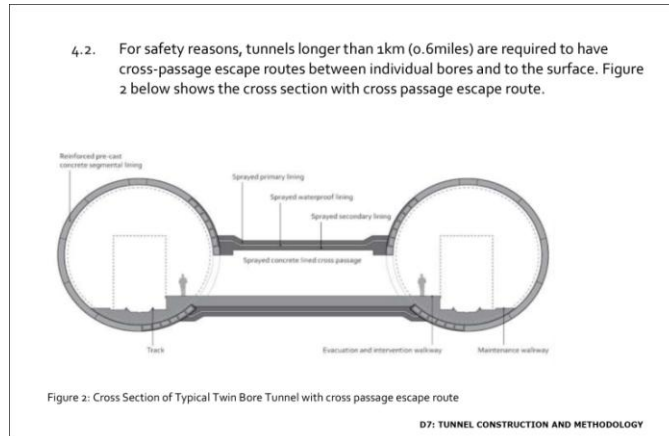


Tunnel Safety Areas

In the proposed two bore system, the safety area is the other tunnel



0761 / 45

Tunnel Safety Areas

- In the case of HS2 the other tunnel has up to 18 trains per hour, running at 320kph.
- In the event of an incident, both tracks must be halted, requiring challenging technical control systems
- HS2 admit in a review of Safety that the other tunnel *could not be considered* as a safe area
- A three bore tunnel system offers a safe area in the central tunnel, which can be sealed from both operating tunnels

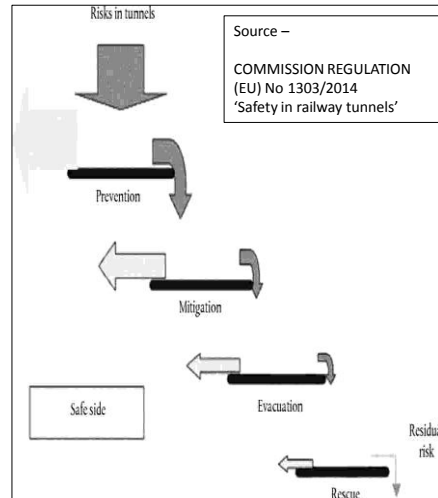
0761 / 46

Tunnel Safety - Risk Management

Best practice Safety Management requires -

- Highest priority to be given to risk 'avoidance', as the best means of 'prevention'
- Rigorous safety assessment of alternatives
- Use of 'Safety Case' disciplines

Key issue for Select Committee –
Can the higher level of public safety provided by a Three-Bore tunnel be discounted?



0761 / 47

Tunnel Safety Assessment

- It is in the public interest that the higher safety benefits of a three bore tunnel are not rejected in order to achieve lower costs
- The only way this can be assured is by the Select Committee requiring all main tunnelling options to be subjected to rigorous comparative safety assessment by independent specialists

0761 / 48

A Three Bore Tunnel – Key Factors

- Improved safety
- Same design concept as Channel Tunnel
- Two tunnels for trains
- Central tunnel for services and safety area
- No need for fire fighting area (intervention gap)
- No vent shafts

0761 / 49



Three Bore Tunnel - Advantages

A three bore tunnel across the Chilterns AONB:

- Reduces operational safety risks by providing a sealed safety area independent of the other operational tunnel
- Only option which eliminates damage to the AONB
- Substantially reduces impacts on
 - local communities
 - commuting
 - emergency services
- Enables
 - Deeper tunnels
 - Operational benefits with virtually no incline on the track
 - Efficient link with Hillingdon Council's tunnel proposal

0761 / 50



Three Bore Tunnel – Costings

Additional Construction Cost

Estimated at £750m more by HS2

Offsets

Economic disbenefits to Chiltern District Council	£170m
Economic disbenefits on Aylesbury Vale DC	£170m
Compensation payments and land costs – estimate	£ 50m
No landscape impacts	£114m
Sub total	£504m

Tunnelling 24 hours / 7 days per week compared with construction for
8 hours per day 5½ days per week

Most of the spoil will be chalk which could be sold for cement
manufacturing

0761 / 51

