

JACOBS			
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Scheme Title: M6 Junction 19 Improvements			
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Subject: M6 Junction 19 Improvements – Alternative Configuration Technical Note – Option 9			

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Introduction

Following the Public Information Exhibition, a member of the public presented a concept (refer to Appendix A). The proposed concept outlined an alternative arrangement for improvements at M6 Junction 19.

The originator of the concept proposed this alternative arrangement would introduce a free flow link (M6 Northbound to A556 Northbound) using a tunnelled section passing under the M6 J19 roundabout.

The design team reviewed this proposal to consider its validity in terms of geometry and design standards, but also its impact on other links, infrastructure and the network operation.

It should be noted that the concept required refinement to present a feasible solution by way of introduction of the following:

- A development of the merge to A556 to the north of the roundabout to remove the weaving section it would introduce.
- Closure of A556 northbound exit slip road due to vertical displacement of highway due to overbridge.
- Refinement of side roads in the vicinity of Over Tabley to maintain appropriate connectivity due to impact of slip road closure stated above.

This option shall be referred to as Option 9.

Alternative Option Description

The proposed alternative option includes the following:

- A new free flow link on a tunnel structure from M6 northbound to A556 northbound.
- Diverge from M6 J19 exit joins parallel link road for Knutsford services northbound exit to meet M6 J19 circulatory carriageway.
- New link road parallel to M6 mainline from the Knutsford Services exit point and joins the realigned J19 Northbound exit slip road.
- Close Knutsford Services connection to M6 mainline.
- New link road parallel to A556 northbound from J19 connecting to side road/Over Tabley Junction.
- New A556 northbound merge and entry slip road at Over Tabley Junction.

The proposed layout caters for all existing movements. However, the cost of the proposed work and the impact of construction works on local communities would be significant.

The junction arrangements at Pickmere Lane Junction previously presented in Options 1 & 7 are unaffected by these proposals.

Assessment

This option has been considered in terms of highway geometry, transportation and environmental impacts.

The highway has been analysed by the Design Team with reference to DMRB TD9/93, TD27/05 and TD22/06.

A layout configuration and long section were developed and are shown in Appendix B:

- HA548641-JAC-GEN-M6J19-Opt 9-WM-002 – Geometric Parameters
- HA548641-JAC-GEN-M6J19-Opt 9-WM-003 – Longitudinal Section

Details of the generic geometric parameters attributable to the proposed layout option are shown.

The alternative configuration has been reviewed against the DMRB with the primary consideration being safety and the appropriate flow of traffic. Additional aspects such as general road safety, environmental impacts, network capacity, infrastructure cost and potential building demolition have been considered as part of the assessment for these alternative options.

Assessment Summary	
Pros	Cons
- Free flow link between M6 Northbound and A556 Northbound. - Reduction of traffic demand to the roundabout due to free flow link improving circulatory carriageway efficiency. - Removal of short M6 mainline weaving section. - Increased capacity of J19. - Reduction in noise for tunnelled free flow sections	- Extensive earthworks. - Excavated spoil and waste transport. - Major structural features required. - New road schemes, currently being constructed, will be removed by this option. - Construction of 450m long tunnel structure. - Drainage of tunnel would require pumping introducing operational concerns. - Significant increase in number of maintenance tasks as a result of proposed tunnel. - Land acquisition required. - Demolition and reconstruction of two bridges to accommodate new link road. - Moves M6 Northbound exit slip road closer to residential properties potentially increasing noise and visual intrusion. - Construction issues relating to close proximity of proposed works to existing infrastructure and the resulting impact on foundations (movements, etc.). - Construction management maintaining traffic flow on existing road network, traffic management.

Cost Comparison to Current Scheme

During PCF Stage 1 a similar free flow scheme, involving a large bridge structure (Option 6) was presented and valued by the Design Team at an estimated value £220m. Whilst Option 10 does present a tunnelling solution for the free flowing element, the layout and associated side road works do have similar configurations.

However, the extents for the works for Option 9 do exceed those within Option 6 and also introduce the tunnel structure in replacement of the overbridge structure, it is therefore concluded that the estimated value for this scheme would exceed £220m.

Conclusion

This Alternative Option would comply with the key objectives for the scheme which are:

- Improve access to key employment locations and increase capacity – The free flow movements and new link roads would reduce congestion around the circulatory carriageway and increase capacity at this Junction.
- Improve the operation and efficiency of existing transport network – The proposed free flow tunnel allows a large proportion of traffic to bypass the J19 circulatory carriageway.
- Improve safety for all road users and reduce accident risk – Road safety will be improved for the traffic which is now able to bypass the J19 circulatory carriageway.

However, the alternative configuration would have a higher environmental impact and incur additional significant additional costs, further compromising the benefit cost ratio.

The Design Team recommend discarding this alternative option.

Appendix A. Email Received after Public Information Exhibition

Below is an extract of the transcript presented by a member of the public at the Public Information Exhibition.

Yes - clearly lowest cost is all that has been considered when designing and selecting options for this consultation

You have failed to identify a solution which matches the following clear requirements:-

1. M6 J19 is a KEY INTERCHANGE in the main vehicular route between Birmingham/London and Manchester, the three biggest cities in the UK - the A556 improvement scheme recognises this by providing free flow slip roads at the M56 end - options presented here should provide equivalent solutions for the M6 end of the A556 route
2. M6 J19 Northbound Exit Slip is TOO close to the Knutsford Services Northbound Entry Slip for the volumes of traffic that use M6 J19 creating a safety hazard because of significant weaving of traffic between these two junctions - options presented here should provide a solution to resolve this dangerous piece of road

I understand the original scheme here provided separate free flow routes for traffic between the M6 and proposed A556(M) was extremely complex and expensive - from Cheshire East it was this:

<http://stevenicklin.com/images/random/originalm6a556junction.jpg>

I would like to propose a simpler scheme which deals directly with the two issues I have highlighted WITHOUT overengineering as follows:-

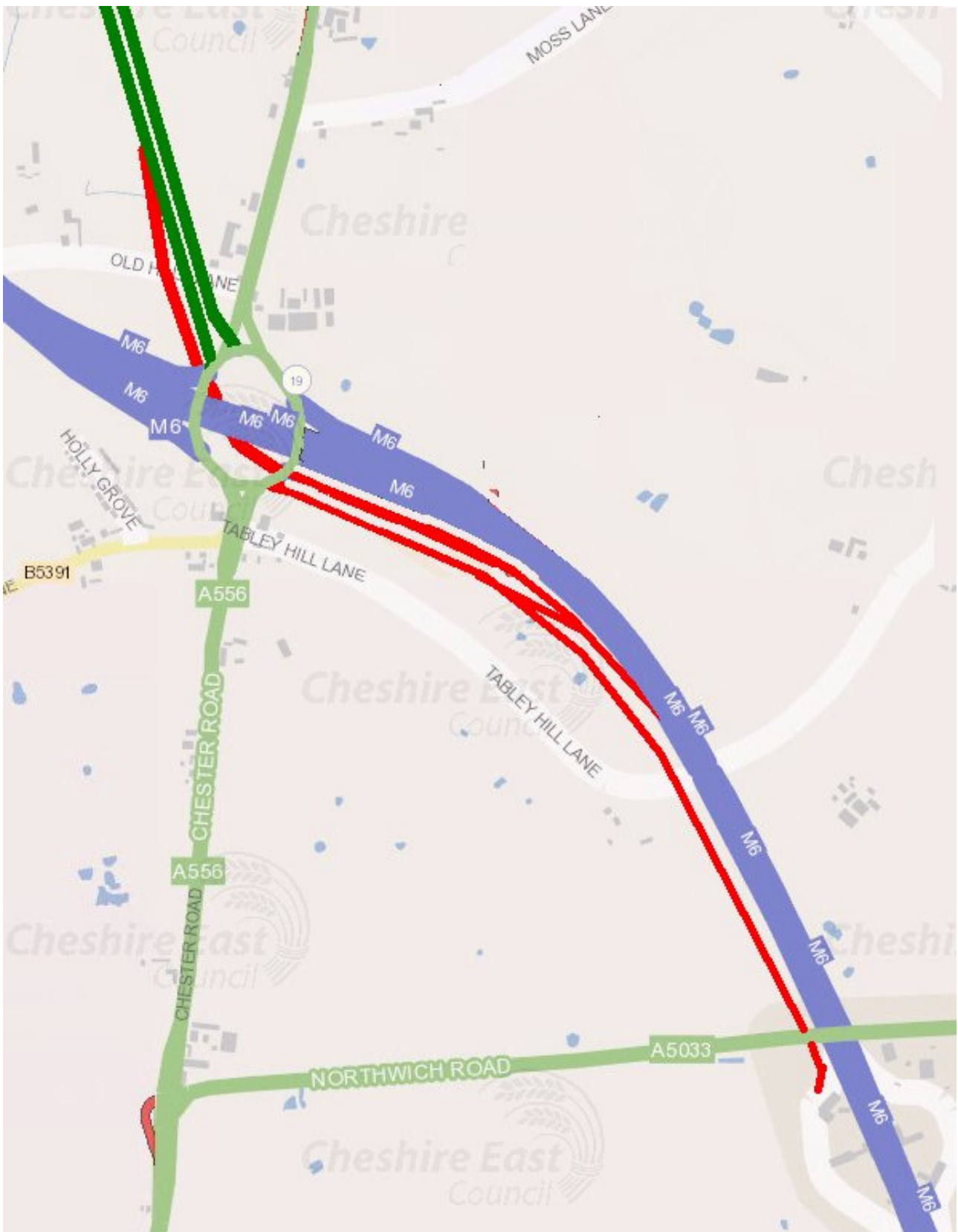
Simple plan is

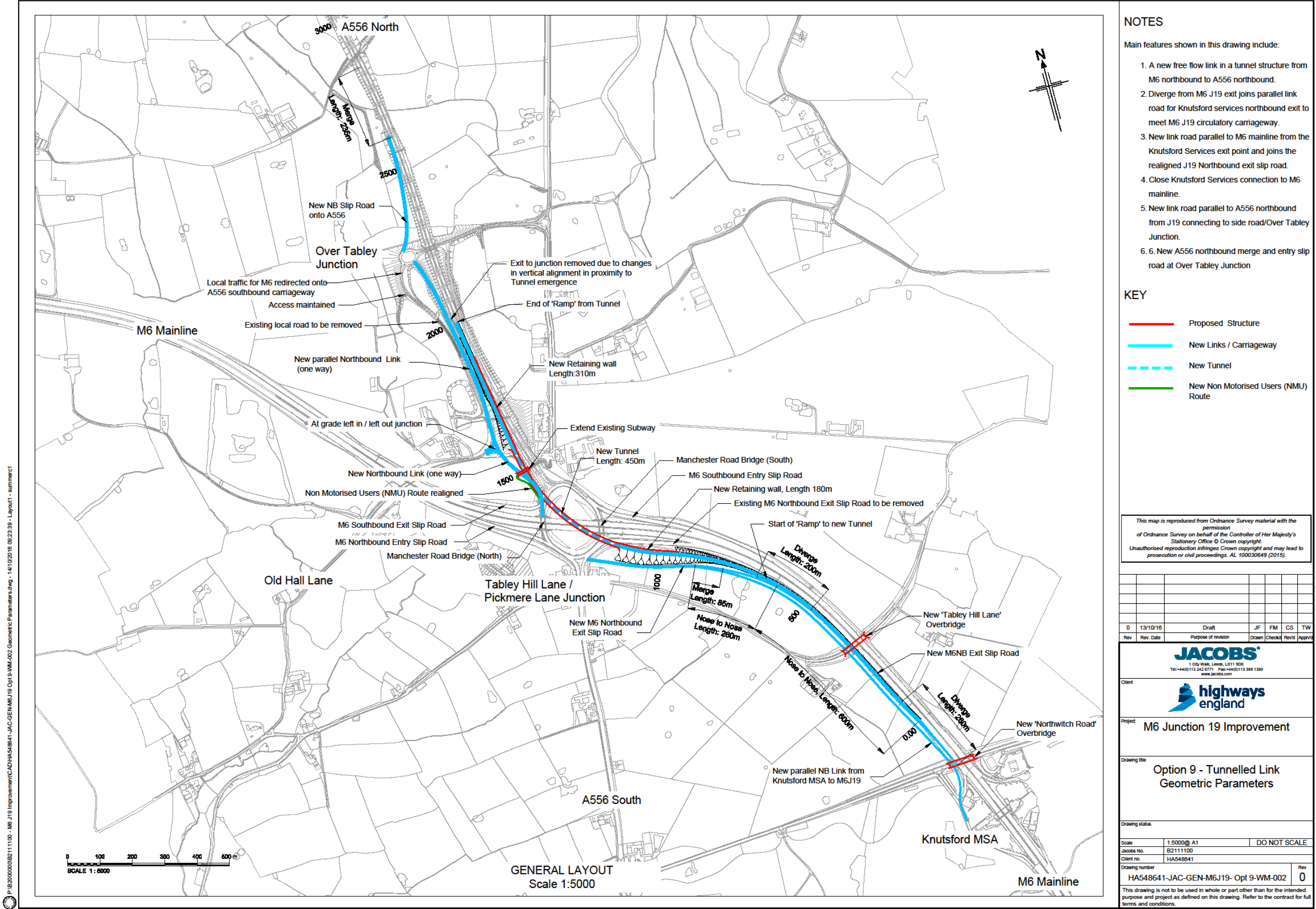
<http://stevenicklin.com/images/random/simplefreeflowm6a556junction.jpg>

The key elements are as follows:-

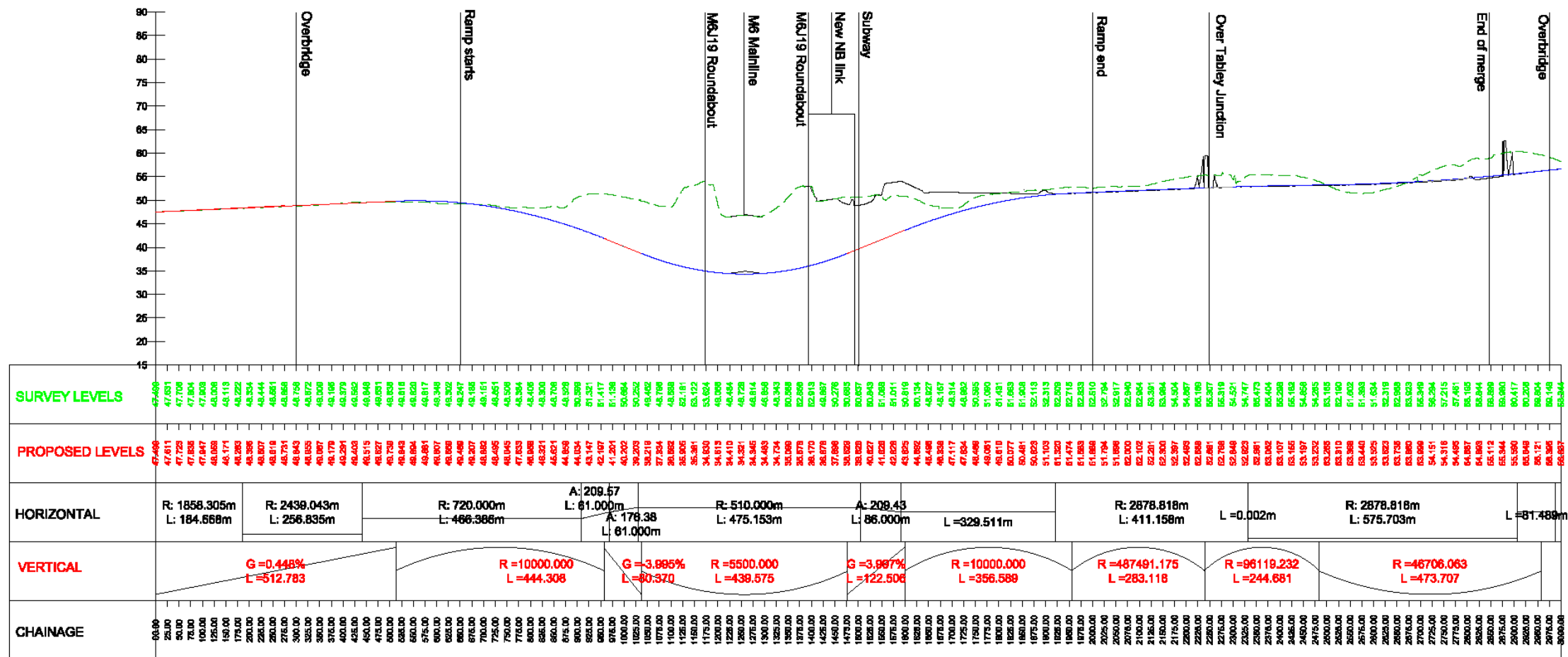
1. The Knutsford Services northbound exit slip does not return directly to the M6, rather it runs a separate lane alongside the M6 and joins a realigned J19 northbound exit slip (and from there northbound traffic leaving Knutsford Services can rejoin the M6 on the J19 northbound entry slip). This would be a similar design to that deployed at the M5 Strensham Services Southbound exit slip and the M5 J8 Southbound exit slip to the M50 roundabout (albeit below the M5).
2. The M6 J19 northbound exit can now be more than doubled its length and made full two lanes wide - halfway along it splits - the left fork joining the realigned and elongated Knutsford Services northbound exit to meet the M6 J19 roundabout. The right fork (actually straight on) descends into a tunnel which curves to the right under the M6 and roundabout at J19 before resurfacing alongside the new A556 scheme northbound lanes before joining them. This would be a similar design to that deployed at the M62 eastbound to M1 northbound free flow slip.
3. All other connections to the M6 J19 roundabout remain as being delivered by the A556 scheme - A556 southbound to M6 free-flow southbound is already catered for in the current A556 scheme.

This would deliver transformational benefits (as compared to the current situation, Option A or Option B) both in congestion and hazard mitigation for all users of M6 J19, with a cost, although greater than either of Option A or Option B which is appropriate for the benefits it delivers.





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Longitudinal section - Tunnelled Link
SCALE: H 1:5000,V 1:500. DATUM: 15.000

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Project
M6 Junction 19 Improvement

Drawing title
Option 9 - Tunnelled Link
Longitudinal section

Drawing status

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