



Norwich Western Link

Environmental Statement

Chapter 20: Cumulative Effects

Appendix 20.1: Sifting for Effect Interaction

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1 Appendix 20.1: Sifting for Effect Interaction

- 1.1.1 To identify where Effect Interactions might occur, a comparison of all Technical Chapters in this ES and their potential to have significant effects on the above common receptor groups and / or specific named receptors was undertaken.
- 1.1.2 This appendix lays out the sifting results used to determine whether the common receptor group and / or specific named receptors are exposed to more than one type of reported residual effect during the construction and operational phases of the Proposed Scheme. Those common receptor groups and / or specific named receptors exposed to two or more types of reported residual effects are taken forward to the next stage of assessment (Stage 2). If there is only one type of effect on a common receptor group and / or specific named receptors (i.e. only one Technical Chapter has identified effects on that sensitive receptor) then it is considered that there are no potential Effect Interactions and are not taken through to the assessment (Stage 2).
- 1.1.3 **Table 1** and **Table 3** summarise the residual effects reported in the Technical Chapters of this ES. The residual effects are grouped by relevant receptor group. **Table 1** summaries residual effects relating to the construction phase and **Table 3** summaries residual effects relating to the operational phase.
- 1.1.4 **Table 2** and **Table 4** assess the potential effect interactions for each receptor group and present those receptor groups to be taken forward to Stage 2. **Table 2** assesses potential effect interactions for the construction phase and **Table 4** assesses potential effect interactions for the operational phase.

Table 1 Reported residual effects – Construction

Common receptor groups / Specific named receptors	Relevant topic	Nature of Potential Effect(s)	Significance of reported residual effect
Residents	Noise and Vibration	Disturbance from changes in Noise and Vibration.	Significant adverse (temporary) construction noise effects to residents located at: C1 – Mouse Wood Farm; C2 – Pump Farm; C4 – Peacehaven; C5 – Deighton Hills House; and C9 – Woodstock.
Residents	Landscape and Visual	Impact on views - The visual amenity of the receptor may be adversely affected by the addition of plant, machinery, cranes, temporary lighting, and temporary barriers within views during construction.	<p>Slight Adverse (temporary) residual visual effects reported to receptors R3, R9 and R12.</p> <p>Slight – Moderate Adverse (temporary) residual visual effects reported to receptors R1, R2, R6 and R10.</p> <p>Moderate Adverse (temporary) residual visual effects reported to receptor R8.</p> <p>Moderate-large adverse (temporary) residual visual effects reported to receptors R13.</p>
Residents	Air Quality	Increase in Dust, PM ₁₀ and air pollutant concentrations from construction activities.	Negligible residual air quality effects in relation to the effect in relation to human receptors.
Residents	Population and Human Health	Changes in land use accessibility.	<p>Slight adverse (temporary) residual effects on properties located off A1270 Broadland Northway, A1067 Fakenham Road, off The Street, Ringland Lane and on Weston Road; Khora Yoga; and Agricultural Land Holdings 12, 17, 19 and 44.</p> <p>Moderate adverse (temporary) residual effect on residents and community assets in Weston Longville; users of Mid Norfolk Shooting Ground and Agricultural Land Holding 45.</p> <p>Moderate adverse (long term) residual effect on residential properties PP1 and PP4.</p> <p>Large adverse (temporary) residual effect on Agricultural Land Holdings 9 and 10, 14 and 32.</p>
Residents	Traffic and Transport	Disruption to journeys and driver delay.	Negligible to minor adverse (temporary) residual effects to residents.
Users of Public Rights of Way (PRoWs) and Walkers, Cyclists, and horse-riders (WCH)	Landscape and Visual	Impact on views - The visual amenity of the receptor may be adversely affected by the addition of plant, machinery, cranes, temporary lighting, and temporary barriers within views during construction.	<p>Moderate adverse (temporary) residual landscape and visual impacts on users of R11 – PRoW (Weston Longville FP9) and R10 (Weston Road).</p> <p>Moderate-large adverse (temporary) residual landscape and visual impacts on users of R13 – PRoW (Honingham RB1).</p>

Common receptor groups / Specific named receptors	Relevant topic	Nature of Potential Effect(s)	Significance of reported residual effect
Users of Public Rights of Way (PRoWs) and Walkers, Cyclists, and horse-riders (WCH)	Population and Human Health	Changes in land use accessibility.	<p>Slight adverse (temporary) residual effects on users of Attlebridge RB3 and Marriott’s Way circular.</p> <p>Moderate adverse (temporary) residual effect on users of Attlebridge RB4, Ringland FP1, Weston Longville FP9, Honingham FP5, Honingham RB1, Weston Longville FP1, Weston Longville FP7, Ringland FP2, Ringland FP3, Attlebridge FP5, an unnamed cycleway, Breck Road, Weston Road, Ringland Lane, Blackbreck Lane.</p>
Users of Public Rights of Way (PRoWs) and Walkers, Cyclists, and horse-riders (WCH)	Traffic and Transport	Severance and delay impacts on users of PRoWs and WCH.	Negligible to minor adverse (temporary) residual effects to users of PRoWs and WCH.
Surface and Groundwater	Road Drainage and Water Environment	<p>Residual effects to water quality and hydromorphology by entrainment of materials.</p> <p>Residual effects to water quality by spillage of pollutants.</p> <p>Residual effects to hydrological and hydromorphological processes. Intrusive works and the impacts to groundwater quality and quantity (level and flow).</p> <p>Change to groundwater flow paths and introducing groundwater flow barriers.</p> <p>Pollution to shallow groundwater receptors via drainage construction.</p>	<p>Neutral to Slight (Temporary) residual effects to Secondary A Aquifers (Alluvium and River Terrace Deposits), Secondary Undifferentiated Aquifers (Sheringham Cliffs Formation, Lowestoft Formation and Head Deposits) and Private Groundwater Abstractions.</p> <p>Slight Adverse (Temporary) residual effects to IDB drains; flood risk receptors; Groundwater Dependent Terrestrial Ecosystems (GWDTEs) – River Wensum SAC and connected habitats; Principal Aquifer (White Chalk Subgroup) and Source Protection Zone 3.</p> <p>Moderate Adverse (Temporary) residual effects to the River Wensum and Foxburrow Stream.</p>

Common receptor groups / Specific named receptors	Relevant topic	Nature of Potential Effect(s)	Significance of reported residual effect
Above Ground Heritage Assets	Cultural Heritage and Archaeology	Impacts to above ground heritage assets	No residual effects to above ground heritage assets identified.

Table 2 Summary of potential effect interactions and screening of receptors to be taken forward to assessment of Effect Interaction (Construction)

Receptor group / Specific named receptor	Potential Effect Interactions / Taken forward to assessment of Effect Interaction?
Residents	Yes - The health and amenity of residents living along the Proposed Scheme have the potential to be negatively affected during construction. Annoyance due noise from traffic and construction, visual disturbance, disruption to access to services, and disruption to journeys could combine to result in adverse effects on residents causing lower levels of quality of life and wellbeing during construction.
Users of Public Rights of Way (PRoWs) and Walkers, Cyclists, and horse-riders (WCH)	Yes – Users of PRoWs may experience significant Effect Interactions associated with visual disruption, reduced accessibility, delay and changes to routes during the construction phase.
Surface and Groundwater	No – Cumulative Effect Interactions are not considered likely as only one environmental topic identifies residual effects to this receptor category. Two or more topics must identify residual effects on this receptor category to combine to create a significant Effect Interaction.
Above Ground Heritage Assets	No – Cumulative Effect Interactions are not considered likely as there are no likely residual effects identified.

Table 3 Reported residual effects – Operation

Common receptor groups / Specific named receptors	Relevant topic	Nature of Potential Effect Interactions	Significance of reported residual effect
Residents	Air Quality	Changes in local air quality due to NO ₂ , PM ₁₀ and PM _{2.5} emissions from the operation of the Proposed Scheme.	Negligible residual air quality effects in relation to the effect in relation to human receptors.

Common receptor groups / Specific named receptors	Relevant topic	Nature of Potential Effect Interactions	Significance of reported residual effect
Residents	Noise and Vibration	Increase in Noise	<p>Significant beneficial (permanent) residual effects to residential receptors in group 1; and Receptors within 50m of B1535 (between A1067 and Heath Road), Rectory Road (west of B1535) and Beech Avenue (between Maple Drive and Ringland Road).</p> <p>Significant adverse (permanent) residual effects to residential receptors in groups 6 and 7; and Receptors within 50m of Taverham Road, Fir Covert Road (north of A1270), A1270 (west of Broadland Northway Roundabout), Station Road (through Attlebridge), Old Fakenham Road and Mattishall Lane (between A47 and Burgh Lane).</p>
Residents	Landscape and Visual	Visual Impacts	<p>Slight Adverse (permanent) residual visual effects reported for receptors R1, R2, R3, R5, R8, R9, R10 and R12.</p>
Residents	Population and Human Health	Land take and severance	<p>Slight adverse (temporary) residual effects on Agricultural Land Holdings 12, 17, 19 and 44.</p> <p>Moderate adverse (temporary) residual effects on Agricultural Land Holdings 1, 7, 18 and 45.</p> <p>Large adverse (temporary) residual effects on Agricultural Land Holdings 9 and 10, 14 and 32.</p>
Users of PRowS and WCH	Landscape and Visual	Visual Impacts	<p>Slight adverse (permanent) residual landscape and visual impacts to users of Honingham FP5 / Weston Longville FP9.</p> <p>Slight-moderate (permanent) residual landscape and visual impacts to users of Honingham RB1.</p>
Users of PRowS and WCH	Population and Human Health	Changes in land use accessibility	<p>Moderate Adverse (permanent) residual effects on users of Honingham RB1, Breck Road, Weston Road and Blackbreck Lane.</p> <p>Slight beneficial (permanent) residual effects on users of Weston Longville FP9, Honingham FP5 and an unnamed cycleway.</p>
Users of PRowS and WCH	Traffic and Transport	Amenity and delay impacts on users of PRowS and WCH	<p>Minor Adverse (temporary) residual effects to users of Brick Kiln Road, Bell Road, Burgh Lane, South Green / Mill Street and the A47 at opening year.</p> <p>Minor Adverse (permanent) residual effects to users of Bell Road, Low Road, Burgh Lane and South Green / Mill Street at year 15.</p>

Common receptor groups / Specific named receptors	Relevant topic	Nature of Potential Effect Interactions	Significance of reported residual effect
Surface and Groundwater	Road Drainage and Water Environment	<p>Impact to hydrological and hydromorphological processes as a result of new structures or channel modifications.</p> <p>Impact to water quality through an increased risk of a spillage event which has the potential to affect a receiving watercourse.</p> <p>Impact to groundwater quality through a potential spillage event.</p> <p>Impact of spillages on groundwater during the operational phase.</p>	<p>Neutral - Slight Adverse (Permanent) residual effects to Secondary A Aquifers (Alluvium and River Terrace Deposits) and Secondary Undifferentiated Aquifers (Sheringham Cliffs Formation, Lowestoft Formation and Head Deposits).</p> <p>Slight Adverse (Temporary) residual effects to Flood risk receptors; Private Groundwater Abstractions; and Groundwater Dependent Terrestrial Ecosystems (GWDTEs) – River Wensum SAC and related habitats.</p> <p>Slight Adverse (Permanent) residual effects to the River Wensum, Foxburrow Stream; Principal Aquifer (White Chalk Subgroup) and Source Protection Zone 3.</p>
Above Ground Heritage Assets	Cultural Heritage and Archaeology	Impacts to visual, historic setting, connections and relationships with nearby assets.	<p>Minor adverse (permanent) residual effects to Abattoir at the Old Butcher's Shop; The Lodge; Church of St Margaret; Garden Walls to West of Morton Hall; Morton Hall; Garden Walls including Owl House at Home Farm, Morton Hall Estate; Church of All Saints including boundary wall to churchyard; Church of St Peter; Stables and Coach House to Honingham Hall and Site of Honingham Hall; Honingham Park; and Attlebridge World War Two Airfield.</p> <p>Moderate adverse (permanent) residual effects to Barn 50m north west of Low Farm House.</p>

Table 4 Summary of potential effect interactions and screening of to be taken forward to assessment of Effect Interaction (Operation)

Receptor group / Specific named receptor	Potential Effect Interactions / Taken forward to assessment of Effect Interaction?
Residents	Yes - The health and amenity of residents living along the Proposed Scheme have the potential to be negatively affected during operation. Annoyance due to noise from increased traffic levels, visual intrusion and disruption in access to properties and land could combine to result in adverse effects on residents causing lower levels of quality of life and wellbeing.
Users of Public Rights of Way (PRoWs) and Walkers, Cyclists, and horse-riders (WCH)	Yes – Users of PRoWs may experience Effect Interactions associated with visual intrusion of the Proposed Scheme, reduced accessibility and changes to journeys.

Receptor group / Specific named receptor	Potential Effect Interactions / Taken forward to assessment of Effect Interaction?
Surface and Groundwater	No – Cumulative Effect Interactions are not considered likely as there are no likely residual significant effects for the Surface and Groundwater receptor category identified. Furthermore, no other environmental topic lists significant residual effects on this receptor category that could combine to create a significant Effect Interaction.
Above Ground Heritage Assets	No – Cumulative Effect Interactions are not considered likely as there are no likely residual significant effects identified. Furthermore, no other environmental topic lists significant residual effects on this receptor category that could combine to create a significant Effect Interaction.