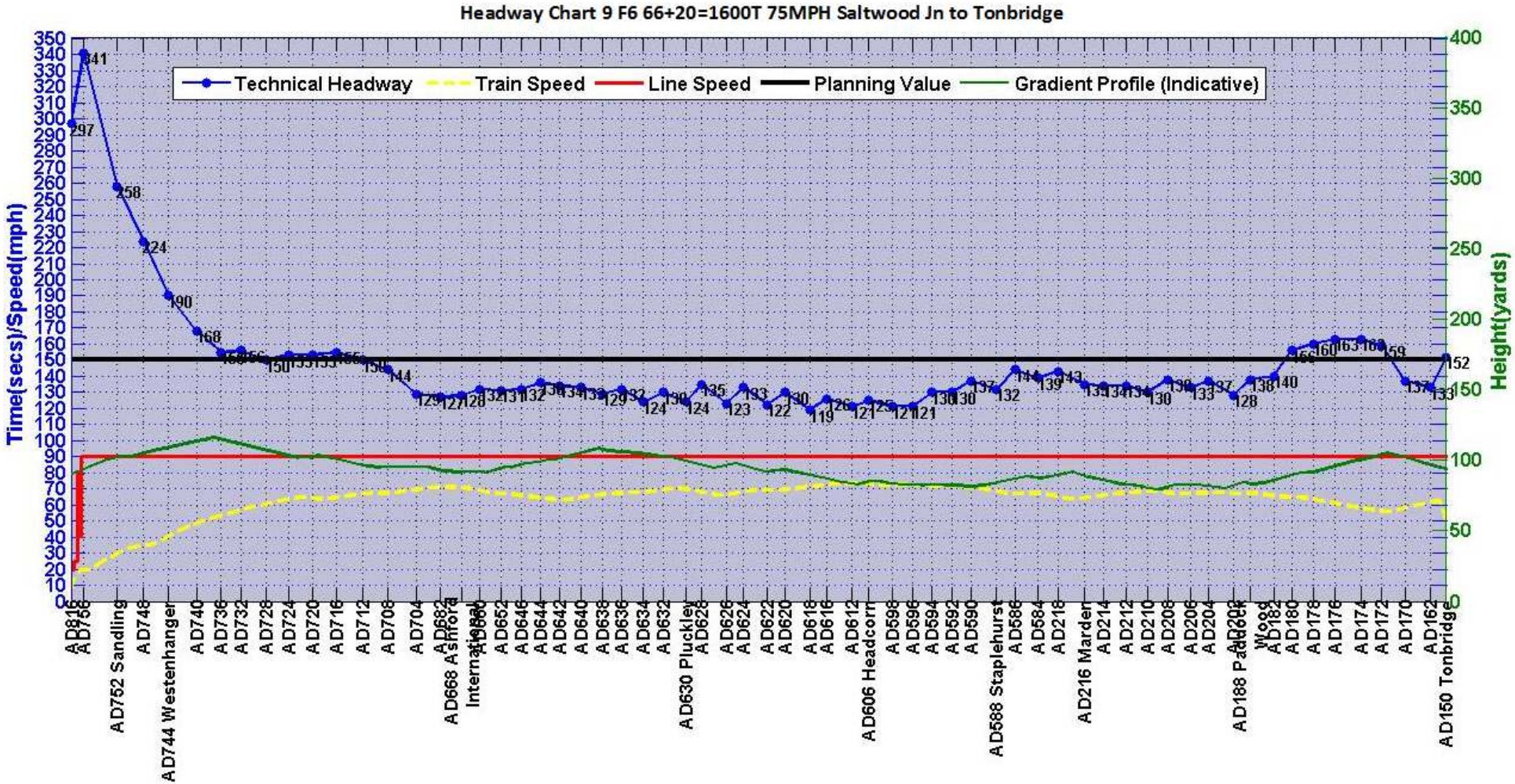


Figure 5-9 Non-Stop – F6 Saltwood Jn-Tonbridge

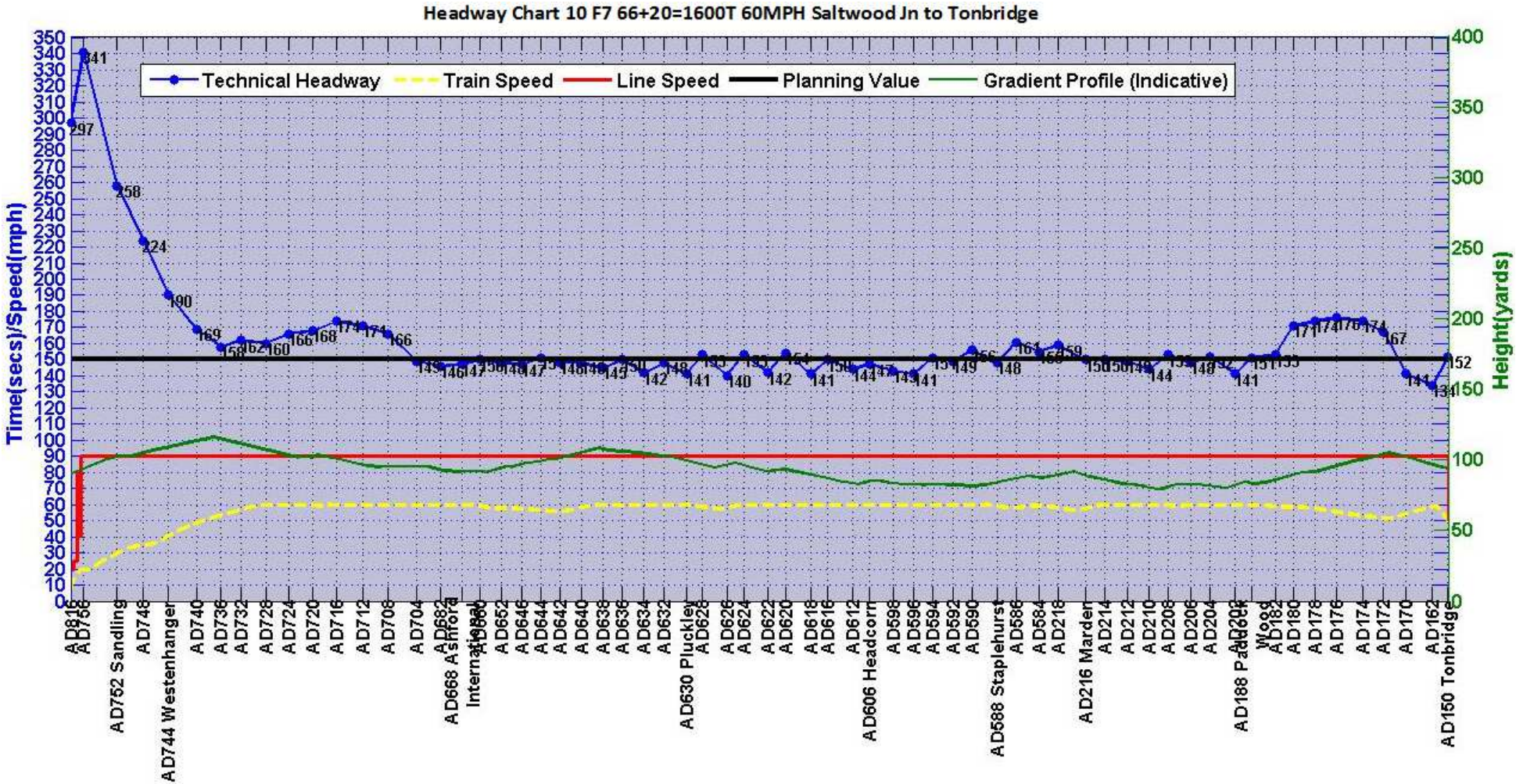


Figure 5-10 Non-Stop – F7 Saltwood Jn-Tonbridge

Headway Chart 9, 10 and 11 Commentary

The technical headway is above the 2½ minutes ‘fast’ planning value at the start of the graph due to the freight departing from a stand at Dollands Moor, then continuing to accelerate on the mainline.

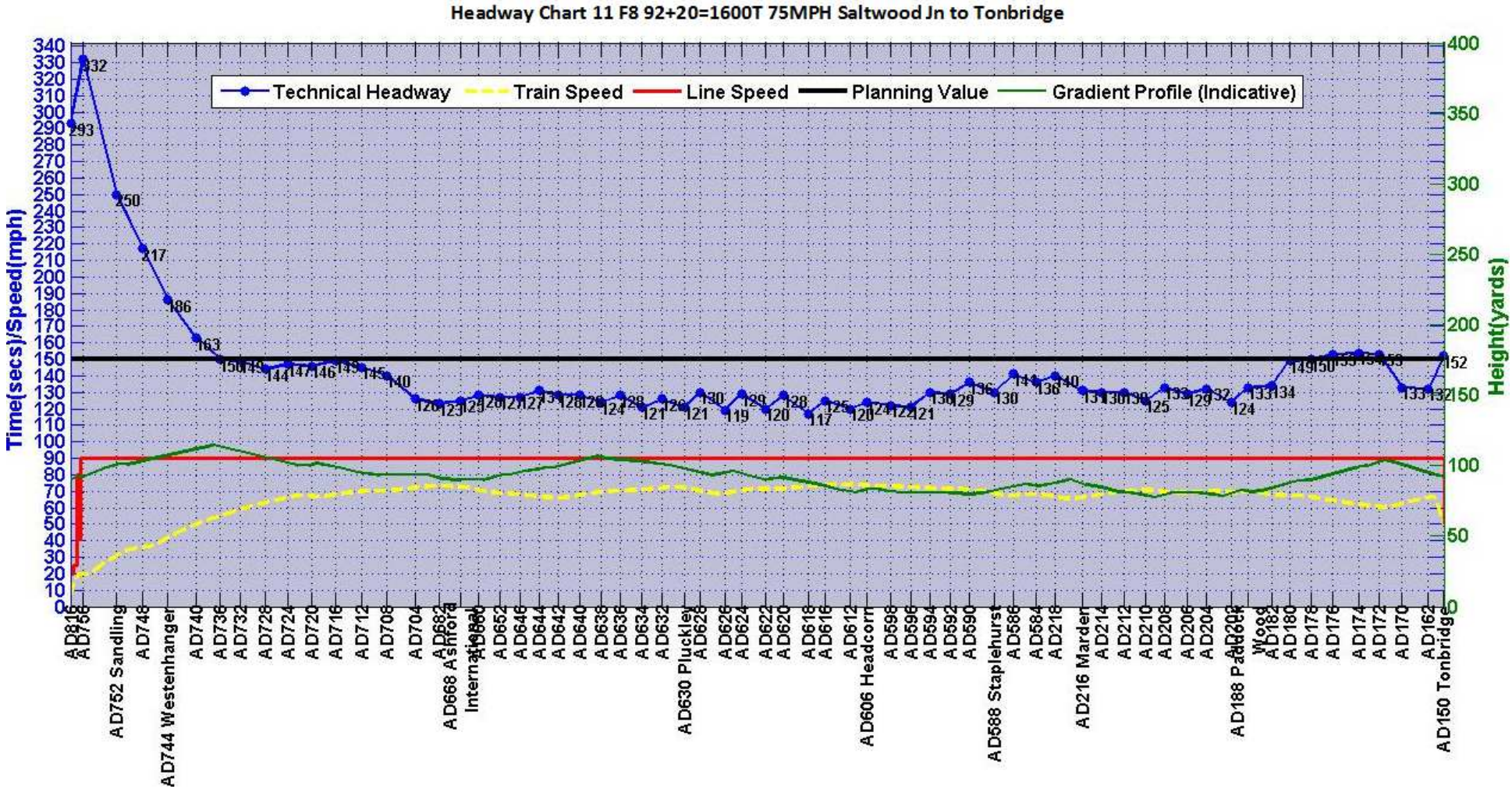


Figure 5-11 Non-Stop – F8 Saltwood Jn-Tonbridge

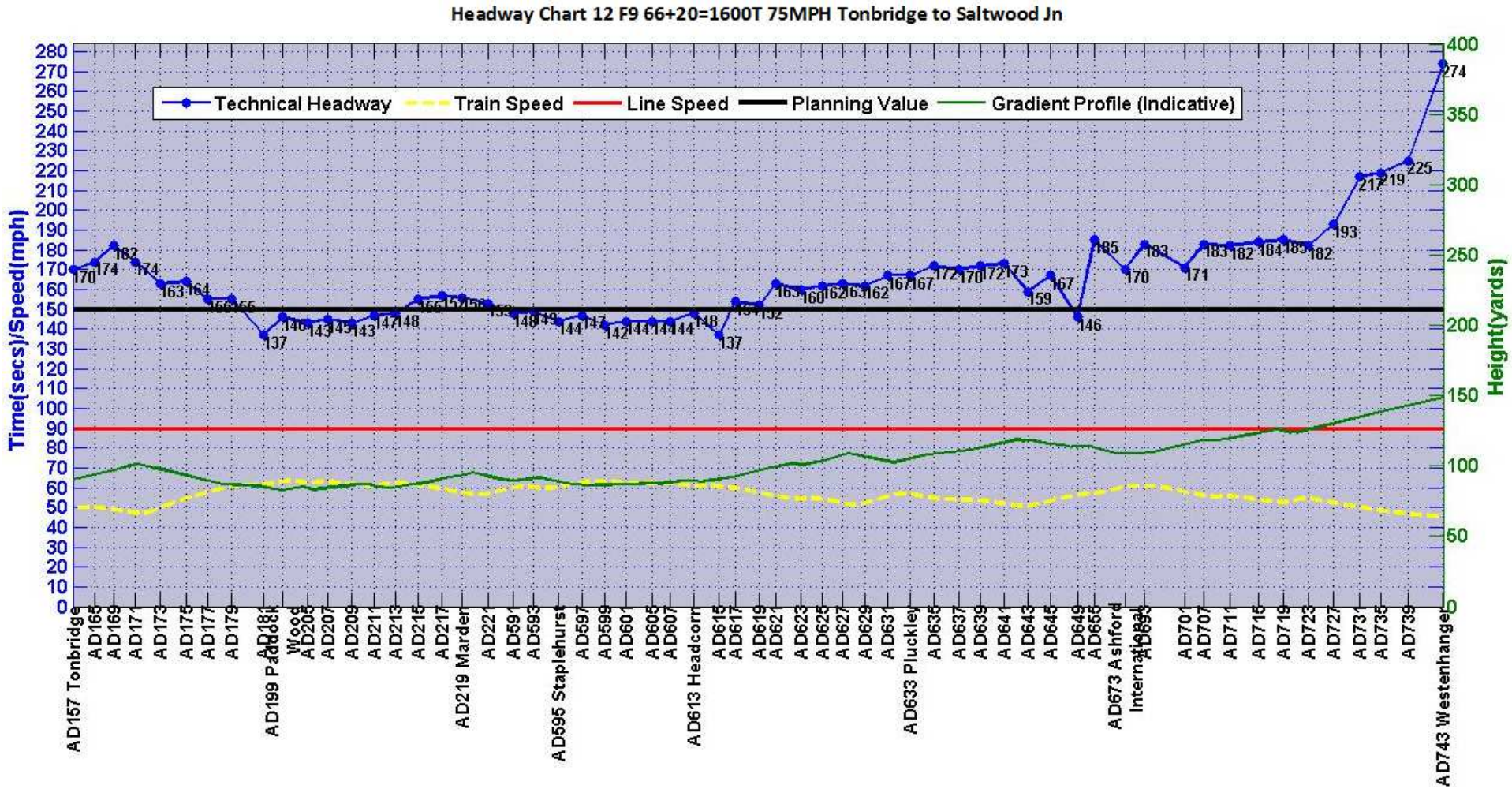


Figure 5-12 Non-Stop – F9 Tonbridge-Saltwood Jn

Headway Chart 12 Commentary

The technical headway rises above the 2½ minutes 'fast' planning value where the train speed dips due to uphill sections – beyond Tonbridge, approaching Marden, beyond Headcorn and beyond Pluckley. The technical headway rises further on the uphill section from Ashford International to Westenhanger. The graph ends at AD743 because this is the last signal that will turn to green. The technical headway rises further at AD743 due to the train speed slowing ahead as it diverges into Dollands Moor.

Headway Chart 13 Commentary

The technical headway rises above the 2½ minutes 'fast' planning value where the train speed dips due to uphill sections – beyond Tonbridge, beyond Pluckley and in particular, on the uphill section from Ashford International to Westenhanger. The graph ends at AD743 because this is the last signal that will turn to green. The technical headway rises further at AD743 due to the train speed slowing ahead as it diverges into Dollands Moor.

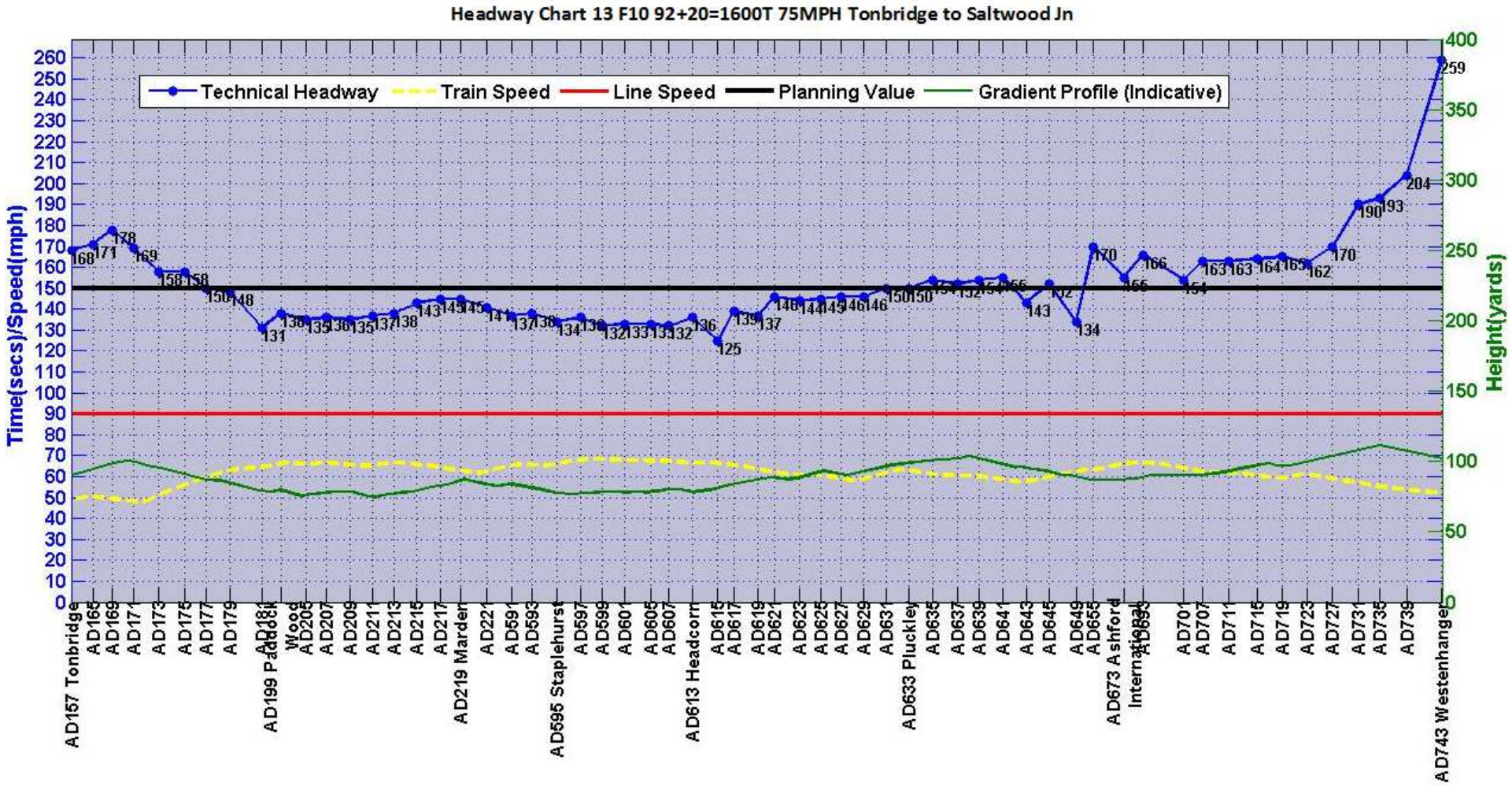


Figure 5-13 Non-Stop – F10 Tonbridge-Saltwood Jn

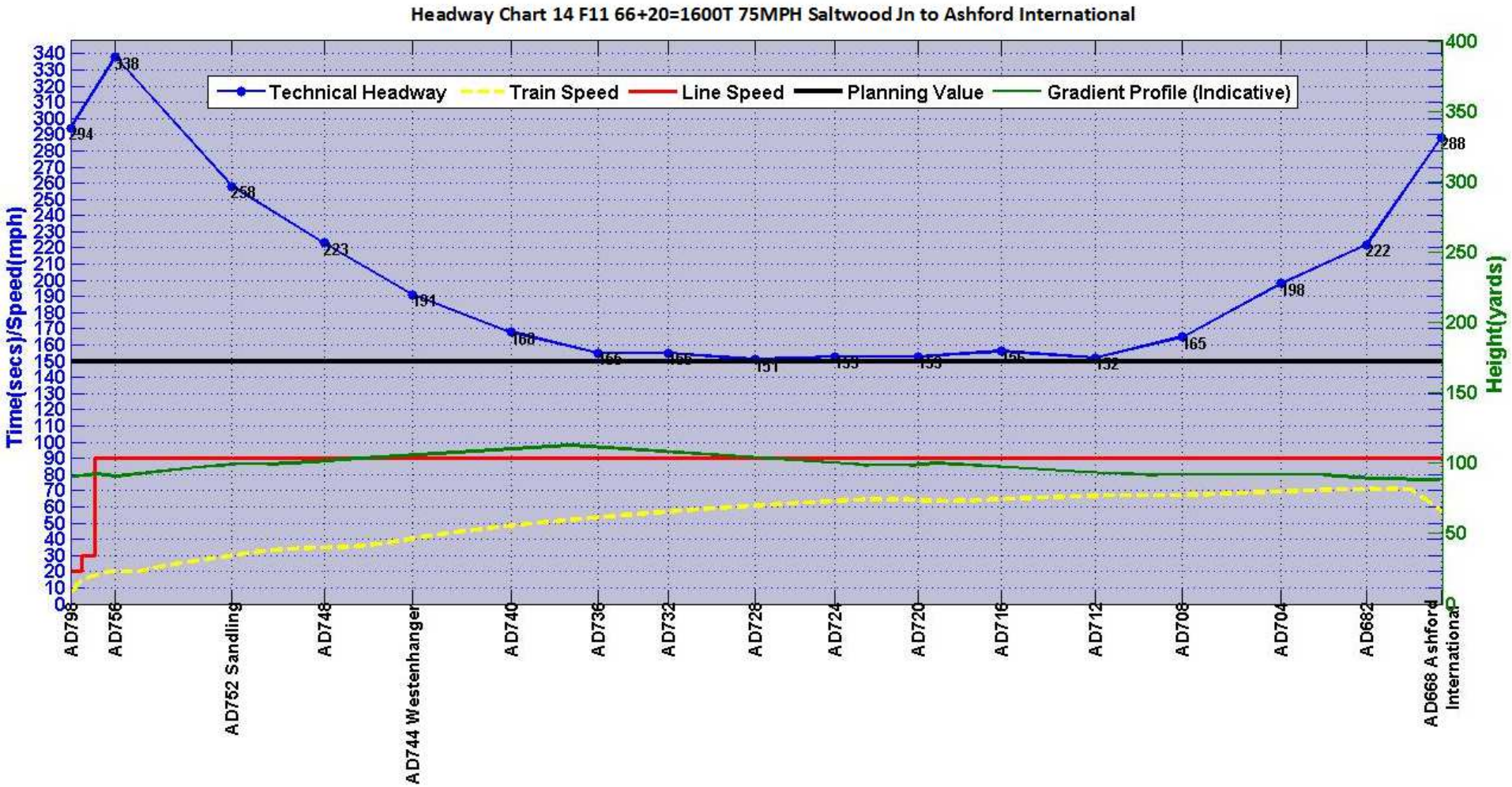


Figure 5-14 Non-Stop – F11 Saltwood Jn-Ashford International

Headway Chart 14 and 15 Commentary

The technical headway is above the 2½ minutes 'fast' planning value at the start of the graph due to the freight departing from a stand at Dollands Moor, then continuing to accelerate on the mainline. The technical headway rises approaching Ashford International due train slowing ahead to negotiate the 40mph crossovers and the wider spaced 3-aspect route ahead on the Up Maidstone, which means signals take longer to return to green.

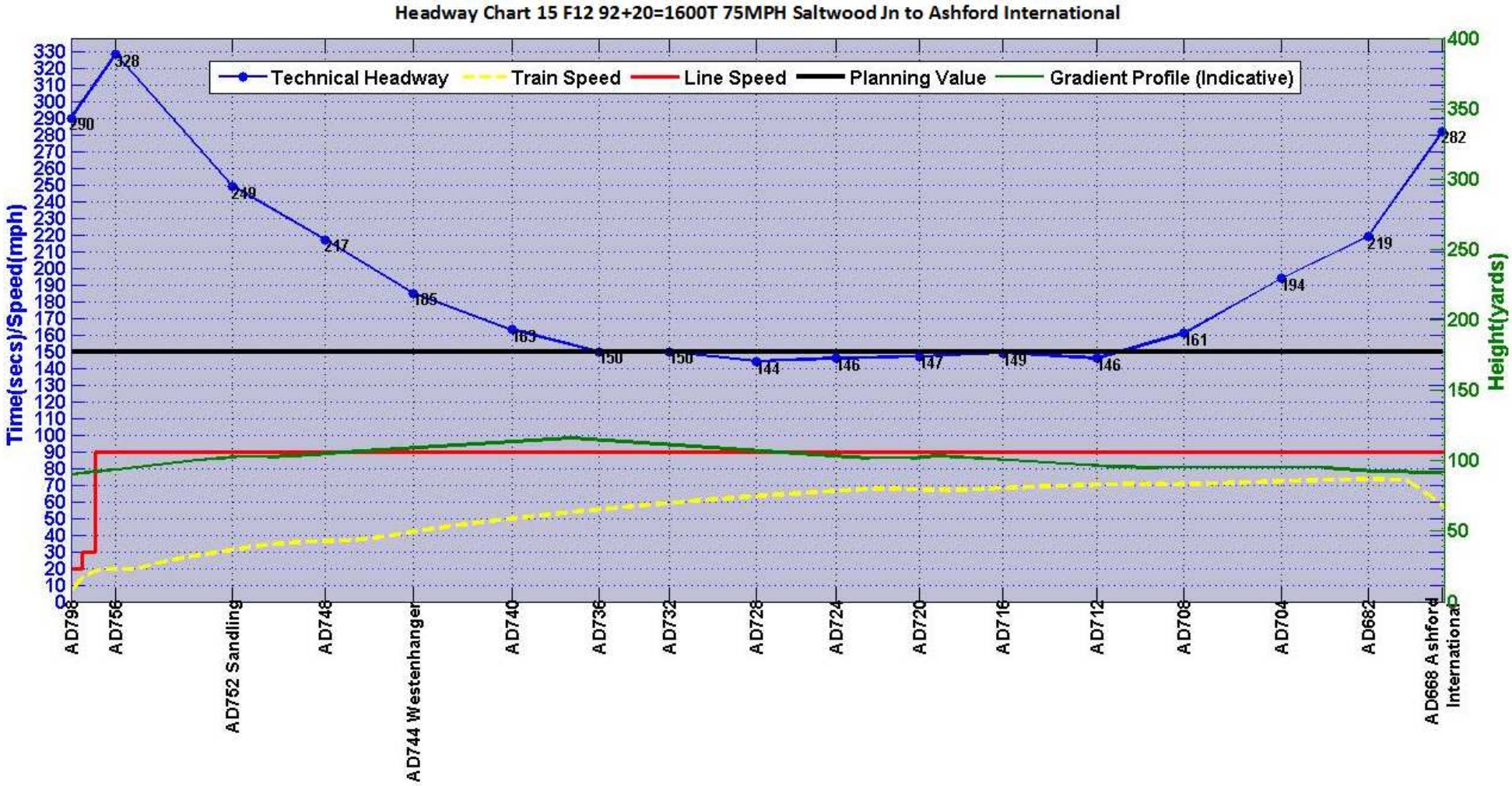


Figure 5-15 Non-Stop – F12 Saltwood Jn-Ashford International

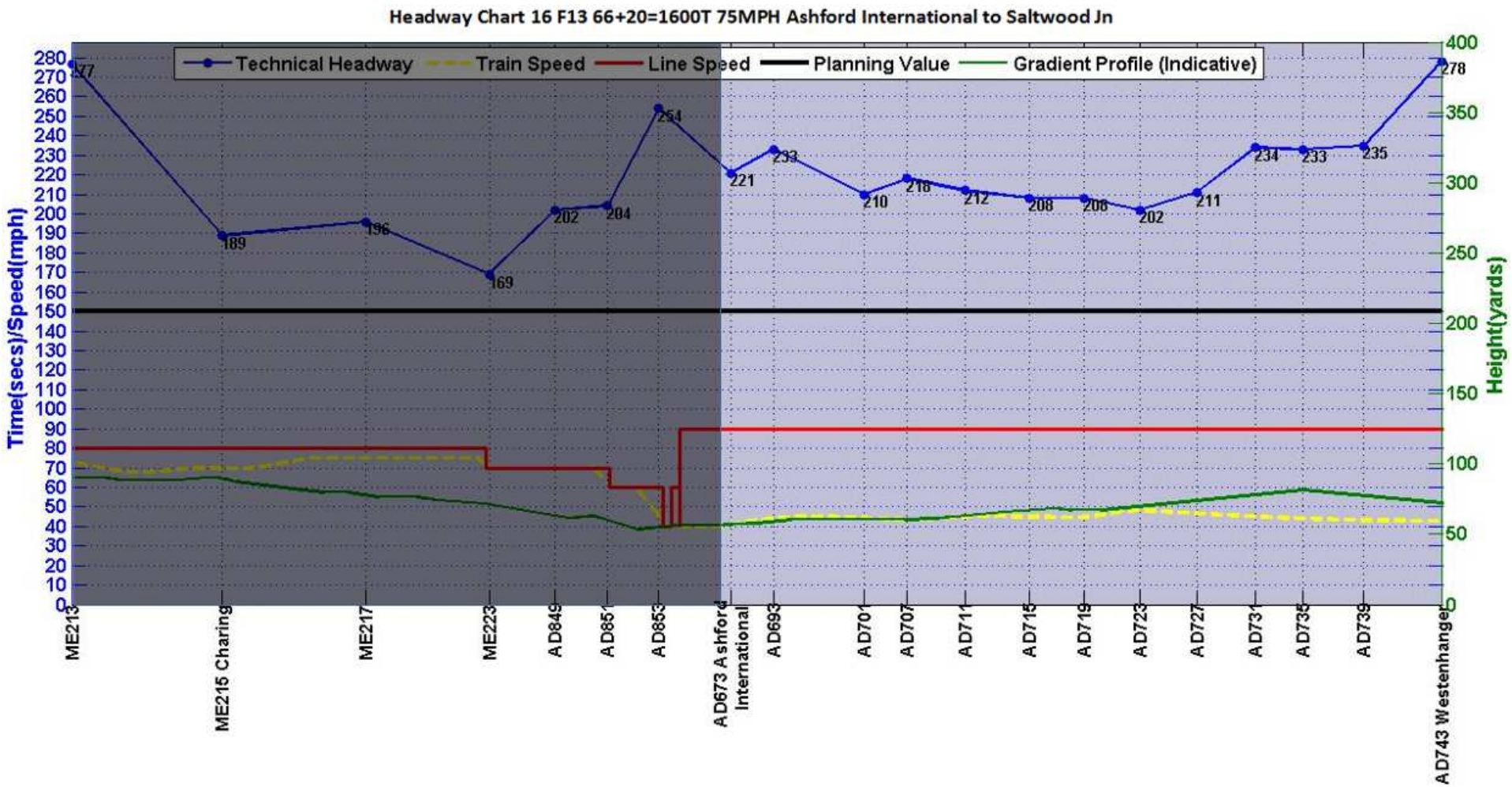


Figure 5-16 Non-Stop – F13 Ashford International-Saltwood Jn

Headway Chart 16 and 17 Commentary

The technical headway is above the 2½ minutes ‘fast’ planning value throughout the route from Ashford International to Dollands Moor. The train speed is approximately 40mph on entering the in-scope area of the graph (due to being routed from the Down Maidstone via 40mph crossover) then struggles to accelerate due to the uphill gradient towards Westenhanger. The graph ends at AD743 because this is the last signal that will turn to green. The technical headway rises further at AD743 due to the train speed slowing ahead as it diverges into Dollands Moor.

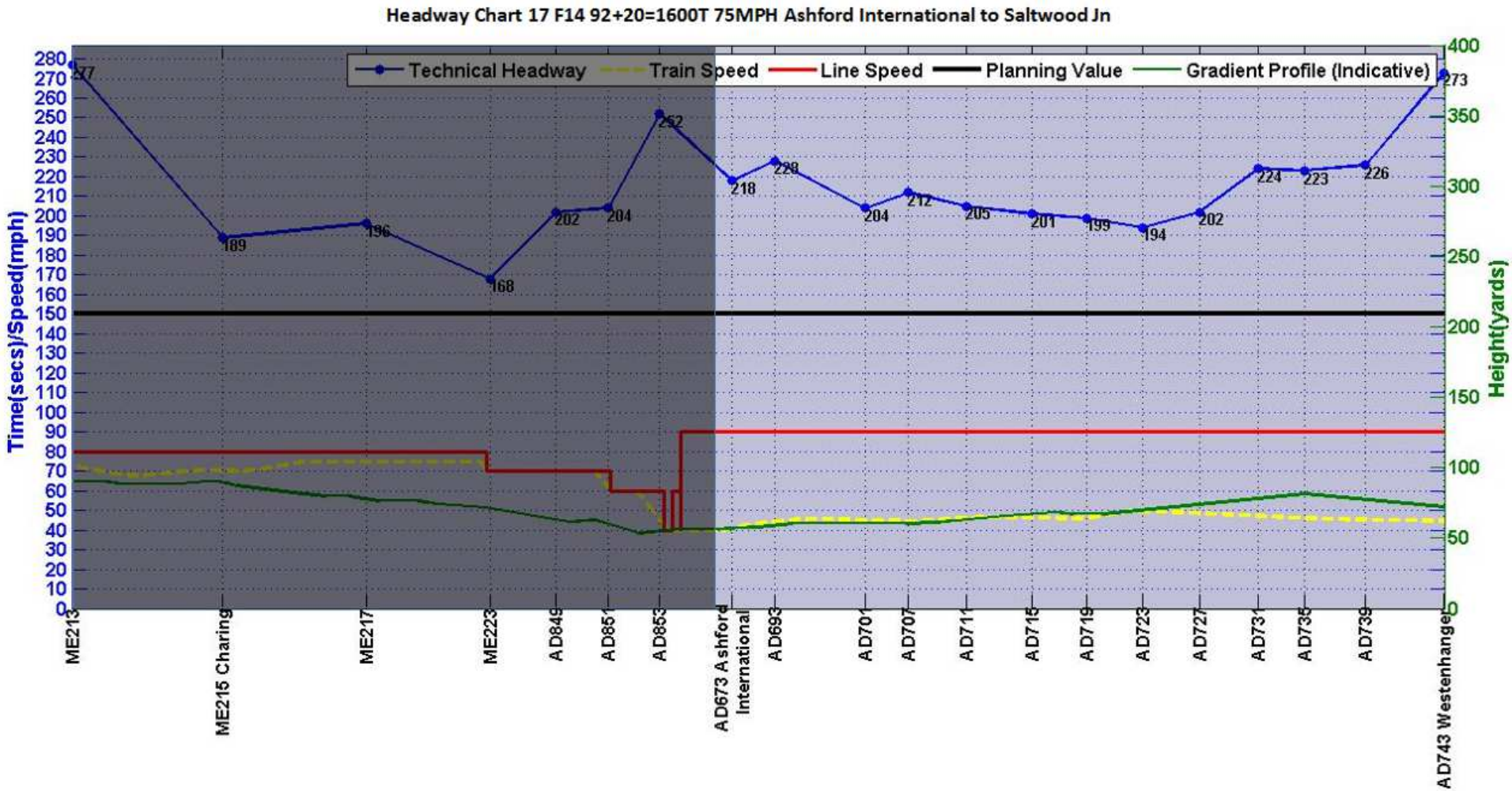


Figure 5-17 Non-Stop – F14 Ashford International-Saltwood Jn

5.2 Depart-Pass platform re-occupation Charts

The Depart-Pass platform re-occupation column bar charts show the unrestricted technical values at each station for the route, stopping pattern and stock types specified by Network Rail in the tab “Stopping Headway” in the Excel document “SE5 - Tonbridge to Dover Via Ashford V. 09 (From NR) (17/06/16)”. In addition to the unrestricted technical value, the charts show the “slow” planning headway value. All values are in seconds.

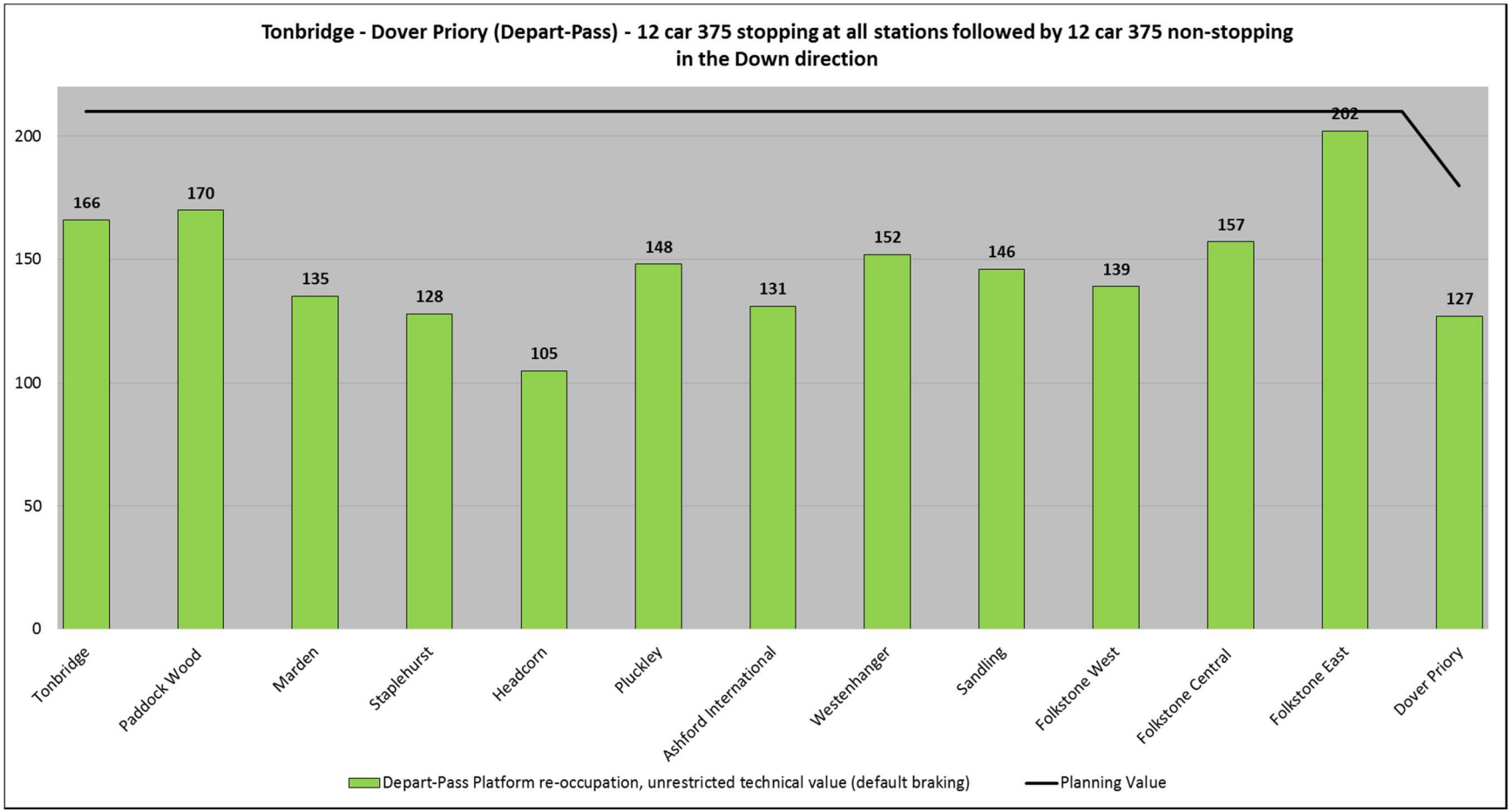


Figure 5-18 Tonbridge – Dover Priory Depart-Pass platform re-occupation (375/375)

Notes

Headcorn – train 2 sighting signal is AD607 junction-protecting signal due to MAR from AD607 to AD611 (platform 2 DPL).

Ashford International – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD671 (platform 3).

Folkestone East – train 2 sighting signal is AD909 due to Double Red on YE11 and YE10, i.e. as train 1 clears the overlap of YE11 (platform end signal): YE11 Red->Red, YE10 Red->Red, AD913 Yellow->Yellow and AD909 Green->Green. No signal turns to green, so the technical margin shown uses timer 2 from AD909 which is already green.

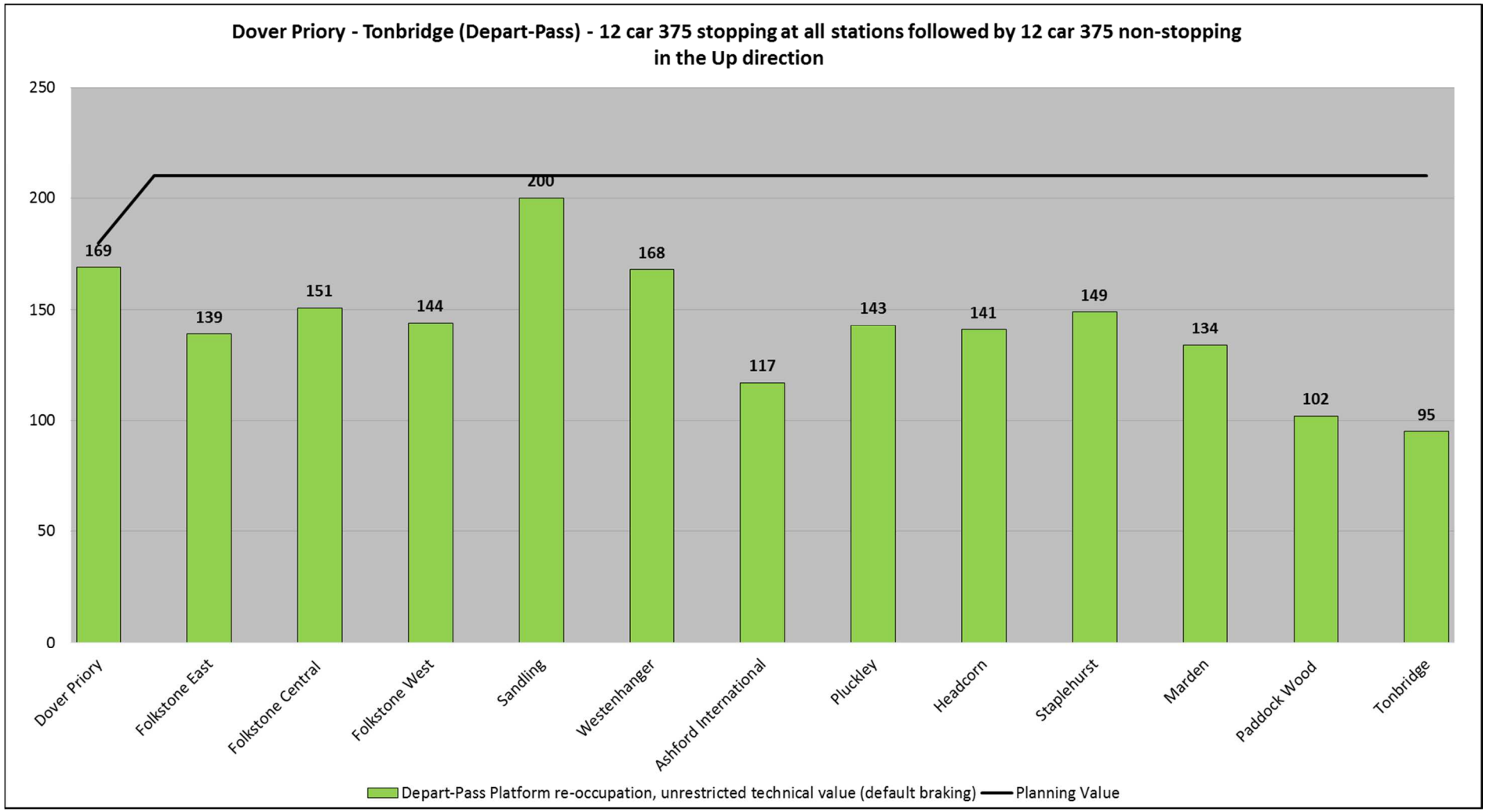


Figure 5-19 Dover Priory - Tonbridge Depart-Pass platform re-occupation (375/375)

Notes

Sandling – if AD752 (Sandling platform-end signal) is Red, then the signal in rear AD756 is also at Red, and the Saltwood Jn junction-protecting signal on the Up Dover (AD760, 3-aspect) is also at Red. Thus the signals in rear, AD902 and AD906 (both 3-aspect), are at Yellow and Green respectively. When train 1 clears the overlap of AD752 then AD752 remains at Red, and therefore no signals change aspect. Train 2 signal used is AD906 which remains green.

Ashford International – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (to platform 2).

Paddock Wood – train 2 sighting signal is AD202 junction-protecting signal due to MAR from AD202 to AD190 (platform 1 UPL).

Tonbridge – train 2 sighting signal is AD162 junction-protecting signal due to MAR from AD162 to AD152 (platform 2).

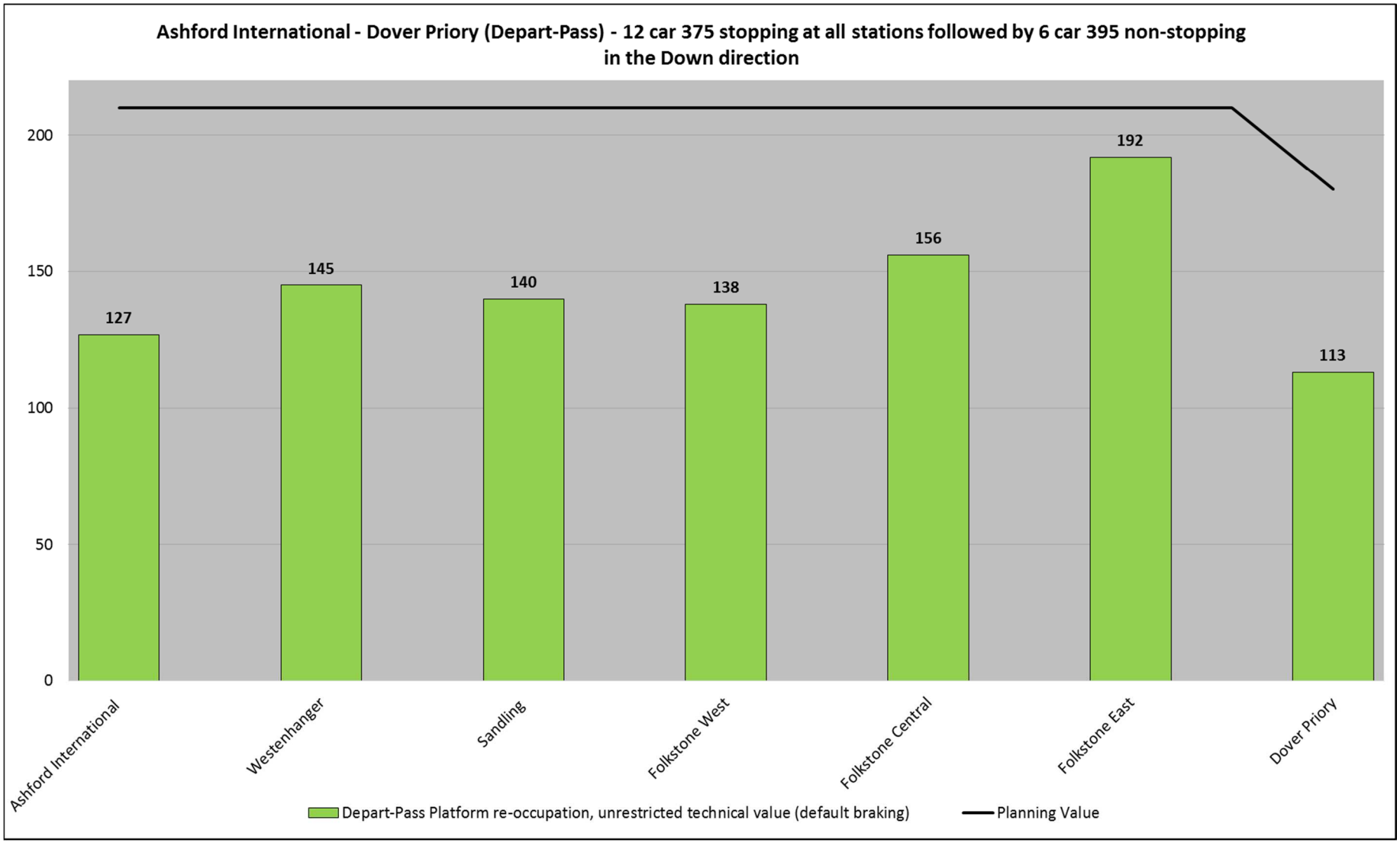


Figure 5-20 Ashford International – Dover Priory Depart-Pass platform re-occupation (375/395)

Notes

Ashford International – due to the routing constraints of Class 395 both trains have been routed via platform 6. The infrastructure has been extended back onto the High Speed Lines, in order that train 2 will have a sighting signal (AF455). The value shown for Ashford International is based on the assumption that the line speed is 130kph and the signals have been modelled as 4-aspect.

Folkestone East – train 2 sighting signal is AD909 due to Double Red on YE11 and YE10, i.e. as train 1 clears the overlap of YE11 (platform end signal): YE11 Red->Red, YE10 Red->Red, AD913 Yellow->Yellow and AD909 Green->Green. No signal turns to green, so the technical margins shown use timer 2 from AD909 which is already green.

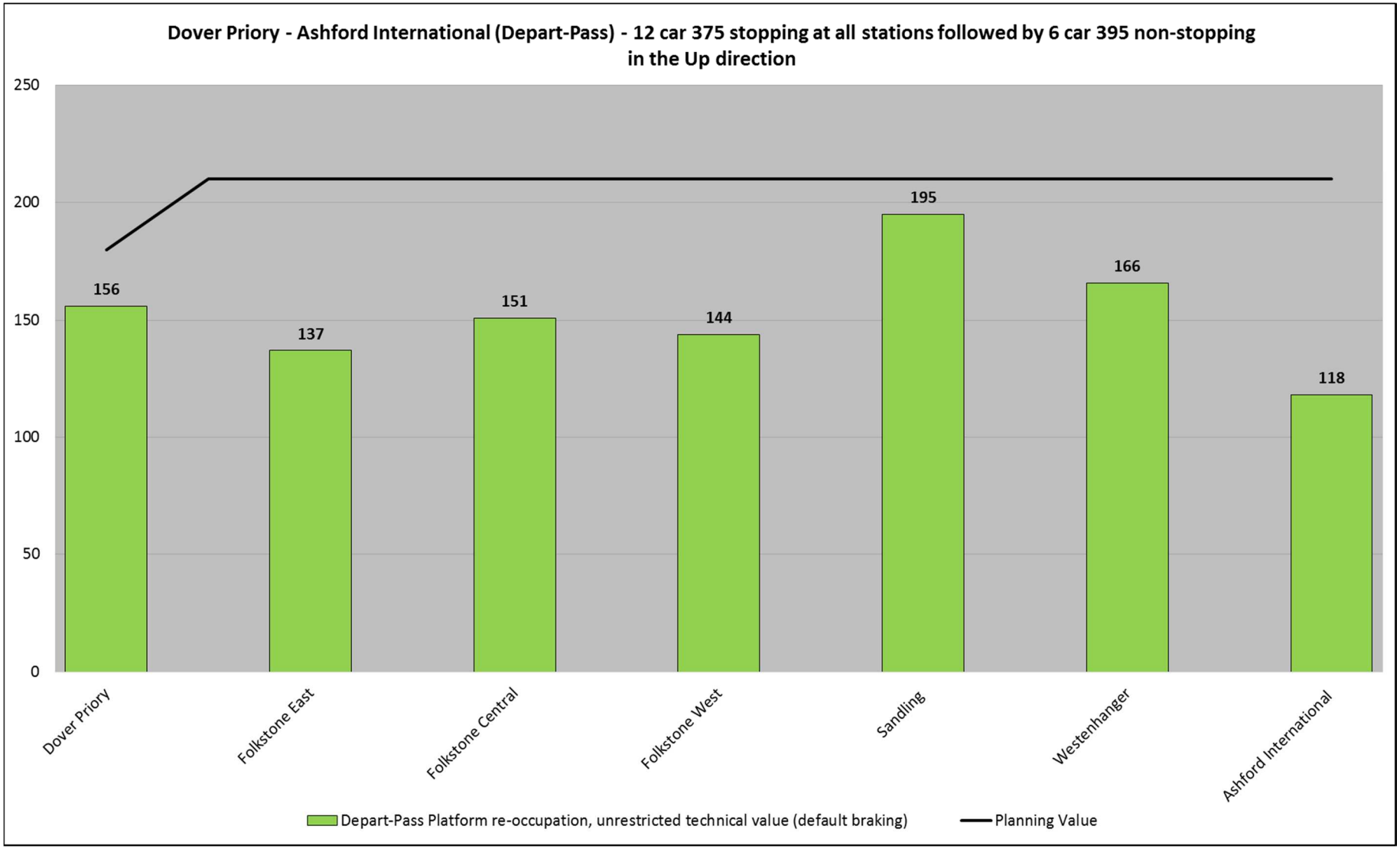


Figure 5-21 Dover Priory – Ashford International Depart-Pass platform re-occupation (375/395)

Notes

Sandling – if AD752 (Sandling platform-end signal) is Red, then the signal in rear AD756 is also at Red, and the Saltwood Jn junction-protecting signal on the Up Dover (AD760, 3-aspect) is also at Red. Thus the signals in rear, AD902 and AD906 (both 3-aspect), are at Yellow and Green respectively. When train 1 clears the overlap of AD752 then AD752 remains at Red, and therefore no signals change aspect. Train 2 signal used is AD906 which remains green.

Ashford International – due to the routing constraints of Class 395 both trains have been routed via platform 5. Train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD786 (to platform 5).

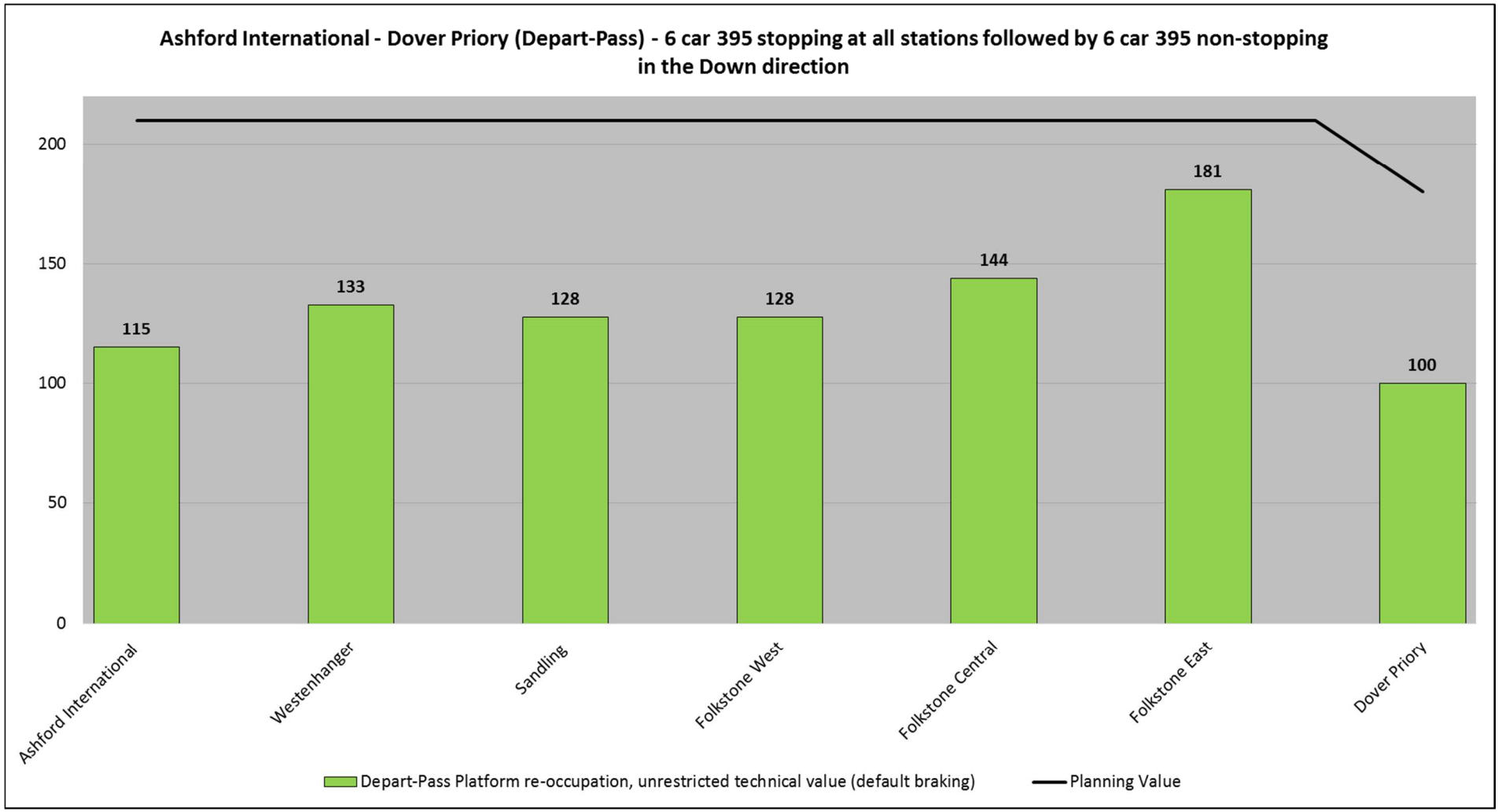


Figure 5-22 Ashford International – Dover Priory Depart-Pass platform re-occupation (395/395)

Notes

Ashford International – due to the routing constraints of Class 395 both trains are routed through platform 6. Note that the infrastructure has been extended back onto the High Speed Lines, in order that train 2 will have a sighting signal (AF455). The value shown for Ashford international is based on the assumption that the line speed is 130kph and the signals have been modelled as 4-aspect.

Folkestone East – train 2 sighting signal is AD909 due to Double Red on YE11 and YE10, i.e. as train 1 clears the overlap of YE11 (platform end signal): YE11 Red->Red, YE10 Red->Red, AD913 Yellow->Yellow and AD909 Green->Green. No signal turns to green, so the technical margins shown use timer 2 from AD909 which is already green.

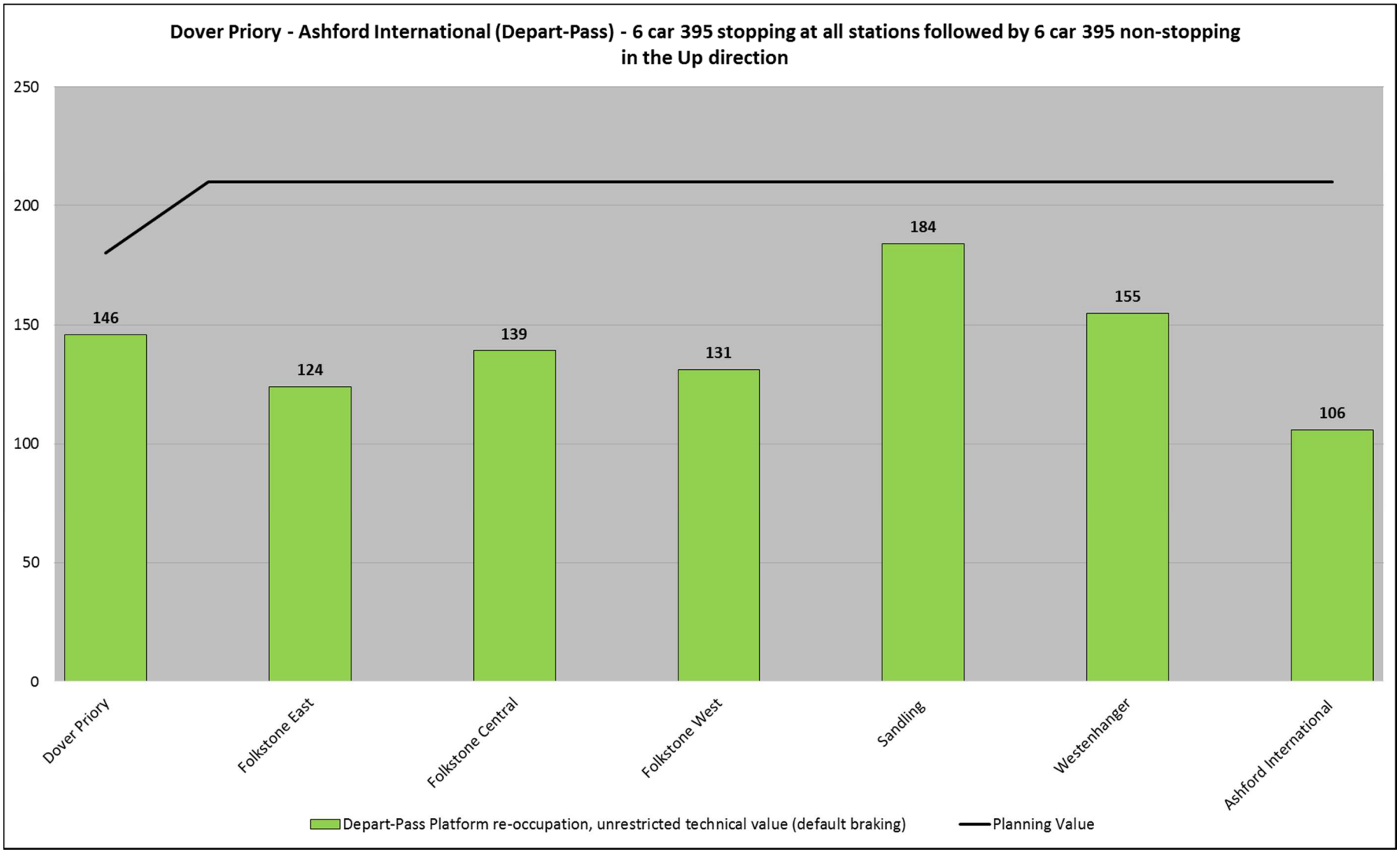


Figure 5-23 Dover Priory – Ashford International Depart-Pass platform re-occupation (395/395)

Notes

Sandling – if AD752 (Sandling platform-end signal) is Red, then the signal in rear AD756 is also at Red, and the Saltwood Jn junction-protecting signal on the Up Dover (AD760, 3-aspect) is also at Red. Thus the signals in rear, AD902 and AD906 (both 3-aspect), are at Yellow and Green respectively. When train 1 clears the overlap of AD752 then AD752 remains at Red, and therefore no signals change aspect. Train 2 signal used is AD906 which remains green.

Ashford International – due to the routing constraints of Class 395 both trains are routed through platform 5. Train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD786 (to platform 5).

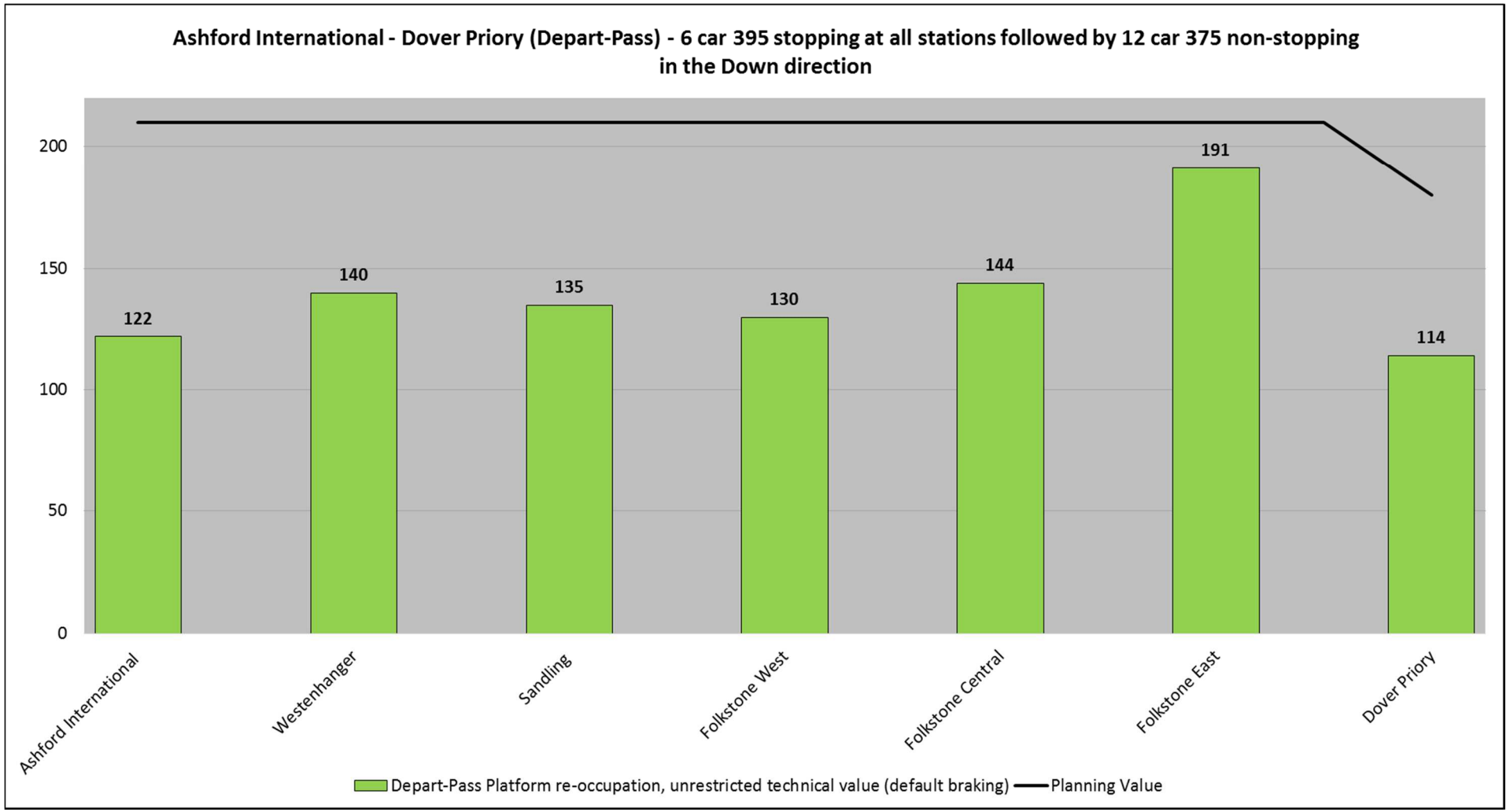


Figure 5-24 Ashford International – Dover Priory Depart-Pass platform re-occupation (395/375)

Notes

Ashford International – due to the routing constraints of Class 395 both trains have been routed via platform 6. Train 2 signal is AD653 due to MAR from AD653 (Down Slow) to AD783.

Folkestone East – train 2 sighting signal is AD909 due to Double Red on YE11 and YE10, i.e. as train 1 clears the overlap of YE11 (platform end signal): YE11 Red->Red, YE10 Red->Red, AD913 Yellow->Yellow and AD909 Green->Green. No signal turns to green, so the technical margins shown use timer 2 from AD909 which is already green.

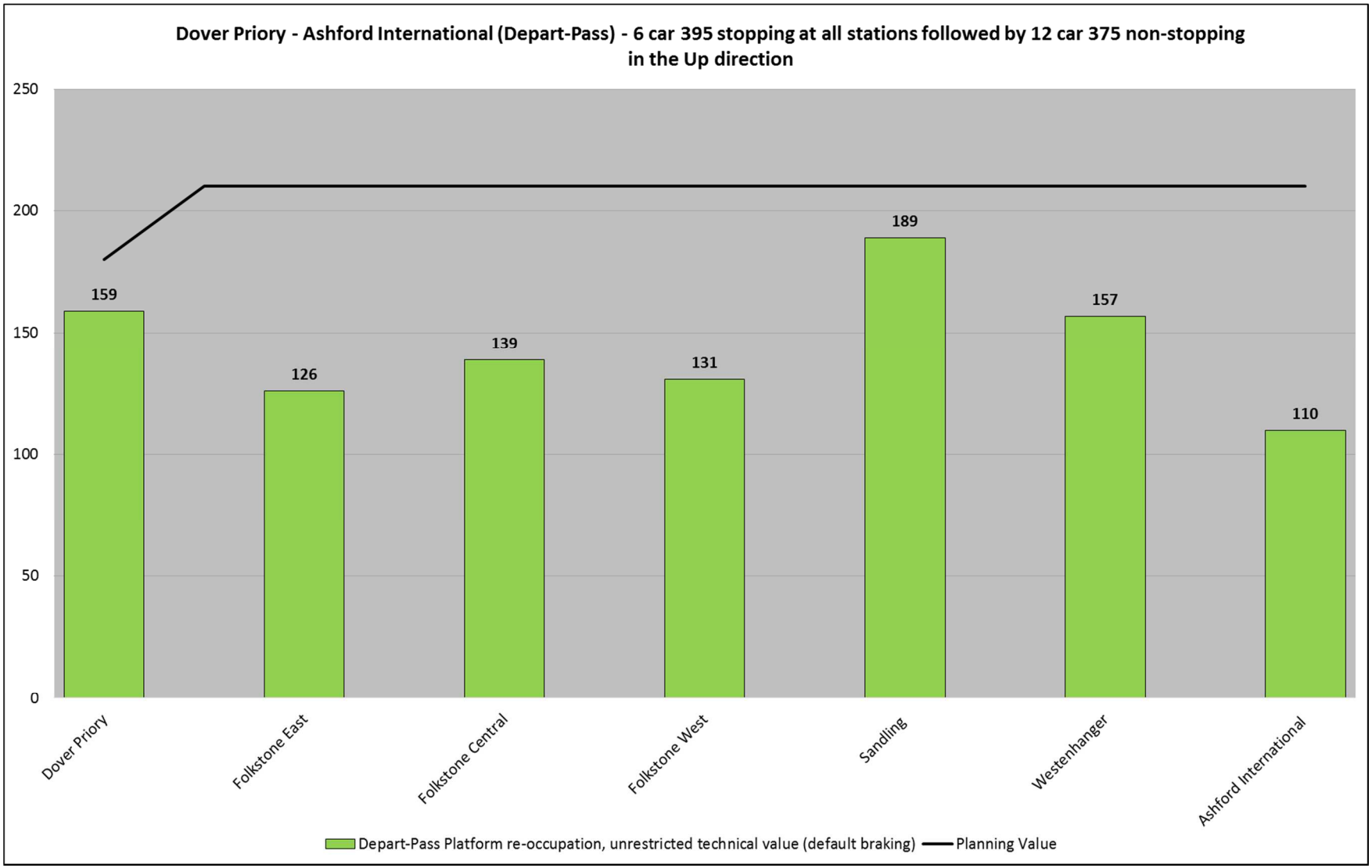


Figure 5-25 Dover Priory – Ashford International Depart-Pass platform re-occupation (395/375)

Notes

Sandling – if AD752 (Sandling platform-end signal) is Red, then the signal in rear AD756 is also at Red, and the Saltwood Jn junction-protecting signal on the Up Dover (AD760, 3-aspect) is also at Red. Thus the signals in rear, AD902 and AD906 (both 3-aspect), are at Yellow and Green respectively. When train 1 clears the overlap of AD752 then AD752 remains at Red, and therefore no signals change aspect. Train 2 signal used is AD906 which remains green.

Ashford International – due to the routing constraints of Class 395 both trains have been routed via platform 5. Train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD786 (to platform 5).

6. Platform re-occupations by Location

This section gives the results of the platform re-occupation margin calculations described in section 4.5.1 and 4.5.2. These are presented in the same order as the specification and are thus grouped by location. They are all platform re-occupations in the same direction unless specifically stated to be “opposing direction” in the platform column.

A screen shot of each area in the VISION model is included, to create a visual representation of the routes.

The technical margin is calculated using the time taken for train 1 to clear the conflict point from the TIPLOC and train 2 to travel from the signal which clears to green (at the same time) to the TIPLOC. Train 2 will travel on the least restrictive sequence of signal aspects that the infrastructure can show, ignoring the release of signals caused by the passage of Train 1 beyond the conflict point. Least restrictive signal aspects are green unless the signal cannot show green, due to approach control or approaching a buffer stop. In all cases the margin is calculated so that train 2 is not affected by train 1.

For standard (default) braking rates we use 1.50 mph/s / 6.839%g (VISION braking category 11) for Class 375, Class 171 and Class 395.

OTMR data shows that the average braking rate observed on the area averages 0.76 mph/s for Class 375 and Class 171 and averages 0.81 mph/s for Class 395, and the OTMR braking margin is based on this adjustment, which means that trains brake earlier when stopping.

This section gives specific margins by stock types, move type and routes.

6.1 Paddock Wood

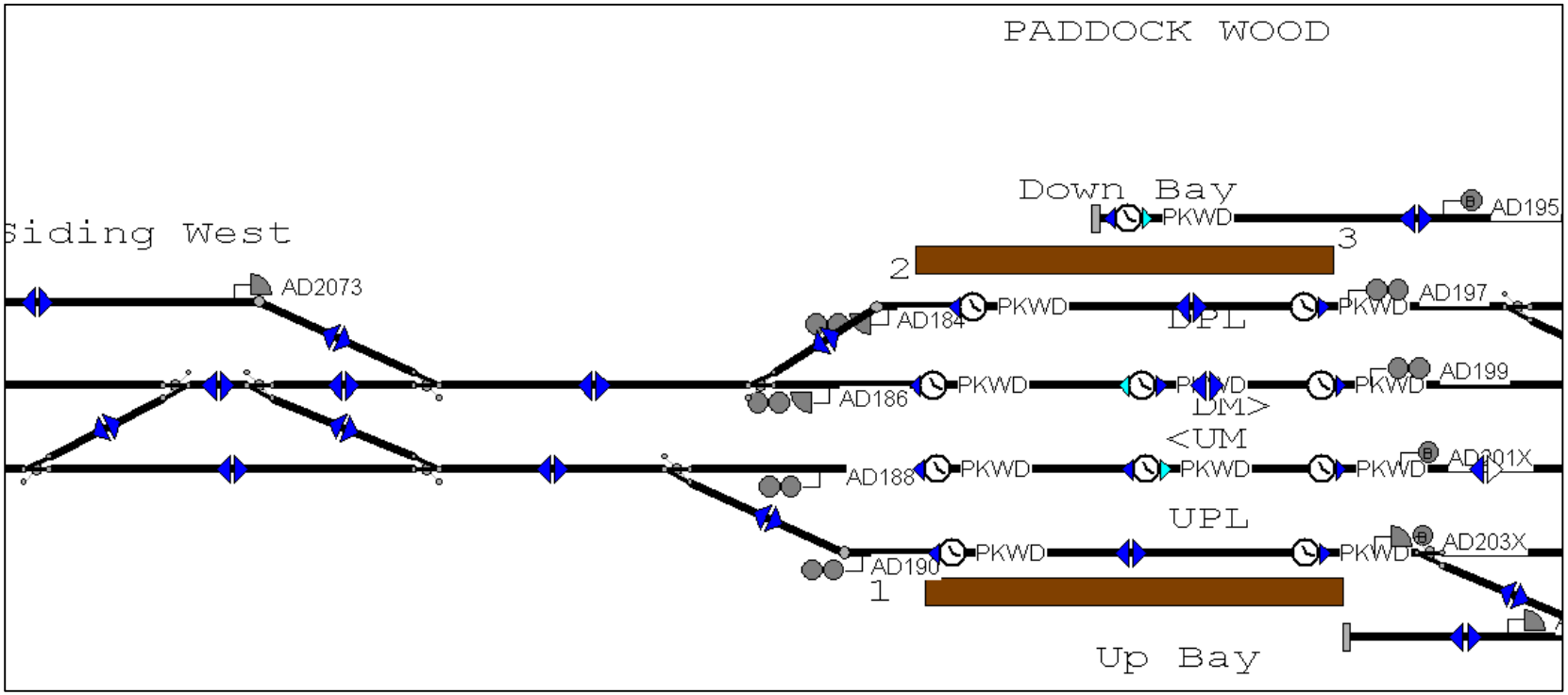


Figure 6-1.1 Paddock Wood Station layout as modelled in VISION

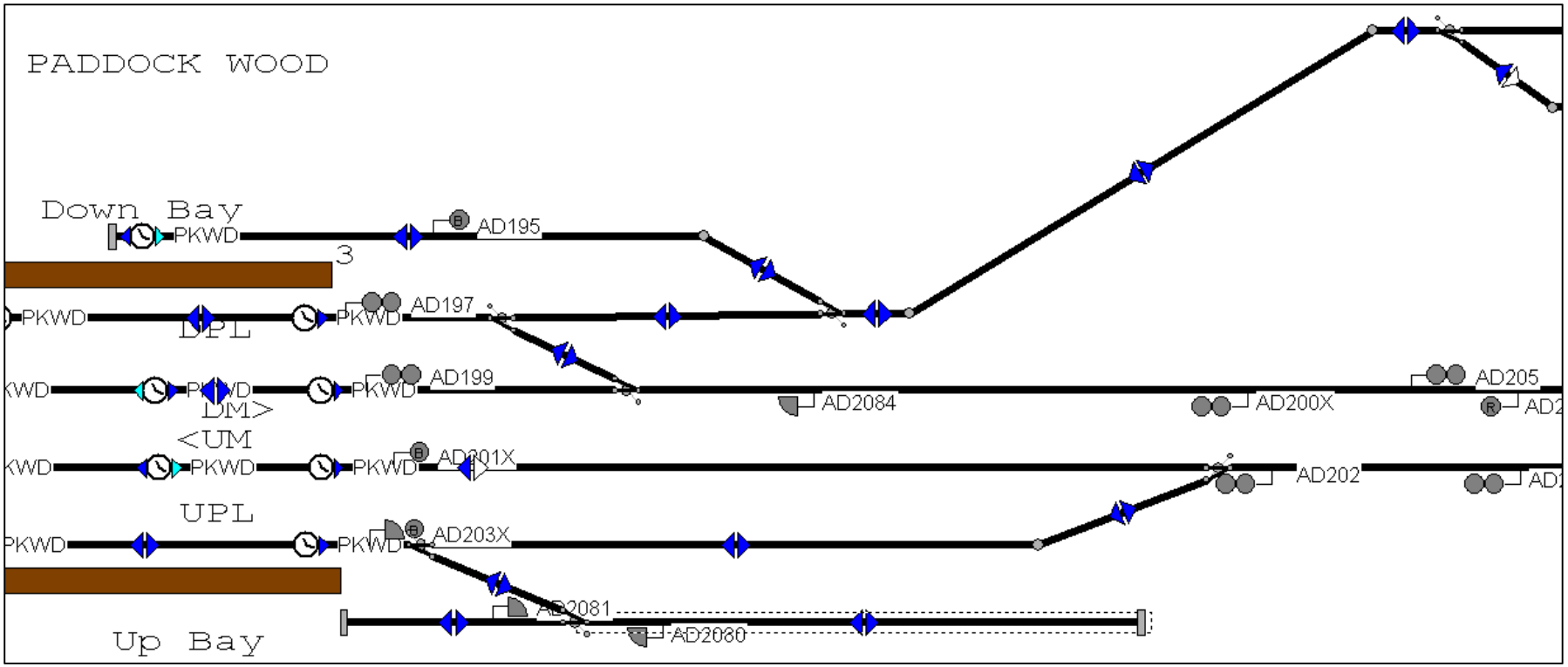


Figure 6-2.2 Paddock Wood Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously stopping at Marden Pl 1 (Up), stopping at Paddock Wood Pl 1 (Up), subsequently stopping at Tonbridge Pl 2 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Marden Pl 1 (Up), stopping at Paddock Wood Pl 1 (Up), subsequently stopping at Tonbridge Pl 2 (Up).	12CAR 37X 675V1500A	Arrive	1	00:01:56	00:02:11
2	P05	Previously entering model at Maidstone Pl 2, stopping at Paddock Wood Pl 2 (Up), subsequently exiting model at Tonbridge Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P05	Previously entering model at Maidstone Pl 2, stopping at Paddock Wood Pl 2 (Up), subsequently exiting model at Tonbridge Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	2	00:01:51	00:02:01
3	P05	Previously entering model at Maidstone Pl 2, stopping at Paddock Wood Pl 2 (Up), subsequently exiting model at Tonbridge Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P01	Previously stopping at Tonbridge Pl 3 (Down), stopping at Paddock Wood Pl 2 (Down), subsequently stopping at Marden Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2 (opposing direction)	00:03:09	00:03:33
4	P01	Previously stopping at Tonbridge Pl 3 (Down), stopping at Paddock Wood Pl 2 (Down), subsequently stopping at Marden Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously entering model at Tonbridge Pl 3 (Down), stopping at Paddock Wood Pl 2 (Down), subsequently stopping at Marden Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:02:59	00:03:22
5	P08	Entering model at Paddock Wood Pl 3 (Down), subsequently exiting model at Maidstone Pl 1.	4CAR 37X 675V1500A	Depart	P07	Previously entering model at Maidstone Pl 2, exiting model at Paddock Wood Pl 3 (Up).	4CAR 37X 675V1500A	Arrive	3 (opposing direction)	00:02:47	00:02:56

Table 6-1 Paddock Wood platform re-occupation

Notes

Margin 1 – train 2 sighting signal is AD202 junction-protecting signal due to MAR from AD202 to AD190 (platform 1 UPL).

Margin 2 – train 2 sighting signal is AD251 junction-protecting signal due to MAR from AD251 to AD184 (Up Maidstone to platform 2 DPL).

6.2 Marden

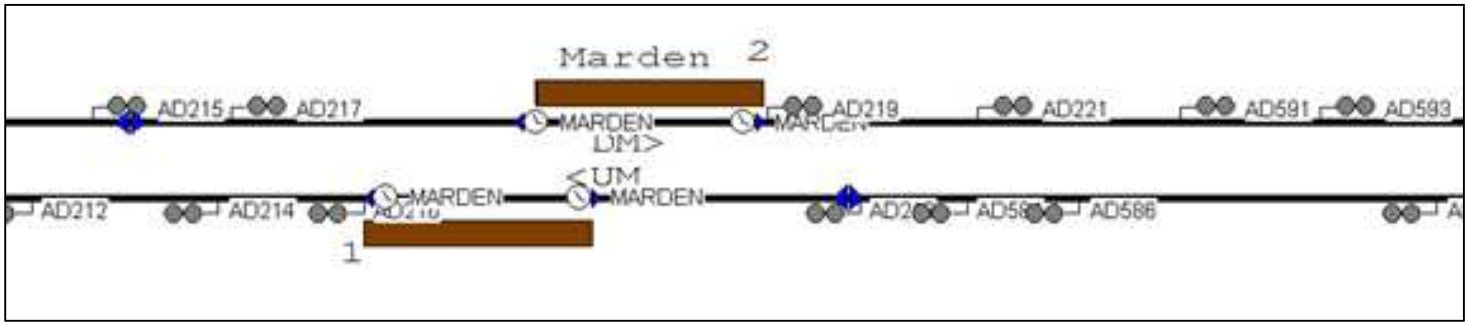


Figure 6-2 Marden Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously stopping at Staplehurst Pl 1 (Up), stopping at Marden Pl 1 (Up), subsequently stopping at Paddock Wood Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Staplehurst Pl 1 (Up), stopping at Marden Pl 1 (Up), subsequently stopping at Paddock Wood Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:03:05	00:03:29
2	P01	Previously stopping at Paddock Wood Pl 2 (Down), stopping at Marden Pl 2 (Down), subsequently stopping at Staplehurst Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously stopping at Paddock Wood Pl 2 (Down), stopping at Marden Pl 2 (Down), subsequently stopping at Staplehurst Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:02:40	00:03:01

Table 6-2 Marden platform re-occupation

6.3 Staplehurst Station

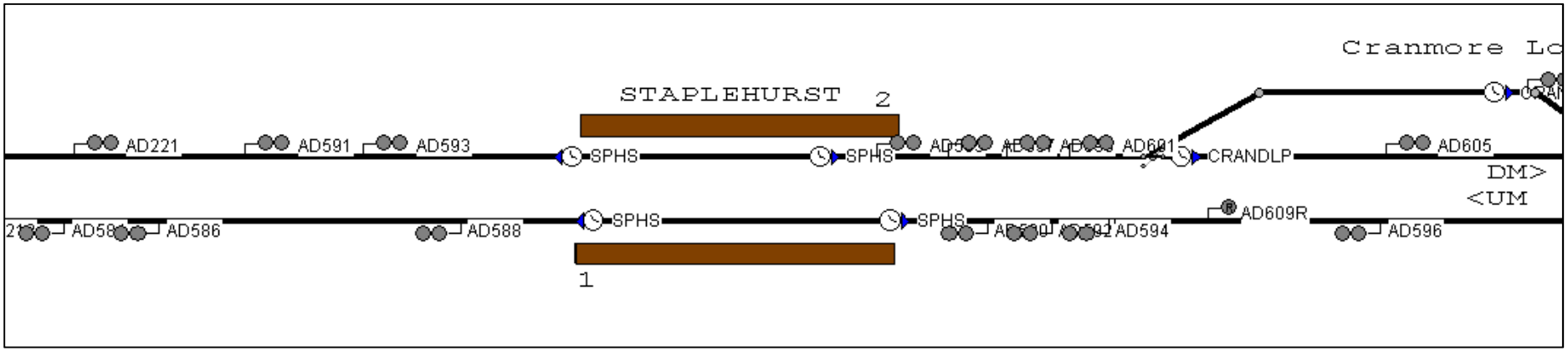


Figure 6-3 Staplehurst Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously stopping at Headcorn Pl 1 (Up), stopping at Staplehurst Pl 1 (Up), subsequently stopping at Marden Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Headcorn Pl 1 (Up), stopping at Staplehurst Pl 1 (Up), subsequently stopping at Marden Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:02:53	00:03:15
2	P01	Previously stopping at Marden Pl 2 (Down), stopping at Staplehurst Pl 2 (Down), subsequently stopping at Headcorn Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously stopping at Marden Pl 2 (Down), stopping at Staplehurst Pl 2 (Down), subsequently stopping at Headcorn Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:03:00	00:03:24

Table 6-3 Staplehurst platform re-occupation

6.4 Headcorn Station

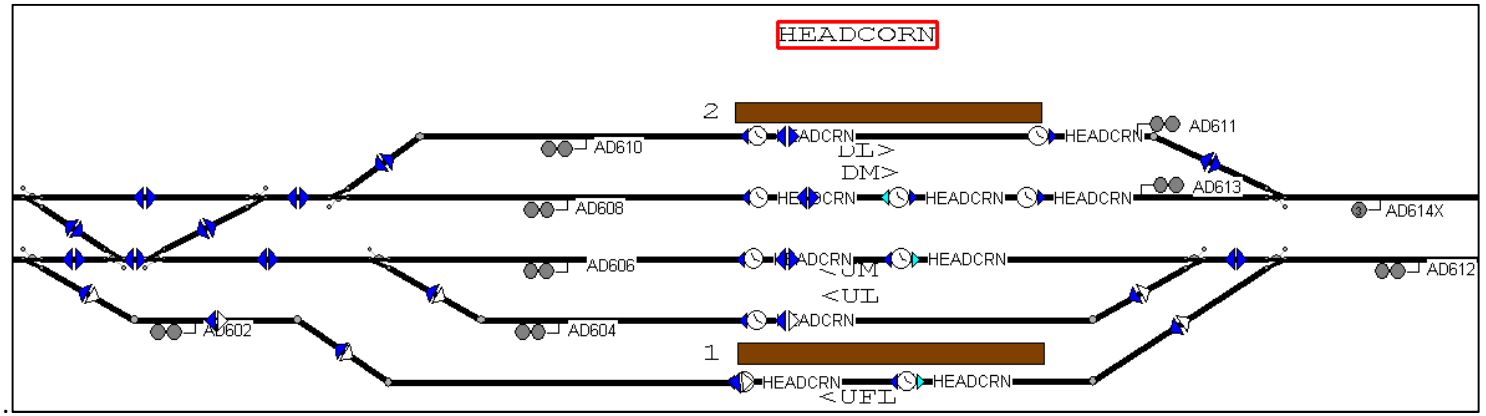


Figure 6-4 Headcorn Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously stopping at Pluckley Pl 1 (Up), stopping at Headcorn Pl 1 (Up), subsequently stopping at Staplehurst Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Pluckley Pl 1 (Up), stopping at Headcorn Pl 1 (Up), subsequently stopping at Staplehurst Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:02:37	00:03:03
2	P01	Previously stopping at Staplehurst Pl 2 (Down), stopping at Headcorn Pl 2 (Down), subsequently stopping at Pluckley Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously stopping at Staplehurst Pl 2 (Down), stopping at Headcorn Pl 2 (Down), subsequently stopping at Pluckley Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:01:58	00:02:12

Table 6-4 Headcorn platform re-occupation

Notes

Margin 2 – train 2 sighting signal is AD607 junction-protecting signal due to MAR from AD607 to AD611 (platform 2 DPL).

6.5 Pluckley Station

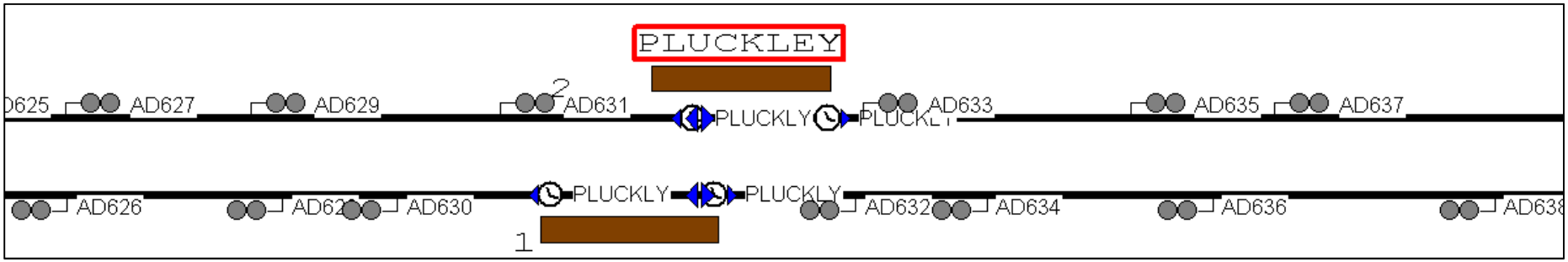


Figure 6-5 Pluckley Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously passing through Ashford West Jn, stopping at Pluckley Pl 1 (Up), subsequently stopping at Headcorn Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously passing through Ashford West Jn, stopping at Pluckley Pl 1 (Up), subsequently stopping at Headcorn Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:02:53	00:03:26
2	P01	Previously stopping at Headcorn Pl 2 (Down), stopping at Pluckley Pl 2 (Down), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Depart	P13	Previously stopping at Headcorn Pl 2 (Down), stopping at Pluckley Pl 2 (Down), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Arrive	2	00:02:56	00:03:23

Table 6-5 Pluckley platform re-occupation

6.6 Ashford International Station

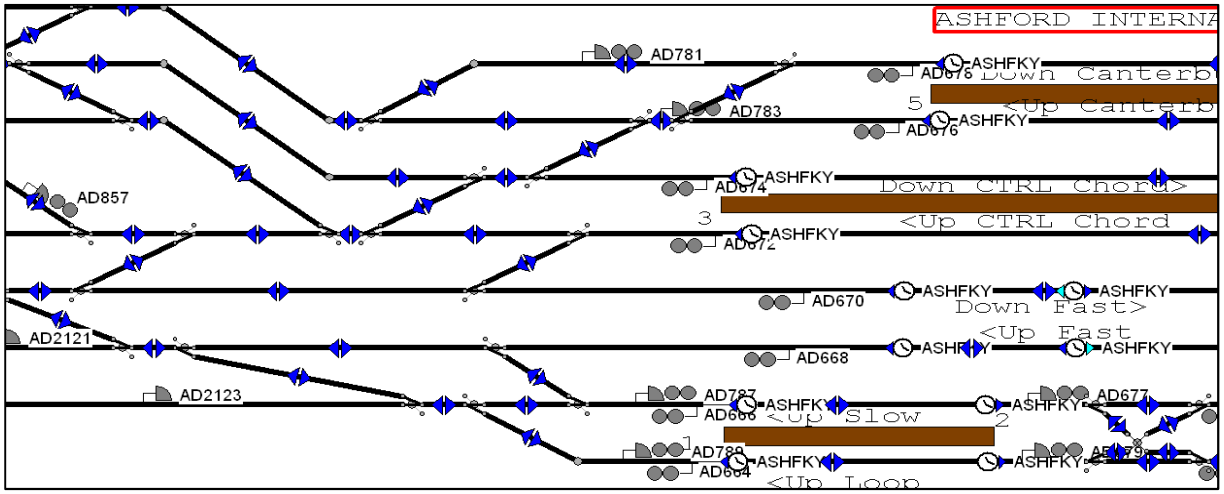


Figure 6-6.1 Ashford International Station layout as modelled in VISION

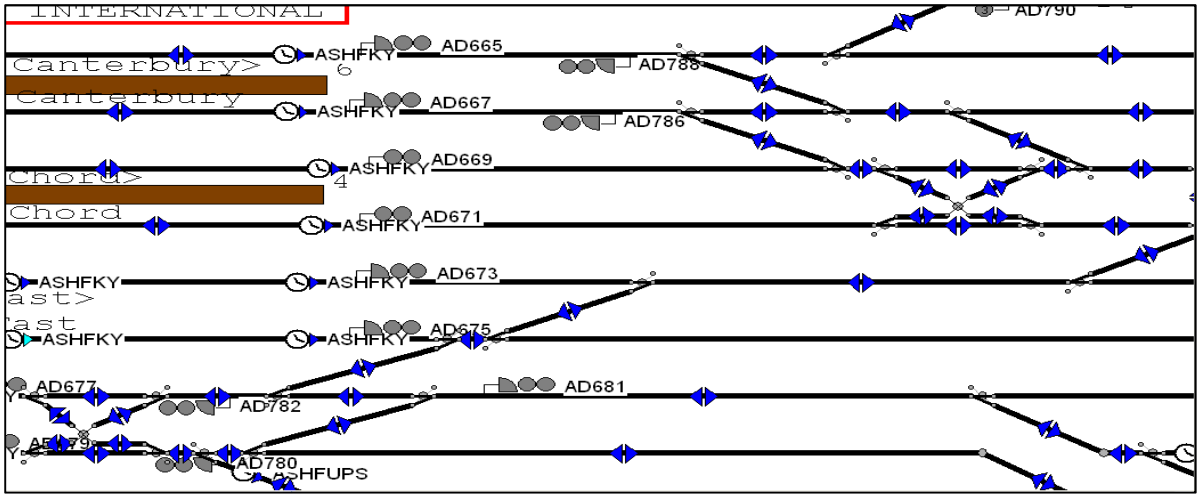


Figure 6-6.2 Ashford International Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P28	Previously passing through Ashford East Jn, stopping at Ashford International Pl 1 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Depart	P17	Previously passing through Appledore Pl 1 (Up), exiting model at Ashford International Pl 1 (Up).	2CAR 170	Arrive	1	00:03:04	00:03:18
2	P27	Entering model at Ashford International Pl 1 (Down), subsequently passing through Appledore Pl 2 (Down).	2CAR 170	Depart	P37	Previously passing through Ashford West Jn, stopping at Ashford International Pl 1 (Down), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Arrive	1	00:01:58	00:02:05
3	P35	Previously passing through Ashford East Jn, stopping at Ashford International Pl 1 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Depart	P33	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 1 (Down), subsequently exiting model at Appledore Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	1 (opposing direction)	00:02:45	00:02:56
4	P33	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 1 (Down), subsequently exiting model at Appledore Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P35	Previously passing through Ashford East Jn, stopping at Ashford International Pl 1 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Arrive	1 (opposing direction)	00:02:12	00:02:18
5	P19	Previously passing through Ashford East Jn, stopping at Ashford International Pl 2 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Depart	P19	Previously passing through Ashford East Jn, stopping at Ashford International Pl 2 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Arrive	2	00:02:07	00:02:13
6	P21	Previously passing through Ashford West Jn, stopping at Ashford International Pl 2 (Down), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Depart	P21	Previously passing through Ashford West Jn, stopping at Ashford International Pl 2 (Down), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Arrive	2	00:02:09	00:02:19

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
7	P19	Previously passing through Ashford East Jn, stopping at Ashford International Pl 2 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Depart	P21	Previously passing through Ashford West Jn, stopping at Ashford International Pl 2 (Down), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Arrive	2 (opposing direction)	00:02:08	00:02:18
8	P21	Previously passing through Ashford West Jn, stopping at Ashford International Pl 2 (Down), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Depart	P19	Previously passing through Ashford East Jn, stopping at Ashford International Pl 2 (Up), subsequently passing through Ashford West Jn.	12CAR 37X 675V1500A	Arrive	2 (opposing direction)	00:02:19	00:02:26
9	P22	Previously passing through Wye Pl 1 (Up), stopping at Ashford International Pl 5 (Up), subsequently passing through Charing Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P22	Previously passing through Wye Pl 1 (Up), stopping at Ashford International Pl 5 (Up), subsequently passing through Charing Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	5	00:02:48	00:03:03
10	P24	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 5 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P24	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 5 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	5	00:03:57	00:04:14
11	P22	Previously passing through Wye Pl 1 (Up), stopping at Ashford International Pl 5 (Up), subsequently passing through Charing Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P24	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 5 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	5 (opposing direction)	00:06:13	00:06:31
12	P24	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 5 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P22	Previously passing through Wye Pl 1 (Up), stopping at Ashford International Pl 5 (Up), subsequently passing through Charing Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	5 (opposing direction)	00:04:13	00:04:30

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
13	P30	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 6 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P30	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 6 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	6	00:03:57	00:04:14
14	P41	Entering model at Ashford International Pl 6 (Down), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Depart	P30	Previously passing through Charing Pl 2 (Down), stopping at Ashford International Pl 6 (Down), subsequently passing through Wye Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	6	00:03:57	00:04:14

Table 6-6 Ashford International platform re-occupation

Notes

Margin 1 – train 2 sighting signal is AD892R due to Double Red on AD892 and AD780, i.e. as train 1 clears the overlap of AD664 (platform end signal): AD780 Red->Yellow, AD892 Red->Green and AD892R Yellow->Green - this is train 2 signal.

Margin 2 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD789
Margin 3 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789
Margins 4 and 5 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782
Margins 6 and 7 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD787
Margin 8 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782
Margins 10 and 11 – train 2 sighting signal is AD851 junction-protecting signal due to MAR from AD851 to AD663
Margin 11 is high compared to margin 12 because it is an opposing direction platform re-occupations of platform 5 at different sides of Ashford International. For margin 11, train 1 must clear points AD1230A (At Ashford 'A' Jn), which means that both timer 1 and timer 2 are across the Maidstone Relief.

Margins 13 and 14 – train 2 sighting signal is AD851 junction-protecting signal due to MAR from AD851 to AD663.

6.7 Westenhanger Station

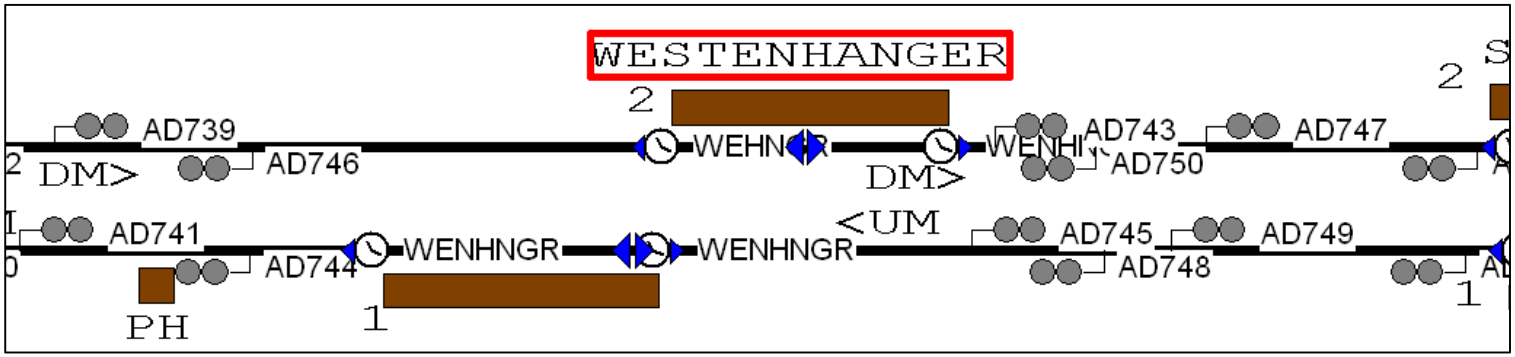


Figure 6-7 Westenhanger Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously stopping at Sandling Pl 1 (Up), stopping at Westenhanger Pl 1 (Up), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Sandling Pl 1 (Up), stopping at Westenhanger Pl 1 (Up), subsequently passing through Ashford East Jn.	12CAR 37X 675V1500A	Arrive	1	00:04:34	00:05:11
2	P01	Previously passing through Ashford East Jn, stopping at Westenhanger Pl 2 (Down), subsequently stopping at Sandling Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously passing through Ashford East Jn, stopping at Westenhanger Pl 2 (Down), subsequently stopping at Sandling Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:02:58	00:03:20

Table 6-7 Westenhanger platform re-occupation

Notes

Margin 1 – note that train 2 stops at Sandling within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

6.8 Sandling Station

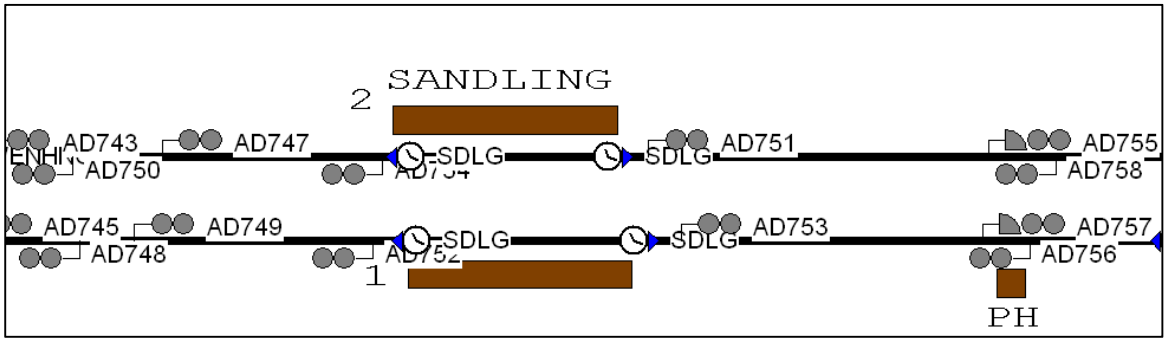


Figure 6-8 Sandling Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously passing through Saltwood Jn , stopping at Sandling Pl 1 (Up), subsequently stopping at Westenhanger Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously passing through Saltwood Jn, stopping at Sandling Pl 1 (Up), subsequently stopping at Westenhanger Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:04:08	00:04:28
2	P01	Previously stopping at Westenhanger Pl 2 (Down), stopping at Sandling Pl 2 (Down), subsequently passing through Saltwood Jn (Down).	12CAR 37X 675V1500A	Depart	P13	Previously stopping at Westenhanger Pl 2 (Down), stopping at Sandling Pl 2 (Down), subsequently passing through Saltwood Jn (Down).	12CAR 37X 675V1500A	Arrive	2	00:04:12	00:04:53

Table 6-8 Sandling platform re-occupation

Notes

Margin 1 – if AD752 (Sandling platform-end signal) is Red, then the signal in rear AD756 is also at Red, and the Saltwood Jn junction-protecting signal on the Up Dover (AD760, 3-aspect) is also at Red. Thus the signals in rear, AD902 and AD906 (both 3-aspect), are at Yellow and Green respectively. When train 1 clears the overlap of AD752 then AD752 remains at Red, and therefore no signals change aspect. Train 2 signal used is AD906 which remains green.

Margin 2 – train 2 stops at Westenhanger within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

6.9 Folkestone West Station

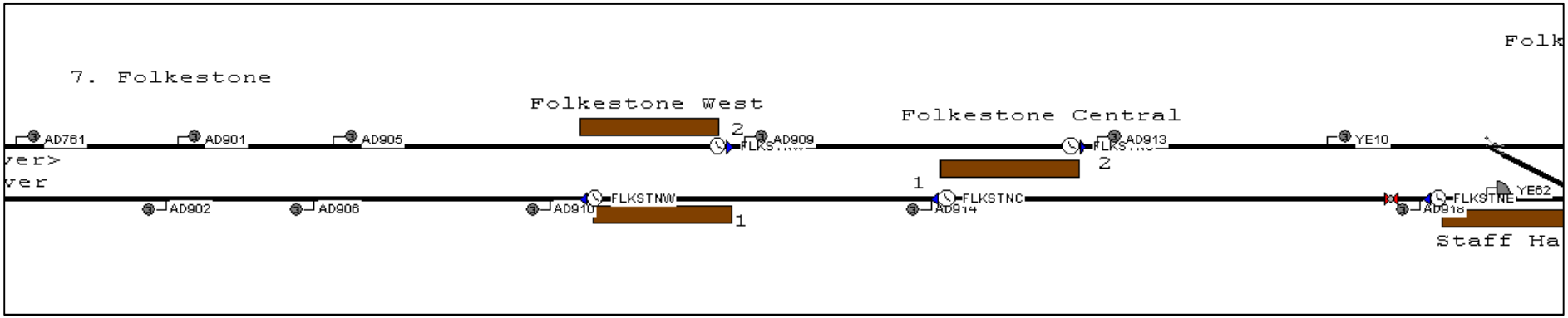


Figure 6-9 Folkestone West Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously stopping at Folkestone Central Pl 1 (Up), stopping at Folkestone West Pl 1 (Up), subsequently passing through Saltwood Jn.	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Folkestone Central Pl 1 (Up), stopping at Folkestone West Pl 1 (Up), subsequently passing through Saltwood Jn.	12CAR 37X 675V1500A	Arrive	1	00:04:17	00:04:41
2	P01	Previously passing through Saltwood Jn (Down), stopping at Folkestone West Pl 2 (Down), subsequently stopping at Folkestone Central Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously passing through Saltwood Jn (Down), stopping at Folkestone West Pl 2 (Down), subsequently stopping at Folkestone Central Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:02:46	00:03:14

Table 6-9 Folkestone West platform re-occupation

Notes

Margin 1 – note that train 2 stops at Folkestone Central within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

6.10 Folkestone Central Station

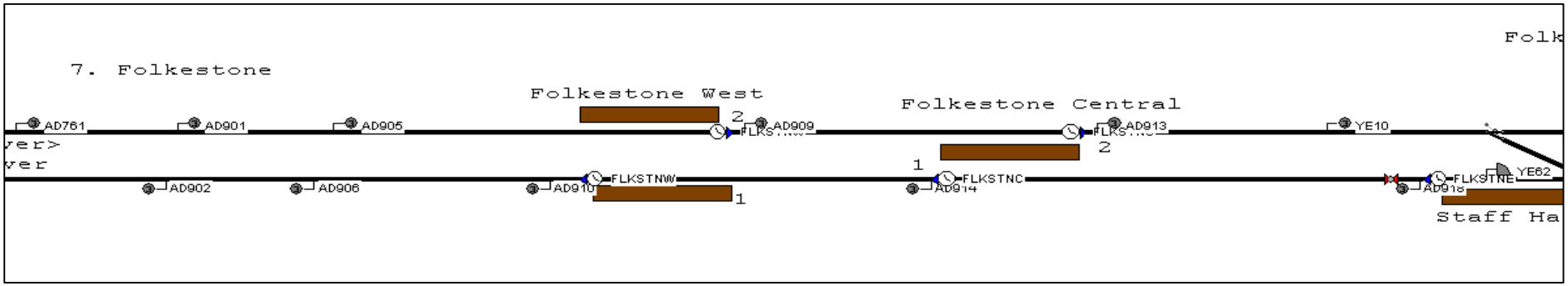


Figure 6-10 Folkestone Central Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P02	Previously passing through Folkestone East Up Main, stopping at Folkestone Central Pl 1 (Up), subsequently stopping at Folkestone West Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Folkestone East Up Main, stopping at Folkestone Central Pl 1 (Up), subsequently stopping at Folkestone West Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:04:01	00:04:36
2	P01	Previously stopping at Folkestone West Pl 2 (Down), stopping at Folkestone Central Pl 2 (Down), subsequently passing through Folkestone East Pl 2 (Down).	12CAR 37X 675V1500A	Depart	P13	Previously stopping at Folkestone West Pl 2 (Down), stopping at Folkestone Central Pl 2 (Down), subsequently passing through Folkestone East Pl 2 (Down).	12CAR 37X 675V1500A	Arrive	2	00:03:39	00:04:20

Table 6-10 Folkestone Central platform re-occupation

Notes

Margin 1 – train 2 stops at Folkestone East within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

Margin 2 – train 2 stops at Folkestone West within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

6.11 Folkestone East Station

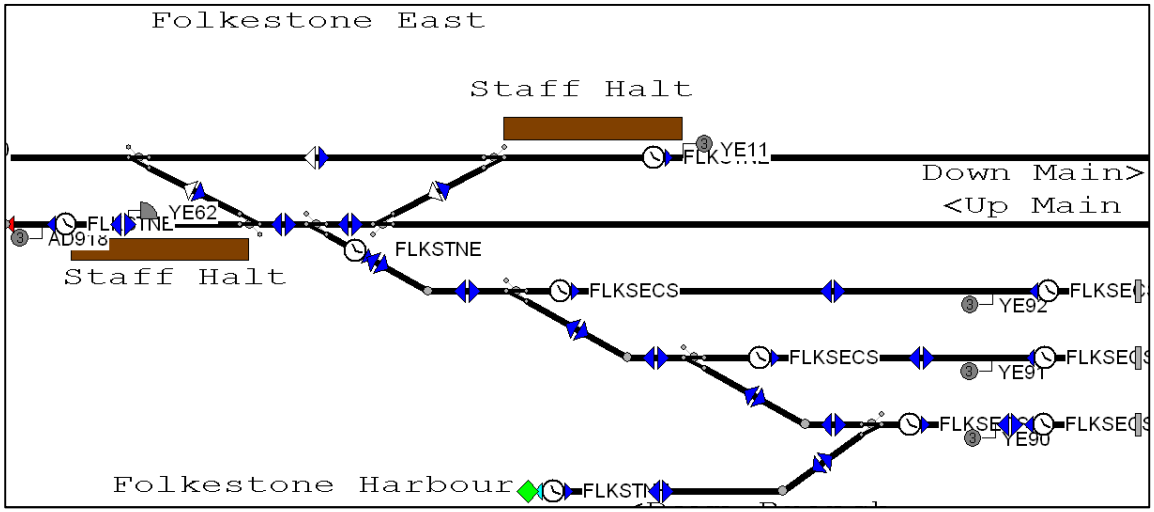


Figure 6-11 Folkestone East Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P15	Previously stopping at Dover Priory Pl 2 (Up), stopping at Folkestone East Up Main, subsequently stopping at Folkestone Central Pl 1 (Up).	12CAR 37X 675V1500A	Depart	P15	Previously stopping at Dover Priory Pl 2 (Up), stopping at Folkestone East Up Main, subsequently stopping at Folkestone Central Pl 1 (Up).	12CAR 37X 675V1500A	Arrive	1	00:02:42	00:03:03
2	P14	Previously stopping at Folkestone Central Pl 2 (Down), stopping at Folkestone East Pl 2 (Down), subsequently stopping at Dover Priory Pl 1 (Down).	12CAR 37X 675V1500A	Depart	P14	Previously stopping at Folkestone Central Pl 2 (Down), stopping at Folkestone East Pl 2 (Down), subsequently stopping at Dover Priory Pl 1 (Down).	12CAR 37X 675V1500A	Arrive	2	00:04:22	00:04:51

Table 6-11 Folkestone East platform re-occupation

Notes

Margin 2 – train 2 sighting signal is AD909 due to Double Red on YE11 and YE10, i.e. as train 1 clears the overlap of YE11 (platform end signal): YE11 Red->Red, YE10 Red->Red, AD913 Yellow->Yellow and AD909 Green->Green. No signal turns to green, so the technical margins shown use timer 2 from AD909 which is already green. Note that train 2 stops at Folkestone Central within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

6.12 Dover Priory

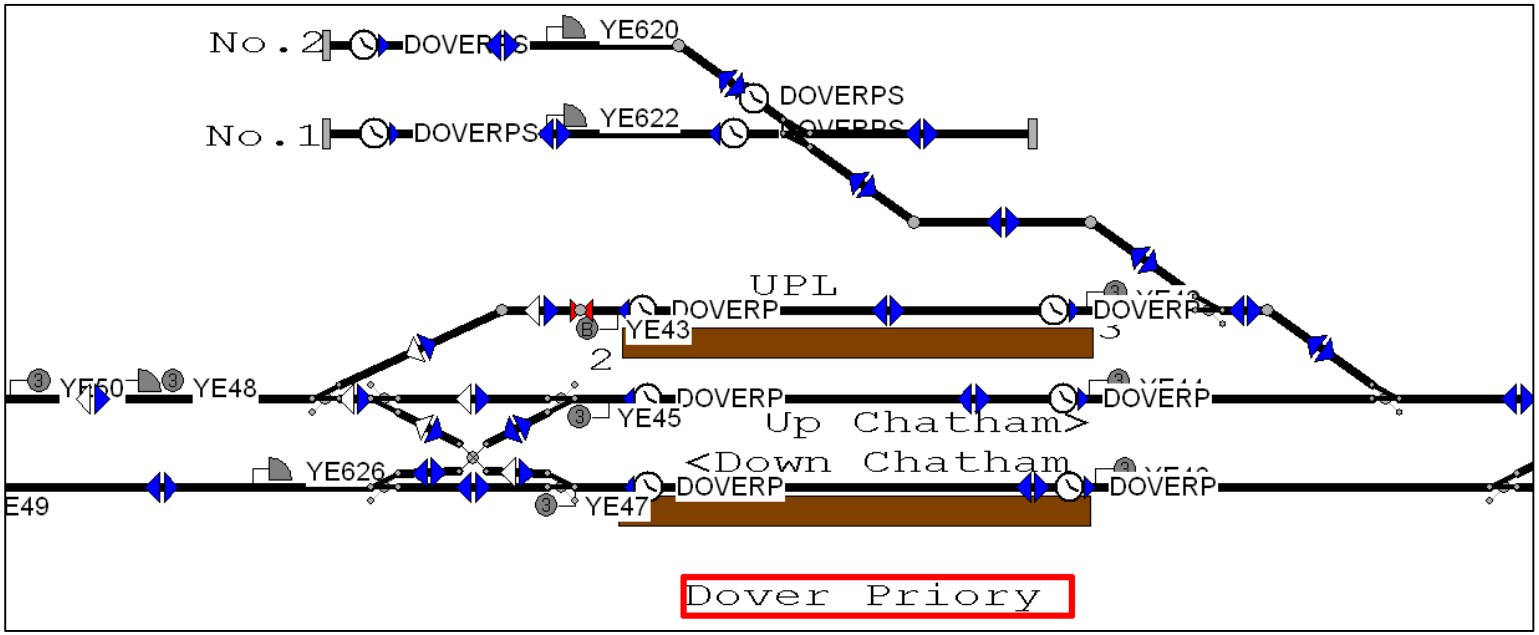


Figure 6-12 Dover Priory Station layout as modelled in VISION

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	P09	Previously passing through Buckland Jn, stopping at Dover Priory Pl 1 (Up), subsequently passing through Folkestone East Up Main.	6CAR 395 675V	Depart	P09	Previously passing through Buckland Jn, stopping at Dover Priory Pl 1 (Up), subsequently passing through Folkestone East Up Main.	6CAR 395 675V	Arrive	1	00:02:45	00:03:08

Margin No.	Train 1	Train 1 Route Description	Train 1 Stock	Train 1 Activity	Train 2	Train 2 Route Description	Train 2 Stock	Train 2 Activity	Platform	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
2	P14	Previously stopping at Folkestone East Pl 2 (Down), stopping at Dover Priory Pl 1 (Down), subsequently passing through Buckland Jn (Down).	12CAR 37X 675V1500A	Depart	P14	Previously stopping at Folkestone East Pl 2 (Down), stopping at Dover Priory Pl 1 (Down), subsequently passing through Buckland Jn (Down).	12CAR 37X 675V1500A	Arrive	1	00:01:53	00:01:59
3	P02	Previously passing through Buckland Jn, stopping at Dover Priory Pl 2 (Up), subsequently passing through Folkestone East Up Main.	12CAR 37X 675V1500A	Depart	P02	Previously passing through Buckland Jn, stopping at Dover Priory Pl 2 (Up), subsequently passing through Folkestone East Up Main.	12CAR 37X 675V1500A	Arrive	2	00:03:43	00:04:02
4	P01	Previously passing through Folkestone East Pl 2 (Down), stopping at Dover Priory Pl 2 (Down), subsequently passing through Buckland Jn (Down).	12CAR 37X 675V1500A	Depart	P10	Previously passing through Folkestone East Pl 2 (Down), stopping at Dover Priory Pl 2 (Down), subsequently passing through Buckland Jn (Down).	6CAR 395 675V	Arrive	2	00:02:06	00:02:14
5	P13	Previously passing through Folkestone East Pl 2 (Down), stopping at Dover Priory Pl 3 (Down), subsequently passing through Buckland Jn (Down).	12CAR 37X 675V1500A	Depart	P13	Previously passing through Folkestone East Pl 2 (Down), stopping at Dover Priory Pl 3 (Down), subsequently passing through Buckland Jn (Down).	12CAR 37X 675V1500A	Arrive	2	00:02:08	00:02:14

Table 6-12 Dover Priory platform re-occupation

Notes

Margin 2 – train 2 sighting signal is YE48 junction-protecting signal due to MAR from YE48 to YE46 (platform 2).

Margin 5 – train 2 sighting signal is YE48 junction-protecting signal due to MAR from YE48 to YE42 (platform 3).

7. Junction Margins by Location

This section gives the results of the junction margin calculations described in section 4.6.1, 4.6.2 and 4.6.3. These are grouped by location and type.

A screenshot of each area in the VISION model is included, to create a visual representation of the routes.

The technical margin is calculated using the time taken for train 1 to clear the conflict point from the TIPLOC and train 2 to travel from the signal which clears to green (at the same time) to the TIPLOC. Train 2 will travel on the least restrictive sequence of signal aspects that the infrastructure can show, ignoring the release of signals caused by the passage of Train 1 beyond the conflict point. Least restrictive signal aspects are green unless the signal cannot show green, due to approach control or approaching a buffer stop. In all cases the margin is calculated so that train 2 is not affected by train 1.

For standard (default) braking rates we use 1.50 mph/s / 6.839%g (VISION braking category 11) for Class 375, Class 171 and Class 395.

OTMR data shows that the average braking rate observed on the area averages 0.76 mph/s for Class 375 and Class 171 and averages 0.81 mph/s for Class 395, and the OTMR braking margin is based on this adjustment, which means that trains brake earlier when stopping.

7.1 Paddock Wood Station

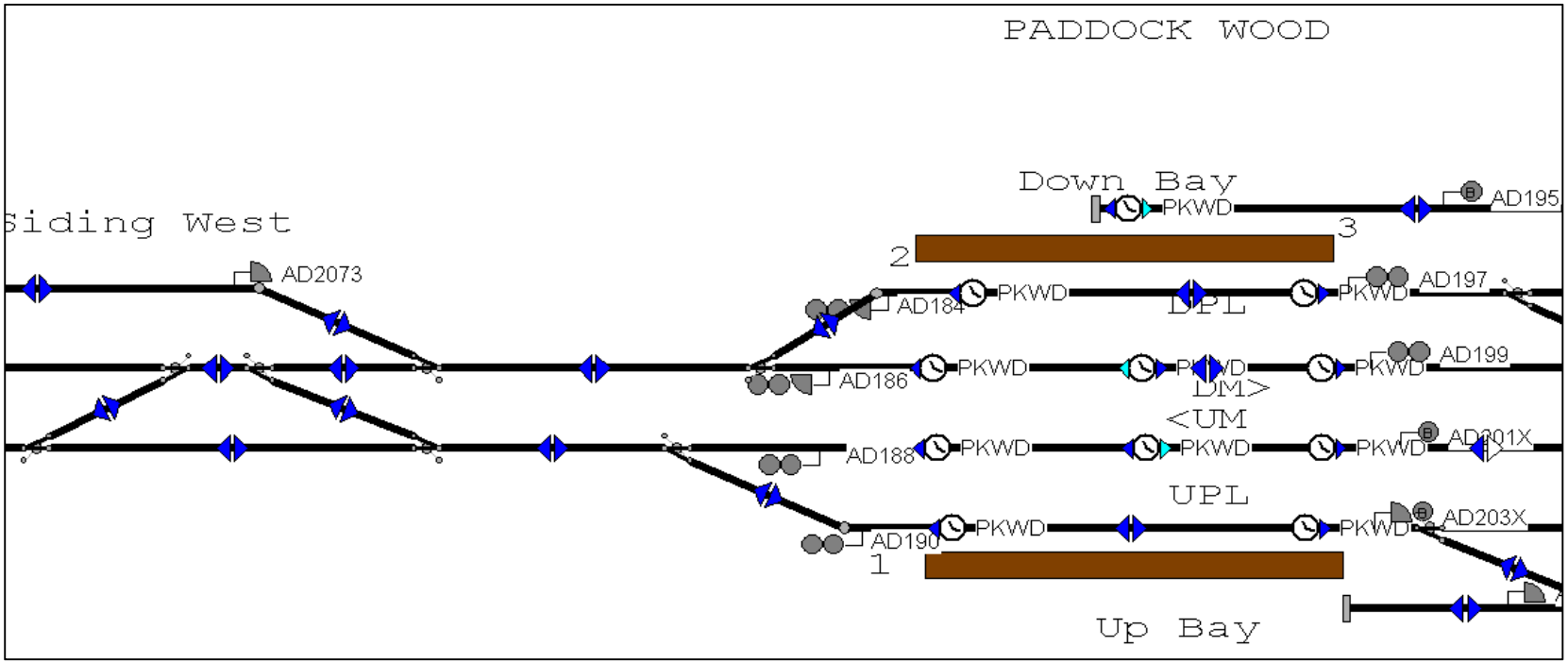


Figure 7-1.1 Paddock Wood Station layout as modelled in VISION

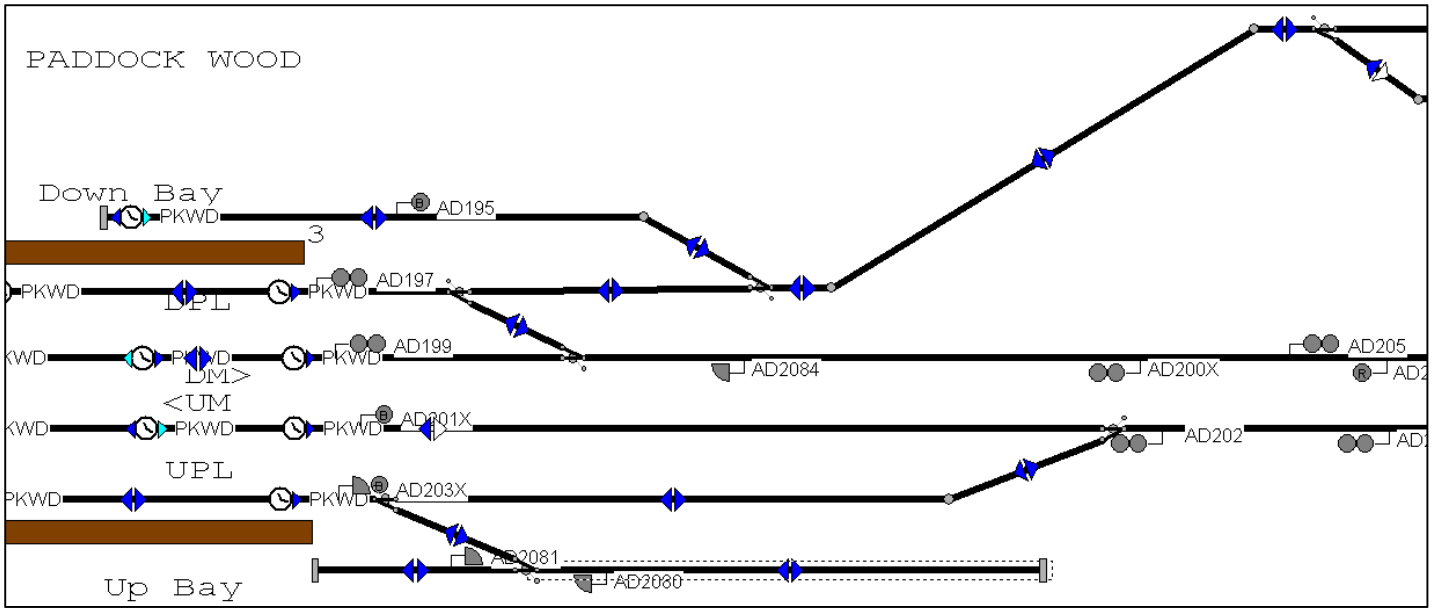


Figure 7-1.2 Paddock Wood Station layout as modelled in VISION

Paddock Wood Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	P01	12CAR 37X 675V1500A	down main to pl.2	P03	8CAR 37X 675V1500A	down main	00:01:16	00:01:13	00:02:01
2	Diverging	F04	66 +23=2400T 60MPH48	down main to pl.2	P03	8CAR 37X 675V1500A	down main	00:01:32	00:01:32	00:03:06
3	Diverging	F05	60 +21=2000T 45MPH	down main to pl.2	P03	8CAR 37X 675V1500A	down main	00:01:29	00:01:29	00:03:26

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
4	Diverging	P03	8CAR 37X 675V1500A	down main	P01	12CAR 37X 675V1500A	down main to pl.2	00:02:15	00:02:38	00:01:32
5	Diverging	P02	12CAR 37X 675V1500A	up main to pl.1	P04	8CAR 37X 675V1500A	up main	00:00:50	00:00:40	00:02:10
6	Diverging	P04	8CAR 37X 675V1500A	up main	P02	12CAR 37X 675V1500A	up main to pl.1	00:00:58	00:01:14	00:01:24
7	Diverging	F06	66 +20=1600T 75MPH	up main	P02	12CAR 37X 675V1500A	up main to pl.1	00:01:05	00:01:21	00:02:18

Table 7-1 Paddock Wood diverging junction margins

Notes

Margin 6 and 7 – train 2 sighting signal is AD202 junction-protecting signal due to MAR from AD202 to AD190 (platform 1 UPL).

Paddock Wood Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Converging Headway
1	Converging	P01	12CAR 37X 675V1500A	pl.2 to down main	P03	8CAR 37X 675V1500A	down main	00:02:42	00:02:42	N/A
2	Converging	P03	8CAR 37X 675V1500A	down main	P01	12CAR 37X 675V1500A	pl.2 to down main	00:01:22	00:01:22	N/A
3	Converging	F01	66 +13=1800T 75MPH	down main	P01	12CAR 37X 675V1500A	pl.2 to down main	00:02:09	00:02:09	N/A
4	Converging	P02	12CAR 37X 675V1500A	pl.1 to up main	P04	8CAR 37X 675V1500A	up main	00:02:40	00:02:39	N/A

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Converging Headway
5	Converging	P04	8CAR 37X 675V1500A	up main	P02	12CAR 37X 675V1500A	pl.1 to up main	00:01:19	00:01:19	00:01:21
6	Converging	F06	66 +20=1600T 75MPH	up main	P02	12CAR 37X 675V1500A	pl.1 to up main	00:02:07	00:02:07	00:02:20
7	Converging	P05	12CAR 37X 675V1500A	platform 2 to up main	P04	8CAR 37X 675V1500A	up main	00:02:36	00:02:37	N/A
8	Converging	P04	8CAR 37X 675V1500A	up main	P05	12CAR 37X 675V1500A	platform 2 to up main	00:01:19	00:01:19	00:01:21
9	Converging	F06	66 +20=1600T 75MPH	up main	P05	12CAR 37X 675V1500A	platform 2 to up main	00:02:07	00:02:07	00:02:20

Table 7-2 Paddock Wood converging junction margins

Notes

Margins 2, 3, 5, 6, 8 and 9 – because train 2 stops at Paddock Wood, methodology dictates that train 2 signal is the relevant departure and junction-protecting signal, and train 1 is moved on such that its clearance point is the signal overlap which would cause the departure signal to turn to green. Timer 2 is 00:00:00 in each case because the departure signal has been calculated to have been at yellow or double yellow for longer than 30 seconds, meaning that the dispatch could have been completed and train 2 would be ready to depart as soon as the departure signal turned to green.

Paddock Wood Crossing junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Crossing	P05	12CAR 37X 675V1500A	platform 2 to up main	P03	8CAR 37X 675V1500A	down main	00:02:16	00:02:17

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
2	Crossing	P03	8CAR 37X 675V1500A	down main	P05	12CAR 37X 675V1500A	platform 2 to up main	00:00:36	00:00:36
3	Crossing	F01	66 +13=1800T 75MPH	down main	P05	12CAR 37X 675V1500A	from up maidstone to up main	00:00:41	00:00:41
4	Crossing	P08	4CAR 37X 675V1500A	pl.3 to down maidstone	P07	4CAR 37X 675V1500A	up maidstone to pl.3	00:02:47	00:02:56

Table 7-3 Paddock Wood crossing junction margins

Notes

Margin 2 and 3 – because train 2 stops at Paddock Wood, methodology dictates that train 2 signal is the departure and junction-protecting signal AD184 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 4 – it is noted that this could also be classified as a platform re-occupation in opposing directions of platform 3, and is indeed part of the specification for platform re-occupations at Paddock Wood.

7.2 Cranmore Down Loop

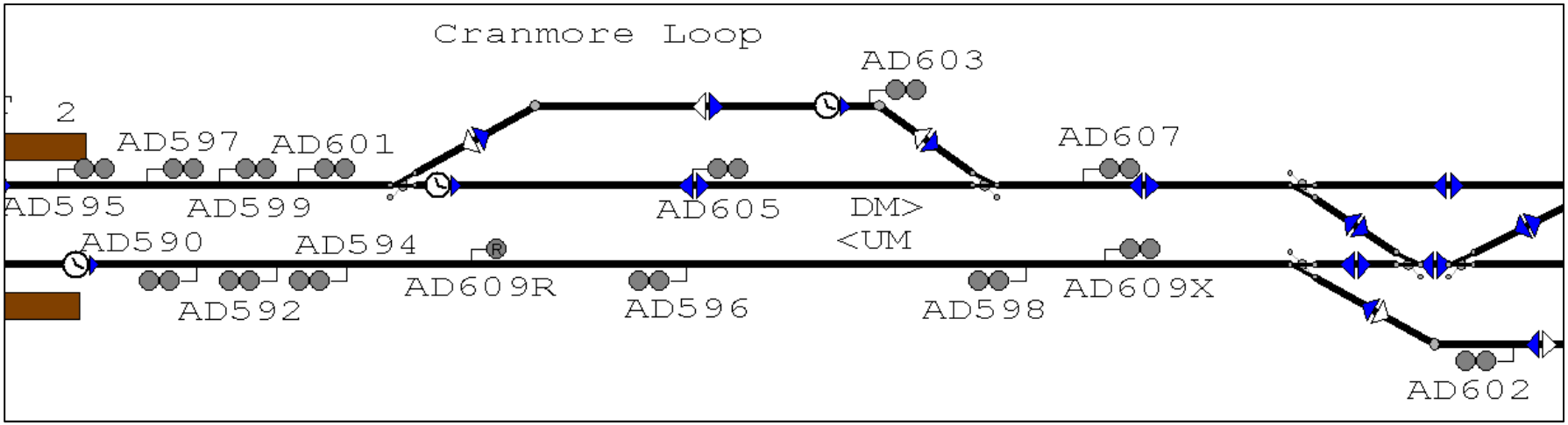


Figure 7-2 Cranmore Down Loop layout as modelled in VISION

Cranmore Down Loop Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	F02	66 +13=1800T 60MPH	down main to down loop	P03	8CAR 37X 675V1500A	down main	00:00:19	00:00:19	00:02:40
2	Diverging	F02	66 +13=1800T 60MPH	down main to down loop	F01	66 +13=1800T 75MPH	down main	00:00:58	00:00:58	00:02:40

Table 7-4 Cranmore Down Loop diverging junction margins

Notes

The diverging technical margins are low because of the negative values for timer 1, i.e. rear of train 1 clears the diverging conflict point (AD1200) into the loop before arriving at the Down Loop timing point (positioned 20y in rear of signal AD603). Margin 1 is 00:00:19 because train 2 is a passenger – so this takes less time to run from train 2 sighting signal (AD597) to the rear of train passing the DML timing point 1 yard past the diverging conflict point (AD1200).

Cranmore Down Loop Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Converging	F02	66 +13=1800T 60MPH	down loop to down main	P03	8CAR 37X 675V1500A	down main	00:03:25	00:03:25
2	Converging	F02	66 +13=1800T 60MPH	down loop to down main	F01	66 +13=1800T 75MPH	down main	00:03:53	00:03:53

Table 7-5 Cranmore Down Loop converging junction margins

Notes

Margin 1 is 00:03:25 because train 2 is a passenger - so this takes less time to run from train 2 sighting signal (AD599) to the rear passing the DML timing point 1y past points AD1200. The converging technical margins are the same for default and observed braking because no braking takes place in this move – train 1 has departed Cranmore Down loop and train 2 is continuing to run at speed.

Margin 2 is 00:03:53 because train 2 is a freight – so this takes longer to run from train 2 sighting signal (AD599) to the rear of the train passing the DML timing point 1 yard past points AD1200. The converging technical margins are the same for default and observed braking because no braking takes place in this move – train 1 has departed Cranmore Down loop and train 2 is continuing to run at speed.

7.3 Headcorn

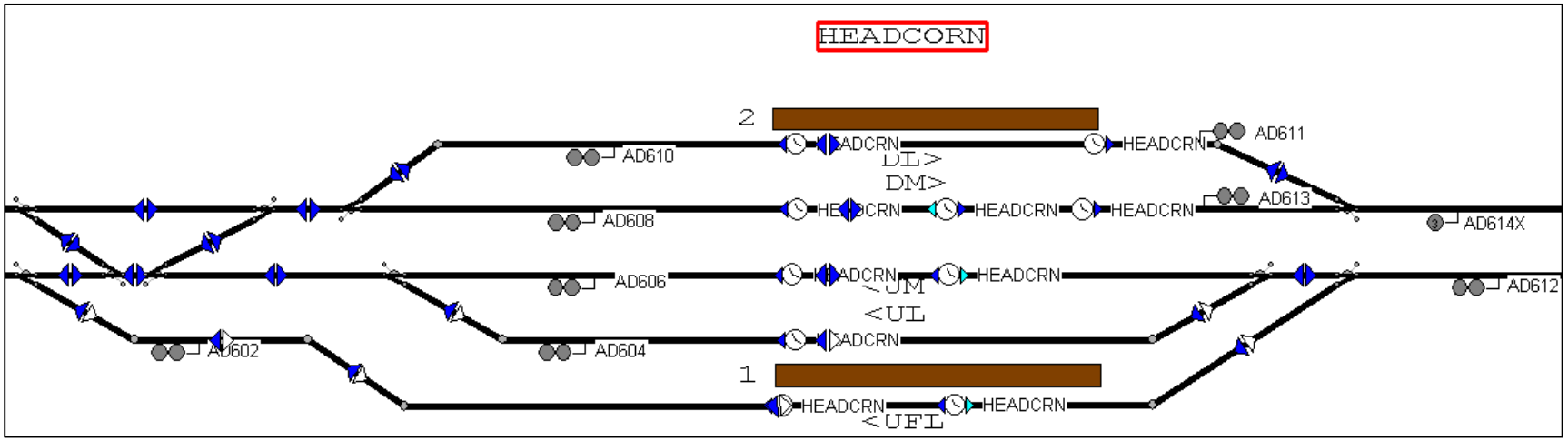


Figure 7-3 Headcorn layout as modelled in VISION

Headcorn Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	P01	12CAR 37X 675V1500A	down main to pl.2	P03	8CAR 37X 675V1500A	down main	00:00:47	00:00:36	00:02:17
2	Diverging	P03	8CAR 37X 675V1500A	down main	P01	12CAR 37X 675V1500A	down main to pl.2	00:01:11	00:01:25	00:01:20
3	Diverging	F01	66 +13=1800T 75MPH	down main	P01	12CAR 37X 675V1500A	down main to pl.2	00:01:12	00:01:26	00:02:11
4	Diverging	P02	12CAR 37X 675V1500A	up main to pl.1	P04	8CAR 37X 675V1500A	up main	00:01:08	00:01:09	00:01:55

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
5	Diverging	P04	8CAR 37X 675V1500A	up main	P02	12CAR 37X 675V1500A	up main to pl.1	00:01:48	00:02:14	00:01:25
6	Diverging	F06	66 +20=1600T 75MPH	up main	P02	12CAR 37X 675V1500A	up main to pl.1	00:01:56	00:02:22	00:02:10

Table 7-6 Headcorn diverging junction margins

Notes

Margin 2 and 3 – train 2 sighting signal is AD607 junction-protecting signal due to MAR from AD607 to AD611 (platform 2 DPL).

Margin 4 – timer 1 was positive because the rear of the train does not clear 82 yards past the conflict point until the train has departed the station. Since TPR show this as being a 12 car platform, it is assumed that the train would clear the junction by the time it had arrived at the platform – therefore timer 1 was manually altered to 00:00:00.

Headcorn Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Converging Headway
1	Converging	P01	12CAR 37X 675V1500A	pl.2 to down main	P03	8CAR 37X 675V1500A	down main	00:02:26	00:02:26	N/A
2	Converging	P03	8CAR 37X 675V1500A	down main	P01	12CAR 37X 675V1500A	pl.2 to down main	00:01:20	00:01:20	00:01:13
3	Converging	F01	66 +13=1800T 75MPH	down main	P01	12CAR 37X 675V1500A	pl.2 to down main	00:02:10	00:02:10	00:02:06
4	Converging	P02	12CAR 37X 675V1500A	pl.1 to up main	P04	8CAR 37X 675V1500A	up main	00:02:29	00:02:30	N/A

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Converging Headway
5	Converging	P04	8CAR 37X 675V1500A	up main	P02	12CAR 37X 675V1500A	pl.1 to up main	00:01:23	00:01:22	N/A
6	Converging	F06	66 +20=1600T 75MPH	up main	P02	12CAR 37X 675V1500A	pl.1 to up main	00:02:00	00:02:00	N/A

Table 7-7 Headcorn converging junction margins

Notes

Margin 2, 3, 5 and 6 – because train 2 stops at Headcorn, methodology dictates that train 2 signal is the relevant departure and junction-protecting signal, and train 1 is moved on such that its clearance point is the signal overlap which would cause the departure signal to turn to green. Timer 2 is 00:00:00 in each case because the departure signal has been calculated to have been at yellow or double yellow for longer than 30 seconds, meaning that the dispatch could have been completed and train 2 would be ready to depart as soon as the departure signal turned to green.

Note that in this case of margins 5 and 6 the departure signal, AD604, is 208 yards from the platform end timing point.

7.4 Ashford West Junction

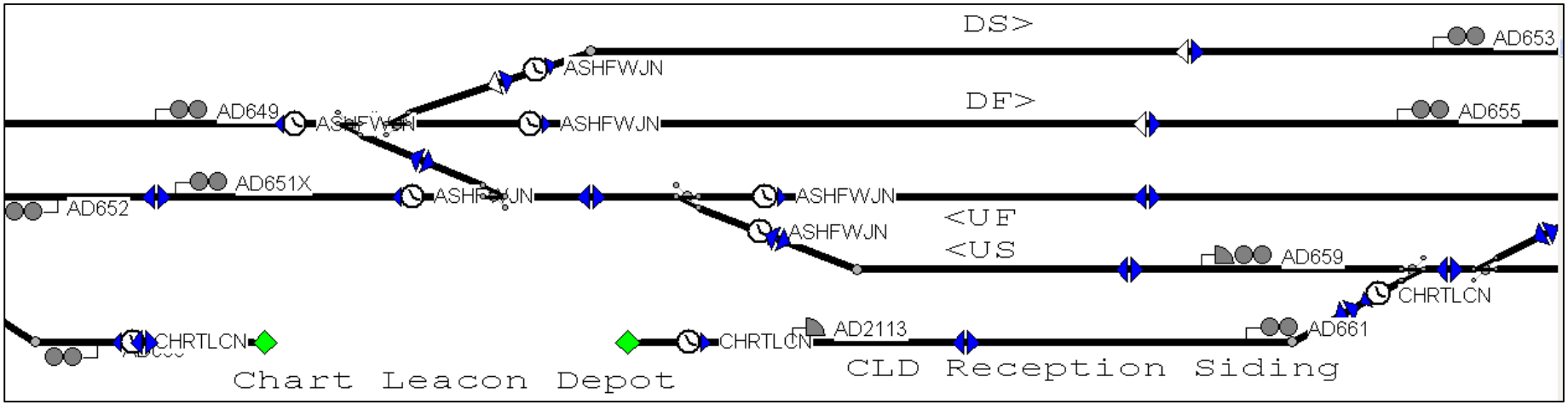


Figure 7-4 Ashford West Junction layout as modelled in VISION

Ashford West Junction Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	P01	12CAR 37X 675V1500A	down main to down slow	P13	12CAR 37X 675V1500A	down main	00:01:51	00:02:06	00:02:03
2	Diverging	P13	12CAR 37X 675V1500A	down main	P01	12CAR 37X 675V1500A	down main to down slow	00:01:51	00:02:05	00:02:03
3	Diverging	F01	66 +13=1800T 75MPH	down main	P01	12CAR 37X 675V1500A	down main to down slow	00:01:47	00:02:02	00:02:42

Table 7-8 Ashford West Junction diverging junction margins

Ashford West Junction Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Converging	P02	12CAR 37X 675V1500A	up slow to up main	P15	12CAR 37X 675V1500A	up main	00:02:58	00:03:06
2	Converging	P15	12CAR 37X 675V1500A	up main	P02	12CAR 37X 675V1500A	up slow to up main	00:02:54	00:03:03
3	Converging	F06	66 +20=1600T 75MPH	up main	P02	12CAR 37X 675V1500A	up slow to up main	00:02:49	00:02:59

Table 7-9 Ashford West Junction converging junction margins

Notes

Margin 1, 2 and 3 – note that train 2 stops at Ashford International within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

7.5 Ashford International

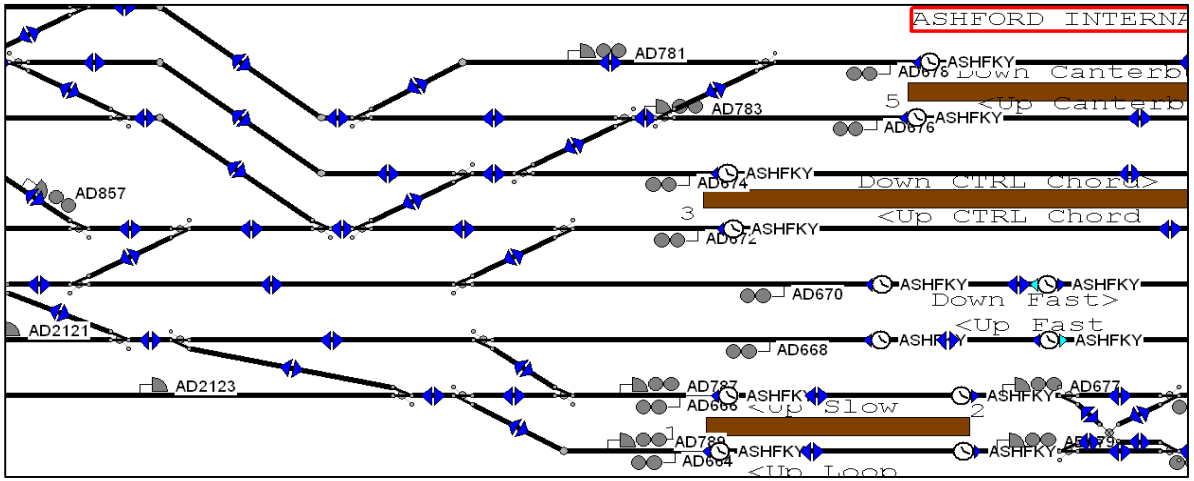


Figure 7-5.1 Ashford International station layout as modelled in VISION

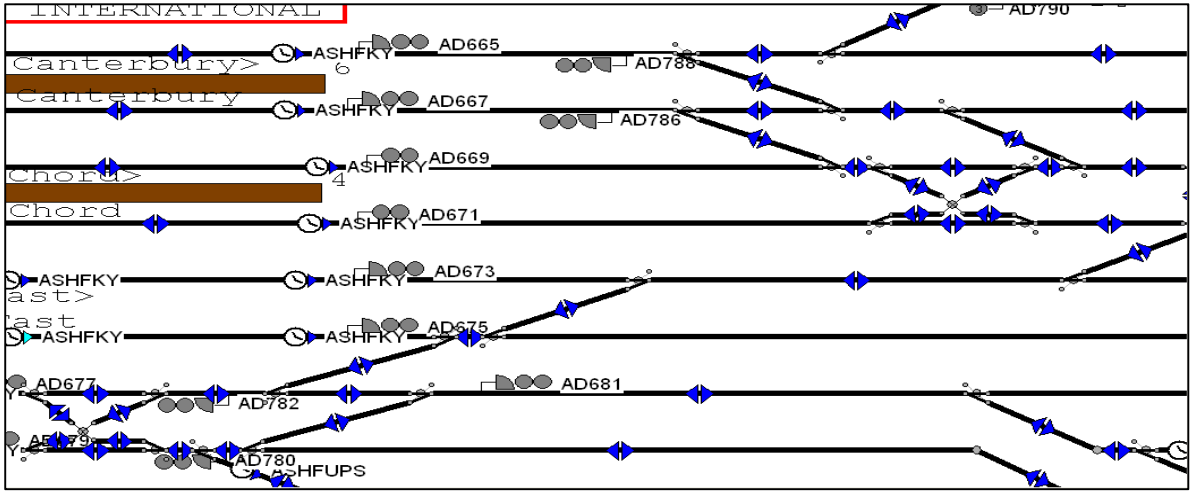


Figure 7-5.2 Ashford International station layout as modelled in VISION

Ashford International Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	F18	66 +20=1600T 75MPH	Up Fast to Pass Ashford on Up Main Line	P19	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.2	00:01:34	00:01:40	00:02:30
2	Diverging	F19	66 +20=1600T 75MPH	Up Main Line to Up Maidstone towards Charing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:02:18	00:02:18	00:02:40
3	Diverging	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	F19	66 +20=1600T 75MPH	Up Main Line to Up Maidstone towards Charing	00:02:00	00:02:00	00:02:24
4	Diverging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P31	12CAR 37X 675V1500A	Down Fast to Down Slow Line to arrive Pl.5	00:01:38	00:01:45	00:01:39
5	Diverging	P31	12CAR 37X 675V1500A	Down Fast to Down Slow Line to arrive Pl.5	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:01	00:00:53	00:02:10
6	Diverging	P39	12CAR 37X 675V1500A	Down Fast Line to arrive at Pl.5	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:01	00:00:53	00:02:10
7	Diverging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P39	12CAR 37X 675V1500A	Down Fast Line to arrive at Pl.6	00:01:38	00:01:45	00:01:39
8	Diverging	P37	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.1	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:06	00:00:57	00:02:09
9	Diverging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P37	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.1	00:01:21	00:01:28	00:01:39

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
10	Diverging	P21	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.2	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:12	00:00:59	00:02:09
11	Diverging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P21	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.2	00:01:12	00:01:22	00:01:39

Table 7-10 Ashford International diverging junction margins

Notes

Margin 1 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 2 US).

Margins 4 and 7 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD783.

Margin 9 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD789 (platform 1 UPL).

Margins 11 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD787 (platform 2 US).

Ashford International Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Converging Headway
1	Converging	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:02:50	00:02:50	N/A
2	Converging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	00:01:38	00:01:38	N/A
3	Converging	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P35	12CAR 37X 675V1500A	Depart Pl.1 to Up Fast towards Pluckley	00:01:56	00:01:56	00:02:12
4	Converging	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P19	12CAR 37X 675V1500A	Depart Pl.2 to Up Fast towards Pluckley	00:01:56	00:01:56	00:02:12

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Converging Headway
5	Converging	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P36	12CAR 37X 675V1500A	Depart Pl.2 to Up Fast towards Pluckley	00:01:56	00:01:56	00:02:12
6	Converging	P21	12CAR 37X 675V1500A	Depart Pl.2 to Down Fast Line towards Westenhanger	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:02:47	00:02:48	N/A
7	Converging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P21	12CAR 37X 675V1500A	Depart Pl.2 to Down Fast Line towards Westenhanger	00:01:38	00:01:38	N/A
8	Converging	P37	12CAR 37X 675V1500A	Depart Pl.1 to Down Fast Line towards Westenhanger	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:02:50	00:02:51	N/A
9	Converging	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P37	12CAR 37X 675V1500A	Depart Pl.1 to Down Fast Line towards Westenhanger	00:01:38	00:01:38	N/A

Table 7-11 Ashford International converging junction margins

Notes

Margins 2, 7 and 9 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the relevant departure and junction-protecting signal, and train 1 is moved on such that its clearance point is the signal overlap which would cause the departure signal to turn to green. However, in this case, because train 1 diverges at Ashford East Jn (AD1305A) after clearing the first signal, this has been used as train 1 clearance point. Timer 2 is 00:00:12 because the departure signal has been calculated to have been at yellow for 18 seconds, meaning that the dispatch could have been started on yellow and completed 12 seconds after the departure signal turned to green.

Margins 3, 4, 5 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the relevant departure and junction-protecting signal (margin 3 – AD664, margin 4 and 5 – AD666) and train 1 is moved on such that its clearance point is the signal overlap which would cause the departure signal to turn to green. Timer 2 is 00:00:00 in each case because the departure signal has been calculated to have been at yellow or double yellow for longer than 30 seconds, meaning that the dispatch could have been completed and train 2 would be ready to depart as soon as the departure signal turned to green.

Ashford International Crossing junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Crossing	P27	2CAR 170	Depart Pl.1 to Down Hastings towards Ham Street	P17	2CAR 170	Up Hastings towards Ashford to arrive Pl.1	00:03:05	00:03:18
2	Crossing	P27	2CAR 170	Depart Pl.1 to Down Hastings towards Ham Street	F17	37 +2=100T 60MPH	Up Hastings towards Ashford to Pass Pl.2	00:03:09	00:03:09
3	Crossing	F17	37 +2=100T 60MPH	Up Hastings towards Ashford to Pass Pl.2	P27	2CAR 170	Depart Pl.1 to Down Hastings towards Ham Street	00:00:25	00:00:25
4	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:03:04	00:03:04
5	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:02:31	00:02:31
6	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	00:00:19	00:00:19
7	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	00:01:07	00:01:07
8	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	P37	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.1	00:02:58	00:03:05
9	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	P21	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.2	00:02:49	00:02:59
10	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	P36	12CAR 37X 675V1500A	Depart Pl.2 to Up Fast towards Pluckley	00:01:41	00:01:41

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
11	Crossing	P36	12CAR 37X 675V1500A	Depart Pl.2 to Up Fast towards Pluckley	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	00:01:33	00:01:34
12	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	00:03:11	00:03:17
13	Crossing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	-00:00:28	-00:00:37
14	Crossing	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	00:03:12	00:03:19
15	Crossing	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	P16	12CAR 37X 675V1500A	Depart Pl.1 to Up Maidstone towards Charing	-00:00:14	-00:00:22
16	Crossing	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:05	00:00:56
17	Crossing	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:00:59	00:00:50
18	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	00:01:23	00:01:34
19	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	00:02:11	00:02:22
20	Crossing	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	P21	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.2	00:01:18	00:01:23

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
21	Crossing	P21	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.2	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	00:01:28	00:01:35
22	Crossing	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	P36	12CAR 37X 675V1500A	Depart Pl.2 to Up Fast towards Pluckley	00:00:25	00:00:20
23	Crossing	P35	12CAR 37X 675V1500A	Depart Pl.1 to Up Fast towards Pluckley	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	00:02:45	00:02:56
24	Crossing	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	00:00:58	00:00:55
25	Crossing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	00:00:39	00:00:41
26	Crossing	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	00:01:13	00:01:11
27	Crossing	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	P33	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.1 at Ashford	00:00:50	00:00:53
28	Crossing	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:02:59	00:02:59
29	Crossing	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:02:25	00:02:25
30	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	00:00:19	00:00:19

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
31	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	00:01:07	00:01:07
32	Crossing	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	P37	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.1	00:02:53	00:03:00
33	Crossing	P37	12CAR 37X 675V1500A	Down Fast Line to arrive Pl.1	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	00:00:08	00:00:00
34	Crossing	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	P35	12CAR 37X 675V1500A	Depart Pl.1 to Up Fast towards Pluckley	00:01:35	00:01:35
35	Crossing	P35	12CAR 37X 675V1500A	Depart Pl.1 to Up Fast towards Pluckley	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	00:01:41	00:01:41
36	Crossing	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	00:03:05	00:03:11
37	Crossing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	-00:00:28	-00:00:37
38	Crossing	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	00:03:07	00:03:14
39	Crossing	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	P38	12CAR 37X 675V1500A	Depart Pl.2 to Up Maidstone towards Charing	-00:00:14	-00:00:22
40	Crossing	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:04	00:00:56

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
41	Crossing	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:01:55	00:01:51
42	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	00:02:30	00:02:44
43	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	00:03:18	00:03:32
44	Crossing	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	P35	12CAR 37X 675V1500A	Depart Pl.1 to Up Fast towards Pluckley	00:00:06	-00:00:01
45	Crossing	P35	12CAR 37X 675V1500A	Depart Pl.1 to Up Fast towards Pluckley	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	00:03:52	00:04:06
46	Crossing	P36	12CAR 37X 675V1500A	Depart Pl.2 to Up Fast towards Pluckley	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	00:03:44	00:03:59
47	Crossing	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	00:00:58	00:00:56
48	Crossing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	00:01:46	00:01:51
49	Crossing	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	00:01:12	00:01:11
50	Crossing	P39	12CAR 37X 675V1500A	Down Fast Line towards Ashford to arrive Pl.6	P34	12CAR 37X 675V1500A	Down Maidstone to arrive Pl.2 at Ashford	00:01:57	00:02:03

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
51	Crossing	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	P24	12CAR 37X 675V1500A	Down Maidstone Relief to arrive Ashford Pl.5	00:03:11	00:03:23
52	Crossing	P24	12CAR 37X 675V1500A	Down Maidstone Relief to arrive Ashford Pl.5	P26	12CAR 37X 675V1500A	Down Slow Line towards Ashford to arrive Pl.6	00:01:37	00:01:39
53	Crossing	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P19	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.2	00:02:22	00:02:29
54	Crossing	P19	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.2	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:00:36	00:00:36
55	Crossing	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:02:29	00:02:31
56	Crossing	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:03:00	00:03:01
57	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:01:06	00:01:06
58	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:00:42	00:00:42
59	Crossing	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	00:02:02	00:02:05
60	Crossing	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:01:42	00:01:42

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
61	Crossing	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	00:02:06	00:02:08
62	Crossing	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	P40	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:01:39	00:01:39
63	Crossing	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P28	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.1	00:02:25	00:02:31
64	Crossing	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:02:29	00:02:31
65	Crossing	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:03:00	00:03:01
66	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:01:06	00:01:06
67	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:00:42	00:00:42
68	Crossing	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	00:02:02	00:02:05
69	Crossing	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:01:42	00:01:42
70	Crossing	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	00:02:06	00:02:08

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
71	Crossing	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	P20	12CAR 37X 675V1500A	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	00:01:39	00:01:39
72	Crossing	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	P28	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.1	00:01:31	00:01:36
73	Crossing	P28	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.1	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	00:02:10	00:02:20
74	Crossing	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:15	00:01:10
75	Crossing	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:01:48	00:01:42
76	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	00:02:40	00:02:47
77	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	00:02:16	00:02:23
78	Crossing	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	-00:00:06	-00:00:13
79	Crossing	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	00:03:16	00:03:23
80	Crossing	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	-00:00:08	-00:00:15

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
81	Crossing	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	P43	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.2	00:03:13	00:03:20
82	Crossing	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	P36	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.2	00:01:30	00:01:36
83	Crossing	P36	12CAR 37X 675V1500A	Up Fast to Up Slow towards Ashford to arrive Pl.2	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	00:02:11	00:02:19
84	Crossing	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	00:01:16	00:01:10
85	Crossing	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	00:01:49	00:01:43
86	Crossing	F15	66 LD	Pass Ashford on Down Fast Line towards Sevington	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	00:02:41	00:02:48
87	Crossing	F18	66 +20=1600T 75MPH	Pass Ashford on Up Main Line towards Pluckley	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	00:02:17	00:02:24
88	Crossing	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	-00:00:07	-00:00:14
89	Crossing	P23	12CAR 37X 675V1500A	Depart Pl.5 to Down Fast towards Westenhanger	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	00:03:17	00:03:24
90	Crossing	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	-00:00:09	-00:00:16

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
91	Crossing	P41	12CAR 37X 675V1500A	Depart Pl.6 to Down Fast towards Westenhanger	P42	12CAR 37X 675V1500A	Up Canterbury towards Ashford to arrive Pl.1	00:03:14	00:03:21
92	Crossing	P27	2CAR 170	Depart Pl.1 to Down Hastings towards Ham Street	P28	12CAR 37X 675V1500A	Up Slow towards Ashford to arrive Pl.1	00:01:57	00:02:02
93	Crossing	P28	12CAR 37X 675V1500A	Up Slow towards Ashford to arrive Pl.1	F17	37 +2=100T 60MPH	Up Hastings towards Ashford to Pass Pl.2	00:02:28	00:02:38
94	Crossing	F17	37 +2=100T 60MPH	Up Hastings towards Ashford to Pass Pl.2	P28	12CAR 37X 675V1500A	Up Slow towards Ashford to arrive Pl.1	00:01:23	00:01:28

Table 7-12 Ashford International crossing junction margins

Notes

Margin 1 – it is noted that this could also be classified as a platform re-occupation in opposing directions of platform 1.

Margin 3 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 6 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 7 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 8 – it is noted that this could also be classified as a platform re-occupation in opposing directions of platform 1. Train 2 sighting signal is AD655 junction-protecting singal due to MAR from AD655 to AD789.

Margin 9 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD787 (platform 2 US).

Margin 10 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 11 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 12 – train 2 sighting signal is AD653 junction-protecting signal due to MAR from AD653 to AD783.

Margin 13 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1). The negative technical margin is due to the negative value for timer 1 (i.e. train 1 clears the conflict point before arriving at the Ashford timing point) whilst timer 2 is just 30s for dispatching

Margin 14 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD783.

Margin 15 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 18 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789 (platform 1 UPL).

Margin 19 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789 (platform 1 UPL).

Margin 20 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD787 (platform 2 US).

Margin 21 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789 (platform 1 UPL).

Margin 22 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 23 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789 (platform 1 UPL). It is noted that this could also be classified as a platform re-occupation in opposing directions of platform 1, and is part of the specification for platform re-occupations at Ashford International.

Margin 24 – train 2 sighting signal is AD653 junction-protecting signal due to MAR from AD653 to AD783.

Margin 25 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789 (platform 1 UPL).

Margin 26 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD783.
Margin 27 – train 2 sighting signal is AD853 junction-protecting signal due to MAR from AD853 to AD789 (platform 1 UPL).

Margin 30 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 31 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 32 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD789 (platform 1 UPL).

Margin 33 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 34 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 35 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 36 – train 2 sighting signal is AD653 junction-protecting signal due to MAR from AD653 to AD783.

Margin 37 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2). The negative technical margin is due to the negative value for timer 1 (i.e. train 1 clears the conflict point before arriving at the Ashford timing point) whilst timer 2 is just 30s for dispatching.

Margin 38 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD783.

Margin 39 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD666 (platform 2) and timer 2 is 30 seconds (for dispatching).

Margin 41 – train 2 signal is one further back than may be expected because the overlap of the junction-protecting signal AD668 extends past the conflict point AD1259B – so at the instant before train 1 clearance point, the overlap of AD668 has not cleared, so AD668 and AD682 (signal in rear) are at red; at the instant after the clearance point, all signals turn to green.

Margin 44 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD664 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 46 – it is noted that this could also be classified as a platform re-occupation in opposing directions of platform 2
Margin 47 – train 2 sighting signal is AD653 junction-protecting signal due to MAR from AD653 to AD783.

Margin 49 – train 2 sighting signal is AD655 junction-protecting signal due to MAR from AD655 to AD783.

Margin 51 – train 2 signal is one further back than may be expected because the overlap of the junction-protecting signal AD783 extends past the conflict point AD1262B – so at the instant before train 1 clearance point, the overlap of AD783 has not cleared, so AD783 and AD663 (signal in rear) are at red; at the instant after the clearance point, all signals turn to green.

Margin 52 – train 2 sighting signal is AD653 junction-protecting signal due to MAR from AD653 to AD783.

Margin 53 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 1 UPL).

Margin 54 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 57 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 58 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 59 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD667 (platform 5) and timer 2 is 30 seconds (for dispatching).

Margin 60 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 61 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD665 (platform 6) and timer 2 is 30 seconds (for dispatching).

Margin 62 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 63 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 1 UPL). It is noted that this could also be classified as a platform re-occupation in opposing directions of platform 2.

Margin 66 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 67 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 68 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD667 (platform 5) and timer 2 is 30 seconds (for dispatching).

Margin 69 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 70 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD665 (platform 6) and timer 2 is 30 seconds (for dispatching).

Margin 71 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD679 (platform 1) and timer 2 is 30 seconds (for dispatching).

Margin 72 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 1 UPL).

Margin 73 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1271A, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 74 – train 2 signal is one further back than may be expected because the overlap of the junction-protecting signal AD673 extends past the conflict point AD1280B – so at the instant before train 1 clearance point, the overlap of AD673 has not cleared, so AD673 and AD655 (signal in rear) are at red; at the instant after the clearance point, all signals turn to green.

Margin 76 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1285, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 77 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1272A, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 78 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD667 (platform 5). The negative technical margin is due to the negative value for timer 1 (i.e. train 1 clears the conflict point before arriving at the Ashford timing point) whilst timer 2 is just 30s for dispatching.

Margin 79 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1285X, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 80 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD665 (platform 6) and timer 2 is 30 seconds (for dispatching).

Margin 81 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1292X, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 82 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 1 UPL).

Margin 83 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1271A, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 86 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1285, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 87 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1272A, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 88 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD667 (platform 5). The negative technical margin is due to the negative value for timer 1 (i.e. train 1 clears the conflict point before arriving at the Ashford timing point) whilst timer 2 is just 30s for dispatching.

Margin 89 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1285X, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 90 – because train 2 stops at Ashford International, methodology dictates that train 2 signal is the departure and junction-protecting signal AD665 (platform 6) and timer 2 is 30 seconds (for dispatching).

Margin 91 - note that train 2 originates in Ashford Down Sidings (at signal AD878), so when train 1 clears points AD1292X, AD878 turns Red to Green, and train 2 (assumed to be an ECS) can depart.

Margin 92 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 1 UPL). It is noted that this could also be classified as a platform re-occupation in opposing directions of platform 1.

Margin 93 - when a clearance distance of 82 yards is used, train 1 does not clear the conflict point AD1270X until after departing platform 1. Therefore timer 1 has been input as 00:00:00 on the assumption that points AD1270X would release by the time the train stopped at the Ashford platform 1 timing point. Train 2 signal is AD892R due to the overlap of AD780 extending across the conflict point and double red on AD892 and AD780.

Margin 94 – train 2 sighting signal is AD682 junction-protecting signal due to MAR from AD682 to AD782 (platform 1 UPL).

7.6 Ashford East Junction

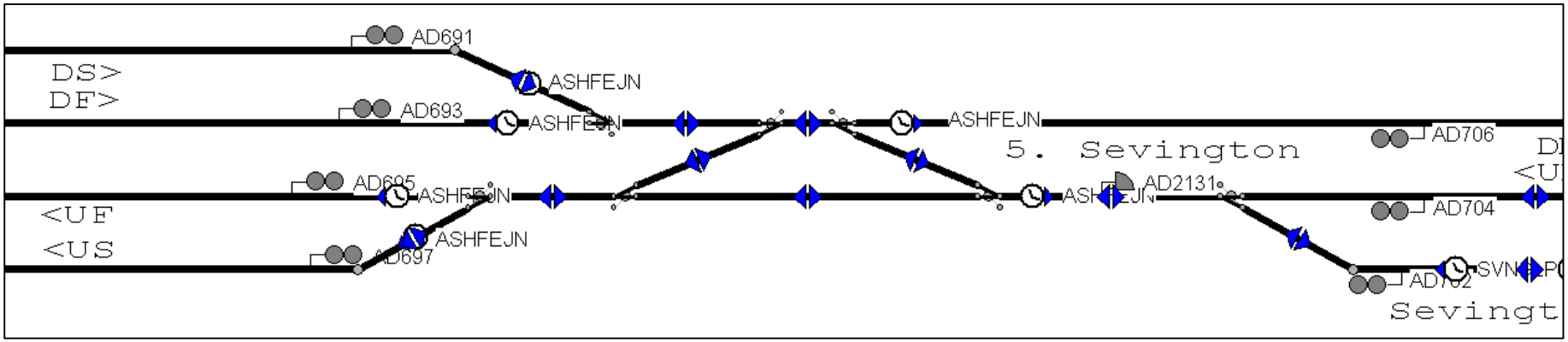


Figure 7-6 Ashford East Junction layout as modelled in VISION

Ashford East Junction Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	P02	12CAR 37X 675V1500A	up main to up slow	P15	12CAR 37X 675V1500A	up main	00:02:03	00:02:10	00:01:47
2	Diverging	P15	12CAR 37X 675V1500A	up main	P02	12CAR 37X 675V1500A	up main to up slow	00:01:46	00:01:56	00:01:50
3	Diverging	F06	66 +20=1600T 75MPH	up main	P02	12CAR 37X 675V1500A	up main to up slow	00:01:43	00:01:54	00:02:35

Table 7-13 Ashford East Junction diverging junction margins

Ashford East Junction Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Converging	P01	12CAR 37X 675V1500A	down slow to down main	P13	12CAR 37X 675V1500A	down main	00:03:50	00:03:58
2	Converging	P13	12CAR 37X 675V1500A	down main	P01	12CAR 37X 675V1500A	down slow to down main	00:03:45	00:03:55
3	Converging	F01	66 +13=1800T 75MPH	down main	P01	12CAR 37X 675V1500A	down slow to down main	00:03:39	00:03:48

Table 7-14 Ashford East Junction converging junction margins

Notes

Margin 1, 2 and 3 – note that train 2 stops at Ashford International within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

7.7 Saltwood Junction

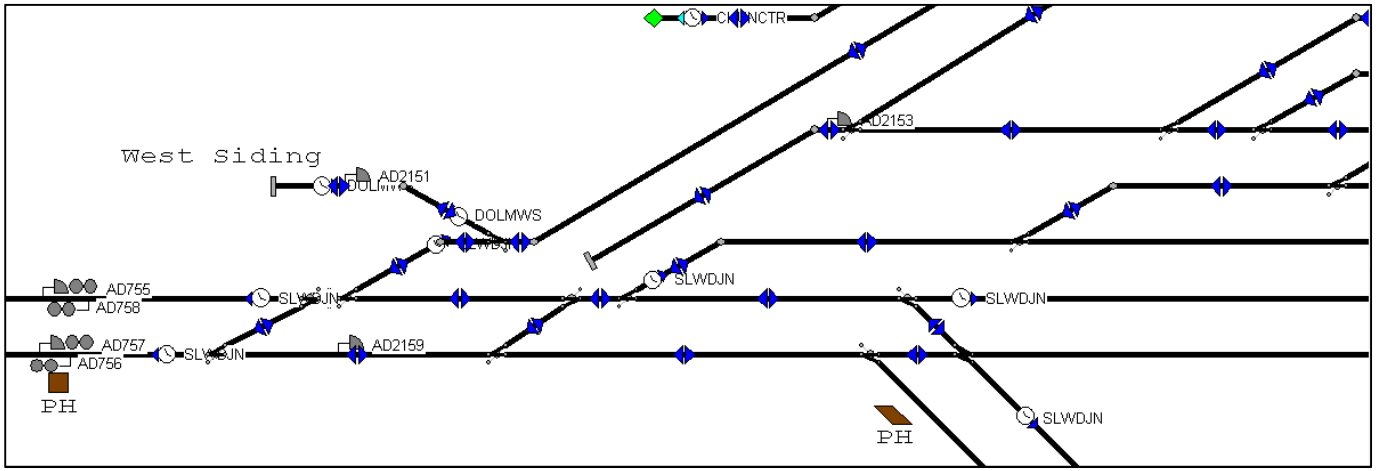


Figure 7-7 Saltwood Junction layout as modelled in VISION

Saltwood Junction Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	F01	66 +13=1800T 75MPH	down main to dollands moor	P10	6CAR 395 675V	down main	00:02:56	00:03:13	00:04:07
2	Diverging	F02	66 +13=1800T 60MPH	down main to dollands moor	P10	6CAR 395 675V	down main	00:02:56	00:03:13	00:04:35
3	Diverging	P10	6CAR 395 675V	down main	F01	66 +13=1800T 75MPH	down main to dollands moor	00:01:28	00:01:28	00:03:34

Table 7-15 Saltwood Junction diverging junction margins

Notes

Margin 1 and 2 – train 2 stops at Sandling within train 2 signal sequence so the user would need to add the required dwell time to the technical margin.

Margin 3 – train 2 sighting signal is AD755 junction-protecting signal due to MAR from AD755 to AD809.

Saltwood Junction Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Converging	F06	66 +20=1600T 75MPH	dollands moor to up main	P09	6CAR 395 675V	up main	00:02:25	00:02:26
2	Converging	F07	66 +20=1600T 60MPH	dollands moor to up main	P09	6CAR 395 675V	up main	00:02:25	00:02:26
3	Converging	P09	6CAR 395 675V	up main	F06	66 +20=1600T 75MPH	dollands moor to up main	00:03:04 *(00:03:45)	00:03:03 *(00:03:44)

Table 7-16 Saltwood Junction converging junction margins

Notes

Margins 1 and 2 – if AD756 is at Red then the Saltwood Jn junction-protecting signal on the Up Dover (AD760, 3-aspect) is also at Red. Thus the signals in rear, AD902 and AD906 (both 3-aspect), are at Yellow and Green respectively. When train 1 clears the overlap of AD756 then AD756 remains at Red and therefore no signals change aspect. Train 2 signal used is AD906 which remains green.

Margin 3 – As train 2 departs from signal AD816 (Dolmoors), the margin shown assumes that train 1 clears the overlap of AD756, and AD816 turns Red to Yellow, and the freight departs on Yellow. *An alternative margin, where train 2 departs AD816 on green based on train 1 being moved on so that it clears the overlap of AD752, is also provided.

Saltwood Junction Crossing junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Crossing	F06	66 +20=1600T 75MPH	dollands moor to up main	P10	6CAR 395 675V	down main	00:03:33	00:03:51
2	Crossing	F07	66 +20=1600T 60MPH	dollands moor to up main	P10	6CAR 395 675V	down main	00:03:33	00:03:51

Table 7-17 Saltwood Junction crossing junction margins

Notes

Margins 1 and 2 – train 2 signal is one further back than may be expected because the overlap of the junction-protecting signal AD755 extends past the conflict point AD1330B – so at the instant before train 1 clearance point, the overlap of AD755 has not cleared, so AD755 and AD751 (signal in rear) are at red; at the instant after the clearance point, all signals turn to green. Note that train 2 stops at Sandling within train 2 signal sequence so the user would need to add the required dwell time to the technical margin**.**

7.8 Folkestone East Station

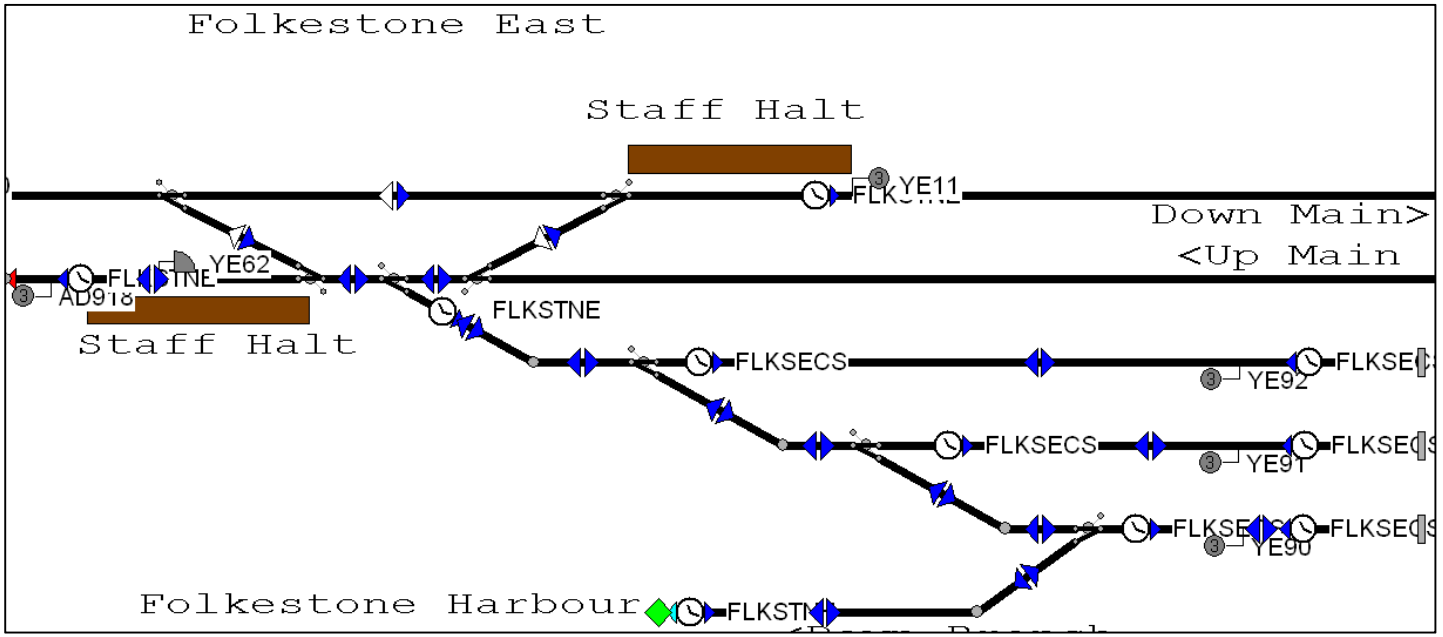


Figure 7-8 Folkestone East Station layout as modelled in VISION

Folkestone East Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Diverging	P11	12CAR 37X 675V1500A	down main to train roads	P10	6CAR 395 675V	down main	00:01:39	00:01:37

Table 7-18 Folkestone East diverging junction margins

Folkestone East Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Converging	P09	6CAR 395 675V	up main	P12	12CAR 37X 675V1500A	train roads to up main	00:01:26 *(00:02:20)	00:01:27 *(00:02:22)

Table 7-19 Folkestone East converging junction margins

Notes

Margin 1 – As train 2 departs from signal YE92 (Folkestone East Sidings), the margin shown assumes that train 1 clears the overlap of AD918, and YE92 turns Red to Yellow, and the ECS departs on Yellow. *An alternative margin, where train 2 departs YE92 on green based on train 1 being moved on so that it clears the overlap of AD914, is also provided.

Folkestone East Crossing junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Crossing	P11	12CAR 37X 675V1500A	down main to train roads	P09	6CAR 395 675V	up main	00:01:48	00:01:48
2	Crossing	P09	6CAR 395 675V	up main	P11	12CAR 37X 675V1500A	down main to train roads	00:02:42	00:02:54

Table 7-20 Folkestone East crossing junction margins

7.9 Dover Priory Station

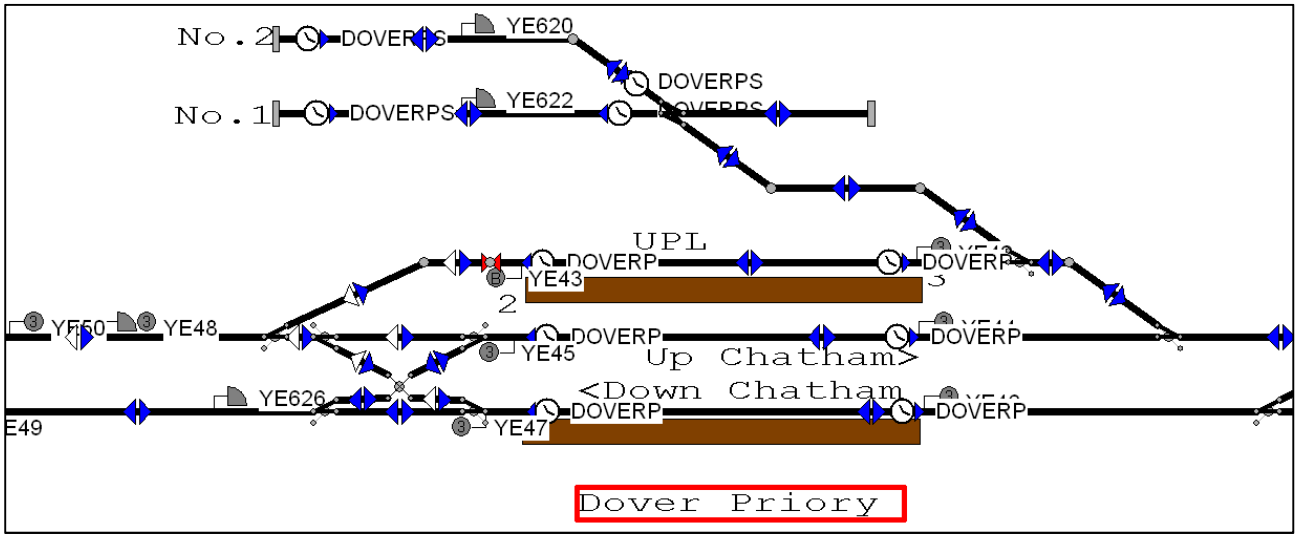


Figure 7-9 Dover Priory Station layout as modelled in VISION

Dover Priory Diverging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)	Diverging Headway
1	Diverging	P13	12CAR 37X 675V1500A	down main to pl.3	P10	6CAR 395 675V	down main to pl.2	00:01:47	00:01:55	00:02:52
2	Diverging	P10	6CAR 395 675V	down main to pl.2	P13	12CAR 37X 675V1500A	down main to pl.3	00:00:58	00:01:01	00:02:12
3	Diverging	P14	12CAR 37X 675V1500A	down main to pl.1	P10	6CAR 395 675V	down main to pl.2	00:01:30	00:01:38	00:02:51
4	Diverging	P10	6CAR 395 675V	down main to pl.2	P14	12CAR 37X 675V1500A	down main to pl.1	00:01:06	00:01:10	00:02:12

Table 7-21 Dover Priory diverging junction margins

Notes

Margin 1 – timer 1 is positive because the rear of the train does not clear 82 yards past the conflict point until the train has departed from the station. This is because the specification requested a 12 car train in platform 3 at Dover Priory, but this platform can only accommodate 8 car trains.

Margin 2 – train 2 sighting signal is YE48 junction-protecting signal due to MAR from YE48 to YE42.

Margin 3 – timer 1 was positive because the rear of the train does not clear 82 yards past the conflict point until the train has departed the station. Since TPR show platform 1 as being a 12 car platform, it is assumed that the train would clear the junction by the time it had arrived at the platform – therefore timer 1 was manually altered to 00:00:00.

Margin 4 – train 2 sighting signal is YE48 junction-protecting signal due to MAR from YE48 to YE46.

Dover Priory Converging junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Converging	P02	12CAR 37X 675V1500A	pl.2 to up main	P09	6CAR 395 675V	pl.1 to up main	00:03:46	00:03:51
2	Converging	P09	6CAR 395 675V	pl.1 to up main	P02	12CAR 37X 675V1500A	pl.2 to up main	00:02:54	00:02:59

Table 7-22 Dover Priory converging junction margins

Notes

Margin 1 and 2 – because train 2 stops at Dover Priory, methodology dictates that train 2 signal is the relevant departure and junction-protecting signal, and train 1 is moved on such that its clearance point is the signal overlap which would cause the departure signal to turn to green. Timer 2 is 00:00:00 in each case because the departure signal has been calculated to have been at yellow for longer than 30 seconds, meaning that the dispatch could have been completed and train 2 would be ready to depart as soon as the departure signal turned to green.

Dover Priory Crossing junction margins

Margin No.	Margin Type	Train 1	Train 1 Stock	Train 1 Movement	Train 2	Train 2 Stock	Train 2 Movement	Technical Margin (Default Braking)	Technical Margin (Observed Braking)
1	Crossing	P14	12CAR 37X 675V1500A	down main to pl.1	P15	12CAR 37X 675V1500A	pl.2 to up main	00:00:38	00:00:38
2	Crossing	P15	12CAR 37X 675V1500A	pl.2 to up main	P14	12CAR 37X 675V1500A	down main to pl.1	00:02:18	00:02:24

Table 7-23 Dover Priory crossing junction margins

Margin 1 – timer 1 was positive because the rear of the train does not clear 82 yards past the conflict point YE228X until the train has departed the platform. Since TPR show platform 1 as being a 12 car platform, it is assumed that points YE228X would release by the time the train stopped at Dover Priory platform 1 timing point – therefore timer 1 was manually altered to 00:00:00. Timer 2 is 00:00:30 for dispatching.

Margin 2 – train 2 sighting signal is YE48 junction-protecting signal due to MAR from YE48 to YE46 (platform 1).

8. Appendix A – SE5 Signal Plans used

Route	Drawing Number	Version	Date
Tonbridge	10AE-ZN-001_QH2	QH2	13/12/05
Paddock Wood	10AG-ZN-001_QB2	QB2	13/12/05
Headcorn	10BA-ZN	JJ3	05/02/03
Ashford	10BB-ZN-001	QG1	06/03/07
Ham Street	10AM_ZN_001-JH6	JH6	23/01/03
Charing	1629HF_ZN_001-BR1	BR1	03/03/04
Wye	14-SO-082-1-0 5	0.5	21/04/15
Sevington	10BE-ZN-001_UA1	UA1	08/04/11
Saltwood Junction	10BH-ZN-001_QD2	QD2	13/12/05
Folkestone	10BJ-ZN-001_QV1	QV1	07/02/07
Folkestone East	1157-ZN-001_CH1	CH1	28/11/11
Dover Priory	1557-ZN-002_CH3	CH3	08/02/12
Sheperds Well	70-ZN-10_AA1	AA1	10/03/14
Ashford West	550-DNN-SCCAC-25010	ZD	12/01/04

9. Appendix B – Tonbridge-Dover Priory Signal Types and Positions

10AE (SE5 Plan 1)

Signal ID	Signal Location	Signal Type	Miles; Yards
AD126		4 aspect (YY/G/Y/R)	27;1086
AD128		4 aspect (YY/G/Y/R)	28;254
AD130		4 aspect (YY/G/Y/R)	28;1227
AD131		4 aspect (YY/G/Y/R)	27;864
AD132		4 aspect (YY/G/Y/R)	29;330
AD133		4 aspect (YY/G/Y/R)	28;254
AD134		4 aspect (YY/G/Y/R)	29;330
AD135		4 aspect (YY/G/Y/R)	28;1626
AD136		4 aspect (YY/G/Y/R)	29;330
AD137XR		1 aspect (Y)	28;254
AD137X		4 aspect (YY/G/Y/R)	28;1667
AD139		4 aspect (YY/G/Y/R)	29;600
AD141		4 aspect (YY/G/Y/R)	29;600
AD143		4 aspect (YY/G/Y/R)	29;600
AD146		4 aspect (YY/G/Y/R)	29;802
AD148		4 aspect (YY/G/Y/R)	29;799
AD150		4 aspect (YY/G/Y/R)	29;799
AD152		4 aspect (YY/G/Y/R)	29;799
AD154		4 aspect (YY/G/Y/R)	29;799
AD155		4 aspect (YY/G/Y/R)	29;1085
AD157		4 aspect (YY/G/Y/R)	29;1077
AD159		4 aspect (YY/G/Y/R)	29;1081
AD160		4 aspect (YY/G/Y/R)	29;1534
AD161		4 aspect (YY/G/Y/R)	29;1085
AD162		4 aspect (YY/G/Y/R)	29;1534
AD163		4 aspect (YY/G/Y/R)	30;288
AD164		4 aspect (YY/G/Y/R)	29;1498
AD165		4 aspect (YY/G/Y/R)	30;288
AD166		2 aspect (R/Y)	30;385
AD167		3 aspect (G/Y/R)	30;609
AD168X		2 aspect (Y/R)	30;1013

AD168XR		1 aspect (Y)	31;346
AD169		4 aspect (YY/G/Y/R)	30;1122
AD170		4 aspect (YY/G/Y/R)	30;1013
AD171		4 aspect (YY/G/Y/R)	31;346
AD172		4 aspect (YY/G/Y/R)	31;346
AD174		4 aspect (YY/G/Y/R)	31;1331
AD2030		Shunt	29;802
AD2032		Shunt	29;1227
AD2036		Shunt	29;1424
AD2063		Shunt	29;652

10AM (SE5 Plan 4b)

Signal ID	Signal Location	Signal Type	Miles; Yards
AD898R		2 aspect (G/Y)	65;978
AD895R		2 aspect (G/Y)	63;1299
AD896		2 aspect (Y/R)	64;1364
AD898		2 aspect (Y/R)	64;1548
AD897		2 aspect (G/R)	64;1188
AD895		3 aspect (G/Y/R)	64;595
AD894		2 aspect (G/R)	64;1016
AD849		3 aspect (G/YY/Y)	57;678
AD790		3 aspect (G/Y/R)	56;767
AD681		4 aspect (YY/G/Y/R)	56;496
AD661		4 aspect (YY/G/Y/R)	55;820
AD650		4 aspect (YY/G/Y/R)	54;1755
EBT7		2 aspect (G/Y)	63;342
EBT4		2 aspect (G/Y)	61;1230

10BA (SE5 Plan 3)

Signal ID	Signal Location	Signal Type	Miles; Yards
AD647XR		1 aspect (Y)	53;1424
AD614XR		1 aspect (Y)	46;330
AD614X		2 aspect (Y/R)	45;922
AD609XR		1 aspect (Y)	43;1111
AD609X		4 aspect (YY/G/Y/R)	44;1309
AD200XR		1 aspect (Y)	35;1535
AD204		4 aspect (YY/G/Y/R)	35;1535
AD205		4 aspect (YY/G/Y/R)	35;976
AD206		4 aspect (YY/G/Y/R)	36;668
AD207		4 aspect (YY/G/Y/R)	36;121
AD208		4 aspect (YY/G/Y/R)	36;1744
AD209		4 aspect (YY/G/Y/R)	36;1199
AD210		4 aspect (YY/G/Y/R)	37;902
AD211		4 aspect (YY/G/Y/R)	37;450
AD212		4 aspect (YY/G/Y/R)	38;186
AD213		4 aspect (YY/G/Y/R)	37;1404
AD214		4 aspect (YY/G/Y/R)	38;1284
AD215		4 aspect (YY/G/Y/R)	38;643
AD216		4 aspect (YY/G/Y/R)	39;430
AD217		4 aspect (YY/G/Y/R)	38;1702
AD218		4 aspect (YY/G/Y/R)	39;1685
AD219		4 aspect (YY/G/Y/R)	39;851
AD221		4 aspect (YY/G/Y/R)	40;234

AD584		4 aspect (YY/G/Y/R)	40;863
AD586		4 aspect (YY/G/Y/R)	41;170
AD588		4 aspect (YY/G/Y/R)	41;1072
AD590		4 aspect (YY/G/Y/R)	42;508
AD591		4 aspect (YY/G/Y/R)	40;1335
AD592		4 aspect (YY/G/Y/R)	42;1410
AD593		4 aspect (YY/G/Y/R)	41;497
AD594		4 aspect (YY/G/Y/R)	43;618
AD595		4 aspect (YY/G/Y/R)	41;1630
AD596		4 aspect (YY/G/Y/R)	43;1560
AD597		4 aspect (YY/G/Y/R)	42;904
AD598		4 aspect (YY/G/Y/R)	44;768
AD599		4 aspect (YY/G/Y/R)	43;133
AD602		4 aspect (YY/G/Y/R)	44;1517
AD603		4 aspect (YY/G/Y/R)	44;533
AD604		4 aspect (YY/G/Y/R)	45;98
AD605		4 aspect (YY/G/Y/R)	44;533
AD606		4 aspect (YY/G/Y/R)	45;98
AD611		4 aspect (YY/G/Y/R)	45;613
AD612		4 aspect (YY/G/Y/R)	45;922
AD613		4 aspect (YY/G/Y/R)	45;613
AD615		4 aspect (YY/G/Y/R)	45;1735
AD616		4 aspect (YY/G/Y/R)	46;330
AD617		4 aspect (YY/G/Y/R)	46;704
AD618		4 aspect (YY/G/Y/R)	46;1152
AD619		4 aspect (YY/G/Y/R)	47;30
AD620		4 aspect (YY/G/Y/R)	47;593
AD621		4 aspect (YY/G/Y/R)	47;744
AD622		4 aspect (YY/G/Y/R)	47;1412
AD623		4 aspect (YY/G/Y/R)	48;90
AD624		4 aspect (YY/G/Y/R)	48;795
AD625		4 aspect (YY/G/Y/R)	48;1040
AD626		4 aspect (YY/G/Y/R)	48;1612
AD627		4 aspect (YY/G/Y/R)	49;182
AD628		4 aspect (YY/G/Y/R)	49;995
AD629		4 aspect (YY/G/Y/R)	49;1229
AD630		4 aspect (YY/G/Y/R)	50;7
AD631		4 aspect (YY/G/Y/R)	50;477
AD632		4 aspect (YY/G/Y/R)	50;1055
AD633		4 aspect (YY/G/Y/R)	50;1458
AD634		4 aspect (YY/G/Y/R)	51;259
AD635		4 aspect (YY/G/Y/R)	51;756
AD636		4 aspect (YY/G/Y/R)	51;1296
AD637		4 aspect (YY/G/Y/R)	52;122
AD638		4 aspect (YY/G/Y/R)	52;459
AD639		4 aspect (YY/G/Y/R)	52;1053
AD640		4 aspect (YY/G/Y/R)	52;1496
AD641		4 aspect (YY/G/Y/R)	53;397
AD642		4 aspect (YY/G/Y/R)	53;719
AD643		4 aspect (YY/G/Y/R)	53;1424
AD644		4 aspect (YY/G/Y/R)	53;1666
AD645		4 aspect (YY/G/Y/R)	54;671
AD646		4 aspect (YY/G/Y/R)	54;786
AD610		4 aspect (YY/G/Y/R)	45;98
AD608		4 aspect (YY/G/Y/R)	45;98
AD607		4 aspect (YY/G/Y/R)	44;1309
AD601		4 aspect (YY/G/Y/R)	43;1111

10BJ (SE5 Plan 7)\1557-1 (SE5 Plan 8)\SR-CY-2-2-5-T

Signal ID	Signal Location	Signal Type	Miles; Yards
AD914		3 aspect (G/Y/R)	69;1456
YE18		3 aspect (G/Y/R)	71;1283
AD902		3 aspect (G/Y/R)	67;720
AD762		3 aspect (G/Y/R)	66;1268
AD761		3 aspect (G/Y/R)	67;191
AD760		3 aspect (G/Y/R)	66;1276
YE92		3 aspect (G/Y/R)	71;162
YE91		3 aspect (G/Y/R)	71;162
YE90		3 aspect (G/Y/R)	71;162
AD901		3 aspect (G/Y/R)	67;992
AD905		3 aspect (G/Y/R)	68;745
AD906		3 aspect (G/Y/R)\4 aspect (YY/G/Y/R)	68;341
YE62		Shunt	70;1559
AD909		3 aspect (G/Y/R)	69;628
AD910		3 aspect (G/Y/R)	69;343
YE20		2 aspect (G/Y)	72;923
AD913		3 aspect (G/Y/R)	69;1749
AD918		3 aspect (G/Y/R)	70;1456
YE11		3 aspect (G/Y/R)	71;41
YE10		3 aspect (G/Y/R)	70;1078

10AE (SE5 Plan 8)

Signal ID	Signal Location	Signal Type	Miles; Yards
AD126		4 aspect (YY/G/Y/R)	27;1086
AD128		4 aspect (YY/G/Y/R)	28;254
AD130		4 aspect (YY/G/Y/R)	28;1227
AD131		4 aspect (YY/G/Y/R)	27;864
AD132		4 aspect (YY/G/Y/R)	29;330
AD133		4 aspect (YY/G/Y/R)	28;254
AD134		4 aspect (YY/G/Y/R)	29;330
AD135		4 aspect (YY/G/Y/R)	28;1626
AD136		4 aspect (YY/G/Y/R)	29;330
AD137XR		1 aspect (Y)	28;254
AD137X		4 aspect (YY/G/Y/R)	28;1667
AD139		4 aspect (YY/G/Y/R)	29;600
AD141		4 aspect (YY/G/Y/R)	29;600
AD143		4 aspect (YY/G/Y/R)	29;600
AD146		4 aspect (YY/G/Y/R)	29;802
AD148		4 aspect (YY/G/Y/R)	29;799
AD150		4 aspect (YY/G/Y/R)	29;799
AD152		4 aspect (YY/G/Y/R)	29;799
AD154		4 aspect (YY/G/Y/R)	29;799
AD155		4 aspect (YY/G/Y/R)	29;1085
AD157		4 aspect (YY/G/Y/R)	29;1077
AD159		4 aspect (YY/G/Y/R)	29;1081
AD160		4 aspect (YY/G/Y/R)	29;1534
AD161		4 aspect (YY/G/Y/R)	29;1085
AD162		4 aspect (YY/G/Y/R)	29;1534
AD163		4 aspect (YY/G/Y/R)	30;288
AD164		4 aspect (YY/G/Y/R)	29;1498

AD165		4 aspect (YY/G/Y/R)	30;288
AD166		2 aspect (R/Y)	30;385
AD167		3 aspect (G/Y/R)	30;609
AD168X		2 aspect (Y/R)	30;1013
AD168XR		1 aspect (Y)	31;346
AD169		4 aspect (YY/G/Y/R)	30;1122
AD170		4 aspect (YY/G/Y/R)	30;1013
AD171		4 aspect (YY/G/Y/R)	31;346
AD172		4 aspect (YY/G/Y/R)	31;346
AD174		4 aspect (YY/G/Y/R)	31;1331
AD400		4 aspect (YY/G/Y/R)	29;1610
AD401		3 aspect (G/Y/R)	30;18
AD402		3 aspect (G/Y/R)	30;1302
AD523		3 aspect (G/Y/R)	41;1659
AD525		3 aspect (G/Y/R)	41;1659
AD527		3 aspect (G/Y/R)	41;1659
AD2030		Shunt	29;802
AD2032		Shunt	29;1227
AD2036		Shunt	29;1424
AD2038		Shunt	29;1468
AD2043		Shunt	41;1549
AD2045		Shunt	41;1549
AD2047		Shunt	41;1560
AD2049		Shunt	41;1560
AD2059		Shunt	41;1760
AD2061		Shunt	41;1745
AD2063		Shunt	29;652
YE13		3 aspect (G/Y/R)	72;134
YE15		3 aspect (G/Y/R)	73;402
AD916		3 aspect (G/Y/R)	69;1462
YE17		3 aspect (G/Y/R)	74;1481
YE19		3 aspect (G/Y/R)	76;586
YE22		2 aspect (G/R)	73;231
YE24		3 aspect (G/Y/R)	74;809
YE28		2 aspect (G/R)	76;264
YE50		3 aspect (G/Y/R)	77;1494
AD907		3 aspect (G/Y/R)	68;748
YE49		3 aspect (G/Y/R)	77;1604
AD908		4 aspect (YY/G/Y/R)	68;341
YE26		2 aspect (G/Y)	75;280
AD911		3 aspect (G/Y/R)	69;630
AD912		3 aspect (G/Y/R)	69;337
AD2084		Shunt	35;86

1557-2 (SE5 Plan 9)

Signal ID	Signal Location	Signal Type	Miles; Yards
YE81R		2 aspect (G/Y)	98;695
YE35R		2 aspect (G/Y)	75;271
EK4470		2 aspect (G/R)	75;1235
YE80		2 aspect (G/R)	98;887
YE81		4 aspect (YY/G/Y/R)	98;1520
EBZ84		2 aspect (G/R)	94;1749
YE85		2 aspect (G/Y)	94;322
YE83		2 aspect (G/R)	95;193
EBZ82		2 aspect (G/Y)	95;1461

YE48		3 aspect (G/Y/R)	77;892
YE47		3 aspect (G/Y/R)	77;626
YE46		3 aspect (G/Y/R)	77;344
YE45		3 aspect (G/Y/R)	77;624
YE44		3 aspect (G/Y/R)	77;386
YE43		1 aspect (R)	77;624
EBZ42		2 aspect (G/Y)	91;1666
YE42		3 aspect (G/Y/R)	77;405
EBZ41		Semaphore stop	91;179
EBZ40		Semaphore stop	90;1094
EBZ39		3 aspect (G/Y/R)	90;268
YE39		4 aspect (YY/G/Y/R)	76;1695
YE38		3 aspect (G/Y/R)	76;1695
YE37		4 aspect (YY/G/Y/R)	76;1221
YE36		3 aspect (G/Y/R)	76;783
EBZ35		Shunt	90;1504
YE35		4 aspect (YY/G/Y/R)	76;65
EBZ29		Shunt	90;1433
EBZ14		Shunt	90;1049
EBZ11		Shunt	90;997
EBZ9		Shunt	90;921
EBZ7		Semaphore stop	91;140
EBZ6		Semaphore stop	90;1328
EBZ5		Semaphore stop	90;528
EBZ3		2 aspect (G/Y)	89;1295

70-10 (SE5 Plan 10)\SR-CY-2-2-3-I

Signal ID	Signal Location	Signal Type	Miles; Yards
EK4468		2 aspect (G/Y)	74;372
EK4466		3 aspect (G/Y/R)	73;663
EK4463		2 aspect (G/R)	71;1342
EK4461		Shunt	71;1035
EK4459		Shunt	71;729
EK4455		3 aspect (G/Y/R)	70;842
EK4454		3 aspect (G/Y/R)	71;1105
EK4452		3 aspect (G/Y/R)	71;1088
EK4450		2 aspect (G/R)	70;707

10.Appendix C – Non-Stop Headway Values

Headway Chart 1

Signal Name	Green Signals Technical Headway Class 395 6 Car	Planning Headway
AD667 Ashford International	178	150
AD693	150	150
AD701	117	150
AD707	118	150
AD711	112	150
AD715	106	150
AD719	103	150
AD723	98	150
AD727	98	150
AD731	107	150
AD735	106	150
AD739	103	150
AD743 Westenhanger	98	150
AD747	121	150
AD751 Sandling	113	150
AD755 Saltwood Junction	125	150
AD761	83	150
AD901	108	150
AD905	136	150
AD909 Folkestone West	135	150
AD913 Folkestone Central	156	150
YE10	100	150
YE11 Folkestone East	129	150
YE13	160	150
YE15	202	150
YE17	187	150
YE19	131	150
YE19	131	180
YE50	83	180
YE48	73	180
YE44 Dover Priory	96	180

Headway Chart 2

Signal Name	Green signals Technical Headway Class 375 12 Car	Planning Headway
YE47 Dover Priory	178	180
YE49	245	180
YE28	152	180
YE28	152	150
YE24	171	150
YE22	95	150
YE18	123	150
AD918 Folkestone East	114	150
AD914 Folkestone Central	115	150
AD910 Folkestone West	120	150
AD906	105	150
AD902	163	150

Signal Name	Green signals Technical Headway Class 375 12 Car	Planning Headway
AD760 Saltwood Junction	126	150
AD756	133	150
AD752 Sandling	120	150
AD748	113	150
AD744 Westenhanger	104	150
AD740	96	150
AD736	91	150
AD732	94	150
AD728	92	150
AD724	95	150
AD720	95	150
AD716	99	150
AD712	100	150
AD708	99	150
AD704	90	150
AD682	87	150
AD668 Ashford International	86	150
AD660	87	150
AD652	84	150
AD646	85	150
AD644	87	150
AD642	85	150
AD640	85	150
AD638	83	150
AD636	84	150
AD634	78	150
AD632	82	150
AD630 Pluckley	77	150
AD628	85	150
AD626	77	150
AD624	85	150
AD622	79	150
AD620	86	150
AD618	78	150
AD616	84	150
AD612	80	150
AD606 Headcorn	82	150
AD598	80	150
AD596	78	150
AD594	84	150
AD592	83	150
AD590	86	150
AD588 Staplehurst	82	150
AD586	89	150
AD584	86	150
AD218	88	150
AD216 Marden	83	150
AD214	83	150
AD212	83	150
AD210	80	150
AD208	85	150
AD206	82	150
AD204	84	150
AD202	78	150

Signal Name	Green signals Technical Headway Class 375 12 Car	Planning Headway
AD188 Paddock Wood	83	150
AD182	82	150
AD180	91	150
AD178	91	150
AD176	93	150
AD174	96	150
AD172	104	150
AD170	98	150
AD162	107	150
AD150 Tonbridge	124	150

Headway Chart 3

Signal Name	Green Signals Technical Headway Class 395 6 Car	Planning Headway
YE47 Dover Priory	159	180
YE49	215	180
YE28	131	180
YE28	131	150
YE24	162	150
YE22	89	150
YE18	118	150
AD918 Folkestone East	109	150
AD914 Folkestone Central	108	150
AD910 Folkestone West	113	150
AD906	98	150
AD902	156	150
AD760 Saltwood Junction	121	150
AD756	126	150
AD752 Sandling	113	150
AD748	106	150
AD744 Westenhanger	97	150
AD740	89	150
AD736	85	150
AD732	87	150
AD728	86	150
AD724	90	150
AD720	91	150
AD716	100	150
AD712	141	150
AD708	150	150
AD704	151	150
AD682	158	150
AD786	142	150
AD676 Ashford International	150	150

Headway Chart 4

Signal Name	Green Signals Technical Headway Class 375 12 Car	Planning Headway
AD157 Tonbridge	121	150
AD165	116	150
AD169	119	150
AD171	111	150
AD173	104	150
AD175	105	150
AD177	99	150
AD179	99	150
AD181	86	150
AD199 Paddock Wood	90	150
AD205	87	150
AD207	88	150
AD209	86	150
AD211	87	150
AD213	87	150
AD215	90	150
AD217	91	150
AD219 Marden	91	150
AD221	89	150
AD591	87	150
AD593	87	150
AD595 Staplehurst	85	150
AD597	87	150
AD599	83	150
AD601	85	150
AD605	83	150
AD607	83	150
AD613 Headcorn	84	150
AD615	75	150
AD617	84	150
AD619	82	150
AD621	86	150
AD623	86	150
AD625	86	150
AD627	88	150
AD629	88	150
AD631	90	150
AD633 Pluckley	90	150
AD635	91	150
AD637	89	150
AD639	90	150
AD641	93	150
AD643	87	150
AD645	99	150
AD649	89	150
AD655	119	150
AD673 Ashford International	108	150
AD693	114	150
AD701	101	150
AD707	107	150
AD711	104	150
AD715	103	150

Signal Name	Green Signals Technical Headway Class 375 12 Car	Planning Headway
AD719	101	150
AD723	97	150
AD727	100	150
AD731	110	150
AD735	111	150
AD739	108	150
AD743 Westenhanger	103	150
AD747	125	150
AD751 Sandling	117	150
AD755 Saltwood Junction	129	150
AD761	87	150
AD901	114	150
AD905	146	150
AD909 Folkestone West	149	150
AD913 Folkestone Central	175	150
YE10	111	150
YE11 Folkestone East	138	150
YE13	164	150
YE15	218	150
YE17	204	150
YE19	152	180
YE19	152	180
YE50	105	180
YE48	85	180
YE44 Dover Priory	111	180

Headway Chart 5

Signal Name	Green Signals Technical Headway 66+13=1800T 75MPH	Planning Headway
AD157 Tonbridge	159	150
AD165	164	150
AD169	172	150
AD171	164	150
AD173	153	150
AD175	154	150
AD177	146	150
AD179	146	150
AD181	127	150
AD199 Paddock Wood	136	150
AD205	133	150
AD207	135	150
AD209	133	150
AD211	135	150
AD213	137	150
AD215	145	150
AD217	145	150
AD219 Marden	145	150
AD221	142	150
AD591	137	150
AD593	139	150
AD595 Staplehurst	134	150
AD597	136	150

Signal Name	Green Signals Technical Headway 66+13=1800T 75MPH	Planning Headway
AD599	131	150
AD601	134	150
AD605	133	150
AD607	132	150
AD613 Headcorn	137	150
AD615	126	150
AD617	141	150
AD619	140	150
AD621	150	150
AD623	149	150
AD625	150	150
AD627	151	150
AD629	150	150
AD631	155	150
AD633 Pluckley	156	150
AD635	160	150
AD637	159	150
AD639	162	150
AD641	162	150
AD643	148	150
AD645	156	150
AD649	135	150
AD655	174	150
AD673 Ashford International	159	150
AD693	172	150
AD701	160	150
AD707	171	150
AD711	170	150
AD715	171	150
AD719	174	150
AD723	171	150
AD727	181	150
AD731	205	150
AD735	209	150
AD739	205	150
AD743 Westenhanger	247	150

Headway Chart 6

Signal Name	Green Signals Technical Headway 66+13=1800T 60MPH	Planning Headway
AD157 Tonbridge	159	150
AD165	164	150
AD169	172	150
AD171	164	150
AD173	154	150
AD175	157	150
AD177	150	150
AD179	152	150
AD181	134	150
AD199 Paddock Wood	142	150
AD205	138	150
AD207	140	150
AD209	139	150

Signal Name	Green Signals Technical Headway 66+13=1800T 60MPH	Planning Headway
AD211	142	150
AD213	143	150
AD215	150	150
AD217	151	150
AD219 Marden	150	150
AD221	147	150
AD591	143	150
AD593	146	150
AD595 Staplehurst	156	150
AD597	179	150
AD599	186	150
AD601	198	150
AD603 Cranmore Loop	191	150
AD607	184	150
AD613 Headcorn	182	150
AD615	164	150
AD617	182	150
AD619	177	150
AD621	186	150
AD623	179	150
AD625	176	150
AD627	174	150
AD629	168	150
AD631	171	150
AD633 Pluckley	170	150
AD635	175	150
AD637	172	150
AD639	174	150
AD641	173	150
AD643	157	150
AD645	175	150
AD649	157	150
AD655	209	150
AD673 Ashford International	192	150
AD693	205	150
AD701	187	150
AD707	198	150
AD711	195	150
AD715	193	150
AD719	192	150
AD723	189	150
AD727	198	150
AD731	222	150
AD735	223	150
AD739	227	150
AD743 Westenhanger	275	150

Headway Chart 7

Signal Name	Green Signals Technical Headway 66+24=700T 60MPH	Planning Headway
AD157 Tonbridge	147	150
AD165	147	150
AD169	154	150
AD171	150	150
AD173	145	150
AD175	155	150
AD177	150	150
AD179	152	150
AD181	134	150
AD199 Paddock Wood	141	150
AD205	139	150
AD207	140	150
AD209	137	150
AD211	140	150
AD213	138	150
AD215	142	150
AD217	144	150
AD219 Marden	144	150
AD221	144	150
AD591	141	150
AD593	145	150
AD595 Staplehurst	156	150
AD597	179	150
AD599	183	150
AD601	190	150
AD603 Cranmore Loop	174	150
AD607	163	150
AD613 Headcorn	154	150
AD615	134	150
AD617	146	150
AD619	139	150
AD621	144	150
AD623	139	150
AD625	140	150
AD627	141	150
AD629	140	150
AD631	145	150
AD633 Pluckley	142	150
AD635	144	150
AD637	141	150
AD639	146	150
AD641	181	150
AD643	191	150
AD645	218	150
AD649	199	150
AD655	196	150
AD787	194	150
AD677 Ashford International	703	150

Headway Chart 8

Signal Name	Green Signals Technical Headway 66+23=2400T 60MPH48	Planning Headway
AD157 Tonbridge	157	150
AD165	165	150
AD169	176	150
AD171	168	150
AD173	157	150
AD175	186	150
AD177	209	150
AD179	288	150
AD181	229	150
AD197	170	150
AD252	232	150

Headway Chart 9

Signal Name	Green Signals Technical Headway 66+20=1600T 75MPH	Planning Headway
AD816	297	150
AD756	341	150
AD752 Sandling	258	150
AD748	224	150
AD744 Westenhanger	190	150
AD740	168	150
AD736	155	150
AD732	156	150
AD728	150	150
AD724	153	150
AD720	153	150
AD716	155	150
AD712	150	150
AD708	144	150
AD704	129	150
AD682	127	150
AD668 Ashford International	128	150
AD660	132	150
AD652	131	150
AD646	132	150
AD644	136	150
AD642	134	150
AD640	133	150
AD638	129	150
AD636	132	150
AD634	124	150
AD632	130	150
AD630 Pluckley	124	150
AD628	135	150
AD626	123	150
AD624	133	150
AD622	122	150
AD620	130	150
AD618	119	150
AD616	126	150

Signal Name	Green Signals Technical Headway 66+20=1600T 75MPH	Planning Headway
AD612	121	150
AD606 Headcorn	125	150
AD598	121	150
AD596	121	150
AD594	130	150
AD592	130	150
AD590	137	150
AD588 Staplehurst	132	150
AD586	144	150
AD584	139	150
AD218	143	150
AD216 Marden	135	150
AD214	134	150
AD212	134	150
AD210	130	150
AD208	138	150
AD206	133	150
AD204	137	150
AD202	128	150
AD188 Paddock Wood	138	150
AD182	140	150
AD180	156	150
AD178	160	150
AD176	163	150
AD174	163	150
AD172	159	150
AD170	137	150
AD162	133	150
AD150 Tonbridge	152	150

Headway Chart 10

Signal Name	Green Signals Technical Headway 66+20=1600T 60MPH	Planning Headway
AD816	297	150
AD756	341	150
AD752 Sandling	258	150
AD748	224	150
AD744 Westenhanger	190	150
AD740	169	150
AD736	158	150
AD732	162	150
AD728	160	150
AD724	166	150
AD720	168	150
AD716	174	150
AD712	171	150
AD708	166	150
AD704	149	150
AD682	146	150
AD668 Ashford International	147	150
AD660	150	150
AD652	148	150
AD646	147	150

Signal Name	Green Signals Technical Headway 66+20=1600T 60MPH	Planning Headway
AD644	151	150
AD642	148	150
AD640	148	150
AD638	145	150
AD636	150	150
AD634	142	150
AD632	148	150
AD630 Pluckley	141	150
AD628	153	150
AD626	140	150
AD624	153	150
AD622	142	150
AD620	154	150
AD618	141	150
AD616	150	150
AD612	144	150
AD606 Headcorn	147	150
AD598	143	150
AD596	141	150
AD594	151	150
AD592	149	150
AD590	156	150
AD588 Staplehurst	148	150
AD586	161	150
AD584	155	150
AD218	159	150
AD216 Marden	150	150
AD214	150	150
AD212	149	150
AD210	144	150
AD208	153	150
AD206	148	150
AD204	152	150
AD202	141	150
AD188 Paddock Wood	151	150
AD182	153	150
AD180	171	150
AD178	174	150
AD176	176	150
AD174	174	150
AD172	167	150
AD170	141	150
AD162	134	150
AD150 Tonbridge	152	150

Headway Chart 11

Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
AD816	293	150
AD756	332	150
AD752 Sandling	250	150
AD748	217	150
AD744 Westenhanger	186	150

Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
AD740	163	150
AD736	150	150
AD732	149	150
AD728	144	150
AD724	147	150
AD720	146	150
AD716	149	150
AD712	145	150
AD708	140	150
AD704	126	150
AD682	123	150
AD668 Ashford International	125	150
AD660	128	150
AD652	127	150
AD646	127	150
AD644	131	150
AD642	128	150
AD640	128	150
AD638	124	150
AD636	128	150
AD634	121	150
AD632	126	150
AD630 Pluckley	121	150
AD628	130	150
AD626	119	150
AD624	129	150
AD622	120	150
AD620	128	150
AD618	117	150
AD616	125	150
AD612	120	150
AD606 Headcorn	124	150
AD598	122	150
AD596	121	150
AD594	130	150
AD592	129	150
AD590	136	150
AD588 Staplehurst	130	150
AD586	141	150
AD584	136	150
AD218	140	150
AD216 Marden	131	150
AD214	130	150
AD212	130	150
AD210	125	150
AD208	133	150
AD206	129	150
AD204	132	150
AD202	124	150
AD188 Paddock Wood	133	150
AD182	134	150
AD180	149	150
AD178	150	150
AD176	153	150
AD174	154	150
AD172	153	150

Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
AD170	133	150
AD162	132	150
AD150 Tonbridge	152	150

Headway Chart 12

Signal Name	Green Signals Technical Headway 66+20=1600T 75MPH	Planning Headway
AD157 Tonbridge	170	150
AD165	174	150
AD169	182	150
AD171	174	150
AD173	163	150
AD175	164	150
AD177	155	150
AD179	155	150
AD181	137	150
AD199 Paddock Wood	146	150
AD205	143	150
AD207	145	150
AD209	143	150
AD211	147	150
AD213	148	150
AD215	155	150
AD217	157	150
AD219 Marden	156	150
AD221	153	150
AD591	148	150
AD593	149	150
AD595 Staplehurst	144	150
AD597	147	150
AD599	142	150
AD601	144	150
AD605	144	150
AD607	144	150
AD613 Headcorn	148	150
AD615	137	150
AD617	154	150
AD619	152	150
AD621	163	150
AD623	160	150
AD625	162	150
AD627	163	150
AD629	162	150
AD631	167	150
AD633 Pluckley	167	150
AD635	172	150
AD637	170	150
AD639	172	150
AD641	173	150
AD643	159	150
AD645	167	150
AD649	146	150
AD655	185	150

Signal Name	Green Signals Technical Headway 66+20=1600T 75MPH	Planning Headway
AD673 Ashford International	170	150
AD693	183	150
AD701	171	150
AD707	183	150
AD711	182	150
AD715	184	150
AD719	185	150
AD723	182	150
AD727	193	150
AD731	217	150
AD735	219	150
AD739	225	150
AD743 Westenhanger	274	150

Headway Chart 13

Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
AD157 Tonbridge	168	150
AD165	171	150
AD169	178	150
AD171	169	150
AD173	158	150
AD175	158	150
AD177	150	150
AD179	148	150
AD181	131	150
AD199 Paddock Wood	138	150
AD205	135	150
AD207	136	150
AD209	135	150
AD211	137	150
AD213	138	150
AD215	143	150
AD217	145	150
AD219 Marden	145	150
AD221	141	150
AD591	137	150
AD593	138	150
AD595 Staplehurst	134	150
AD597	136	150
AD599	132	150
AD601	133	150
AD605	133	150
AD607	132	150
AD613 Headcorn	136	150
AD615	125	150
AD617	139	150
AD619	137	150
AD621	146	150
AD623	144	150
AD625	145	150
AD627	146	150
AD629	146	150

Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
AD631	150	150
AD633 Pluckley	150	150
AD635	154	150
AD637	152	150
AD639	154	150
AD641	155	150
AD643	143	150
AD645	152	150
AD649	134	150
AD655	170	150
AD673 Ashford International	155	150
AD693	166	150
AD701	154	150
AD707	163	150
AD711	163	150
AD715	164	150
AD719	165	150
AD723	162	150
AD727	170	150
AD731	190	150
AD735	193	150
AD739	204	150
AD743 Westenhanger	259	150

Headway Chart 14

Signal Name	Green Signals Technical Headway 66+20=1600T 75MPH	Planning Headway
AD798	294	150
AD756	338	150
AD752 Sandling	258	150
AD748	223	150
AD744 Westenhanger	191	150
AD740	168	150
AD736	155	150
AD732	155	150
AD728	151	150
AD724	153	150
AD720	153	150
AD716	156	150
AD712	152	150
AD708	165	150
AD704	198	150
AD682	222	150
AD668 Ashford International	288	150
AD852	222	150
AD850	332	150
ME224	373	150

Headway Chart 15

Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
AD798	290	150
AD756	328	150
AD752 Sandling	249	150
AD748	217	150
AD744 Westenhanger	185	150
AD740	163	150
AD736	150	150
AD732	150	150
AD728	144	150
AD724	146	150
AD720	147	150
AD716	149	150
AD712	146	150
AD708	161	150
AD704	194	150
AD682	219	150
AD668 Ashford International	282	150
AD852	215	150
AD850	320	150
ME224	356	150

Headway Chart 16

Signal Name	Green Signals Technical Headway 66+20=1600T 75MPH	Planning Headway
ME213	277	150
ME215 Charing	189	150
ME217	196	150
ME223	169	150
AD849	202	150
AD851	204	150
AD853	254	150
AD673 Ashford International	221	150
AD693	233	150
AD701	210	150
AD707	218	150
AD711	212	150
AD715	208	150
AD719	208	150
AD723	202	150
AD727	211	150
AD731	234	150
AD735	233	150
AD739	235	150
AD743 Westenhanger	278	150

Headway Chart 17

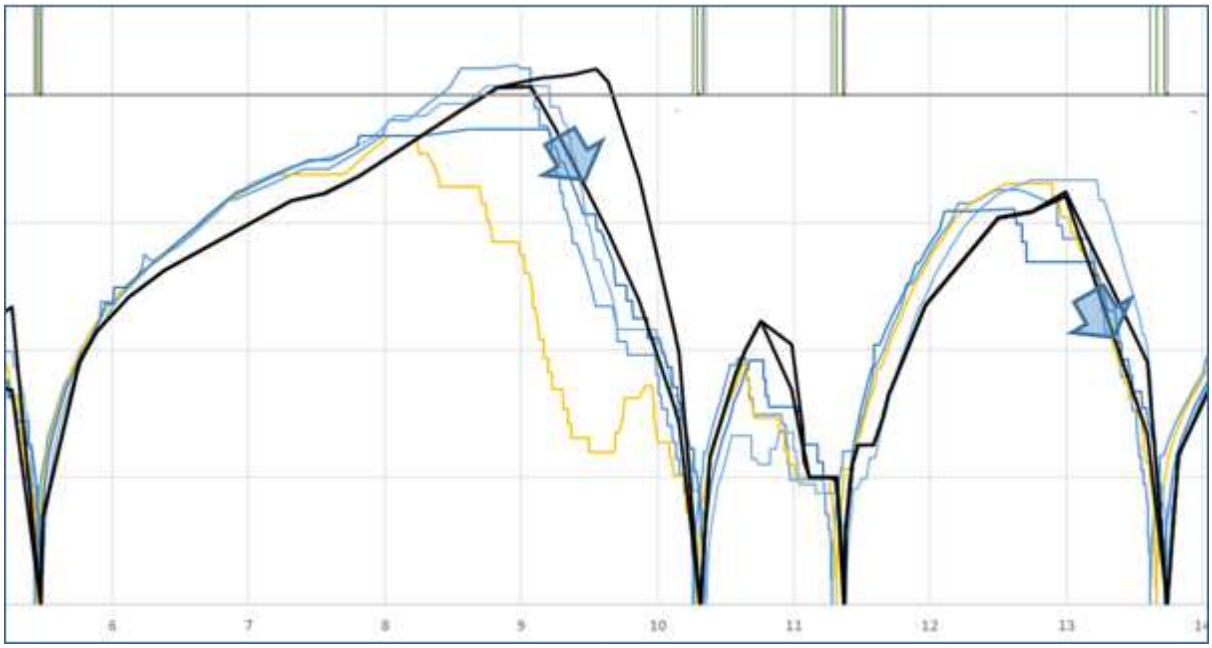
Signal Name	Green Signals Technical Headway 92+20=1600T 75MPH	Planning Headway
ME213	277	150
ME215 Charing	189	150
ME217	196	150
ME223	168	150
AD849	202	150
AD851	204	150
AD853	252	150
AD673 Ashford International	218	150
AD693	228	150
AD701	204	150
AD707	212	150
AD711	205	150
AD715	201	150
AD719	199	150
AD723	194	150
AD727	202	150
AD731	224	150
AD735	223	150
AD739	226	150
AD743 Westenhanger	273	150

Highlighted values denote higher than Timetable Planning Rules.

11.Appendix D – VISION vs Observed Train Speed Example

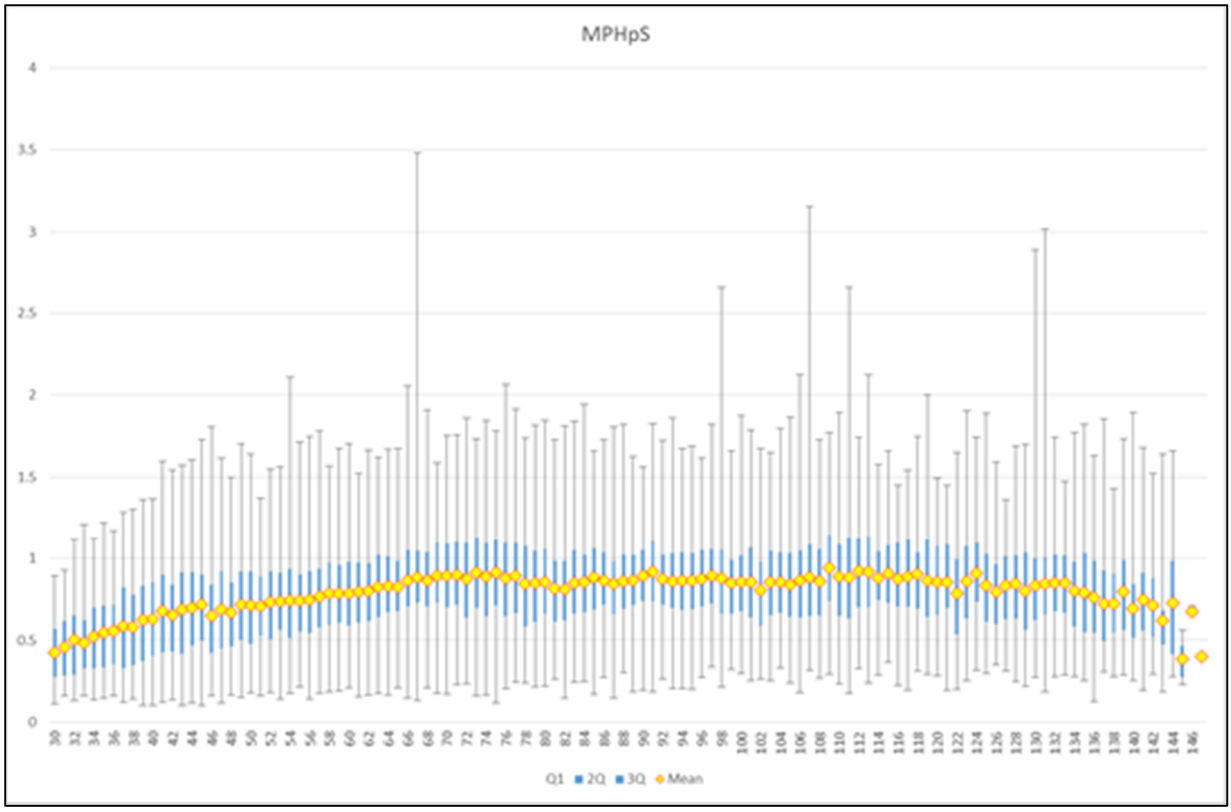
Example graphs plotting the train speed as modelled in VISION (using default and observed braking) and from actual train services within the observed train running data are shown below.

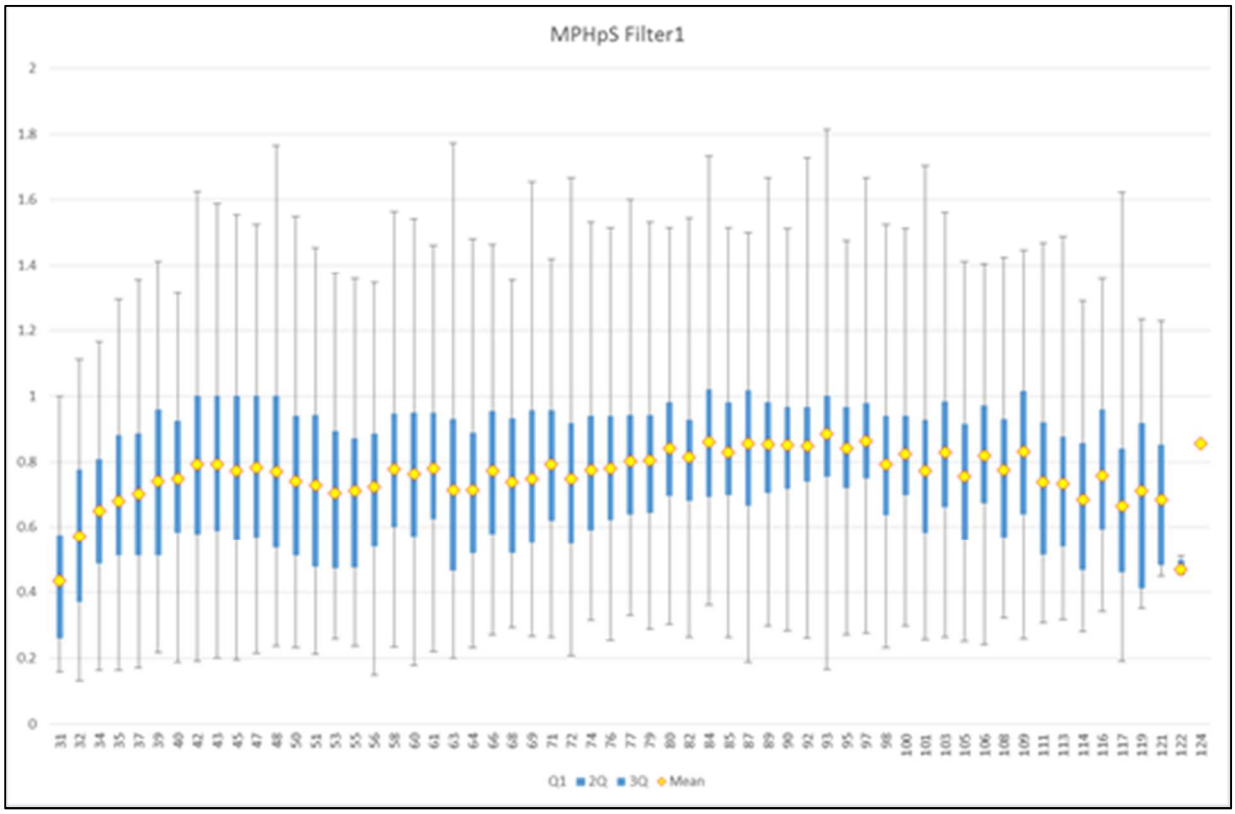
Yellow lines = VISION speed curve (default braking)
Green lines = VISION speed curve (observed braking rate)
Blue lines = actual observed train running data



It can be seen that there is a difference between the VISION train speed curves when using standard and observed braking rates, but that applying the observed braking rate in VISION gives a train speed curve that is comparable to that of the observed train running data.

The box and whisker charts below show the tractions braking rate from different starting speeds, although it should be noted that a limitation of this process is that it is not location specific and thus may not always be representative.


MPHpS
Q1 2Q 3Q Mean


MPHpS Filter1
Q1 2Q 3Q Mean

12.Appendix E – List of Approach control from Red (MAR)

The following table lists all the approach control from red (MAR) within the model area:

Interlocking	Entry Signal	Exit Signal	Route	Track Circuit ID	Occupied for (Seconds)
TONBRIDGE EAST	AD160	AD150	C(M)	TGZ	0
TONBRIDGE EAST	AD160	AD154	A(M)	TGZ	0
TONBRIDGE EAST	AD162	AD154	A(M)	TPU	31
TONBRIDGE EAST	AD164	AD150	C(M)	THA	35
TONBRIDGE EAST	AD166	AD160	A(M)	TRN1	0
TONBRIDGE EAST	AD167	AD169	M	TRN2	0
TONBRIDGE WEST	AD137X	AD139	A(M)	TSU	16
TONBRIDGE WEST	AD137X	AD141	B(M)	TSU	16
TONBRIDGE WEST	AD137X	AD143	C(M)	TSU	16
TONBRIDGE WEST	AD170	AD164	A(M)	TPN	5
PADDOCK WOOD	AD181	AD201X	C(M)	PKL	12
PADDOCK WOOD	AD181	AD203X	D(M)	PKL	12
PADDOCK WOOD	AD183X	AD199	B(M)	PPF	19
PADDOCK WOOD	AD183X	AD201X	C(M)	PPF	19
PADDOCK WOOD	AD183X	AD197	A(M)	PPF	19
PADDOCK WOOD	AD183X	AD203X	D(M)	PPF	26
PADDOCK WOOD	AD186	AD168X	B(M)	PKT	0
PADDOCK WOOD	AD186	AD182	A(M)	PKT	0
PADDOCK WOOD	AD188	AD168X	B(M)	PNZ1	0
PADDOCK WOOD	AD200X	AD186	A(M)	PKY	21
PADDOCK WOOD	AD200X	AD184	B(M)	PKY	21
PADDOCK WOOD	AD201X	AD609X	M	PNZ2	0
PADDOCK WOOD	AD202	AD190	A(M)	PNU	5
PADDOCK WOOD	AD203X	AD609X	A(M)	PPA	0
HEADCORN	AD601	AD603	A(M)	HAA	0
HEADCORN	AD606	AD200X	B	HXM	8
HEADCORN	AD607	AD611	A(M)	HAJ	0
HEADCORN	AD607	AD647X	C-1	HAJ	15
HEADCORN	AD608	AD598	A	HAP	0
HEADCORN	AD609X	AD611	A(M)	HXY	20
HEADCORN	AD609X	AD613	B	HXY	20
HEADCORN	AD609X	AD647X	C-1	HXY	20
HEADCORN	AD610	AD200X	B	HAR	0
HEADCORN	AD610	AD598	A	HAR	0
HEADCORN	AD612	AD602	A(M)	HXJ	5
HEADCORN	AD612	AD604	B(M)	HXJ	5
HEADCORN	AD614X	AD608	A	HAV	0
HEADCORN	AD614X	AD610	B	HAV	0
ASHFORD EAST	AD682	AD670	C(M)	AVJ-2	0
ASHFORD EAST	AD682	AD672	D(M)	AVJ-2	0
ASHFORD EAST	AD682	AD674	E(M)	AVJ-2	0
ASHFORD EAST	AD682	AD782	A(M)	AVJ-2	0
ASHFORD EAST	AD682	AD786	F(M)	AVJ-2	0
ASHFORD EAST	AD880	AD878	C(M)	AJG-2	55
ASHFORD SOUTH	AD659	AD669	B(M)	AXY	0
ASHFORD SOUTH	AD659	AD671	C(M)	AXY	0
ASHFORD SOUTH	AD659	AD673	D(M)	AXY	0
ASHFORD SOUTH	AD659	AD675	E(M)	AXY	0
ASHFORD SOUTH	AD659	AD783	A(M)	AXY	0
ASHFORD SOUTH	AD659	AD787	F(M)	AXY	18

Interlocking	Entry Signal	Exit Signal	Route	Track Circuit ID	Occupied for (Seconds)
ASHFORD SOUTH	AD659	AD789	G(M)	AXY	18
ASHFORD SOUTH	AD668	AD854	D(M)	AVS-2	0
ASHFORD SOUTH	AD892	AD780	M	AZN2	38
ASHFORD WEST	AD653	AD671	C-2(M)	AFA	7
ASHFORD WEST	AD653	AD783	A(M)	AFA	7
ASHFORD WEST	AD653	AD789	G(M)	AFA	7
ASHFORD WEST	AD655	AD669	B(M)	ABV	7
ASHFORD WEST	AD655	AD671	C(M)	ABV	7
ASHFORD WEST	AD655	AD675	E(M)	ABV	7
ASHFORD WEST	AD655	AD783	A(M)	ABV	7
ASHFORD WEST	AD655	AD789	G(M)	ABV	7
ASHFORD WEST	AD655	AD787	F-1(M) or F-2(M)	ABV	7
ASHFORD WEST	AD663	AD781	A(M)	AKB	0
ASHFORD WEST	AD663	AD783	B(M)	AKB	0
ASHFORD WEST	AD851	AD663	A(M)	AHH-3	0
ASHFORD WEST	AD851	AD855	B(M)	AHH-3	0
ASHFORD WEST	AD853	AD789	G(M)	AGD	0
SEVINGTON	AD691	AD703	B(M)	AFW	0
SEVINGTON	AD691	AD705	C(M)	AFW	0
SEVINGTON	AD693	AD703	B(M)	ACM	0
SEVINGTON	AD693	AD705	C(M)	ACM	0
SEVINGTON	AD695	AD701	A(M)	AVJ-1	0
SEVINGTON	AD695	AD705	C(M)	AVJ-1	0
SEVINGTON	AD697	AD701	A(M)	AXH	0
SEVINGTON	AD697	AD703	B(M)	AXH	0
SEVINGTON	AD702	AD680	A(M)	AXB2	0
SEVINGTON	AD702	AD682	B(M)	AXB2	0
SEVINGTON	AD702	AD684	C(M)	AXB2	0
SEVINGTON	AD702	AD686	D(M)	AXB2	0
SEVINGTON	AD704	AD680	A(M)	AVB	0
SEVINGTON	AD704	AD684	C(M)	AVB	0
SEVINGTON	AD704	AD686	D(M)	AVB	0
SEVINGTON	AD705	AD709	A(M)	AXB1	0
SEVINGTON	AD706	AD680	A(M)	ADD	12
SEVINGTON	AD706	AD682	B(M)	ADD	12
SEVINGTON	AD706	AD686	D(M)	ADD	12
SEVINGTON	AD708	AD702	A(M)	AUW	0
SEVINGTON	AD727	AD733	B(M)	WDV	0
SEVINGTON	AD729	AD731	A(M)	WUH	0
SEVINGTON	AD732	AD730	B(M)	WUB	0
SEVINGTON	AD734	AD728	A(M)	WEC	0
DOLLANDS MOOR WEST	AD755	AD761	K(M)	DEV	0
DOLLANDS MOOR WEST	AD755	AD791	J(M)	DEV	0
DOLLANDS MOOR WEST	AD755	AD795	B(M)	DEV	5
DOLLANDS MOOR WEST	AD755	AD797	C(M)	DEV	5
DOLLANDS MOOR WEST	AD755	AD799	D(M)	DEV	5
DOLLANDS MOOR WEST	AD755	AD803	E(M)	DEV	5
DOLLANDS MOOR WEST	AD755	AD807	F(M)	DEV	5
DOLLANDS MOOR WEST	AD755	AD809	G(M)	DEV	5
DOLLANDS MOOR WEST	AD755	AD813	H(M)	DEV	5
DOLLANDS MOOR WEST	AD757	AD791	K(M)	DTH	5
DOLLANDS MOOR WEST	AD757	AD797	B(M)	DTH	5
DOLLANDS MOOR WEST	AD757	AD799	C(M)	DTH	5
DOLLANDS MOOR WEST	AD757	AD803	E(M)	DTH	5

Interlocking	Entry Signal	Exit Signal	Route	Track Circuit ID	Occupied for (Seconds)
DOLLANDS MOOR WEST	AD757	AD807	G(M)	DTH	5
DOLLANDS MOOR WEST	AD757	AD809	H(M)	DTH	5
DOLLANDS MOOR WEST	AD757	AD813	J(M)	DTH	5
FOLKESTONE EAST	YE10	Folkestone E. Train Road 1	B(S)	FNT-2	0
FOLKESTONE EAST	YE10	Folkestone E. Train Road 2	B(S)	FNT-2	0
FOLKESTONE EAST	YE10	Folkestone E. Train Road 3	B(S)	FNT-2	0
FOLKESTONE EAST	YE36	YE80	B(M)	DO	0
FOLKESTONE EAST	YE48	YE42	A(M)	FG	0
FOLKESTONE EAST	YE48	YE46	C(M)	FG	0

13.Appendix F – Network Rail Amended Specification of Services, Margins and Re-occupations

13.1 Passenger services

PASSENGER | Note - P16-P43 are used for Ashford International only

Ref no	Train Type	Max. Speed (mph)	No. of cars	Direction	Origin	Destination	TOC (Added by LR)	Model Start Location	Model End Location	Via				Stop 1	Stop 2	Stop 3	Stop 4	Stop 5	Stop 6	Stop 7	Stop 8	Stop 9	Stop 10			
P01	STS	100	10	DOWN	London Charing Cross	Ramsgate	SE	Tonbridge	Dover Priory	Paddock Wood (down main no pl.2 to down main)	Headcorn (down main no pl.2 to down main)	Ashford East (down main to pl.3 to down main)		Tonbridge pl.9	Paddock Wood pl.2	Marden pl.2	Staplehurst pl.2	Headcorn pl.2	Pluckley pl.2	Ashford Int pl.2	Wesenhanger pl.2	Sandling pl.2	Folkestone West pl.2	Folkestone Central pl.2	Dover Priory pl.2	
P02	STS	100	10	UP	Ramsgate	London Charing Cross	SE	Dover Priory	Tonbridge	Dover Priory (pl.2 to up main)	Ashford (up main to pl.2 to up main)	Headcorn (up main to pl.2 to up main)	Paddock Wood (up main to pl.1 to up main)	Dover Priory pl.2	Folkestone Central pl.1	Folkestone West pl.1	Sandling pl.1	Wesenhanger pl.1	Ashford Int pl.2	Pluckley pl.1	Headcorn pl.1	Staplehurst pl.1	Marden pl.1	Paddock Wood pl.1	Tonbridge pl.2	
P03	STS	100	6	DOWN	Tonbridge Jubilee sidings	Ashford Down sidings	SE	Tonbridge	Ashford International	Ashford (east jn--down main no pl.6 to down eqlps)				Ashford pl.6												
P04	STS	100	6	UP	Ashford Up sidings	Tonbridge Wells Tunbeck	SE	Ashford International	Tonbridge	Ashford (up eqlp to pl.2 to up main)				Ashford pl.2	Tonbridge pl.1											
P05	STS	100	10	UP	Maidstone West	Tonbridge	SE	Paddock Wood	Tonbridge	Paddock Wood (up maidstone no pl.2 no up main)				Paddock Wood pl.2	Tonbridge pl.1											
P06	STS	100	10	DOWN	Tonbridge	Maidstone West	SE	Tonbridge	Paddock Wood	Tonbridge pl.1 to down fast)				Tonbridge pl.1	Paddock Wood pl.2											
P07	STS	100	4	UP	Brood	Paddock Wood	SE	Paddock Wood	Paddock Wood	Paddock Wood (up maidstone no pl.2)				Paddock Wood pl.2												
P08	STS	100	4	DOWN	Paddock Wood	Brood	SE	Paddock Wood	Paddock Wood	Paddock Wood (pl.2 no down maidstone)				Paddock Wood pl.2												
P09	395	140	6	UP	Ramsgate	St Pancras International	SE	Dover Priory	Ashford International					Dover Priory pl.1	Ashford Int pl.2											
P10	395	140	6	DOWN	St Pancras International	Ramsgate	SE	Ashford International	Dover Priory	Ashford East (down slow no down main)				Ashford pl.6	Wesenhanger pl.2	Sandling pl.2	Dover Priory pl.2									
P11	STS	100	10	DOWN	Folkestone Central	Folkestone East Train Road	SE	Folkestone Central	Folkestone East	Folkestone East (down main to train roads)				Folkestone Central pl.2												
P12	STS	100	10	UP	Folkestone East Train Road	Folkestone Central	SE	Folkestone East	Folkestone Central	Folkestone East train roads to up main)				Folkestone Central pl.1												
P13	STS	100	10	DOWN	London Charing Cross	Ramsgate	SE	Tonbridge	Dover Priory	Paddock Wood (down main no pl.2 to down main)	Headcorn (down main no pl.2 to down main)	Ashford East(down main to pl.3 to down main)	Dover Priory (down main no pl.3)	Tonbridge pl.9	Paddock Wood pl.2	Marden pl.2	Staplehurst pl.2	Headcorn pl.2	Pluckley pl.2	Ashford Int pl.2	Wesenhanger pl.2	Sandling pl.2	Folkestone West pl.2	Folkestone Central pl.2	Dover Priory pl.2	
P14	STS	100	10	DOWN	London Charing Cross	Ramsgate	SE	Tonbridge	Dover Priory	Paddock Wood (down main no pl.2 to down main)	Headcorn (down main no pl.2 to down main)	Ashford east(down main to pl.3 to down main)	Dover Priory (down main no pl.1)	Tonbridge pl.9	Paddock Wood pl.2	Marden pl.2	Staplehurst pl.2	Headcorn pl.2	Pluckley pl.2	Ashford Int pl.2	Wesenhanger pl.2	Sandling pl.2	Folkestone West pl.2	Folkestone Central pl.2	Folkestone East pl.2	Dover Priory pl.1
P15	STS	100	10	UP	Ramsgate	London Charing Cross	SE	Dover Priory	Tonbridge	Ashford (up main to pl.2 to up main)	Headcorn (up main no pl.2 to up main)	Paddock Wood (up main to pl.1 to up main)		Dover Priory pl.2	Folkestone East pl.1	Folkestone Central pl.1	Folkestone West pl.1	Folkestone West pl.1	Wesenhanger pl.1	Ashford Int pl.2	Pluckley pl.1	Headcorn pl.1	Staplehurst pl.1	Marden pl.1	Paddock Wood pl.1	Tonbridge pl.2
P16	STS	100	10	Up	Ashford International	London Victoria	SE	Ashford International	Ashford International	Ashford (pl.1 to up maidstone via points 1362)				Ashford pl.1												
P17	170	100	2	Up	Hastings	Ashford International	SN	Ashford International	Ashford International	Ashford (up hastings no pl.1)				Ashford pl.1												
P18	STS	100	10	Down	London Charing cross	Ashford International	SE	Tonbridge	Ashford International	Ashford (down main to pl.2 via points 1202-1202)				Ashford pl.2												
P19	STS	100	10	Up	Dover Priory	London Charing Cross	SE	Dover Priory	Tonbridge	Ashford (up main up fast to pl.2 to up fast (up main via points 1072-1034)				Ashford pl.2												
P20	STS	100	10	Down	Ashford International	Ashford Down sidings	SE	Ashford International	Ashford International	Ashford (pl.1 to ashford down yard)				Ashford pl.1												
P21	STS	100	10	Down	London Charing Cross	Dover Priory	SE	Tonbridge	Dover Priory	Ashford (down main down fast to pl.2 to down fast via points 1362-1272)				Ashford pl.2												
P22	STS	100	10	Up	Canterbury West	London Victoria	SE	Ashford International	Ashford International	Ashford (up canterbury to pl.2 to maidstone west)				Ashford pl.2												
P23	STS	100	10	Down	London Charing cross	Dover Priory	SE	Tonbridge	Dover Priory	Ashford (down main down slow no pl.2 to down fast down main via points 1304-1276-1267				Ashford pl.2												
P24	STS	100	10	Down	London Victoria	Canterbury West	SE	Ashford International	Ashford International	Ashford (maidstone west no pl.2 to down canterbury)				Ashford pl.2												
P25	STS	100	10	Up	Ashford International	London Victoria	SE	Ashford International	Ashford International	Ashford (pl.4 to up maidstone via points 1362)				Ashford pl.4												

P 23	STS	100	12	Down	London Charing cross	Dover Priory	SE	Tonbridge	Dover Priory	Ashford (down main/down slow no pl.3 to down fast/down main via points 1324/1274/1367				Ashford pl.3													
P 24	STS	100	12	Down	London Victoria	Canterbury West	SE	Ashford International	Ashford International	Ashford (maidstone west/no pl.5 to down canterbury)				Ashford pl.5													
P 25	STS	100	12	Up	Ashford International	London Victoria	SE	Ashford International	Ashford International	Ashford (pl.4 to up maidstone via points 1362)				Ashford pl.4													
P 26	STS	100	12	Down	London Charing cross	Ramsgate	SE	Tonbridge	Ashford International	Ashford (down main/down slow no pl.4 to down canterbury via points 1324)				Ashford pl.4													
P 27	TS	100	2	Down	Ashford International	Hastings	SN	Ashford International	Ashford International	Ashford (pl.1 to down hastings)				Ashford pl.1													
P 28	STS	100	12	Up	Dover Priory	London Charing Cross	SE	Dover Priory	Tonbridge	Ashford (up fast no pl.1 to up slow/up main via points 1272/1325)				Ashford pl.1													
P 29	STS	100	12	Down	London Charing Cross	Dover Priory	SE	Tonbridge	Dover Priory	Ashford (down main/down fast no pl.2 to down fast via points 1362/1359/1272)				Ashford pl.2													
P 30	STS	100	12	Down	London Victoria	Canterbury West	SE	Ashford International	Ashford International	Ashford (maidstone west/no pl.6 to down canterbury)				Ashford pl.6													
P 31	STS	100	12	Down	London Charing cross	Ashford Down Sidings	SE	Tonbridge	Ashford International	Ashford (down main/down slow no pl.3 via points 1322)				Ashford pl.3													
P 32	STS	100	12	Down	London Victoria	Ashford International	SE	Ashford International	Ashford International	Ashford (down maidstone to pl.1)				Ashford pl.1													
P 34	STS	100	12	Down	London Victoria	Ashford International	SE	Ashford International	Ashford International	Ashford (down maidstone to pl.2 via points 1299)				Ashford pl.2													
P 35	STS	100	12	Up	Dover Priory	London Charing Cross	SE	Dover Priory	Tonbridge	Ashford (up fast no pl.1 to up fast up main via points 1272/1361)				Ashford pl.1													
P 36	STS	100	12	Up	Dover Priory	London Charing Cross	SE	Dover Priory	Tonbridge	Ashford (up fast no pl.2 to up fast up main via points 1272/1361)				Ashford pl.2													
P 37	STS	100	12	Down	London Charing Cross	Dover Priory	SE	Tonbridge	Dover Priory	Ashford (down main/down fast no pl.1 to down fast via points 1362/1271)				Ashford pl.1													
P 38	STS	100	12	Up	Ashford International	London Victoria	SE	Ashford International	Ashford International	Ashford (pl.2 no up maidstone via points 1299/1362)				Ashford pl.2													
P 39	STS	100	12	Down	London Charing cross	Ramsgate	SE	Tonbridge	Ashford International	Ashford (down main/down fast no pl.4 no down canterbury via points 1292)				Ashford pl.4													
P 40	STS	100	12	Up	Ashford International	Ashford Down Sidings	SE	Ashford International	Ashford International	Ashford (pl.1 to down yard)				Ashford pl.1													
P 41	STS	100	12	Up	Ashford International	Dover Priory	SE	Ashford International	Dover Priory	Ashford (pl.4 to down slow/down main)				Ashford pl.4													
P 42	STS	100	12	Down	Ashford Down Sidings	Ashford International	SE	Ashford International	Ashford International	Ashford (down yard no pl.1)				Ashford pl.1													
P 43	STS	100	12	Down	Ashford Down Sidings	Ashford International	SE	Ashford International	Ashford International	Ashford (down yard no pl.2)				Ashford pl.2													

13.2 Freight services

Note - F15-F19 are used for Ashford International only

FREIGHT

Ref	Class	Max. Speed	Direction	Traction Type	Total Trailing Weight (t)	Length (ft)	No. of wagons	Wagon Type	Length of wagons (ft)	Origin	Destination	Model Start Location	Model End Location	Via		Stop 1	Stop 2	Stop 3	Stop 4	HAW/CON			Headcode	Origin	To	
F1	4	75	DOWN	66	1800	1560	13	FIA	120	Scunthorpe Redbourne Sdg	Dollands Moor Sdgs	Tonbridge	Saltwood Jn	Saltwood Jn (down main to dollands moor)									4O28	Scunthorpe Redbourne Sdg	Dollands Moor Sdgs	75-66s18
F2	6	60	DOWN	66	1800	1560	13	FIA	120	Scunthorpe Redbourne Sdg	Dollands Moor Sdgs	Tonbridge	Saltwood Jn	Cranmore Down Loop (down main to loop to down main)	Saltwood Jn (down main to dollands moor)	Cranmore Down Loop							6O73	Scunthorpe Redbourne Sdg	Dollands Moor Sdgs	60-66s18
F3	6	60	DOWN	66	700	1560	24	HHA	65	Crewe Coal Sidings (DRS)	Dungeness British Energy	Tonbridge	Ashford International	Cranmore Down Loop (down main to loop to down main)	Ashford (down main towards appledore)	Cranmore Down Loop							6O62	Crewe Coal Sidings (DRS)	Dungeness British Energy	60-tr40
F4	6	60	DOWN	66	2400	1104	23	JGA	48	Acton T.C.	Allington A.R.C. Sdg.	Tonbridge	Paddock Wood	Paddock Wood (down main to down maidstone)						HAW			6O87	Acton T.C.	Allington A.R.C. Sdg.	60h66s24
F5	7	45	DOWN	60	2000	1008	21	JGA	48	Humberstone Road	Allington A.R.C. Sdg.	Tonbridge	Paddock Wood	Paddock Wood (down main to down maidstone)									7O54	Humberstone Road	Allington A.R.C. Sdg.	45-tr115
F6	4	75	UP	66	1600	2360	20	IFA	118	Dollands Moor Sdgs	Ripple Lane FLT (DBS)	Saltwood Jn	Tonbridge	Saltwood Jn (dollands moor to up main)						CON			4L33	Dollands Moor Sdgs	Ripple Lane FLT (DBS)	75c66s16
F7	6	60	UP	66	1600	2360	20	IFA	118	Dollands Moor Sdgs	Barry Docks Abp Shipment	Saltwood Jn	Tonbridge	Saltwood Jn (dollands moor to up main)									6V10	Dollands Moor Sdgs	Barry Docks Abp Shipment	60-66s16
F8	4	75	UP	92	1600	2360	20	IFA	118	Dollands Moor Sdgs	Wembley Eur FRT ops centre	Saltwood Jn	Tonbridge	Saltwood Jn (dollands moor to up main)						CON						
F9	4	75	DOWN	66	1600	2360	20	IFA	118	Wembley Eur FRT ops centre	Dollands Moor Sdgs	Tonbridge	Saltwood Jn	Saltwood Jn (down main to dollands moor)						CON						
F10	4	75	DOWN	92	1600	2360	20	IFA	118	Wembley Eur FRT ops centre	Dollands Moor Sdgs	Tonbridge	Saltwood Jn	Saltwood Jn (down main to dollands moor)						CON						
F11	4	75	UP	66	1600	2360	20	IFA	118	Dollands Moor Sdgs	Wembley Eur FRT ops centre	Saltwood Jn	Ashford International (towards charing)	Saltwood Jn (dollands moor to up main)	Ashford (up main to up maidstone)					CON						
F12	4	75	UP	92	1600	2360	20	IFA	118	Dollands Moor Sdgs	Wembley Eur FRT ops centre	Saltwood Jn	Ashford International (towards charing)	Saltwood Jn (dollands moor to up main)	Ashford (up main to up maidstone)					CON						
F13	4	75	DOWN	66	1600	2360	20	IFA	118	Wembley Eur FRT ops centre	Dollands Moor Sdgs	Ashford International (from charing)	Saltwood Jn	Ashford (down maidstone to down main)	Saltwood Jn (down main to dollands moor)					CON						
F14	4	75	DOWN	92	1600	2360	20	IFA	118	Wembley Eur FRT ops centre	Dollands Moor Sdgs	Ashford International (from charing)	Saltwood Jn	Ashford (down maidstone to down main)	Saltwood Jn (down main to dollands moor)					CON						
F15	0	75	Down	66	0	0	0	0	0			Headcorn	Sevington Loop													
F16	4	75	Up	92	1600	2360	20	IFA	118			Sevington Loop	Headcorn	Ashford (up main to up slow to up main via points 1225)												
F17	6	60	Up	37x2	100	164	2	FNA	82			Ashford International (from appledore)	Ashford International (towards charing)	Ashford (up hastings to pass pl.2 to up main via points 1259)												
F18	4	75	Up	66	1600	2360	20	IFA	118			Saltwood Junction	Headcorn													
F19	4	75	Up	92	1600	2360	20	IFA	118			Sandling	Ashford International (towards charing)	Ashford (up fast to up maidstone via points 1245/1242)												

13.3 Junction Margins

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Paddock Wood	Diverging	P01	down main to pl.2	P03	down main
Paddock Wood	Diverging	F4	down main to pl.2	P03	down main
Paddock Wood	Diverging	F5	down main to pl.2	P03	down main
Paddock Wood	Diverging	P03	down main	P01	down main to pl.2
Paddock Wood	Diverging	P02	up main to pl.1	P04	up main
Paddock Wood	Diverging	P04	up main	P02	up main to pl.1

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Paddock Wood	Diverging	F6	up main	P02	up main to pl.1
Paddock Wood	Converging	P01	pl.2 to down main	P03	down main
Paddock Wood	Converging	P03	down main	P01	pl.2 to down main
Paddock Wood	Converging	F1	down main	P01	pl.2 to down main
Paddock Wood	Converging	P02	pl.1 to up main	P04	up main
Paddock Wood	Converging	P04	up main	P02	pl.1 to up main
Paddock Wood	Converging	F6	up main	P02	pl.1 to up main
Paddock Wood	Converging	P05	platform 2 to up main	P04	up main
Paddock Wood	Converging	P04	up main	P05	platform 2 to up main
Paddock Wood	Converging	F6	up main	P05	platform 2 to up main
Paddock Wood	Crossing	P05	platform 2 to up main	P03	down main
Paddock Wood	Crossing	P03	down main	P05	platform 2 to up main
Paddock Wood	Crossing	F1	down main	P05	from up maidstone to up main
Paddock Wood	Crossing	P08	pl.3 to down maidstone	P07	up maidstone to pl.3
Cranmore Down Loop	Diverging	F2	down main to down loop	P03	down main
Cranmore Down Loop	Diverging	F2	down main to down loop	F1	down main
Cranmore Down Loop	Converging	F2	down loop to down main	P03	down main
Cranmore Down Loop	Converging	F2	down loop to down main	F1	down main
Headcorn	Diverging	P01	down main to pl.2	P03	down main
Headcorn	Diverging	P03	down main	P01	down main to pl.2
Headcorn	Diverging	F1	down main	P01	down main to pl.2
Headcorn	Diverging	P02	up main to pl.1	P04	up main
Headcorn	Diverging	P04	up main	P02	up main to pl.1
Headcorn	Diverging	F6	up main	P02	up main to pl.1
Headcorn	Converging	P01	pl.2 to down main	P03	down main
Headcorn	Converging	P03	down main	P01	pl.2 to down main
Headcorn	Converging	F1	down main	P01	pl.2 to down main
Headcorn	Converging	P02	pl.1 to up main	P04	up main
Headcorn	Converging	P04	up main	P02	pl.1 to up main
Headcorn	Converging	F6	up main	P02	pl.1 to up main
Ashford West	Diverging	P01	down main to down slow	P13	down main

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford West	Diverging	P13	down main	P01	down main to down slow
Ashford West	Diverging	F1	down main	P01	down main to down slow
Ashford West	Converging	P02	up slow to up main	P15	up main
Ashford West	Converging	P15	up main	P02	up slow to up main
Ashford West	Converging	F6	up main	P02	up slow to up main
Ashford International	Single Line Reoccupation	P27	Depart Pl.1 to Down Hastings towards Ham Street	P17	Up Hastings towards Ashford to arrive Pl.1
Ashford International	Single Line Reoccupation	P27	Depart Pl.1 to Down Hastings towards Ham Street	F17	Up Hastings towards Ashford to Pass Pl.2
Ashford International	Single Line Reoccupation	F17	Up Hastings towards Ashford to Pass Pl.2	P27	Depart Pl.1 to Down Hastings towards Ham Street
Ashford International	Diverging	F18	Up Fast to Pass Ashford on Up Main Line	P19	Up Fast to Up Slow towards Ashford to arrive Pl.2
Ashford International	Diverging	F19	Up Main Line to Up Maidstone towards Charing	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Diverging	F18	Pass Ashford on Up Main Line towards Pluckley	F19	Up Main Line to Up Maidstone towards Charing
Ashford International	Diverging	F15	Pass Ashford on Down Fast Line towards Sevington	P31	Down Fast to arrive Pl.5
Ashford International	Diverging	P31	Down Fast to arrive Pl.5	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Diverging	P39	Down Fast Line to arrive at Pl.5	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Diverging	F15	Pass Ashford on Down Fast Line towards Sevington	P32	Down Fast Line to arrive at Pl.5
Ashford International	Diverging	P39	Down Fast Line to arrive at Pl.6	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Diverging	F15	Pass Ashford on Down Fast Line towards Sevington	P39	Down Fast Line to arrive at Pl.6
Ashford International	Diverging	P37	Down Fast Line to arrive Pl.1	F15	Pass Ashford on Down Fast Line towards Sevington

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Diverging	F15	Pass Ashford on Down Fast Line towards Sevington	P37	Down Fast Line to arrive Pl.1
Ashford International	Diverging	P21	Down Fast Line to arrive Pl.2	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Diverging	F15	Pass Ashford on Down Fast Line towards Sevington	P21	Down Fast Line to arrive Pl.2
Ashford International	Converging	P23	Depart Pl.5 to Down Fast towards Westenhanger	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Converging	F15	Pass Ashford on Down Fast Line towards Sevington	P23	Depart Pl.5 to Down Fast towards Westenhanger
Ashford International	Converging	F18	Pass Ashford on Up Main Line towards Pluckley	P28	Depart Pl.1 to Up Fast towards Pluckley
Ashford International	Converging	F18	Pass Ashford on Up Main Line towards Pluckley	P35	Depart Pl.1 to Up Fast towards Pluckley
Ashford International	Converging	F18	Pass Ashford on Up Main Line towards Pluckley	P19	Depart Pl.2 to Up Fast towards Pluckley
Ashford International	Converging	F18	Pass Ashford on Up Main Line towards Pluckley	P36	Depart Pl.2 to Up Fast towards Pluckley
Ashford International	Converging	P21	Depart Pl.2 to Down Fast Line towards Westenhanger	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Converging	F15	Pass Ashford on Down Fast Line towards Sevington	P21	Depart Pl.2 to Down Fast Line towards Westenhanger
Ashford International	Converging	P37	Depart Pl.1 to Down Fast Line towards Westenhanger	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Converging	F15	Pass Ashford on Down Fast Line towards Sevington	P37	Depart Pl.1 to Down Fast Line towards Westenhanger
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P16	Depart Pl.1 to Up Maidstone towards Charing

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P16	Depart Pl.1 to Up Maidstone towards Charing
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	P37	Down Fast Line to arrive Pl.1
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	P21	Down Fast Line to arrive Pl.2
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	P36	Depart Pl.2 to Up Fast towards Pluckley
Ashford International	Crossing	P36	Depart Pl.2 to Up Fast towards Pluckley	P16	Depart Pl.1 to Up Maidstone towards Charing
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	P26	Down Slow Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P26	Down Slow Line towards Ashford to arrive Pl.6	P16	Depart Pl.1 to Up Maidstone towards Charing
Ashford International	Crossing	P16	Depart Pl.1 to Up Maidstone towards Charing	P39	Down Fast Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P39	Down Fast Line towards Ashford to arrive Pl.6	P16	Depart Pl.1 to Up Maidstone towards Charing
Ashford International	Crossing	P33	Down Maidstone to arrive Pl.1 at Ashford	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P33	Down Maidstone to arrive Pl.1 at Ashford	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P33	Down Maidstone to arrive Pl.1 at Ashford
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P33	Down Maidstone to arrive Pl.1 at Ashford
Ashford International	Crossing	P33	Down Maidstone to arrive Pl.1 at Ashford	P21	Down Fast Line to arrive Pl.2
Ashford International	Crossing	P21	Down Fast Line to arrive Pl.2	P33	Down Maidstone to arrive Pl.1 at Ashford
Ashford International	Crossing	P33	Down Maidstone to arrive Pl.1 at Ashford	P36	Depart Pl.2 to Up Fast towards Pluckley

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Crossing	P35	Depart Pl.1 to Up Fast towards Pluckley	P33	Down Maidstone to arrive Pl.1 at Ashford
Ashford International	Crossing	P33	Down Maidstone to arrive Pl.1 at Ashford	P26	Down Slow Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P26	Down Slow Line towards Ashford to arrive Pl.6	P33	Down Maidstone to arrive Pl.1 at Ashford
Ashford International	Crossing	P33	Down Maidstone to arrive Pl.1 at Ashford	P39	Down Fast Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P39	Down Fast Line towards Ashford to arrive Pl.6	P33	Down Maidstone to arrive Pl.1 at Ashford
Ashford International	Crossing	P38	Depart Pl.2 to Up Maidstone towards Charing	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P38	Depart Pl.2 to Up Maidstone towards Charing	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P38	Depart Pl.2 to Up Maidstone towards Charing
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P38	Depart Pl.2 to Up Maidstone towards Charing
Ashford International	Crossing	P38	Depart Pl.2 to Up Maidstone towards Charing	P37	Down Fast Line to arrive Pl.1
Ashford International	Crossing	P37	Down Fast Line to arrive Pl.1	P38	Depart Pl.2 to Up Maidstone towards Charing
Ashford International	Crossing	P38	Depart Pl.2 to Up Maidstone towards Charing	P35	Depart Pl.1 to Up Fast towards Pluckley
Ashford International	Crossing	P35	Depart Pl.1 to Up Fast towards Pluckley	P38	Depart Pl.2 to Up Maidstone towards Charing
Ashford International	Crossing	P38	Depart Pl.2 to Up Maidstone towards Charing	P26	Down Slow Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P26	Down Slow Line towards Ashford to arrive Pl.6	P38	Depart Pl.2 to Up Maidstone towards Charing
Ashford International	Crossing	P38	Depart Pl.2 to Up Maidstone towards Charing	P39	Down Fast Line towards Ashford to arrive Pl.6

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Crossing	P39	Down Fast Line towards Ashford to arrive Pl.6	P38	Depart Pl.2 to Up Maidstone towards Charing
Ashford International	Crossing	P34	Down Maidstone to arrive Pl.2 at Ashford	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P34	Down Maidstone to arrive Pl.2 at Ashford	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	P34	Down Maidstone to arrive Pl.2 at Ashford	P35	Depart Pl.1 to Up Fast towards Pluckley
Ashford International	Crossing	P35	Depart Pl.1 to Up Fast towards Pluckley	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	P36	Depart Pl.2 to Up Fast towards Pluckley	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	P35	Depart Pl.1 to Up Fast towards Pluckley	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	P34	Down Maidstone to arrive Pl.2 at Ashford	P26	Down Slow Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P26	Down Slow Line towards Ashford to arrive Pl.6	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	P34	Down Maidstone to arrive Pl.2 at Ashford	P39	Down Fast Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P39	Down Fast Line towards Ashford to arrive Pl.6	P34	Down Maidstone to arrive Pl.2 at Ashford
Ashford International	Crossing	P26	Down Slow Line towards Ashford to arrive Pl.6	P24	Down Maidstone Relief to arrive Ashford Pl.5
Ashford International	Crossing	P24	Down Maidstone Relief to arrive Ashford Pl.5	P26	Down Slow Line towards Ashford to arrive Pl.6
Ashford International	Crossing	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P19	Up Fast to Up Slow towards Ashford to arrive Pl.2

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Crossing	P19	Up Fast to Up Slow towards Ashford to arrive Pl.2	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P23	Depart Pl.5 to Down Fast towards Westenhanger
Ashford International	Crossing	P23	Depart Pl.5 to Down Fast towards Westenhanger	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P41	Depart Pl.6 to Down Fast towards Westenhanger
Ashford International	Crossing	P41	Depart Pl.6 to Down Fast towards Westenhanger	P40	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P28	Up Fast to Up Slow towards Ashford to arrive Pl.1
Ashford International	Crossing	P28	Up Fast to Up Slow towards Ashford to arrive Pl.1	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P23	Depart Pl.5 to Down Fast towards Westenhanger

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Crossing	P23	Depart Pl.5 to Down Fast towards Westenhanger	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings	P41	Depart Pl.6 to Down Fast towards Westenhanger
Ashford International	Crossing	P41	Depart Pl.6 to Down Fast towards Westenhanger	P20	Depart Pl.1 to Down Canterbury towards Ashford Down Sidings
Ashford International	Crossing	P43	Up Canterbury towards Ashford to arrive Pl.2	P28	Up Fast to Up Slow towards Ashford to arrive Pl.1
Ashford International	Crossing	P28	Up Fast to Up Slow towards Ashford to arrive Pl.1	P43	Up Canterbury towards Ashford to arrive Pl.2
Ashford International	Crossing	P43	Up Canterbury towards Ashford to arrive Pl.2	F15	Pass Ashford on Down Fast Line towards Sevington
Ashford International	Crossing	P43	Up Canterbury towards Ashford to arrive Pl.2	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P43	Up Canterbury towards Ashford to arrive Pl.2
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P43	Up Canterbury towards Ashford to arrive Pl.2
Ashford International	Crossing	P43	Up Canterbury towards Ashford to arrive Pl.2	P23	Depart Pl.5 to Down Fast towards Westenhanger
Ashford International	Crossing	P23	Depart Pl.5 to Down Fast towards Westenhanger	P43	Up Canterbury towards Ashford to arrive Pl.2
Ashford International	Crossing	P43	Up Canterbury towards Ashford to arrive Pl.2	P41	Depart Pl.6 to Down Fast towards Westenhanger
Ashford International	Crossing	P41	Depart Pl.6 to Down Fast towards Westenhanger	P43	Up Canterbury towards Ashford to arrive Pl.2
Ashford International	Crossing	P42	Up Canterbury towards Ashford to arrive Pl.1	P36	Up Fast to Up Slow towards Ashford to arrive Pl.2
Ashford International	Crossing	P36	Up Fast to Up Slow towards Ashford to arrive Pl.2	P42	Up Canterbury towards Ashford to arrive Pl.1
Ashford International	Crossing	P42	Up Canterbury towards Ashford to arrive Pl.1	F15	Pass Ashford on Down Fast Line towards Sevington

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Ashford International	Crossing	P42	Up Canterbury towards Ashford to arrive Pl.1	F18	Pass Ashford on Up Main Line towards Pluckley
Ashford International	Crossing	F15	Pass Ashford on Down Fast Line towards Sevington	P42	Up Canterbury towards Ashford to arrive Pl.1
Ashford International	Crossing	F18	Pass Ashford on Up Main Line towards Pluckley	P42	Up Canterbury towards Ashford to arrive Pl.1
Ashford International	Crossing	P42	Up Canterbury towards Ashford to arrive Pl.1	P23	Depart Pl.5 to Down Fast towards Westenhanger
Ashford International	Crossing	P23	Depart Pl.5 to Down Fast towards Westenhanger	P42	Up Canterbury towards Ashford to arrive Pl.1
Ashford International	Crossing	P42	Up Canterbury towards Ashford to arrive Pl.1	P41	Depart Pl.6 to Down Fast towards Westenhanger
Ashford International	Crossing	P41	Depart Pl.6 to Down Fast towards Westenhanger	P42	Up Canterbury towards Ashford to arrive Pl.1
Ashford International	Crossing	F17	Up Hastings towards Ashford to Pass Pl.2	P27	Depart Pl.1 to Down Hastings towards Ham Street
Ashford International	Crossing	P27	Depart Pl.1 to Down Hastings towards Ham Street	P28	Up Slow towards Ashford to arrive Pl.1
Ashford International	Crossing	P28	Up Slow towards Ashford to arrive Pl.1	F17	Up Hastings towards Ashford to Pass Pl.2
Ashford International	Crossing	F17	Up Hastings towards Ashford to Pass Pl.2	P28	Up Slow towards Ashford to arrive Pl.1
Ashford East	Diverging	P02	up main to up slow	P15	up main
Ashford East	Diverging	P15	up main	P02	up main to up slow
Ashford East	Diverging	F6	up main	P02	up main to up slow
Ashford East	Converging	P01	down slow to down main	P13	down main
Ashford East	Converging	P13	down main	P01	down slow to down main
Ashford East	Converging	F1	down main	P01	down slow to down main
Saltwood Jn	Diverging	F1	down main to dollands moor	P10	down main
Saltwood Jn	Diverging	F2	down main to dollands moor	P10	down main
Saltwood Jn	Diverging	P10	down main	F1	down main to dollands moor
Saltwood Jn	Converging	F6	dollands moor to up main	P09	up main

Location	Margin type	Train 1	Movement 1	Train 2	Movement 2
Saltwood Jn	Converging	F7	dollands moor to up main	P09	up main
Saltwood Jn	Converging	P09	up main	F6	dollands moor to up main
Saltwood Jn	Crossing	F6	dollands moor to up main	P10	down main
Saltwood Jn	Crossing	F7	dollands moor to up main	P10	down main
Folkestone East	Diverging	P11	down main to train roads	P10	down main
Folkestone East	Converging	P09	up main	P12	train roads to up main
Folkestone East	Crossing	P11	down main to train roads	P09	up main
Folkestone East	Crossing	P09	up main	P11	down main to train roads
Dover Priory	Diverging	P13	down main to pl.3	P10	down main to pl.2
Dover Priory	Diverging	P10	down main to pl.2	P13	down main to pl.3
Dover Priory	Diverging	P14	down main to pl.1	P10	down main to pl.2
Dover Priory	Diverging	P10	down main to pl.2	P14	down main to pl.1
Dover Priory	Converging	P02	pl.2 to up main	P09	pl.1 to up main
Dover Priory	Converging	P09	pl.1 to up main	P02	pl.2 to up main
Dover Priory	Crossing	P14	down main to pl.1	P15	pl.2 to up main
Dover Priory	Crossing	P15	pl.2 to up main	P14	down main to pl.1

13.4 Platform re-occupations

Location	Train 1	Train 2
Paddock Wood	P02	P15
Paddock Wood	P05	P05
Paddock Wood	P05	P01
Paddock Wood	P01	P13
Paddock Wood	P08	P07
Marden	P02	P15
Marden	P01	P13
Staplehurst	P02	P15
Staplehurst	P01	P13
Headcorn	P02	P15
Headcorn	P01	P13
Pluckley	P02	P15

Location	Train 1	Train 2
Pluckley	P01	P13
Ashford	P28	P17
Ashford	P27	P37
Ashford	P35	P33
Ashford	P33	P35
Ashford	P19	P19
Ashford	P21	P21
Ashford	P19	P21
Ashford	P21	P19
Ashford	P22	P22
Ashford	P24	P24
Ashford	P22	P24
Ashford	P24	P22
Ashford	P30	P30
Ashford	P41	P30
Westenhanger	P02	P15
Westenhanger	P01	P13
Sandling	P02	P15
Sandling	P01	P13
Folkestone West	P02	P15
Folkestone West	P01	P13
Folkestone Central	P02	P15
Folkestone Central	P01	P13
Folkestone East	P15	P15
Folkestone East	P14	P14
Dover Priory	P09	P09
Dover Priory	P14	P14
Dover Priory	P02	P02
Dover Priory	P01	P10
Dover Priory	P13	P13

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www.tracsis.com
www.tracsisops.com
info@tracsis.com

@Tracsis

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