HS2 width

Fencing of various heights, depending on local conditions, would be used along the length of the route for safety and security reasons. Typically the distance between fences would be 22 metres wide on level ground in open country. This would provide space for:

- two sets of tracks (one northbound and one southbound);
- masts to hold overhead power lines over the track;
- communications cables;
- drainage; and
- an access road alongside the track for maintenance purposes wherever practical.

Putting the line in cutting or on embankment would require the overall width to be greater due to the need for a cutting or embankment slope. This slope area would be landscaped and grassed or planted with vegetation depending on what was agreed as appropriate in any particular location. The width in this case would be determined on an individual basis, depending on the steepness of the cutting or embankment slope. In urban areas, however, where line speed would be lower and surface route options are very constrained, it would be possible to reduce the width to an absolute minimum width of 15 metres.

What does the cross-section look like?

Cross section of a high speed rail line

Source: HS2 Ltd

The distance between the centre of the tracks is determined by line speed (the speed at which the train would be travelling). The track spacing for the HS2 track between centre lines is typically five metres. On existing two track rail
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lines track spacing is about three and a half metres. Masts for power lines would typically be spaced about 60 metres apart as on other electrified railways.

Comparison of the widths of a motorway and a two-track high speed railway

What can cause the width of the railway to vary?

Cutting
If the route was in a cutting, we would need additional width. The width would depend on the gradient of the cutting (the steeper the sides, the narrower the width).

Embankment
If the route was on an embankment (a section of track built-up often using material excavated from a cutting), it would also be wider. Width would depend on the gradient of the embankment (the steeper the sides, the narrower the width). We could use special materials to strengthen the embankment and make the sides steeper.

Urban areas
In built-up areas, we may be able to reduce the railway’s width in order to reduce the impacts on local communities. We can only do this though where slower line speeds enable the track spacing to be closer together, and where we can manage safety considerations for operations and maintenance without a dedicated access road. The minimum width achievable in this case is 15 metres (compared with 22 metres in normal situations).

Vegetation management
One advantage of vegetation near the proposed railway is that it would act as screening and we estimate we would plant some two million trees along the line of route. To prevent leaves on the line and other potential issues we would manage and control the vegetation along the edge of the route. We would expect to work with adjacent land owners on a case-by-case basis to achieve this. Important things to consider include tree types (e.g. whether they drop leaves), the area’s importance (e.g. whether it is historic woodland) and the local landscape (e.g. would the trees be above or below the level of the railway). We would seek to use planting that blends with the local environment as far as possible and to keep any removal of vegetation to a minimum.

The High Speed 1 route in a shallow cutting

Source: © Arup
If you would like more detail on this topic

Please visit our website – http://highspeedrail.dft.gov.uk/ – where you can view the “High Speed Rail: Investing in Britain’s Future – Consultation” and all the documentation published alongside it, as well as detailed maps of the proposed route between London and the West Midlands and images and visualisations.