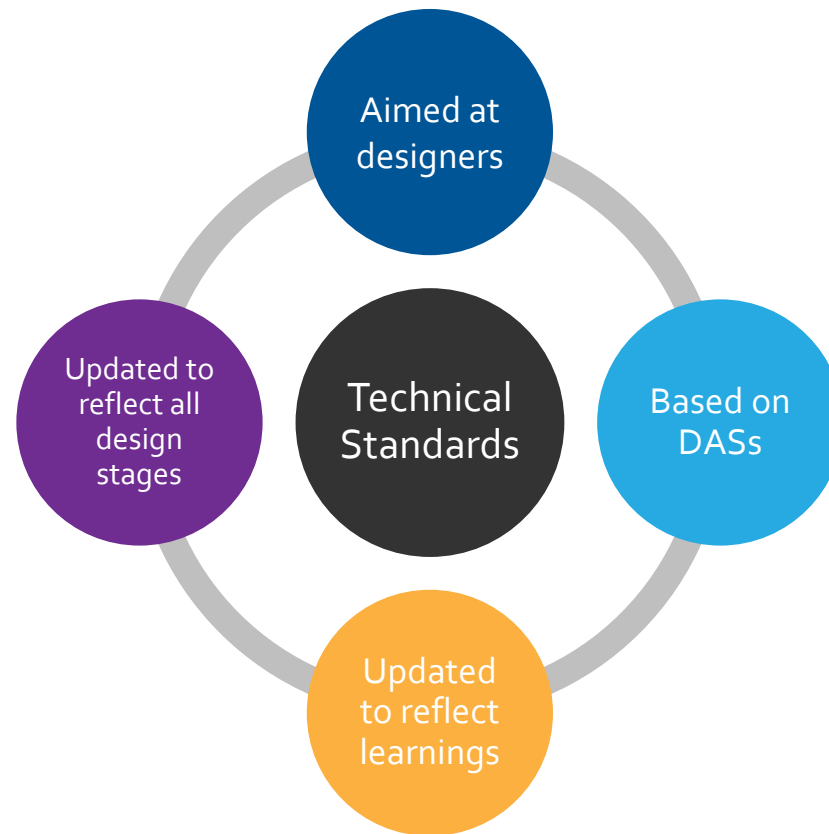


Highways Subgroup #9 – 08th September 2015



HS2 Technical Standards

Technical Standards



Convention used in Technical Standards

- Convention similar to DMRB

Mandatory clauses

The following convention is used to indicate mandatory clauses.

Mandatory clauses are differentiated from the main text of this document by use of a 'black box'. They contain the word 'shall' to indicate their status as a requirement.

Guidance

The following convention is used to indicate guidance.

NOTE – Guidance is differentiated from the paragraph to which it relates by use of italic type and use of the words 'should' or 'may'.

Technical Standards relevant to highways

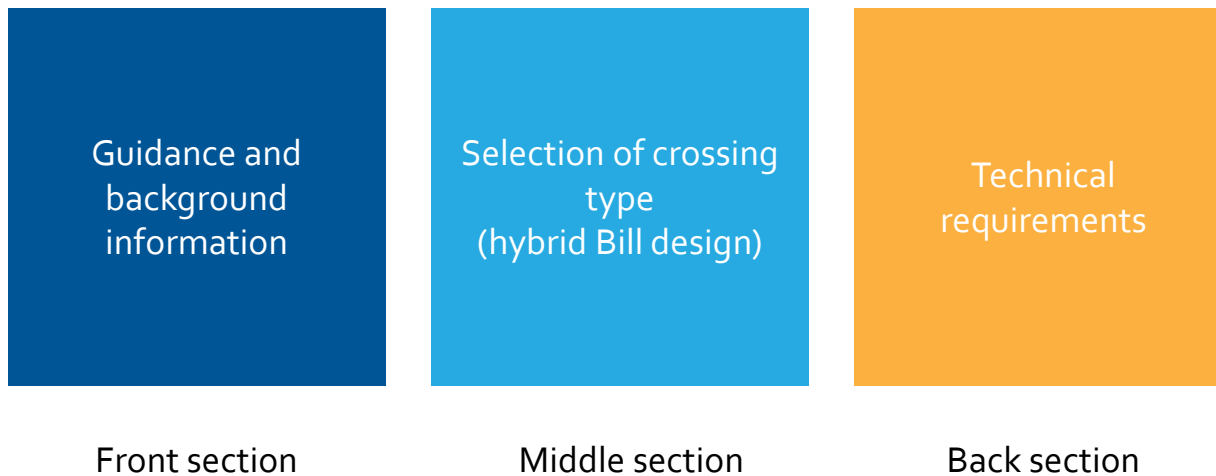
Technical Standard
Roads

Technical Standard
Public rights of way

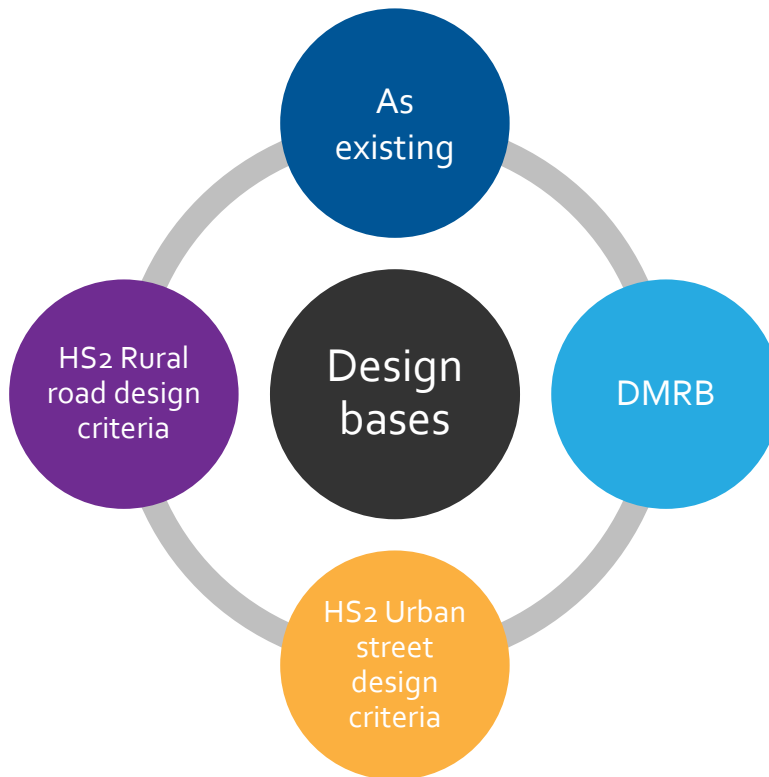
Technical Standard
Errant vehicle
protection

Technical Standard
Highway and access
drainage

Technical Standard - Roads



Technical Standard - Roads

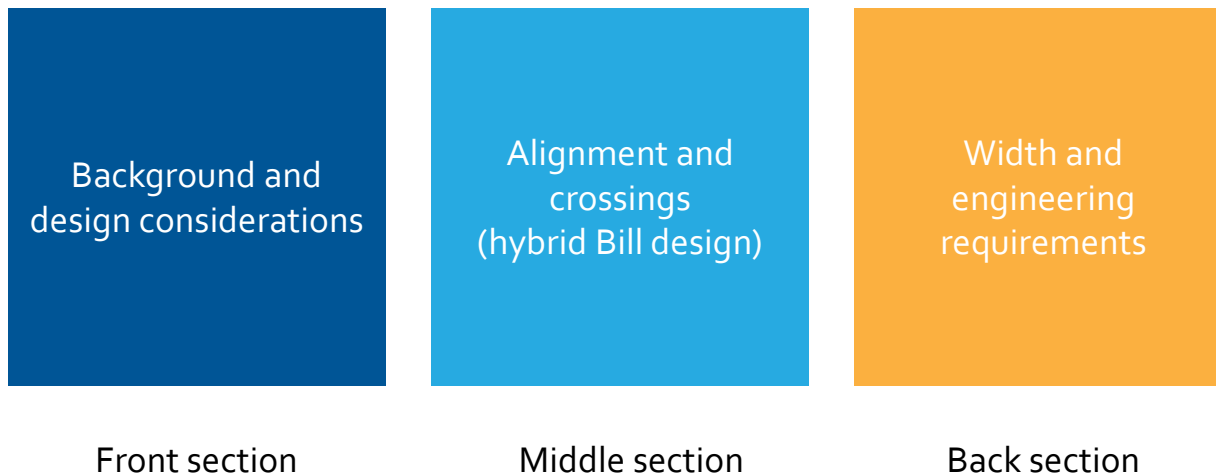


Section 6

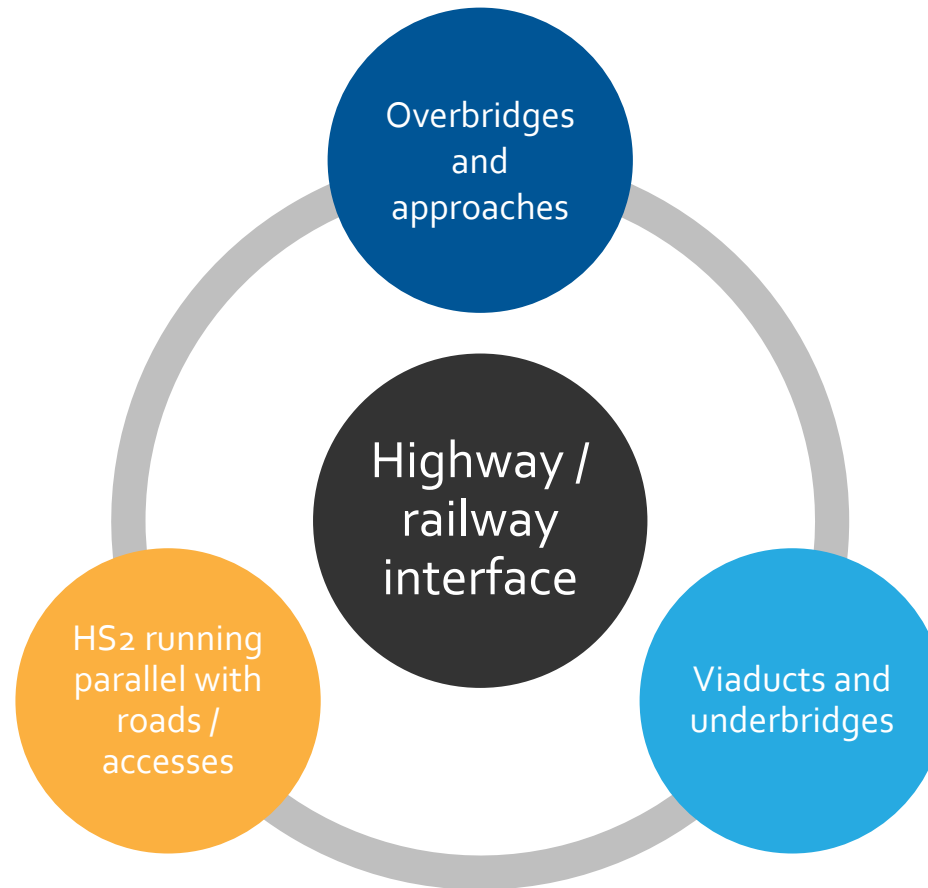
Flexibility for local requirements

Section 7

Technical Standard – Public rights of way



Technical Standard – Errant vehicle protection



Technical Standard – Errant vehicle protection

RISK-BASED
APPROACH

BASED ON DfT's
'MANAGING THE
ACCIDENTAL
OBSTRUCTION
OF RAILWAY BY
ROAD VEHICLES'

RISK SCORE
BASED ON
FACTORS

FACTORS
AMENDED TO
REFLECT
ACTUAL
PROJECT

INPUT FROM
ORR, RSSB, DfT,
HIGHWAYS
ENGLAND &
NETWORK RAIL

Technical Standard – Highway and access drainage

- Details the approach to highway drainage, including:
 - Over the edge versus positive drainage systems
 - Outfalls and soakaways
 - Balancing ponds
- Requirements depend on the design basis for roads
 - 'DMRB' – as per DMRB
 - Other design bases – requirements are listed specifically
 - ▶ Some of these not as onerous as DMRB to reflect status of road
 - ▶ Climate change allowance of 30% applied – consistent with all of HS2 drainage design.

Construction specification

- Civils works to be built using Specification for Highway Works (SHW), as amended.
- SHW applicable not just to highways but all civil works.
- Anticipate in future that there may be amendments to SHW that are common to highways.
 - Propose to address through Highways Subgroup

Standard detail drawings

Supports Technical
Standards

Addresses aspects
not covered in
Highway
Construction Details

Further drawings can
be produced if
required

Share with Subgroup
as future agenda item

Vehicle Flow Management

September 2015

Purpose of vehicle flow management

To manage and monitor vehicle flows on construction routes, ensuring requirements of the HS2 phase 1 Bill, Environmental Statement, Code of Construction Practice and Undertakings & Assurances are met, through :

Purpose of vehicle flow management

- Implementing a vehicle booking system to manage arrival patterns so not exceed worksite capacities
- Monitoring compliance with lorry routes and undertakings and assurances
- Setting vehicle identification requirements
- Comprehensive recording and reporting of all construction vehicle movements at worksite accesses
- Linking to driver and vehicle safety management systems
- Deployment of a route (and safety) compliance team

Vehicle Booking System

- Used on Olympic Park and Crossrail
- Visibility of planned and actual movements
 - Will site capacities be exceeded?
 - Arrivals within authorised site working times?
 - Understand scale of movement
 - Controlling volumes as required by undertakings and assurances
- Record vehicle safety equipment & driver training compliance

Exclusions

- Utilities not related to construction
- Welfare related – food and drink; water bottles; toilet consumables; cleaning materials; “domestic” waste
- Couriers (small items not requiring MHE to unload)
- Postal services
- Vans for workers and hand carried tools for personal use
- Access to railways
- Emergency services (practice drills etc)
- Abnormal loads

Booking process

- Contractors submit for each receiving point long range, weekly and daily plans to include:
 - Planned arrival and departure time
 - Vehicle type
 - Load type
- HS2 monitors plans
- To include movements through lorry holding areas

Actual movements

- Logged on mobile device at main works site gate and lorry holding areas by contractor Duty Access Manager
 - Arrival and departure time
 - Vehicle type and registration
 - Driver name and training status
 - Origin and destination
 - Utilisation
 - Safety equipment fitted

Compliance - safety

- Booking system configured to recognise:
 - ▶ Suspended drivers
 - ▶ Untrained drivers
 - ▶ Vehicles with previously recorded defective equipment

Compliance - lorry routes

- Booking system will enable Automated Number Plate Recognition (ANPR) to be used to monitor routes where required by Undertakings and Assurances
 - Matched with Vehicle Booking System to identify HS2 construction vehicles

Compliance - vehicle identification

- All vehicles > 3.5t engaged on construction activity including spoil to carry A4 "HS2" identifier on inside of windscreen. May include contract number.
- Problem is that often will be left in windscreen when no longer working on project.
- May therefore have different background colours issued periodically.



Driver and vehicle safety management

September 2015

Vulnerable Road Users along the HS2 phase 1 route

Vulnerable road users – using KSIs

Killed: Human casualties who sustained injuries which caused death less than 30 days after the *accident*.

Serious injury: ...a person is detained in hospital as an “in-patient”, or any of the following injuries: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the *accident*.

Vulnerable road users – KSIs

	c. KSI injuries involving an HGV	a. All casualties which are KSIs	b. All casualties involving an HGV	% injuries involving HGVs which are KSI (c/b)	% KSIs to road users which involve an HGV (c/a)	% KSIs involving HGVs which were in London
Pedestrians	71	Not recorded	394	18.0%	-	46.5%

Vulnerable road users – KSIs

	c. KSI injuries involving an HGV	a. All casualties which are KSIs	b. All casualties involving an HGV	% injuries involving HGVs which are KSI (c/b)	% KSIs to road users which involve an HGV (c/a)	% KSIs involving HGVs which were in London
Pedestrians	71	Not recorded	394	18.0%	-	46.5%
Motorcycles	55	1589	336	16.4%	3.5%	23.6%

Vulnerable road users – KSIs

	c. KSI injuries involving an HGV	a. All casualties which are KSIs	b. All casualties involving an HGV	% injuries involving HGVs which are KSI (c/b)	% KSIs to road users which involve an HGV (c/a)	% KSIs involving HGVs which were in London
Pedestrians	71	Not recorded	394	18.0%	-	46.5%
Motorcycles	55	1589	336	16.4%	3.5%	23.6%
Pedal cycles	34	1076	332	10.2%	3.2%	50.0%

Vulnerable road users – KSIs

	c. KSI injuries involving an HGV	a. All casualties which are KSIs	b. All casualties involving an HGV	% injuries involving HGVs which are KSI (c/b)	% KSIs to road users which involve an HGV (c/a)	% KSIs involving HGVs which were in London
Pedestrians	71	Not recorded	394	18.0%	-	46.5%
Motorcycles	55	1589	336	16.4%	3.5%	23.6%
Pedal cycles	34	1076	332	10.2%	3.2%	50.0%
Equestrians	0	6	0	n/a	n/a	n/a

Vulnerable road users – the safety deficit

Chart 4: Proportion of reported casualties by road user type and severity, Great Britain: 2012

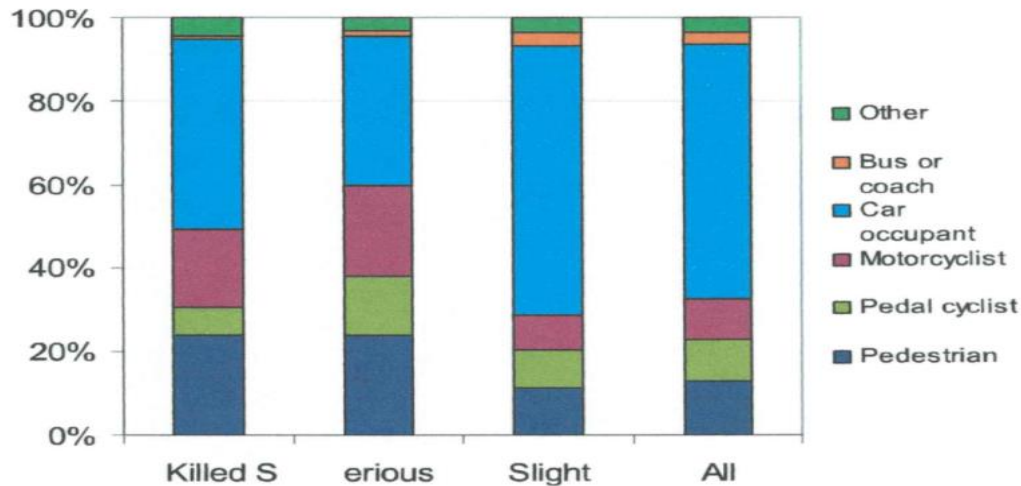
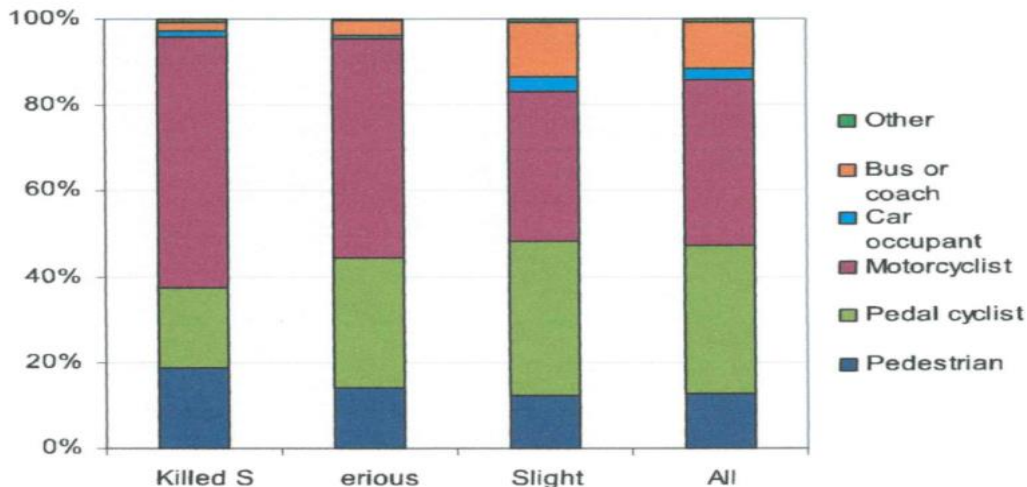


Chart 5: Proportion of reported casualties by road user type and severity, adjusted for distance travelled per year, Great Britain: 2012



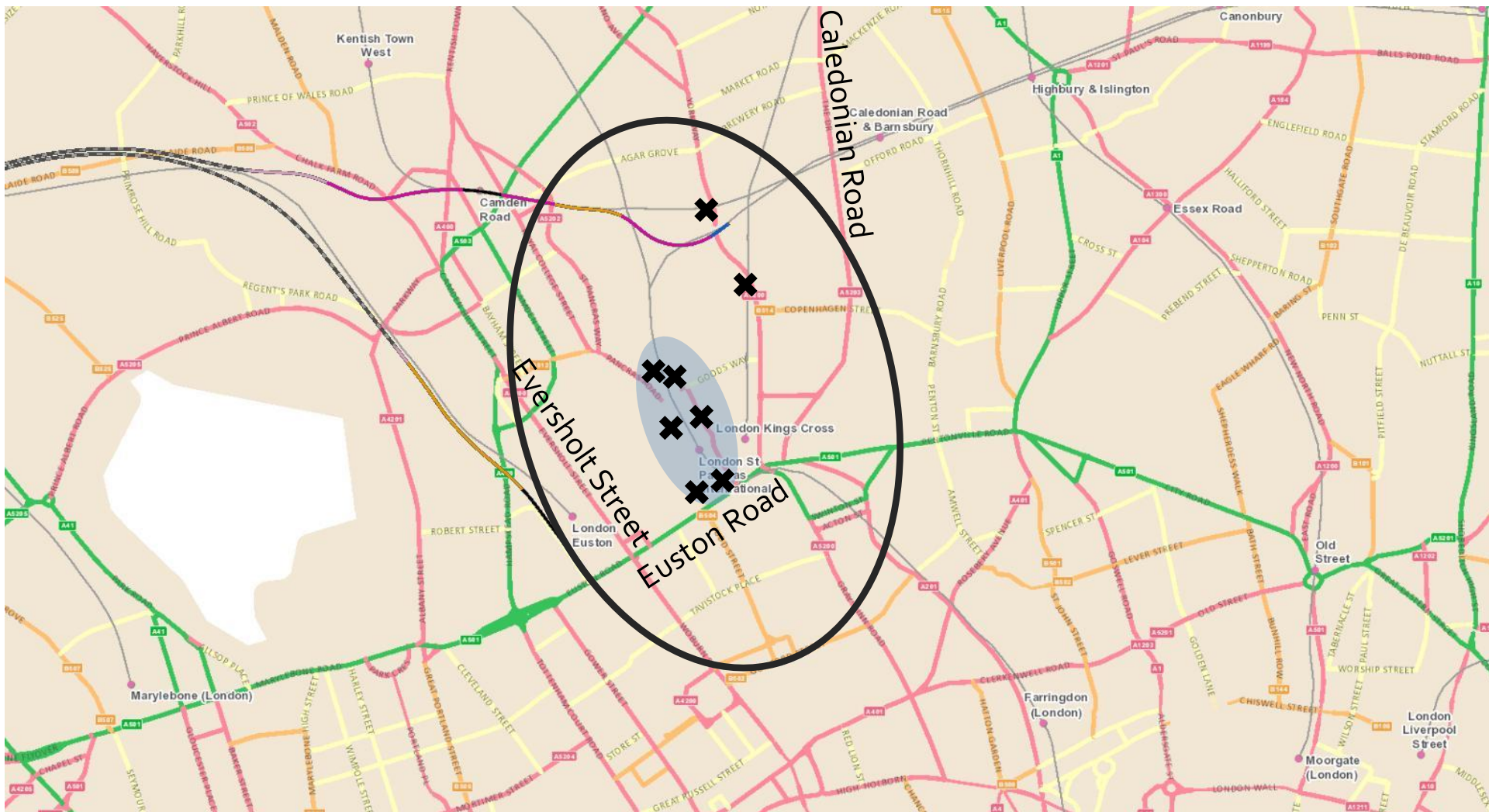
HS2 Requirements (draft)

Quality plans

- Quality operation ✓
 - FORS (agree level to be achieved and by when)
or
 - ISO 39001
or
 - A quality plan which addresses the themes in FORS or ISO and demonstrate how they will be independently audited
 - *Also added – Van Excellence (vehicles under 3.5t)*

Driver safety

- Collision reporting ✓
 - Utilise the CLOCS-manager and
 - Damage-only and near miss reporting and
 - STATS19 reviews for 3 years before and after commencement of construction





	Involving cycles			Involving pedestrians			Involving HGVs and cycles or peds		
	Slight	Serious	Fatal	Slight	Serious	Fatal	Slight	Serious	Fatal
7am-6pm									
2004-2007	31	10	0	49	19	1	1	0	0
2007-2011	24	2	0	30	8	1	0	0	0
Change	-23%	-80%	-	-39%	-58%	-	-100%	-	-

Road closure date: 2 July 2007

All data – weekdays 7am to 6pm

Construction traffic peak in 2009 – 1,185 light and 544 heavy each way/day

Workforce mode share – 5 to 7% walk, 4 to 5% cycle

Route safety

- Traffic routeing ✓
 - Lorry route approvals under Schedule 16 of the High Speed Rail (London to West Midlands) Bill
 - Specific restrictions (U&As) being monitored
 - Route Management, Improvement and Safety plans
and
 - Workforce travel to work plans

Vehicle safety

- Warning signage ✓
 - What is the appropriate signing for all environments?

Vehicle safety

- Side under-running protection ✓
 - Check - contractors will need to demonstrate if this is not feasible on a site-by site basis. May not be 100% compliant.

Vehicle safety

- Blind spot minimisation ✓
 - Specific equipment for 7.5t + (4-way or 360 degrees CCTV) >
 - Specific equipment will not be acceptable (e.g. fresnal lenses) >
 - Consider use of low floor cabs and see-through doors through the supply chain – to be set out in ESSMPs
 - Type of equipment and fitting capacity?

Vehicle safety

- Vehicle manoeuvring warnings ✓
 - Check - are turn alerts OK in rural areas – equestrians?

Driver safety

- Training and development
 - Capacity
 - Appropriate training for HS2 environment
 - Course validation

Driver safety

- Driver licencing checks ✓
 - One-off deliveries
 - Visitors

Planning for safety

- Construction Logistics Plan ✓
 - Logistic plans (overseen by HS2 logistics team)
 - Route Management Improvement and Safety plans
 - Highway Condition, Maintenance and Safety Management Plan
 - Logistics Environment, Sustainability and Safety Management Plan
 - Workforce travel plan

Design safety

- Site access and egress ✓
 - Approvals for new site accesses under Schedule 4 part 1 of the High Speed Rail (London to West Midlands) Bill

Operational safety

- Vehicle loading and unloading ✓
 - Site access and management

Vehicle flow management

- Control of site traffic, particularly at peak hours ✓
 - Demonstrating compliance with Undertakings and Assurances regarding timing

Compliance and assurance

- Supply chain compliance ✓
 - Demonstrating compliance at Gate will be contractor responsibility. HS2 will provide assurance.

Other measures

- Safety programme
 - Health checks – HSE guidance
 - Drug and alcohol testing
 - Eye sight testing
 - “No incentives”
 - Toolbox talks – “total working day, total journey”
- Establishing liaison with regulators

Implementation of driver and vehicle safety

	HS2	Contractor
Route-wide TMP	√	
Contract specification	√	
Prepares plans		√
Approves plans	√	
Implementation		√
Assurance – 1 st		√
Assurance – 2 nd	√	



Highways Maintenance

Richard Adam

Maintenance

- Update on draft Information Paper E29
- Update on maintenance data / cost analysis
- Update on maintenance agreements
- Feedback to Select Committee

Update on draft Information Paper E29

Actions since last Highways Sub-group meeting

- Information Paper E28 will now be numbered E29 when formally issued
- HS2 Ltd's responses to Highways Sub-group comments on draft Information Paper E28 distributed to members
- Final draft Information Paper E29 has almost cleared HS2 Ltd / DfT governance procedure

Future action (as previously)

- To be published online with updated Information Paper E14

Update on maintenance data / cost analysis

Actions since last Highways Sub-group meeting

- HS2's calculations based on maintenance data supplied by three sample authorities (WCC, BCC and LBC) circulated to members
- DfT's cost analysis based on HS2's calculations also circulated
- Useful meeting held with BCC and WCC on 21 August 2015
- Similar meeting planned with LBC (date to be confirmed)

Future actions (as previously)

- Full data collection to be undertaken once construction programme is clear (with start / completion dates required for each highway)
- Final 'new burdens' assessment report to be prepared for consideration by DfT and DCLG

Update on maintenance agreements

Actions since last Highways Sub-group meeting

- HS2 Ltd has undertaken clause-by-clause review of WCC's proposed draft agreement (v8) to establish:
 - Matters of common ground
 - Issues requiring clarification
 - Proposals not consistent with hybrid Bill (or otherwise not agreed by HS2 Ltd)
- HS2 Ltd's initial draft version showing proposed amendments under review by Parliamentary Agents

Future action

- HS2 to circulate clause-by-clause review and draft proposed amendments to members when ready

Feedback to Select Committee

Actions since last Highways Sub-group meeting

- None, awaiting outcome of work on:
 - maintenance data / cost analysis
 - maintenance agreements

Future action (as previously)

- DfT to send paper to Select Committee updating them on discussions and current position before end of year




Forward Plan

Planning Forum Document Route Map – Sept 2015

Title	Engagement	1 st Draft	2 nd Draft	3 rd Draft	4 th Draft	Final
Environmental Minimum Requirements						
General principles	NEF, Planning Forum	Autumn 2013	Nov 2013	May 2015	End of HoC	Royal Assent
Environmental Memorandum	NEF, Planning Forum	Autumn 2013	Nov 2013	May 2015	End of HoC	Royal Assent
Planning Memorandum	Planning Forum	Sept 2013	Nov 2013	April 2015	End of HoC	End of HoL Select Committee
Heritage Memorandum	EH and Planning Forum	Autumn 2013	Nov 2013	April 2015	End of HoC	Royal Assent
CoCP	NEF, Planning Forum	Autumn 2012/ May 2013	Bill deposit	July 2015	End of HoC	Royal Assent
U&As register	TBC	During parliamentary process				Royal Assent
Other						
Planning Regime (Principles)	Planning Forum	April 2013	Sch 16 of the Bill subject to petitions and Select Committee. Discussion on common issues – Planning Forum			Royal Assent
Statutory Guidance	Planning Forum	April 2013	July 2015		End of HoC	Post Royal Assent
Construction arrangements class approval	Planning Forum	July 2014	July 2015		End of HoC	Post Royal Assent
Pre-submission funding	Planning Forum	Agreement in principle -April 2014	Discussion on funding and mechanisms - Planning Forum			End of HoL Select Committee
Fee Regulation	TBC	TBC				Post Royal Assent*

*This does not preclude earlier discussion on additional funding, eg during the Bill process

 Action with LPAs

 Action with HS2/DfT

Highways Subgroup Route Map – Sept 2015

Title	July	Sept	Oct	Nov	Dec	Future
Permanent Works						
Highways Maintenance Agreement		Feedback on proposed draft agreement	Agenda item			For implementation post royal assent
Technical Standards		Presentation and issue of draft	Feedback from authorities			Finalised by royal assent
New Burdens Assessment – Highways Maintenance	Presentation on Initial findings	Feedback on discussion with sample authorities				Detailed work after royal assent when programme available
Consents and Approvals			Draft approach	Feedback	Agenda item	Finalised by royal assent
Temporary Works						
Route-wide Traffic Management Plan	Presentation and first draft Issue	Presentation on Vehicle flow management and vehicle / driver safety management	Feedback from authorities		Final draft	
Local Traffic Management Plan				Agenda item		Consult summer next year. Implemented post royal assent (ECI Contactor input)
Signals Works Agreements	Feedback on progress					Agreement before royal assent
Methodology for Conditions Surveys				Agenda item		Agreement sought and implemented pre-construction
Enabling Works TMP		Draft issued		Feedback from authorities		

Action with Highways Authorities



Action with HS2/DfT



Forward Programme – Sept 2015

2015	HS2 Phase One Planning Forum
	15th/16th
July	<ul style="list-style-type: none"> • HS2/DfT - Code of Construction Practice – 3rd Draft • HS2/DfT – Environmental Memorandum – Key Environmental Worksites
	16th / 17th
Sept	<ul style="list-style-type: none"> • HS2/DfT feedback on LPA response on Planning Memorandum 3rd Draft • HS2/DfT Schedule 16 Statutory Guidance 2nd Draft • LPA feedback on General Principles 3rd Draft and Environmental Memorandum 3rd Draft
	28th
Oct	<p>One meeting in London to introduce:</p> <ul style="list-style-type: none"> • Design Panel Chair • Residents Commissioner • Construction Director • HS2/DfT feedback on LPA response to General Principles 3rd Draft and Environmental Memorandum 3rd Draft
Nov	
	9th / 10th TBC
Dec	<ul style="list-style-type: none"> • LPA feedback on Schedule 16 Statutory Guidance 2nd Draft
Jan 16	27th / 28th TBC

Forward Programme – Sept 2015

2015	Subgroup: Environmental Health	Subgroup: Highways	Subgroup: Heritage	Subgroup: Flood Risk and Drainage
July	<p>2nd</p> <ul style="list-style-type: none"> • HS2/DfT feedback on CoCP 	<p>22nd</p> <ul style="list-style-type: none"> • Route Wide Transport Management Plan • HS2/DfT feedback on CoCP 		
Sept	<p>24th</p> <ul style="list-style-type: none"> • Introduction to construction, programme and consents • Noise – special cases update 	<p>8th Warwick</p> <ul style="list-style-type: none"> • Technical Standards • Vehicle flow management and vehicle / driver safety management • Highways maintenance agreement 	<p>9th</p> <ul style="list-style-type: none"> • HS2/DfT feedback on CoCP • Sch 17 Heritage Agreements • Environmental Min Requirements • Research matters 	<p>Date TBC</p> <p>(Mid-Sept)</p> <ul style="list-style-type: none"> • Technical Standards
Oct		<p>14th Euston</p> <ul style="list-style-type: none"> • Route Wide Transport Management Plan feedback • Technical Standards feedback • Consents and approvals 		
Nov		<p>18th Warwick TBC</p> <ul style="list-style-type: none"> • Methodology for condition surveys • Green Bridges • Early works (pre-Royal Assent) Works outside Act limits 		
Dec		<p>16th Euston TBC</p> <ul style="list-style-type: none"> • Local Traffic Management Plan 		

HS2 Indicative Programme (Sept 2015)

ACTIVITY	2013				2014				2015				2016				2017				2018	2019-2026
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4		
Phase One																						
Bill programme																						
Hybrid Bill preparation																						
Bill submission to Parliament																						
Formal ES publication																						
Hybrid Bill Parliamentary process																						
Royal Assent																						
Documents																						
EMR general principles																						
Planning Memorandum																						
Environment Memorandum																						
Heritage Memorandum																						
Code of Construction Practice																						
Undertakings & Assurance register																						
Statutory Guidance																						
Con. arrangements class approval																						
Fee regulations																						
Delivery																						
NU established																						
Procurement																						
Design Development																						
Planning submissions																						
Construction																						

NB: Subject to change. Delivery dates dependent on Royal Assent