Eastcote resident questions for HS2

- **Why not use existing train lines (route along the Piccadilly and Metropolitan lines)**

UKPN, who are the local electricity network operator in the area, will be providing the Tunnel Boring Machine (TBM) power supply on behalf of the HS2 project. This supply will then be used to power HS2 plant and equipment within the tunnels between Ruislip and Euston during the subsequent operation of the new railway.

UKPN have assessed a number of potential cable routes between their North Harrow substation and West Ruislip. This has included a route along the Piccadilly and Metropolitan railway corridor.

However any cable route alongside a railway line needs to be easily accessible to UKPN for inspections and emergency repairs 24 hours a day, seven days a week. This would only be possible along the railway if the route was either behind a physical barrier, or over two metres away from the tracks along its entire length – otherwise UKPN operatives would need specialist training to access the high risk area, and underground trains would have to be stopped to enable UKPN to reach, and then work on the cables.

Any cable route onto the railway would also need to be via existing public rights of way to avoid third party land where access rights would be unlikely to be obtained.

Based on the above constraints and because of the many bridges and other narrow pinch points found along the railway, a route running the full length of the line is not practical.

Using London Underground's existing cable hangers along the route was also considered, but again is not feasible as they are already full with any visible spare space already allocated for other London Underground projects. There would also be a risk that the new UKPN power supply could interfere with other London Underground equipment such as the signalling system also running along these routes.

UKPN did consider a route that utilised a short section of railway land that was more accessible between Ruislip and Eastcote stations. However, this would require diverting the cable route away from the current proposed residential areas, onto sections of heavily congested main roads just to reach this relatively short section. This was considered to be more disruptive to the local community than simply continuing along the currently proposed chosen route.

In summary, HS2 via UKPN, have considered running the cable route alongside the nearby train tracks, however the route has been discounted due to the accessibility constraints detailed above.

- **Why not use a supply to the west as it wouldn't have caused inconvenience**

The tunnel Boring Machine requires a high capacity 20MVA power supply, which is only available from larger primary substations.

There are only two options available in the local West Ruislip area, see map above. Any other option would require even longer and more disruptive routes from primary substations much further afield.

The original option proposed in the HS2 Hybrid Bill was a Scottish and Southern Energy (SSEN) supply located approximately 4km south west of West Ruislip station. This option was based on tapping onto a nearby high voltage overhead power line with a new large transformer substation building to change the voltage down to 33kV located south of the A40.

Various options were being considered for the cable route from this location to West Ruislip station, but they would all have required some element of routing along main or residential roads. The most direct route would have been an approximately 4.5km route crossing the A40 onto Swakeleys Road and High Road Ickenham before turning back into the Golf Club off Ickenham Road.

However, the HS2 project was not able to formally secure this supply and develop the scheme further until we had been granted Royal Assent in 2017. In the meantime the available electrical power capacity from this location was secured by another customer. This meant that an alternative supply was required with the only viable one being the UKPN supply via the North Harrow substation which has subsequently been progressed by the HS2 project.

The map also shows another grid supply point at Ickenham (Harefield). This is a new facility that is being created on behalf of the HS2 project, but as this is not due to be completed and

operational until much later in the programme (after 2023) and is not an option for the West Ruislip TBM power supply which is required in 2021.

- **Damage to gas mains (run along the centre of the roads with spurs off to each house) explosions damage to property**
- **Ditto water mains sewers and storm drains. Infrastructure 80-90 years old, fragile, digging 1.6m deep trenches will cause disturbance and later subsidence could cause these pipes to fracture.**
- **Electricity cables, telephone cables etc may lead to loss of email etc. Will HS2 pay compensation for loss of income or to householders 'inconvenienced' by their work**

UKPN are a regulated body and there are standard processes in place to protect the other utilities and any other third parties that may be impacted by the works.

UKPN will use standard construction methodology when undertaking the work adjacent to other buried services such as gas, water or drainage. This would involve firstly notifying the other utility companies in the area. Then if work is going to take place close to other utilities, then UKPN will agree mitigation measures which could include, amongst other things, locally re-routing the new power supply route within the highway or localised protection measures of the other services.

- **Many mature trees (give area its character) along this route, whose roots run under the roads, will suffer root loss and die off maybe causing heave and subsidence to properties. Lots of trees lost in the years after fibre optic cable laid**

UKPN will be working to the National Joint Utilities Group (NJUG) standard, Vol. 4. This controls how their work is managed close to trees.

- **Worried will not bend round corners so gardens will be dug up.**

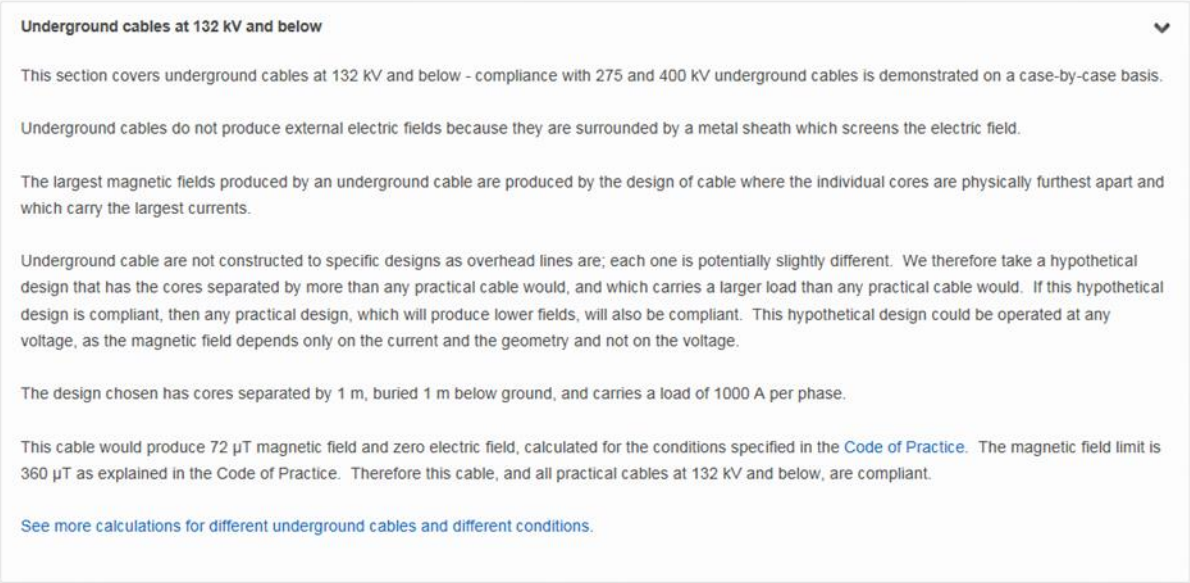
UKPN will only undertake their work in the public highway. They have no rights over third party land.

- **Electromagnetic disturbances – substations have been shown to affect health**

All cables that will be installed by UKPN are compliant with the government Code of Practice entitled, "Power Lines: Demonstrating compliance with EMF public exposure guidelines - a voluntary code of practice" (published by the Department of Energy & Climate Change, DECC, in March 2012). This sets a magnetic field limit for public exposure of 360µT based on the ICNIRP 1998 guidance.

The code of practice requires the electricity supply industry to keep records of all equipment that is known to be compliant and this is done on the emf.info website; http://www.emfs.info/compliance/public/.

The following is an extract from the website which relates to the specific type of cable (33kV) that will be used for the HS2 TBM power supply. This shows that the magnetic field produced by the cable will be significantly lower (less than one fifth) than the 360µT limit given in the Code of Practice.



Underground cables at 132 kV and below

This section covers underground cables at 132 kV and below - compliance with 275 and 400 kV underground cables is demonstrated on a case-by-case basis.

Underground cables do not produce external electric fields because they are surrounded by a metal sheath which screens the electric field.

The largest magnetic fields produced by an underground cable are produced by the design of cable where the individual cores are physically furthest apart and which carry the largest currents.

Underground cable are not constructed to specific designs as overhead lines are; each one is potentially slightly different. We therefore take a hypothetical design that has the cores separated by more than any practical cable would, and which carries a larger load than any practical cable would. If this hypothetical design is compliant, then any practical design, which will produce lower fields, will also be compliant. This hypothetical design could be operated at any voltage, as the magnetic field depends only on the current and the geometry and not on the voltage.

The design chosen has cores separated by 1 m, buried 1 m below ground, and carries a load of 1000 A per phase.

This cable would produce 72 µT magnetic field and zero electric field, calculated for the conditions specified in the Code of Practice. The magnetic field limit is 360 µT as explained in the Code of Practice. Therefore this cable, and all practical cables at 132 kV and below, are compliant.

See more calculations for different underground cables and different conditions.

- **London Clay, prone to subsidence.**

All trenches are partially backfilled with cement bound sand which is a stable material and then reinstated to the HAUC (Highway Authority and Utility Committee) Code and can be inspected by the Local Authority.

- **Water table very high. Concerned joins in cable is a weakness, prone to water incursion, ground movement etc.**

Based on initial desktop surveys, UKPN are not expecting any water table issues, but if necessary they will manage any local dewatering of the trenches they dig. Once jointed the plastic sheathed cable is not affected by water.

- **Why will it take a year to lay cable?**

The current programme is indicative and will be subject to the next detail design stage and the findings from the trial holes which will be undertaken to check areas of engineering difficulty (for example where services cross at busy junctions). It is also based on a number of assumptions that will be discussed with the local authorities. For example, UKPN will be

working under the HS2 Code of Construction Practice (CoCP) which stipulates set working hours. These could be extended by agreement with the LA if there was deemed to be a benefit in doing so.

- **After years of complaints regarding potholes and damage to their cars finally most of the roads concerned have recently been resurfaced by the Council, these works will break up the surface. Once patched inclement winter weather will again result in potholes.**

All road surfaces will be reinstated as per the HAUC (Highway Authority and Utility Committee) Code and can be inspected by the Local Authority.

Where a road has been re-surfaced within two years, then UKPN will be required to resurface the affected area by the Local Authority.

- **Parking/deliveries Access to drives.**

Planned works will be communicated with residents well in advance to help manage any disturbances. Trenches across driveways can be plated over outside of the core working hours to allow access and egress to resident's properties.

- **Spoil where will this go? Mud on roads? Dust?**

Spoil will be removed and not stored locally on site.

Mud on roads will be managed through the use of road sweepers as required.

Dust will be controlled with damping down measures.

These details will be defined in the Section 61 submission which will be agreed with the Local Authority.

- **How will you manage rush hour traffic Rushdene Road/Deane Croft Road and Hawthorne Avenue/Meadow Way.**
- **How will you ensure high street continues to function.**
- **How will you manage traffic to Pembroke Park at north end of Lime Grove**

UKPN will develop a mini Local Traffic Management Plan (LTMP) document in the next stage to set out how traffic and transport related impacts of their works will be managed. The LTMP will be a live document and will be updated as necessary, in consultation with the local highway authority to address any specific TM impacts of the work proposals

- **How many HGVs/workers vehicles. Where will they park?**

We are expecting significantly less than 12 Lorries in and out of the worksites in any one day (this is the amount that we believe would start to cause a possible impact in the local area). As part of the work we will agree a traffic management plan with the Local Authority, and this may include specific times when lorry movements will be restricted to minimise any localised impacts.

- **Security. Safety of children. School drop off.**

Trenches will be secured by fencing.

Any traffic management measures agreed with the Local Authority will consider safe diversion of pedestrians and the location of any traffic stop points. It is also planned that work outside any schools will be undertaken during the school holidays.

- **Footpath linking Hawthorn Avenue with Lime Grove narrower than width of the trench**
- **Concerns about construction machinery needing access to neighbouring properties**
- **Concerns about damage to residents wall**
- **Concerns about damage to foundations as properties fairly close to boundary**

The current expectation is that this footpath link will not be used due other services within it. The route will instead be re-routed via Elm Avenue.