

Tritax Symmetry (Hinckley) Limited

## **HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE**

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### **The Hinckley National Rail Freight Interchange Development Consent Order**

Project reference TR050007

### **Environmental Statement Volume 2: Appendices**

### **Appendix 18.6: Potential Effects of Climate Change and Associated Hazards on The Proposed Development**

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Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009  
Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017  
Regulation 14

**This document forms a part of the Environmental Statement for the Hinckley National Rail Freight Interchange project.**

Tritax Symmetry (Hinckley) Limited (TSH) has applied to the Secretary of State for Transport for a Development Consent Order (DCO) for the Hinckley National Rail Freight Interchange (HNRFI).

To help inform the determination of the DCO application, TSH has undertaken an environmental impact assessment (EIA) of its proposals. EIA is a process that aims to improve the environmental design of a development proposal, and to provide the decision maker with sufficient information about the environmental effects of the project to make a decision.

The findings of an EIA are described in a written report known as an Environmental Statement (ES). An ES provides environmental information about the scheme, including a description of the development, its predicted environmental effects and the measures proposed to ameliorate any adverse effects.

**Further details about the proposed Hinckley National Rail Freight Interchange are available on the project website:**

<http://www.hinckleynrfi.co.uk/>

**The DCO application and documents relating to the examination of the proposed development can be viewed on the Planning Inspectorate's National Infrastructure Planning website:**

<https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/hinckley-national-rail-freight-interchange/>

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Appendix 18.6 ◆

**POTENTIAL EFFECTS OF CLIMATE CHANGE AND ASSOCIATED HAZARDS ON HNRFI**

**Table 18.6.1: Potential effects of climate change and associated hazards on HNRFI**

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
Precipitation	Extreme rainfall events	Soil saturation and water damage resulting in undercutting and erosion.  Softening of subsurface materials below the carriageway and structures resulting in a loss	Soil saturation and water damage.  Erosion, silting and sedimentation.	Damage to carriageway structures due to increased run-of.  Damage to unpaved shoulders.  Health and safety risks to road users.	Landslip and earthwork failure and risk to rolling stock and staff.  Damage to railway embankment and slope.  Scour of bridge supports.	Drains and culverts becoming overwhelmed.  Reduced opportunities for maintenance.	Difficult working conditions.  Increased risk of injury including slip, trip and fall hazards.  Health and safety risks to road users.

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
		of stability.  Increased slope instability.			Water on track or in underground structures.  Damage to rail track.  Other material damage to equipment and infrastructures.		
	Drought	Deformation of rigid structures.  Drying out of construction materials and cracking resulting in a loss of stability.	Drying out and loss of vegetation leading to greater erosion risk.	Deformation of rigid structures (roads, cycleway and footpath, culverts etc).	Desiccation of embankments resulting in track geometry faults and failures in supported lineside equipment.	Increased rate of deterioration of materials, potentially leading to need for early replacement.	Increased dust and windborne materials affecting, operation and maintenance, including silting and sedimentation.

Climate Variable	Potential Effect (Operation) for Each Receptor					
	Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
Change in seasonal average – drier summers.	<p>Subsidence impacting roads, the stability of structures.</p> <p>Failure of earthworks due to desiccation impacting structures and culverts.</p> <p>Shrinking and cracking of soils.</p>	Drying out and loss of vegetation / habitat affecting feeding and breeding.	<p>Failure of earthworks due to desiccation impacting roads, cycleway and footpath.</p> <p>Subsidence impacting roads, cycleway and footpath.</p>	Desiccation of embankments resulting in track geometry faults and failures in supported lineside equipment.		Increased dust and windborne materials affecting, operation and maintenance, including silting and sedimentation.
Change in seasonal average – wetter winters (including flooding)	Damage due to increased run-off Soil softening and erosion leading to collapse and	Changes in growing season and more vigorous growth during wet periods.	Damage to unpaved shoulders.	Flooding can affect all rail assets through:	<p>Blockage of drains and associated assets.</p> <p>Water accumulation in low spots and / or</p>	<p>Greater mobilisation of pollutants in the soil / ground.</p> <p>Movement of debris causing</p>

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
	and/or repeated wet cycles).	settlement of soil structures. Increased slope instability. Soil saturation. Undercutting in relation to structures.	Damage to unpaved shoulders.  Greater mobilisation of pollutants in the soil / ground.		Closure of line due to track flooding;  Failure of lineside equipment due to inundation of water;  Access to assets and infrastructure.	on impermeable surfaces.	slip, trip and fall hazards.  Difficult working conditions.
Temperature	Extreme temperature events	Increased risk of erosion.  Fire.	Fire.  Drying out and loss of vegetation.	Deformation of pavement surfaces.  Health and safety risks to road users.	High Temperatures:  Sagging of overhead line;  Failure of temperature controls and overheating of	Overheating of equipment (e.g. electronic signage).  Failure of temperature controls.	Reduced opportunities for maintenance.  Operational disruption.  Increased fire risk.

Climate Variable	Potential Effect (Operation) for Each Receptor					
	Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
				electronic equipment;  Warping of rail track; and  Overheating of safety device.  Low Temperatures:  Derailment due to snow or ice causing brittle tracks and track separation;  For overhead line equipment, there may be loss of power to rolling		Hot surfaces which may cause injury.

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		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
					stock due to ice and snow build up and contact failure; and icicle build up causing damage to pantograph;  Frost cracking, freezing of equipment and structures on track; and  Supply cable sag or tensional failure.		
	Change in seasonal average –	Increased risk of erosion.	Drying out and loss of vegetation.	Deformation of pavement surfaces.	Warping of rail track.	Overheating of equipment.	Difficult working conditions.



Climate Variable	Potential Effect (Operation) for Each Receptor					
	Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
hotter summers					Reduced opportunities for maintenance.  Greater demand for cooling.	
Change in seasonal average – warmer winters	Not applicable.	Changes in growing season and more vigorous growth during autumn and winter.	Fewer freeze-thaw events causing potholes.	Changes in growth rates and impacts on maintenance budgets and leaf fall management.  Changes in invasive species and impacts on maintenance budgets and risk based assessment.	Not applicable.	Less disruption from fewer ice and snow events.  Better working conditions for road operatives.

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
	Changes in solar radiation	UV degradation of materials.	Changes in growing season and more vigorous growth.	Increased solar gain (i.e. glare and warming of exposed surfaces).	Uneven thermal expansion leading to warping of track.	Opportunity for sustainable / renewable energy resources.	Not applicable.
Wind and Storm Events	Gales and extreme wind events	Risk of damage to structures and foundations, including from flood scour and run-off.  Increased rate of deterioration of materials, potentially leading to need for early replacement.	Loss of vegetation.  Falling trees.	Not applicable.	In relation to overhead line equipment and tracks, there is a risk to rolling stock, staff and asset failure from falling trees and debris (plastic bags, sheds and trampolines).  High crosswinds causing train instability.	Damage to signage.  Damage and disruption to power supply and other linked infrastructure.	Difficult working conditions.  Health and safety risks to road users, particularly high sided vehicles.

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
		Erosion of banks and exposed surfaces.			Damage to railway embankment and slope.  Scour of bridge supports.  Water on track or in underground structures.  Damage to rail track.  Other material damage to equipment and infrastructures.  Supply cable sag or tensional failure.		

Climate Variable	Potential Effect (Operation) for Each Receptor					
	Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
Storms (snow, hail, lighting)	Destabilisation due to lighting strike.	Falling trees.	Destabilisation due to lighting strike.	<p>For switches and crossings, there may be: frozen or snow-blocked points; and failure of point operating equipment.</p> <p>Lineside equipment may fail as a result of lightning strikes and electrical surges.</p> <p>Damage to railway embankment and slope.</p> <p>Scour of bridge supports.</p>	<p>Risk to power sources.</p> <p>Electrical surges.</p> <p>Fire risk.</p>	<p>Difficult working conditions.</p> <p>Health and safety risks to road users, particularly high sided vehicles.</p>

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
					Water on track or in underground structures.  Damage to rail track.  Other material damage to equipment and infrastructures.		
Relative humidity	Humidity	Damage from condensation, mould growth and mildew.  Excessive moisture in sheltered (i.e. north-facing) surfaces.	Changes in growing season and more vigorous growth.	Not applicable.	Thermal expansion and contraction of rail line.	Damage from condensation, mould growth and mildew.	Uncomfortable working conditions.

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
Water quality and soils	Soil moisture and runoff	Shrinking and cracking of soils leading to subsidence.	Shrinking and cracking of soils leading to loss of vegetation.	Not applicable.		Increased maintenance costs and risks to operation.	Greater mobilisation of pollutants in the soil/ground.
		Soil softening and erosion leading to collapse and settlement of structures.	Damage to unpaved shoulders.			Increasingly difficult working conditions, including time available to undertake works.	Difficult working conditions.
		Increased slope instability.					
		Soil saturation.					
		Flooding and damage due to increased run-off.					
		Shrinking and cracking of soils					

Climate Variable		Potential Effect (Operation) for Each Receptor					
		Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
		leading to subsidence.  Blockage of drains.  Water accumulation in low spots and/or on impermeable surfaces.					
	Salinity / pH	Increased rate of deterioration of materials, potentially leading to need for early replacement.	Change in soil chemistry may lead to loss of vegetation.	Not applicable.		Not applicable.	Not applicable.

Climate Variable	Potential Effect (Operation) for Each Receptor					
	Substructure / Built Structures	Landscaping / Habitats	Roads / Pedestrian and Cycle Ways	Rail	Ancillary Equipment	Employees and Users / Operators
Soil stability	<p>Subsidence impacting structures and culverts.</p> <p>Failure of earthworks due to desiccation.</p> <p>Increased maintenance costs.</p>	Loss of soil leading to loss of vegetation.	Not applicable.		Increased maintenance costs.	Not applicable.