7.0 Buildability Constraints – Junction 12 to 15

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Traffic Management – Conclusions

- Worst case scenario to highlight the extensive work and planning to design the traffic management
- Extensive/detailed TM modelling is recommended at specific locations on the network. Consideration given to hardshoulder running, narrow lanes, progressive closures etc.

7.0 Buildability Constraints – Junction 12 to 15 (Cntd)

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Constraints Summary

- Departures will be necessary regardless of the type of systems we use
- Departures will be required for working widths at some locations
- Departures required for setback at some locations
- Highmasts will not be relocated between 12 and 15 therefore barrier design will need to accommodate the high masts
- Barrier design will need to accommodate the gantry legs
- Diversion/protection work may be necessary before barrier replacement can take place
- Traffic Management – Significant and extensive delay will be encountered by travellers during the works. TM to be planned and managed, extensive modelling to take place.

8.0 Possible Solutions

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Design Requirements

- Safety barrier MUST be provided where the central reserve is less than 10m.
- Traffic flows >=25,000 vehicles per day a rigid concrete barrier with minimum H1 containment must be provided in England. In Scotland the use of concrete barriers is not mandatory.
- System will have a minimum containment of H1.
- At gantries very high containment H4a should be provided
- WW1 required to minimise the number of departures from standard

8.0 Possible Solutions - Continued

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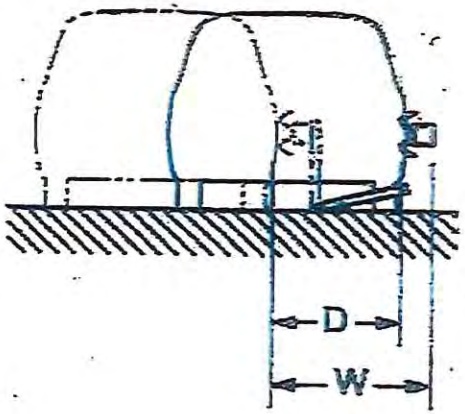
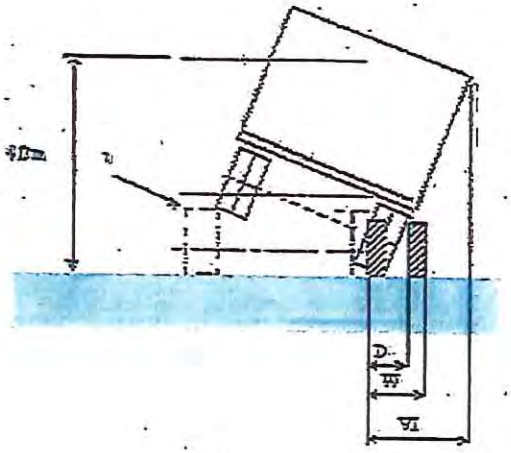
Design Requirements

- The Vehicle Intrusions (VI) needs to be taken account of as changes the available working width.

- Example – Hill and Smith "Hi Flex" product claims to be an H2 WW1 product, however the vehicle intrusion on the product is VI3 which ultimately makes the products working width the equivalent of WW3.





8.0 Possible Solutions - Continued

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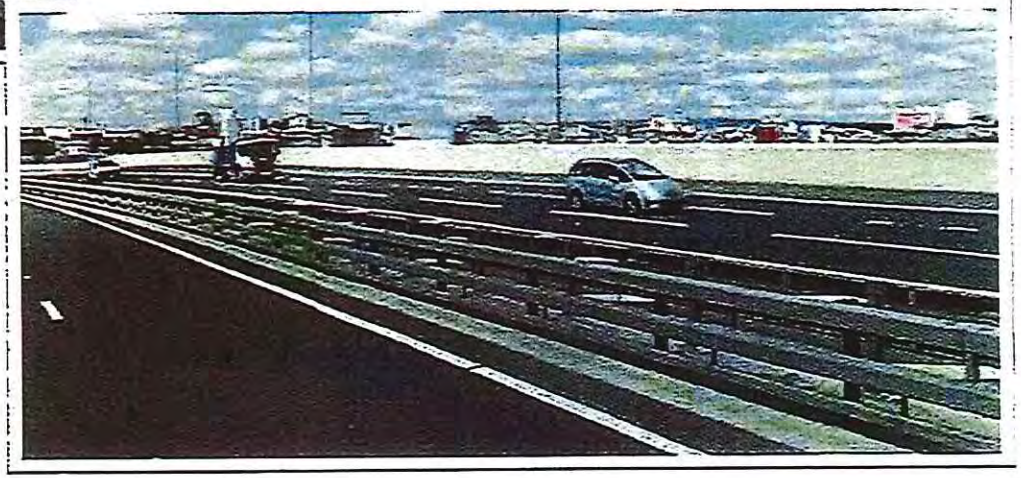
- Two main types of barrier on the market, concrete or steel.



- Jct 12 – 15 Requirements – WW1, VI1, H4a containment
- Is this type of system available?

8.0 Possible Solutions - Continued

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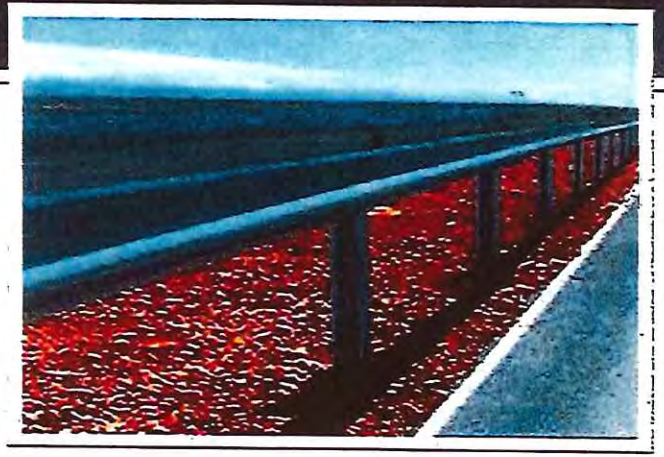
Steel Products

- H1 Containment - WW2, VI3 – 1 product sourced
- H2 Containment - WW2, VI2 – 2 products sourced
- H4a Containment - WW5, VI5 (1 safety barrier sourced, all rest are classified as parapet)
- Limited products available



8.0 Possible Solutions - Continued

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Concrete Products

- H1 Containment – Concrete products are generally H2. H1 products larger working widths.
- H2 Containment - WW1, VI1
- H4a Containment - WW6, VI7
- Limited products available
- Some products are precast, some in-situ

8.0 Possible Solutions – Continued

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Concrete V's Steel

Consideration	Steel	Concrete
Maintenance Regime	Ongoing throughout life of barrier.	Manufacturer's claim the barrier is maintenance free, however the drainage and debris maintenance can be more difficult.
Serviceable Life	20 years	50 years
Construction Time	Longer construction period on site than concrete for same length of barrier.	Shorter construction period on site than concrete for same length of barrier.
Flexibility	Can accommodate obstacles/street furniture	Not as easy to accommodate obstacles
Other	Can be used on bridge decks	May not be able to be used on bridge decks

8.0 Possible Solutions - Continued

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Summary

- No products on the market for the required working width/vehicle intrusion – Departure from Standards
- No very high containment barrier available with adequate working width/vehicle intrusion – Departure from standards
- Concrete is likely to be difficult to accommodate within a constrained central reserve and if concrete barrier was progressed this would likely need to be combined with sections of steel barrier. On this basis implement steel barrier solution.....THOUGHTS?

9.0 Construction Costs - Jct 12 to 15

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Item	Cost
Preliminaries	[redacted]
Traffic Management	[redacted]
Site Clearance	[redacted]
Safety Fence	[redacted]
Drainage	[redacted]
Earthworks	[redacted]
Pavements	[redacted]
Utility Diversions/Protection	[redacted]
40% Contingencies	[redacted]
Total	[redacted]

- Costs assume one phase
- Unlikely to be possible due to construction period
- If broken down into different zones costs would increase

10.0 Forward Planning

November 2014 to March 2015

Investigations

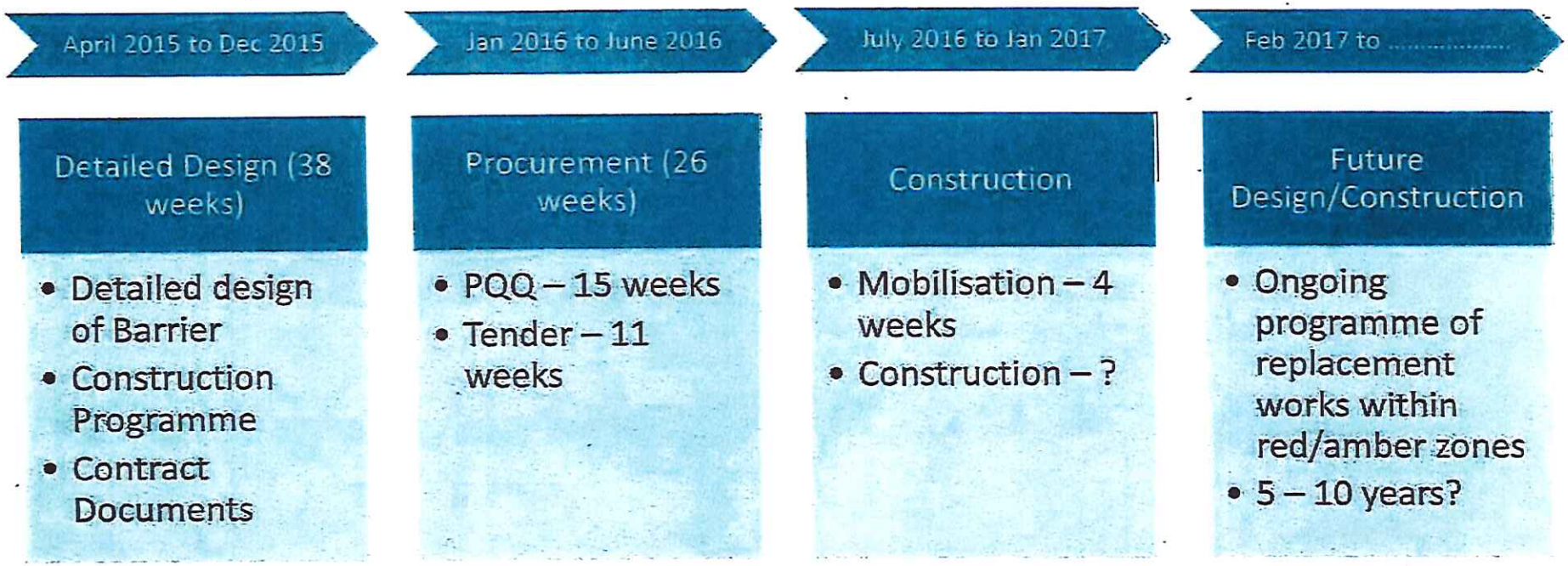
- Detailed Drainage Survey (CCTV)
- Trial Holes
- Additional Information from Mobile Surveys
- Environmental Surveys

Preliminary Design Tasks

- Priority Matrix
- Validation of TM Model
- Utility C2 Notices and Liaison
- TS Containment levels discussions
- TM Preliminary Design
- Preliminary Barrier Design

Investigation/Preliminary Design Cost Estimate [redacted]

10.0 Forward Planning



- Detailed Design Estimate [redacted] to end of Dec 2015 for construction Summer 2016
- Length of section to be constructed is unknown.
- Investigation/Design (including Modelling) will have a significant impact on the construction phasing

11.0 Conclusions

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- Barrier needs replaced as non-standard, life expired and non-proprietary and therefore cannot be defined or guaranteed.
- Condition surveys, push pull testing and accident data have been utilised to establish a priority system for the maintenance sequence
- Identified constraints that will need to be incorporated into design process including departures from standard
- Extensive traffic management planning and modelling
- Next Steps – Preliminary/Detailed design of Junctions 12 to 15.

STSV Incident Report

General Details	
Incident ID	00025049
Contract	STSW
Issued	28/12/2014 20:30:16
Status	O
Police Inc No	
Weather	
Other Cause	

Incident Details	
Incident Cat	RTC
Incident Type	MINOR
O/I Ref	
Defect Ref	SW14850598
Incident Description	RTC/ Barrier Damage

Organisation	Contacts	Contact Phone	Contact Mobile	Contact Email
Traffic Scotland	Traffic Scotland			

Location Details

Region	Route	Junction	Marker Post
	M8		

Location Description	M8 - Junction 14 W/B SW14850598				
Easting	260997	Northing	665887	Link/Section	

Vehicle Response

ISURef	Time Called	Time Allocated	Time Arrived	Time Departed
PAPA 1	29/12/2014 00:00:00	29/12/2014 00:00:00	29/12/2014 00:25:00	29/12/2014 01:25:00
PAPA 2	28/12/2014 20:30:00	28/12/2014 20:30:00	28/12/2014 20:45:00	29/12/2014 02:05:00
TM Crew	28/12/2014 20:40:00	28/12/2014 20:40:00	28/12/2014 22:00:00	29/12/2014 02:05:00
Nightshift	28/12/2014 22:40:00	28/12/2014 22:40:00	29/12/2014 00:15:00	29/12/2014 01:50:00

No Trace	False

Vehicles Involved

Make/Model	Vehicle Registration	Colour	Driver	Foreign Vehicle	Slight Injuries	Serious Injuries	Fatal Injuries
[redacted]		[redacted]		False	0	0	0

Damage

Single Sided Box Beam (OBB)	20 mtr central reservation open box barrier/ 7 posts

Action Date	Actions Taken
28/12/2014 20:33:00	From camera lane 4 closed
28/12/2014 20:36:00	email sent to transport emergencies in box.
28/12/2014 20:51:00	From [redacted] police require lanes 3/4 closed on the e/b and w/b carriageway [redacted] trapped in the vehicle.
28/12/2014 20:51:00	From [redacted] requires IPV vehicle and TM foreman .
28/12/2014 20:51:00	NCC called SWDO [redacted] he will arrange for IPV and TM Foreman to attend.
28/12/2014 20:51:00	updated email sent to Transport emergencies.
28/12/2014 20:51:00	From [redacted] eta for TM Crew 20 minutes.
28/12/2014 20:51:00	Papa 2 [redacted] updated .
28/12/2014 21:13:00	From police require lanes 3 and 4 closed in both directions state crash investigation are attending.
28/12/2014 21:13:00	police called for eta for TM NCC called Papa 2 eta 20 minutes.
28/12/2014 21:13:00	From Traffic scotland lane 4 of 4 closed on the e/b carriageway.
28/12/2014 22:05:00	updated email sent to transport emergencies inbox.
28/12/2014 22:23:00	From [redacted] currently putting on the TM he has assess the barrier state that it either going to need varioguard or lane closure to be left on.
28/12/2014 22:23:00	NCC called Duty Officer [redacted] he will contac [redacted] direct and call NCC with update.
28/12/2014 22:32:00	SWDE [redacted] updated.
28/12/2014 22:32:00	From Papa 2 [redacted] police are requesting [redacted] to attend to discuss barrier damage.
28/12/2014 22:32:00	NCC spoke to [redacted] he will attend .
28/12/2014 22:45:00	Traffic Scotland updated - [redacted]
28/12/2014 22:45:00	From Papa 2 crash investigation team at locus.
28/12/2014 23:53:00	From Papa 2 [redacted] police are looking for still saw to cut a bit of the barrier to take away as evidence.
28/12/2014 23:53:00	From Papa 2 [redacted] doesnt have a still saw on vehicle .
28/12/2014 23:53:00	From [redacted] Papa 1 to attend with still saw.
28/12/2014 23:53:00	Papa 1 will attend [redacted] updated.
29/12/2014 00:15:00	NCC called police scotland for update no details have been received from hospital as yet of injuries.
29/12/2014 00:19:00	SWDO [redacted] on site.
29/12/2014 00:42:00	From [redacted] off side lane closure will remain in place on the w/b carriageway he also advised they will hard cone where barrier has been it and also hard cone the e/b verge.
29/12/2014 00:42:00	Damage as follows 20mtr central reservation open box barrier and 7 posts.
29/12/2014 00:42:00	Traffic Scotland updated.
29/12/2014 01:23:00	From [redacted] - update on damage 10 beam and 12 post details given of vehicle but no registration number.
29/12/2014 01:23:00	NCC sending patrol driver to locus to spot grit closure .
29/12/2014 01:23:00	From [redacted] off side lane closure w/b will remain in place arrangement will be made tomorrow for barrier repair.
29/12/2014 01:23:00	Debris removed
29/12/2014 01:23:00	email sent to Transport emergencies inbox
29/12/2014 01:23:00	email sent to [redacted]