Review of Options to Improve Visual Amenity of Electrification in Areas of Outstanding Natural Beauty (AONB)

# Appendix 4 - Summary of Assessments (page 1 of 2)

| Option Ref | Options passing 1st filter: | 1st Stage Filtering | Visual Improvement Factor | Impact Factor | Score | Comments/Options to take forwards |
|---|---|---|---|---|---|---|
| G416b | Rigid headspan ( and ATF moved) | Pass | 75 | 68 | 51.0 | 1a (1a or 1b depending if ATF can be moved) |
| AS2 | Amend structure - more beautiful sections (+ATF moved) | Pass | 70 | 67 | 46.9 | 2a (2a or 2b depending if ATF can be moved) |
| G416 | Rigid headspan | Pass | 70 | 62 | 43.4 | 1b (1a or 1b depending if ATF can be moved) |
| VTTC | Viaduct back to back TTC (as per Moulsford GA) | Pass | 60 | 68 | 40.8 | 3a |
| VTTC2 | Use viaduct TTC on 2 track sections | Pass | 60 | 68 | 40.8 | 3b Note - this is for the 2 track sections |
| PSC | Portal structure - radius (curved) | Pass | 60 | 65 | 39.0 | 4 |
| AS1 | Amend structure - more beautiful sections | Pass | 60 | 61 | 36.6 | 2b (2a or 2b depending if ATF can be moved) |
| VP | Viaduct Portal (as per Moulsford GA) | Pass | 50 | 68 | 34.0 | 3c in conjunction with 3a depending on site constraints (3a preferable) |
| N108 | Standard Headspan | Pass | 70 | 34 | 23.8 | 5 |
| SL1 | Standard lattice beam | Pass | 35 | 68 | 23.8 | 6 |
| ATF | ATF removal plus upstands | Pass | 30 | 74 | 22.2 | 7 |
| N109 | Brace structure to make smaller | Pass | 30 | 65 | 19.5 | 8 |
| A203 | Green Bridge/tunnel | Pass | 30 | 64 | 19.2 | 9 |
| N113 | Longitudinal Headspans to increase span | Pass | 70 | 26 | 18.2 | Does not provide any improvement over standard headspan plus there will be more issues with this therefore not being progressed. |
| A106 | Mix of headspans/portals | Pass | 35 | 49 | 17.2 | 10 |
| K117 | Move ATF inboard | Pass | 20 | 71 | 14.2 | Low score - not being progressed. |
| P5 | Painting - Mirror painting /mirrored steelwork | Pass | 20 | 68 | 13.6 | 11 * Painting options |
| N115 | Boom material non conductive & remove small parts steel | Pass | 50 | 27 | 13.5 | Given that there is a structure already designed that provides similar visual improvement - no merit in progressing this given how long it will take to develop/prove and implement. |
| N106 | Remove longitudinal loads - slimmer structures | Pass | 20 | 57 | 11.4 | Given that there is a structure already designed that provides greater visual improvement - no merit in progressing this. |
| P3 | Painting - graduated colour | Pass | 15 | 68 | 10.2 | 11 * Painting options |
| P4 | Painting - camouflage | Pass | 15 | 68 | 10.2 | 11 * Painting options |
| P6 | Painting - different colours post to beam | Pass | 15 | 68 | 10.2 | 11 * Painting options |
| P7 | Painting - heat sensitive paint (need review if technology) | Pass | 15 | 68 | 10.2 | 11 * Painting options |
| S423 | Textured coating | Pass | 15 | 68 | 10.2 | 11 * Painting options |
| P2 | Painting - aged colour | Pass | 12 | 68 | 8.2 | 11 * Painting options |
| N105 | Bigger structures further apart | Pass | 10 | 79 | 7.9 | Low score - not being progressed. |
| P1 | Painting - single colour | Pass | 10 | 68 | 6.8 | 11 * Painting options |
| TSC | Using timber, stone or concrete as alternative material | Pass | 10 | 65 | 6.5 | Low score - not being progressed. |
| TL | Lower track levels (to lower height of system) | Pass | 10 | 55 | 5.5 | Low score - not being progressed. |
| DN | Do Nothing | Pass | 0 | 76 | 0.0 | Baseline with Series 1 OLE installed |
| | | | | | | * Painting options to be assessed on their own (on Series 1) and in combination with amended structures options |

| Option Ref | Landscaping options (may be and/or other options depending on location): - Assessments have not been completed for these | | |
|---|---|---|---|
| F309 | Natural screening (vegetation) | To be assessed relative to identified receptors in addition to other options | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| N314 | Earth bunds | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| K311 | Man made screen | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| K105 | Strategic planting | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| G407 | Compensatory landscape mitigation | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| G408 | Offsetting i.e. do something good i.e. planting somewhere else | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| N319 | Relocate mature trees | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| K322 | Influence viewer - i.e. move footpaths | Would need to be assessed following wider LVIA | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| K214 | Obstruct the view (close to the railway) | Landscaping as above - need wider LVIA first | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| K215 | Obstruct the view (close to the viewer) | Landscaping as above - need wider LVIA first | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| K324 | Waterfall wall at viewpoint | | 12 - All of these are to be retained pending wider LVIA/matching to amenity |
| | Other options: | | |
| K113 | Use Rock anchors in cutting rather than portals | Very site specific - cutting only where it is anticipated visual impact will already be low - does not cover other areas. LVIA to assess. | |
| K116 | Reduce electrical clearances - challenge standards | Review & assess. Note in report at this stage. | |
| F210 | Higher parapets at overbridges | Need wider LVIA to assess if this is beneficial. | |

# Appendix 4 - Summary of Assessments (page 2 of 2)

| Option Ref | Rejected Options (Did not pass 1st filter): | 1st Stage Filtering | Basis for Rejection (note further explanation within individual sheets) |
|---|---|---|---|
| N104 | Smaller masts closer together | Reject | Visual impact |
| N201 | Coasting | Reject | DfT rolling stock strategy & Linespeed |
| N207 | Reduced structural requirements by reducing speed | Reject | Linespeed |
| N208 | 3rd Rail (also 4th Rail) | Reject | DfT rolling stock strategy & Safety |
| N211 | Cut & cover/cut and lower line | Reject | Overall Environmental Impact & Timeframe |
| N213 | Re route the line | Reject | Overall Environmental Impact & Timeframe |
| K128 | Large structure/Statement Structure | Reject | Visual impact |
| F207 | Maglev | Reject | DfT rolling stock strategy |
| K211 | Cut & cover - differentiate between fast and slow lines i.e. fast on top | Reject | Overall Environmental Impact & Timeframe |
| F305 | Painting - Artwork | Reject | Visual impact |
| K224 | Camouflage netting/synthetic Ivy/vegetation | Reject | Visual impact & safety |
| K304 | Cladding | Reject | Visual impact |
| F213 | OLE activated by trains (comes out of 4 foot) | Reject | Safety, timeframe, DfT rolling stock strategy & linespeed |
| K219 | Rising/falling OLE (like rotary washing line) | Reject | Timeframe |
| K226 | Reduced number of tracks or bi-directional tracks | Reject | Timeframe |
| G426 | Use the moulsford viaduct TTC structures staggered | Reject | Visual impact |
| G427 | Use Series 1 TTC's staggered instead of portals | Reject | Visual impact |
| K105 | Use different shape portal -(see photo from presentation) - TGV | Reject | Visual impact |
| A323 | Transparent/translucent FRP | Reject | Visual impact |
| A321 | Glass structures (opaque or Transparent) | Reject | Visual impact & timeframe |
| K201 | Different form of power for trains (batteries, flywheels, diesel, gas turbines, linear induction motor) | Reject | DfT rolling stock strategy |
| K220 | 25kV in track (low level) with system switched on when train is in section | Reject | DfT rolling stock strategy, Safety & Timeframe |
| K325 | Slipform wall down 10 ft | Reject | Visual impact, timeframe & safety |
| A205 | Multiple pantographs to eliminate section of wire | Reject | DfT rolling stock strategy & Visual impact |
| A327 | Convert stantions to 'tree structure' | Reject | Visual impact |
| F320 | Turn structures into a sculpture (sails, allow movement) | Reject | Visual impact |
| N110 | Modify structures to look Victorian by adding to them | Reject | Visual impact |
| N303 | Artificial Fog | Reject | Timeframe |
| N216 | Use trees as masts | Reject | Safety |
| K218 | Distraction i.e. Angel of the West | Reject | Visual impact |
| K216 | Compensation | Reject | Visual impact |
| K217 | Engage the community (get them to build it) | Reject | Visual impact |
| K323 | Solar Panels | Reject | Visual impact, timeframe & safety |
| S422 | Ultra black paint | Reject | Visual impact |
| HS2 | Concept structures as per HS2 design competition | Reject | Timeframe |