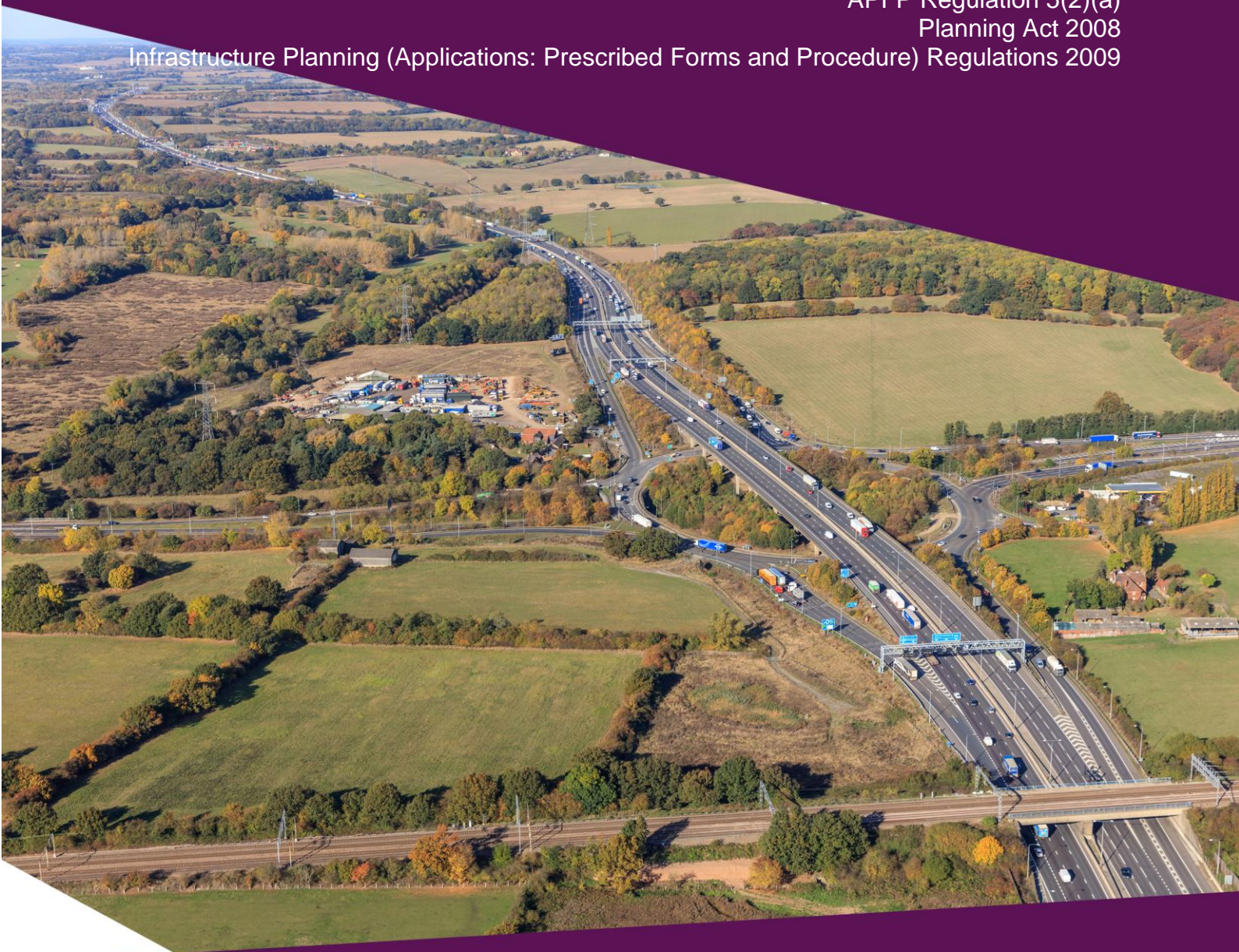


**M25 junction 28 improvement scheme
TR010029
6.3 Environmental Statement
Appendix 4.2: Major accidents and disasters
long list**

APFP Regulation 5(2)(a)
Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M25 junction 28 scheme Development Consent Order 202[x]

6.3 ENVIRONMENTAL STATEMENT APPENDIX 4.2: MAJOR ACCIDENTS AND DISASTERS LONG LIST

Regulation Number:	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010029
Application Document Reference	TR010029/APP/6.3
Author:	M25 junction 28 improvement scheme project team, Highways England

Version	Date	Status of Version
1	May 2020	Application issue

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Appendix 4.2 Major accidents and disasters long list

4. Major accidents and disasters long list

Table 4.1: Long list of major events

Disaster type	Relevant to the Scheme	Source of disaster	Potential receptors	Consequence	Addressed in ES (Yes/No and where)	Covered outside of ES (Yes/No and where)	Embedded mitigation	Additional mitigation to reduce risk
Geological disasters								
Avalanches	No	Due to the topography of the Scheme and the surrounding area, large scale avalanche disasters are considered an unlikely risk to the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Earthquakes	No	The site is not in a geologically active area and as such earthquakes are not considered to be a risk or serious possibility.	N/A	N/A	N/A	N/A	N/A	N/A
Volcanic eruptions	No	The site is not in a geologically active area and as such volcanic eruptions are not considered to be a risk or serious possibility.	N/A	N/A	N/A	N/A	N/A	N/A
Sinkholes and/or ground dissolution	No	The geological units beneath the Scheme are not considered prone to dissolution therefore sinkholes and/or ground dissolution are not considered likely risks to the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Ground instability	Yes	<p>Instable ground from geological units or Made Ground/fill causing instability of the ground surrounding the Scheme. Potential for collapsible ground, compressible ground, landslides, running sand and shrinking/swelling clay.</p> <p>No historical underground mining has been identified within the vicinity of the Scheme.</p>	Road users, infrastructure and property, surrounding environment.	Casualties, damage to infrastructure and property, disruption to services.	Yes - Geology and Soils chapter (Chapter 10) and Appendix 10.1 Preliminary Geo-environmental Assessment Report	No	No – however, the Scheme detailed design will be informed by the Ground Investigation (GI). The risk can be removed through design. Depending on the findings of the assessment of the final GI results, the Scheme design will be modified to prevent significant effects.	No
Hydrological disasters								
Floods	Yes	<p>Both the vulnerability of the Scheme to flooding, and its potential to exacerbate flooding, are covered in the Flood Risk Assessment and are also reported in EIA terms in the Road Drainage and the Water Environment chapter of the ES (Chapter 8). Both assessments address the risk to the Scheme and increased risk due to the Scheme.</p> <p>The Flood Risk Assessment (application document TR010029/APP/6.6) has concluded that based on current flood risk understanding and the incorporation of flood risk mitigation/considerations the Scheme would be at an acceptable level of flood risk and would not increase flood risk elsewhere.</p>	N/A	N/A	Yes – in the Road Drainage and Water Environmental chapter (Chapter 8)	Yes – in the Flood Risk Assessment (application document TR010029/APP/6.6)	N/A	N/A
Tsunami/Storm surge	No	No applicable as Scheme is not located in a coastal location.	N/A	N/A	N/A	N/A	N/A	N/A

Disaster type	Relevant to the Scheme	Source of disaster	Potential receptors	Consequence	Addressed in ES (Yes/No and where)	Covered outside of ES (Yes/No and where)	Embedded mitigation	Additional mitigation to reduce risk
Limnic eruptions	No	No lakes are located near the Scheme and as such limnic eruptions are not considered to be a risk or serious possibility.	N/A	N/A	N/A	N/A	N/A	N/A
Major change to groundwater levels	Yes	The vulnerability of the Scheme to flooding and its potential to exacerbate flooding, are covered in the Flood Risk Assessment. The Flood Risk Assessment (application document TR010029/APP/6.6) has concluded the Scheme will be at an acceptable level of groundwater flood risk. Mitigation included in the Scheme design will ensure the risk is acceptable. The vulnerability of the Scheme to groundwater flooding and its potential to exacerbate groundwater flooding is therefore considered low. Due to the extent of the development relative to current conditions the Scheme is not considered likely to effect groundwater recharge rates and therefore will not affect groundwater levels.	N/A	N/A	Yes – in the Road Drainage and Water Environmental chapter (Chapter 8)	Yes – in the Flood Risk Assessment (application document TR010029/APP/6.6)	N/A	N/A
Meteorological disasters								
Blizzards	Yes	Blizzard conditions could cause road users to be trapped on the road, however the risk is no different from other roads/road users in the UK, and as such is not considered further.	N/A	N/A	No	No	N/A	N/A
Cold waves	Yes	A rapid fall in temperature within a defined time period can cause a cold wave, affecting road users if they become trapped due to bad weather. The Scheme is not considered to be at any greater risk of a cold wave than other roads/road users and is not considered further.	N/A	N/A	Yes – in the Climate chapter (Chapter 14)	No	N/A	N/A
Cyclonic storms	Yes	Cyclonic storms could cause high winds and heavy rain causing damage to infrastructure and property. However the risk is no different from other roads/road users in the UK, and as such is not considered further.	N/A	N/A	No	No	N/A	N/A
Droughts	No	Droughts are only considered as a disaster due to water shortages for essential services and where there are indirect impacts on food production, loss of soils etc. The Scheme is not considered to be vulnerable to drought.	N/A	N/A	N/A	N/A	N/A	N/A
Thunderstorms	Yes	As the junction interchange is elevated, some consideration is given to the potential risk of lightning strikes, though the risk is not considered to be any greater than any other road bridges.	N/A	N/A	No	No	N/A	N/A

Disaster type	Relevant to the Scheme	Source of disaster	Potential receptors	Consequence	Addressed in ES (Yes/No and where)	Covered outside of ES (Yes/No and where)	Embedded mitigation	Additional mitigation to reduce risk
Hailstorms	Yes	The risk of hailstorms is no different from other roads/road users in the UK and as such is not considered further.	N/A	N/A	Yes – in the Climate chapter (Chapter 14)	No	N/A	N/A
Heat waves	Yes	Extreme heat for a prolonged period can cause tarmac to melt, a higher risk of fires to the surrounding vegetation and road users to dehydrate. The Scheme is not considered to be at any greater risk of a heat wave than other roads/road users and is not considered further.	N/A	N/A	Yes – in the Climate chapter (Chapter 14)	No	N/A	N/A
Tornadoes	No	Although there are tornadoes in the UK, their destructive force tends to be much less than in other parts of the world and the Scheme is not particularly vulnerable to any potential effects.	N/A	N/A	N/A	N/A	N/A	N/A
Wildfires	Yes	There may be some potential for bush, scrub, grassland or heather fires, though the risk is no greater than the existing road and is not considered further.	N/A	N/A	No	No	N/A	N/A
Poor air quality episodes	Yes	Although relevant, as vehicle emissions can contribute to poor air quality, it is not considered necessary to undertake any more assessment than is already being undertaken for the Air quality assessment of the EIA, in the Air quality chapter of the ES (Chapter 5).	N/A	N/A	Yes – in the Air Quality Chapter (Chapter 5)	No	N/A	N/A
High wind events	Yes	High wind events are usually linked to storm events that have been considered above. The risk of the Scheme to high wind events is no greater than other roads/road users and is not considered further.	N/A	N/A	Yes – in the Climate chapter (Chapter 14)	No	N/A	N/A
Space disasters								
Geomagnetic storms	Yes	Solar wind shock waves can interact with the earth's magnetic field causing disruption to electrical systems, communications and GPS. The Scheme is considered to be no more vulnerable than any other development and is not considered further.	N/A	N/A	No	No	N/A	N/A
Solar flare	Yes	Solar flares can interrupt radio and other electronic communications. The Scheme is considered to be no more vulnerable than any other development and is not considered further.	N/A	N/A	No	No	N/A	N/A
Astronomical object collision	Yes	An impact from an astronomical object can cause effects such as shock waves, heat radiation and craters. The Scheme is considered to be no more vulnerable than any other development and is not considered further.	N/A	N/A	No	No	N/A	N/A

Disaster type	Relevant to the Scheme	Source of disaster	Potential receptors	Consequence	Addressed in ES (Yes/No and where)	Covered outside of ES (Yes/No and where)	Embedded mitigation	Additional mitigation to reduce risk
Transport								
Road accidents	Yes	A major traffic accident leading to the closure of the road for a prolonged period. The risk posed by spillage from hazardous loads as a result of a road traffic accident e.g. fuel tankers is considered in the Road Drainage and Water Environment chapter (Chapter 8). Mitigation included in the Scheme design ensures the risk is acceptable. Diverted traffic onto local roads following a road accident can cause a change in air quality emissions to the surrounding area. There is not considered to be any increased risk to the Scheme and road users than currently exists and is not considered further.	N/A	N/A	Yes – in the Road Drainage and Water Environment chapter (Chapter 8) and the Geology and Soils chapter (Chapter 10)	No	N/A	N/A
Rail accidents	No	A railway line is located approximately 400 m south of junction 28 which carries trains between London and Brentwood and further east. There is not considered to be any increased risk of rail accidents to the Scheme and road users than currently exists and is not considered further.	N/A	N/A	N/A	N/A	N/A	N/A
Aircraft disasters	No	Stansted and Southend airports are not located within 2 km of the Scheme and there is not considered to be any increased risk to the Scheme and road users than currently exists and is not considered further.	N/A	N/A	N/A	N/A	N/A	N/A
Maritime disasters	No	The River Thames is the closest navigable river, located to south of the Scheme. There is not considered to be any increased risk to the Scheme than currently exists and is not considered further.	N/A	N/A	N/A	N/A	N/A	N/A
Engineering Accidents/Failures								
Bridge failure	Yes	The existing bridges and overbridges that form part of the Scheme design as well as the bridges for the loop road for the Scheme. There is not considered to be any increased risk to the Scheme as a result of the existing bridges than currently exists and the new bridges will be designed to Highways England standards and is therefore not considered further.	N/A	N/A	No	No	N/A	N/A
Flood defence failure/ reservoir failure	Yes	The Flood Risk Assessment (application document TR010029/APP/6.6) considers the risk from flooding from reservoir failure. No reservoirs are located close enough to the Scheme for the potential reservoir flooding area to affect the	N/A	N/A	Yes – in the Road Drainage and Water Environmental chapter (Chapter 8)	Yes – in the Flood Risk Assessment (application document TR010029/APP/6.6)	N/A	N/A

Disaster type	Relevant to the Scheme	Source of disaster	Potential receptors	Consequence	Addressed in ES (Yes/No and where)	Covered outside of ES (Yes/No and where)	Embedded mitigation	Additional mitigation to reduce risk
		Scheme. Similarly, there are no areas protected by flood defences which would affect the Scheme.						
Mast and tower collapse	Yes	Existing masts and towers could collapse on the road. There is not considered to be any increased risk to the Scheme than currently exists and is therefore not considered further.	N/A	N/A	No	No	N/A	N/A
Building failure or fire	No	No large buildings are located close by the Scheme to cause a risk greater than currently exists.	N/A	N/A	N/A	N/A	N/A	N/A
Utilities failure (gas, electricity, water, sewage, oil, communications)	Yes	Numerous utility routes cross the M25, A12 and are located in the new proposed loop road which could fail and cause damage to the Scheme. The required diversion of some utility routes due to the Scheme increases the risk of failure during diversion.	Road users, local residents, property, surrounding environment.	Potential for fire/explosion, pollution incident, injury.	No	No	No	All utilities companies have plans and arrangements in place to deal with supply disruptions and failures.
Industrial Accidents								
Defence industry	No	No defence industries are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Energy industry (fossil fuel)	No	No energy industries are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Nuclear power	No	No nuclear power plants are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Oils and gas refinery/storage	No	No oil and gas refinery/storage facilities are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Food industry	No	No food industries are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Chemical industry	No	No chemical industries are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturing industry	No	No manufacturing industries are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Mining industry	No	No mining industries are located within 2 km of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Terrorism/Crime/Civil unrest								
Bomb/vehicle attack on people	Yes	The Scheme is unlikely to be any more of a target for this attack than currently exists and is therefore not considered further.	N/A	N/A	No	No	N/A	N/A
Bomb/vehicle attack on infrastructure	Yes	The Scheme is unlikely to be any more of a target for this attack than currently exists and is therefore not considered further.	N/A	N/A	No	No	N/A	N/A
Mass shooting	No	Unlikely to occur in the vicinity of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Chemical/gas attack	Yes	Unlikely to be any more of a target for this attack than currently exists and is therefore not considered further.	N/A	N/A	No	No	N/A	N/A

Disaster type	Relevant to the Scheme	Source of disaster	Potential receptors	Consequence	Addressed in ES (Yes/No and where)	Covered outside of ES (Yes/No and where)	Embedded mitigation	Additional mitigation to reduce risk
Rioting	No	Unlikely to occur due to no target locations/businesses in the vicinity of the Scheme.	N/A	N/A	N/A	N/A	N/A	N/A
Cyber attack	Yes	The increased number of roadside technology and increasing reliance on this technology could render the Scheme more vulnerable to a cyber attack.	Road users	Accidents due to information boards displaying incorrect information, fatalities.	No	No	The roadside technology is designed to Highways England security arrangements to mitigate the effects of cyber attacks.	No
War								
Conventional	No	No more vulnerable than any other infrastructure.	N/A	N/A	N/A	N/A	N/A	N/A
Chemical	No	No more vulnerable than any other infrastructure.	N/A	N/A	N/A	N/A	N/A	N/A
Nuclear	No	No more vulnerable than any other infrastructure.	N/A	N/A	N/A	N/A	N/A	N/A
Disease								
Human disease	No	No more vulnerable than any other infrastructure.	N/A	N/A	N/A	N/A	N/A	N/A
Animal disease	No	No more vulnerable than any other infrastructure.	N/A	N/A	N/A	N/A	N/A	N/A
Plant disease	No	No more vulnerable than any other infrastructure.	N/A	N/A	N/A	N/A	N/A	N/A
Animal infestation	No	An animal infestation event could impact the Scheme although this is no more likely to occur than currently exists and is not considered further.	N/A	N/A	N/A	N/A	N/A	N/A

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