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Project	Extended Tay Estuary Rail Study	Project No. 22093501

Subject Initial option sifting**Methodology overview**

The option sifting process began with the generation of the master options list. This options list was created from analysis of the operational opportunities and constraints in the corridor to give a comprehensive view of the service patterns that could be realistically considered.

This list does not take into account fit against planning objectives and to a certain extent, the relationships between different options. The initial option sift evaluated each entry in the master options list against a number of logic tests, comparative evaluation between options and scoring against the planning objectives to generate three packages of options that are to be taken through to the outline appraisal stage.

This note outlines the process undertaken and the reasoning behind the acceptance and or rejection of specific options.

Stage 1: Comparative evaluation - sifting 'non starters'

Whilst a large number of theoretically feasible options and packages of options were available, there were a number of options that could easily be rejected on the basis of a simple comparison against other, clearly better performing options both against planning objectives and on grounds of implementability.

The first sift was based around options beginning and terminating at Stirling station. In comparison with comparable options beginning and terminating at Glasgow Queen Street, these options perform poorly on all counts. No Stirling options are possible until at least 2017 (when platforms 4 and 5 become available at Stirling), they would require station works costing around £2 million and there are possible conflicts with the Edinburgh-Glasgow Improvement Programme (EGIP). In contrast, comparable options continuing to Glasgow Queen Street are implementable from 2010 onwards with no related capital cost. These options also clearly perform better against the planning objectives by providing a link all the way through to Glasgow for all intermediate stations as well as being cheaper and easier to implement.

For these reasons, all options and packages with services starting and terminating at Stirling can be discarded on the grounds that they have comparable options that perform better against planning objectives and can be implemented in a shorter or comparable timescale.

A second sift was applied regarding packages where there was no common interchange station between stations. For example, packages that provided a service from Glasgow-Perth and Dundee-northwards with no connection between Perth and Dundee were discarded on the grounds that other packages can provide this connection for similar cost and timescale.

Stage 2: High level planning objective sift

Once 'non starters' had been discarded, the remaining options were scored against the planning objectives. Each option was given a score of either no impact (0), minor impact (1) or significant impact (2) against each of the eight objectives. This gave each option a score out of a maximum possible 16. Packages were scored with a qualitative assessment of the likely incremental impact of a combination of services. In some cases, two services both with a minor impact might not add up to a significant impact if the effects are on different parts of the corridor, or do not provide connectivity. In other cases, the package may provide connections that mean that the package could be marked as having a significant impact on accessibility overall even if both individual services are only classed as having a minor impact on accessibility.

Given the large number of options and relatively high scores of a number of options, all options scoring eight or less were discarded. In other words, all options and packages that would not contribute a significant impact to one or more of the planning objectives were discarded (as a minor impact for all objectives would only give a total of eight out of 16).

Stage 3: Comparative evaluation - sifting similar options

The second stage concentrated on the sifting of similar options where only one specific issue separated two options. Analysis of performance against planning objectives, cost and implementability was performed to sift out options where performance against planning objectives was very similar but issues such as cost and implementability might make one option more desirable than another.

The major issue here was a comparison of packages with two services with the only difference between options being whether the service breaks at Perth or Dundee. In terms of performance against planning objectives, the difference between these options is negligible but Glasgow-Dundee options cannot be implemented until December 2016 whilst Glasgow-Perth options can be implemented in 2010 and are in fact part of a priced option in the current Scotrail franchise.

All packages with a break at Dundee where there is a comparable package breaking at Perth were therefore discarded.

Stage 4: Review of sifted options and re-packaging

Once options had been sifted and scored against planning objectives, the options were reviewed and sense checked to ensure that the process had not rejected options that intuitively were a good fit with policy and planning objectives without good reason. This process also reviewed rejected options to ascertain whether they might still be feasible as a stepping stone to an option which had passed the sift.

Options consisting of a single service were reviewed to decide if they could be packaged, or indeed existed in a package where there was no apparent need to test as a single option.

Options New B.2, New B.4, New B.5, New B.6 and New B.7 all passed the sift but clearly showed a progression in service level, cost and timescales that lend themselves well to a package in which the service from Glasgow northwards could be developed over time as opportunities present themselves using the hourly Glasgow-Perth service in option New B.1 as a starting point. A sensible progression of this option based on the likely timescales for each option is shown below in Table 1. At this stage it was decided to reject option New B.2 (hourly Glasgow-Dundee) as the timescales suggest that hourly Glasgow-Arbroath is possible with minimal capital expenditure in the same timescale.

Options New D.2 (hourly Perth-Arbroath) and New D.4 (hourly Perth-Aberdeen) both passed the sift as single options, but were also present in packages Pac A.2 and Pac A.4 respectively with a higher score and no dependencies on other options. They were therefore discarded as single options and taken forward as part of these packages with the Glasgow-Perth franchise priced option.

Packages Pac. A.2, Pac A.4 and Pac A.9 passed the sift with good performance against planning objectives. Again, Packages Pac A.2 and A.4 clearly lend themselves to packaging, with the common Glasgow-Perth service implemented in 2010, hourly Perth-Arbroath in 2011 and then an extension of this service to Aberdeen in the long term post 2017.

Pac. A.9 can also be combined with Pac A.2. This option would provide an hourly Glasgow-Perth service in 2010, hourly Perth-Arbroath service in 2011 and an hourly Perth-Aberdeen service in 2016 by utilising the path freed up by splitting and joining the Glasgow and Edinburgh to Aberdeen trains at Perth. This would provide an option that can be implemented for less capital outlay but has some recognised operational issues that will be investigated in the detailed appraisal.

From this final part of the sift process, it became apparent there was a further viable package to be obtained by introducing a Glasgow - Arbroath service in place of the separate Glasgow - Perth and Perth - Arbroath services once sufficient rolling stock and timetable paths were available.

Package summary

In summary, the four packages recommended to be taken through to outline appraisal are shown in Table 1 below:

TABLE 1 PACKAGES FOR OUTLINE APPRAISAL

Package	Service description	Timescale	Indicative incremental capital cost
Package 1 (derived from New 'B' options)	Hourly Glasgow-Perth	2010	Nil
	Hourly Glasgow-Perth with two hourly extension to Arbroath	2011	<£0.5m
	Hourly Glasgow-Arbroath	Dec 2016	Nil
	Hourly Glasgow-Aberdeen	Post 2017	>£50m (as part of STPR Project 23)
Package 2 (derived from Pac A.2/A.4)	Hourly Glasgow-Perth	2010	Nil
	Hourly Glasgow-Perth and hourly Perth-Arbroath	2011	<£0.5m
	Hourly Glasgow-Perth and hourly Perth-Aberdeen	Post 2017	>£50m (as part of STPR Project 23)
Package 3 (derived from Pac A.9)	Hourly Glasgow-Perth	2010	Nil
	Hourly Glasgow-Perth and hourly Perth-Arbroath	2011	<£0.5m
	Hourly Glasgow-Perth and hourly Perth-Aberdeen (with reduction in express paths)	Dec 2016	Nil
Package 4 (Hybrid of Packages 1 & 2)	Hourly Glasgow-Perth	2010	Nil
	Hourly Glasgow-Perth and hourly Perth-Arbroath	2011	<£0.5m
	Hourly Glasgow-Arbroath	Dec 2016	Nil
	Hourly Glasgow-Aberdeen	Post 2017	>£50m (as part of STPR Project 23)

Option sifting detail

The detailed sifting of each option is shown in Tables 2 to 4 below. These outline the stage at which options were rejected and the reasons for rejection where further clarification is of use.

Exist C.1	Change stopping pattern of Perth / Inverness - Glasgow express	S	✓	✓	Dec 2010	Nil	Nil	Reject - Stage 2 sift (planning objectives)
		M						
		L						
Exist C.2	Increase stopping pattern of Perth / Inverness - Glasgow express	S	✓	✓	Dec 2010	Nil	Southbound service would have to start earlier to meet available path from Stirling - Glasgow	Reject - Stage 2 sift (planning objectives)
		M						
		L						
Exist D.1	Change stopping pattern of Aberdeen - Edinburgh express	S	✓	✓	Dec 2010	Nil	Nil	Reject - Stage 2 sift (planning objectives)
		M						
		L						
Exist D.2	Increase stopping pattern of Aberdeen - Edinburgh express	S	✓	✓	Dec 2010	Nil	Southbound service would have to start earlier to meet available path from Dundee - Edinburgh	Reject - Stage 2 sift (planning objectives)
		M						
		L						
Exist E.1	Combined options Exist B.1, C.1 and D.1 (change stopping patterns of all current express services)	S	✓	✓	Dec 2010	Nil	Nil	Reject - Stage 2 sift (planning objectives)
		M						
		L						
Exist E.2	Combined options Exist B.2, C.2 and D.2 (increase stopping patterns of all current express services)	S	✓	✓	Dec 2010	Nil	Southbound services would have to start earlier to meet available paths into Edinburgh and Glasgow	Reject - Stage 2 sift (planning objectives)
		M						
		L						

TABLE 3 PROPOSED NEW SERVICE OPTIONS

Option Ref.	Description	Timeframe for realising planning objectives	Contributes to planning objectives?								Implementability			Decision	
			Ec1	Ec2	Acc 1	Env1	Env2	Sec 1	Int1	Int2	Time frame	Capital cost	Pathing constraints		
New A.1	Extension of proposed electric Glasgow - Dunblane service to new Dunblane North Station.	S										If linked to EGIP - Dec 2016	Estimated £5m for station plus £4m for OLE works.	Possible between Dunblane and Greenloaning SB's	Reject - Stage 2 sift (planning objectives)
		M	✓	✓	✓	✓				✓					
		L													
New A.2	Extension of proposed electric Glasgow - Dunblane service to new Greenloaning station.	S									If linked to EGIP - Dec 2016	Estimated £5m for station plus £10m for OLE works.	Possible between Dunblane and Greenloaning SB's	Reject - Stage 2 sift (planning objectives)	
		M	✓	✓	✓	✓				✓					
		L													
New A.3	Extension of proposed electric Glasgow - Dunblane service to new Blackford station.	S									2017+	Estimated £5m for station plus £20m for OLE works.	Possible between Dunblane and Greenloaning SB's	Reject - Stage 2 sift (planning objectives)	
		M													
		L	✓	✓	✓	✓				✓					
New A.4	Extension of proposed electric Glasgow - Dunblane service to Gleneagles station.	S									2017+	Estimated £3m for station and road improvements plus £22m for OLE and signalling works.	Possible between Dunblane and Greenloaning SB's	Reject - Stage 2 sift (planning objectives)	
		M													
		L	✓	✓	✓	✓				✓					
New A.5	Extension of proposed electric Glasgow - Dunblane service to Perth station.	S									2017+	Estimated £50m for OLE and signalling works. Additional rolling stock required.	Additional rolling stock required to meet available paths.	Reject - Stage 2 sift (planning objectives)	
		M													
		L	✓	✓	✓	✓	✓	✓		✓					
New B.1	Hourly Glasgow - Perth service (extends to Inverness some hours)	S	✓	✓	✓	✓	✓	✓		✓	Dec 2010	Nil	Minor conflict with current freight paths at Stirling - resolvable	Reject - Stage 2 sift (planning objectives)	
		M													
		L													
New B.2	Hourly Glasgow - Dundee service	S									Dec 2016	Nil	Pathing conflicts with HML and access to Glasgow Queen St. Difficult to implement until national timetable recast complete.	Reject - Stage 4 (packaging) - other 'B' options allow easier packaging over time, other Dundee splitting options rejected at Stage 3.	
		M	✓✓	✓✓	✓	✓	✓	✓	✓✓	✓					
		L													

New B.3	Hourly Glasgow - Perth service with two hourly extension to Dundee	S M L	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	Dec 2011	Nil	Minor conflict with current freight paths at Stirling - resolvable	Reject - Stage 2 sift (planning objectives) - possible sensitivity to B.1
New B.4	Hourly Glasgow - Arbroath service	S M L	✓✓ ✓✓ ✓✓ ✓ ✓✓ ✓ ✓ ✓	Dec 2016	Minor works at Arbroath <£0.5m	Pathing conflicts with HML and access to Glasgow Queen St. Difficult to implement until national timetable recast complete.	Accept - to be packaged with other 'B' options as steppingstones to full coverage (New B.6)
New B.5	Hourly Glasgow - Perth service with two hourly extension to Arbroath	S M L	✓ ✓ ✓✓ ✓ ✓✓ ✓ ✓	Dec 2011	Minor works at Arbroath <£0.5m	Minor conflict with current freight paths at Stirling - resolvable	Accept - to be packaged with other 'B' options as steppingstones to full coverage (New B.6)
New B.6	Hourly "all stations" Glasgow - Aberdeen service	S M L	✓✓ ✓✓ ✓✓ ✓ ✓✓ ✓ ✓✓ ✓✓	2017+	Major infrastructure works at Usan (£50m+).	Pathing conflicts with existing services at Usan, HML and access to Glasgow Queen St. Difficult to implement until national timetable recast complete.	Accept
New B.7	Hourly Glasgow - Perth service with two hourly extension to Aberdeen	S M L	✓ ✓ ✓✓ ✓ ✓✓ ✓ ✓	2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Pathing conflicts with existing services at Usan, HML and access to Glasgow Queen St. Difficult to implement until national timetable recast complete.	Accept - providing this is found to be implementable. To be packaged with other 'B' options as steppingstones to full coverage (New B.6)
New C.1	Hourly Stirling - Perth service	S M L	✓ ✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts.	Reject - Stage 1 sift
New C.2	Hourly Stirling - Dundee service	S M L	✓ ✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts.	Reject - Stage 1 sift

New C.3	Hourly Stirling - Perth service with 2 hourly extension to Dundee	S M L	✓ ✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts.	Reject - Stage 1 sift
New C.4	Hourly Stirling - Arbroath service	S M L	✓ ✓ ✓✓ ✓ ✓✓ ✓ ✓ ✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
New C.5	Hourly Stirling - Perth service with 2 hourly extension to Arbroath	S M L	✓ ✓ ✓ ✓ ✓ ✓ ✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
New C.6	Hourly Stirling - Aberdeen service	S M L	✓✓ ✓ ✓✓ ✓ ✓✓ ✓ ✓ ✓	2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
New C.7	Hourly Stirling - Perth service with 2 hourly extension to Aberdeen	S M L	✓ ✓ ✓✓ ✓ ✓ ✓ ✓	2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
New D.1	Hourly Perth - Dundee service	S M L	✓ ✓ ✓ ✓	Dec 2011	Nil	Minor shunting required at Perth - resolvable	Reject - Stage 2 sift (planning objectives)
New D.2	Hourly Perth - Arbroath service	S M L	✓ ✓ ✓✓ ✓ ✓ ✓ ✓ ✓	Dec 2011	Minor works at Arbroath <£0.5m	Minor shunting required at Perth - resolvable.	Reject - Stage 4 sift (packaging) - to be packaged in Pac A.2

New D.3	Hourly Perth - Dundee service with 2 hourly extension to Arbroath	S M L	✓ ✓ ✓ ✓ ✓ ✓	Dec 2011	Minor works at Arbroath <£0.5m	Minor shunting required at Perth - resolvable	Reject - Stage 2 sift (planning objectives)
New D.4	Hourly Perth - Aberdeen service	S M L	✓ ✓ ✓✓ ✓ ✓ ✓ ✓	2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 4 sift (packaging) - to be packaged in Pac A.4
New D.5	Hourly Perth - Dundee service with 2 hourly extension to Aberdeen	S M L	✓ ✓ ✓ ✓ ✓ ✓ ✓	2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 2 sift (planning objectives)
New E.1	Hourly Dundee to Arbroath service	S M L	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	Dec 2011	Minor works at Arbroath <£0.5m	Nil	Reject - Stage 2 sift (planning objectives)
New E.2	Hourly Dundee to Aberdeen service	S M L	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 2 sift (planning objectives)
New E.3	Hourly Dundee to Arbroath service with two hourly extension to Aberdeen	S M L	✓ ✓ ✓ ✓ ✓	2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 2 sift (planning objectives)
New F.1	Hourly Perth - Aberdeen service with reduction in express services	S M L	✓ ✓✓ ✓ ✓ ✓ ✓ ✓	Dec 2016	Nil	Aberdeen - Glasgow and Edinburgh express runs as a combined unit, splitting at Dundee. The "spare" path created to be used by a new stopping service. Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 2 sift (planning objectives) - performance risks for express services reduces performance against planning objectives

New F.2	Hourly Dundee - Aberdeen service with reduction in express services	S M L	✓ ✓ ✓ ✓ ✓ ✓ ✓	Dec 2011	Nil	Aberdeen - Glasgow and Edinburgh express runs as a combined unit, splitting at Dundee. The "spare" path created to be used by a new stopping service. Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 2 sift (planning objectives) - performance risks for express services reduces performance against planning objectives
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TABLE 4 PACKAGES OF NEW SERVICE OPTIONS

Option Ref.	Description	Timeframe for realising planning objectives	Contributes to planning objectives?								Implementability			Decision
			Ec1	Ec2	Acc1	Env1	Env2	Sec1	Int1	Int2	Time frame	Capital cost	Pathing constraints	
Pac A.1	Hourly Glasgow - Perth service plus hourly Perth - Dundee service	S	✓	✓	✓	✓	✓	✓	✓	✓	Dec 2010 and then Dec 2011	Nil	Minor conflict with current freight paths at Stirling - resolvable	Reject - Stage 2 sift (planning objectives)
		M												
		L												
Pac A.2	Hourly Glasgow - Perth service plus hourly Perth - Arbroath service	S	✓✓	✓	✓✓	✓	✓✓	✓	✓✓	✓	Dec 2010 and then Dec 2011	Minor works at Arbroath <£0.5m	Minor conflict with current freight paths at Stirling - resolvable	Accept
		M												
		L												
Pac A.3	Hourly Glasgow - Perth service plus hourly Perth - Dundee service with 2 hourly extension to Arbroath	S	✓	✓	✓	✓	✓		✓	✓	Dec 2010 and then Dec 2011	Minor works at Arbroath <£0.5m	Minor conflict with current freight paths at Stirling - resolvable	Reject - Stage 2 sift (planning objectives)
		M												
		L												
Pac A.4	Hourly Glasgow - Perth service plus hourly Perth - Aberdeen service	S	✓	✓	✓	✓	✓	✓		✓	Dec 2010 and then 2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Accept
		M												
		L			✓				✓✓					
Pac A.5	Hourly Glasgow - Perth service plus hourly Perth - Dundee service with 2 hourly extension to Aberdeen	S	✓	✓	✓	✓	✓	✓		✓	Dec 2010 and then 2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 2 (planning objectives)
		M												
		L							✓					
Pac A.6	Hourly Glasgow - Perth service plus hourly Dundee - Arbroath service	S	✓	✓	✓	✓	✓	✓	✓	✓	Dec 2010 and then Dec 2011	Minor works at Arbroath <£0.5m	Minor conflict with current freight paths at Stirling - resolvable	Reject - Stage 1 sift
		M												
		L												

Pac A.7	Hourly Glasgow - Perth service plus hourly Dundee - Aberdeen service	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010 and then 2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift	
		M												
		L							✓					
Pac A.8	Hourly Glasgow - Perth service plus hourly Dundee - Arbroath service with 2 hourly extension to Aberdeen	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010 and then 2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift	
		M												
		L							✓					
Pac A.9	Hourly Glasgow - Perth service plus hourly Perth - Aberdeen service (with reduction in express paths)	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010 and then Dec 2016	Nil	Performance risk for combining Aberdeen bound services at Dundee.	Accept - performance issues noted but gives low cost and early implementation if these can be resolved.	
		M			✓				✓					
		L												
Pac A.10	Hourly Glasgow - Perth service plus hourly Dundee - Aberdeen service (with reduction in express paths)	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010 and then Dec 2011	Nil	Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 1 sift	
		M												
		L												
Pac B.1	Hourly Glasgow - Dundee service plus hourly Dundee to Arbroath service	S	✓	✓	✓	✓	✓	✓	✓	Dec 2011 and then Dec 2016	Nil	Glasgow - Dundee operation had pathing conflicts with HML and access to Glasgow Queen St. Difficult to implement until national timetable recast complete.	Reject - Stage 3 sift comparative evaluation against Perth break in services	
		M	✓		✓		✓		✓					
		L												
Pac B.2	Hourly Glasgow - Dundee service plus hourly Dundee - Aberdeen service	S								Dec 2016 and then 2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 3 sift comparative evaluation against Perth break in services	
		M	✓✓	✓	✓	✓	✓	✓	✓✓					✓
		L			✓		✓							
Pac B.3	Hourly Glasgow - Dundee service plus hourly Dundee - Arbroath service with 2 hourly extension to Aberdeen	S								Dec 2016 and then 2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 3 sift comparative evaluation against Perth break in services	
		M	✓✓	✓	✓	✓	✓	✓	✓✓					✓
		L			✓		✓							

Pac B.4	Hourly Glasgow - Dundee service plus hourly Dundee - Aberdeen service (with reduction in express paths)	S	✓		✓	✓	✓	✓	✓	✓	✓	Dec 2011 and then Dec 2016	Nil	Performance risk for combining Aberdeen bound services at Dundee. Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 3 sift comparative evaluation against Perth break in services
		M	✓	✓	✓		✓		✓						
		L													
Pac C.1	Hourly Glasgow - Perth service with two hourly extension to Dundee plus hourly Dundee to Arbroath service	S	✓	✓	✓	✓	✓	✓	✓	✓	✓	Dec 2011 and then Dec 2016	Minor works at Arbroath <£0.5m	Minor conflict with current freight paths at Stirling - resolvable.	Reject - Stage 3 sift comparative evaluation against Perth break in services
		M			✓				✓						
		L													
Pac C.2	Hourly Glasgow - Perth service with two hourly extension to Dundee plus hourly Dundee to Aberdeen service	S	✓	✓	✓	✓	✓			✓	✓	Dec 2011 and then 2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 3 sift comparative evaluation against Perth break in services
		M													
		L				✓			✓						
Pac C.3	Hourly Glasgow - Perth service with two hourly extension to Dundee plus hourly Dundee to Arbroath service with 2 hourly extension to	S	✓	✓	✓	✓	✓			✓	✓	Dec 2011 and then 2017+	Signalling works at Usan to improve lighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 3 sift comparative evaluation against Perth break in services
		M													
		L				✓									
Pac C.4	Hourly Glasgow - Perth service with two hourly extension to Dundee plus hourly Dundee - Aberdeen service (with reduction in express paths)	S	✓	✓	✓	✓	✓			✓	✓	Dec 2011 and then Dec 2016	Nil	Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 3 sift comparative evaluation against Perth break in services
		M													
		L				✓									
Pac D.1	Hourly Stirling - Perth service plus hourly Perth - Dundee service	S	✓	✓							✓	Dec 2011 and then Dec 2016	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts.	Reject - Stage 3 sift comparative evaluation against Perth break in services
		M													
		L				✓									
Pac D.2	Hourly Stirling - Perth service plus hourly Perth - Arbroath service	S	✓	✓	✓	✓	✓	✓	✓	✓	✓	Dec 2011 and then Dec 2016	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
		M													
		L													

Pac D.3	Hourly Stirling - Perth service plus hourly Perth - Dundee service with two hourly extension to Arbroath	S	✓	✓	✓	✓	✓	✓		Dec 2011 and then Dec 2016	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
		M											
		L											
Pac D.4	Hourly Stirling - Perth service plus hourly Perth - Aberdeen service	S								2017+	Reinstate Stirling platforms 4&5 at circa £2m. Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L	✓	✓	✓✓	✓	✓	✓	✓				
Pac D.5	Hourly Stirling - Perth service plus hourly Perth - Dundee service with two hourly extension to Aberdeen	S								2017+	Reinstate Stirling platforms 4&5 at circa £2m. Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L	✓	✓	✓	✓	✓		✓				
Pac D.6	Hourly Stirling - Perth service plus hourly Dundee - Arbroath service	S	✓	✓	✓	✓	✓	✓	✓	Dec 2011 and then 2017+	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
		M											
		L											
Pac D.7	Hourly Stirling - Perth service plus hourly Dundee - Aberdeen service	S								2017+	Reinstate Stirling platforms 4&5 at circa £2m. Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L	✓	✓	✓	✓	✓	✓	✓				
Pac D.8	Hourly Stirling - Perth service plus hourly Dundee - Arbroath service with two hourly extension to Aberdeen	S								2017+	Reinstate Stirling platforms 4&5 at circa £2m. Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L	✓	✓	✓	✓	✓		✓				

Pac D.9	Hourly Stirling - Perth service plus hourly Perth - Aberdeen service (with reduction in express paths)	S								Dec 2016 and 2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 1 sift
		M	✓	✓✓	✓	✓	✓	✓	✓				
		L											
Pac D.10	Hourly Stirling - Perth service plus hourly Dundee - Aberdeen service (with reduction in express paths)	S		✓	✓	✓	✓		✓	Dec 2011 and 2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 1 sift
		M											
		L	✓						✓				
Pac E.1	Hourly Stirling - Dundee service plus hourly Dundee - Arbroath service	S				✓	✓			Dec 2011 and then 2017+	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
		M											
		L	✓		✓				✓				
Pac E.2	Hourly Stirling - Dundee service plus hourly Dundee - Aberdeen service	S								2017+	Reinstate Stirling platforms 4&5 at circa £2m. Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L	✓	✓	✓	✓	✓		✓				
Pac E.3	Hourly Stirling - Dundee service plus hourly Dundee - Arbroath service with two hourly extension to Aberdeen	S								2017+	Reinstate Stirling platforms 4&5 at circa £2m. Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L	✓	✓	✓	✓	✓		✓				
Pac E.4	Hourly Stirling - Dundee service plus hourly Dundee - Aberdeen service (with reduction in express paths)	S		✓	✓	✓	✓		✓	Dec 2011 and then 2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 1 sift
		M											
		L	✓										
Pac F.1	Hourly Stirling - Perth service with two hourly extension to Dundee plus hourly Dundee - Arbroath service	S				✓	✓			Dec 2011 and then 2017+	Reinstate Stirling platforms 4&5 at circa £2m and minor works at Arbroath <£0.5m.	Possible EGIP conflicts.	Reject - Stage 1 sift
		M											
		L			✓								

Pac F.2	Hourly Stirling - Perth service with two hourly extension to Dundee plus hourly Dundee - Aberdeen service	S	✓	✓	✓	✓	✓	✓	✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m. Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L											
Pac F.3	Hourly Stirling - Perth service with two hourly extension to Dundee plus hourly Dundee - Arbroath service with two hourly extension to Aberdeen	S	✓	✓	✓	✓	✓	✓	✓	2017+	Reinstate Stirling platforms 4&5 at circa £2m. Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 1 sift
		M											
		L											
Pac F.4	Hourly Stirling - Perth service with two hourly extension to Dundee plus hourly Dundee - Aberdeen service (with reduction in express paths)	S	✓	✓	✓	✓	✓	✓	✓	Dec 2011 and then 2017+	Reinstate Stirling platforms 4&5 at circa £2m.	Possible EGIP conflicts Performance risk for combining Aberdeen bound services at Dundee.	Reject - Stage 1 sift
		M											
		L											
Pac G.1	Hourly Glasgow - Perth service, plus hourly Perth - Dundee service, plus hourly Dundee - Arbroath service	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010, then Dec 2011 and then Dec 2016	Minor works at Arbroath <£0.5m	Minor conflict with current freight paths at Stirling - resolvable.	Reject - Stage 2 sift (planning objectives)
		M											
		L											
Pac G.2	Hourly Glasgow - Perth service, plus hourly Perth - Dundee service, plus hourly Dundee - Aberdeen service	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010, then Dec 2011 and then 2017+	Major infrastructure works at Usan (£50m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 2 sift (planning objectives)
		M											
		L											
Pac G.3	Hourly Glasgow - Perth service, plus hourly Perth - Dundee service, plus hourly Dundee - Arbroath service with two hourly extension to Aberdeen	S	✓	✓	✓	✓	✓	✓	✓	Dec 2010, then Dec 2011 and then 2017+	Signalling works at Usan to improve flighting on single track section (£10m+).	Difficult to implement until EGIP and national timetable recast complete.	Reject - Stage 2 sift (planning objectives)
		M											
		L											