Commission Reference: 2019/D001

THE ROADS (NORTHERN IRELAND) ORDER 1993

ARTICLE 67A

Public Local Inquiry into the A5 Western Transport Corridor Road Scheme

Report by

Commissioner G A Kerr and Mr T A Rue (Assessor)

Inquiry Dates: 18th to 21st February 2020, 11th to 13th March 2020, 15th to 19th May 2023 and 30th May to 2nd June 2023

Date of Report: 31st October 2023

Planning Appeals Commission

CONTENTS

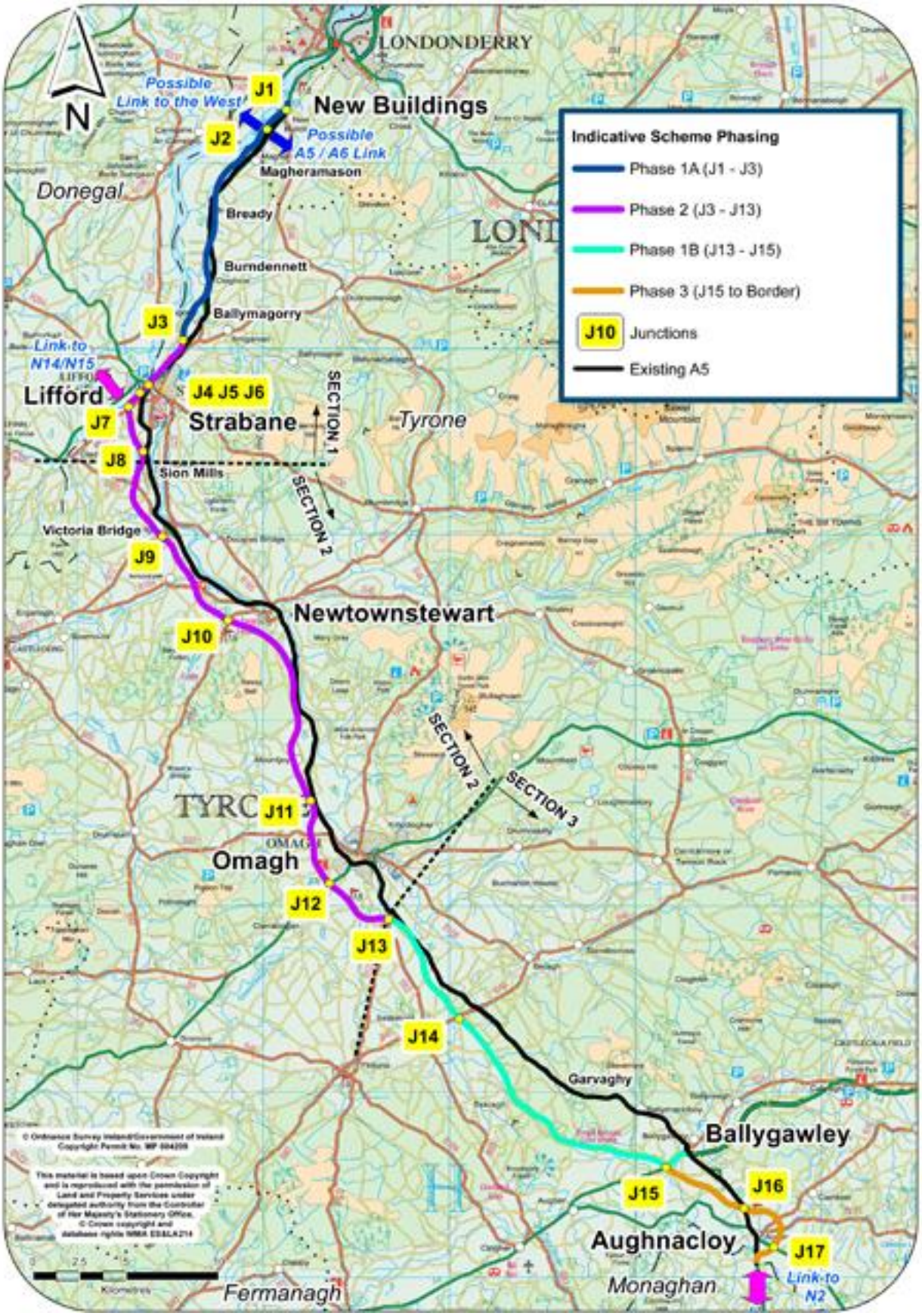
ABBEVIATIONS USED IN THE REPORT

AA	Appropriate assessment
AA5A	Alternative A5 Alliance
AADT	Annual average daily traffic
AIIA	Agricultural industry impact assessment
AISRR	All-Island Strategic Rail Review
AM	Morning
APIS	Air Pollution Information System
ASSI	Area of Special Scientific Interest
AOD	Above Ordnance datum
AoHSV	Area of High Scenic Value
AONB	Area of Outstanding Natural Beauty
BCR	Benefit to cost ratio
BS	British Standard
CEMP	Construction environmental management plan
CL	Climbing lane
CLe	Critical level
COBALT	Cost and Benefit to Accidents – Light Touch
dB	decibels
DAERA	Department of Agriculture, Environment and Rural Affairs
DAP	Derry Area Plan 2011
DfI	Department for Infrastructure
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
DoF	Department of Finance
DWL	Double white line
ECHR	European Convention on Human Rights
ECJ	European Court of Justice
EIA	Environmental impact assessment
EiE	Enough is Enough
EQIA	Equality impact assessment
ES	Environmental statement
ESA	Environmental statement addendum
EU	European Union

FRA	Flood risk assessment
GAA	Gaelic Athletic Association
GHG	Greenhouse gas
HED	Historic Environment Division
HGV	Heavy goods vehicles
HRAIA	Human Rights Act impact assessment
kgN/ha/y	kilograms of nitrogen per hectare per year
$L_{A10,18h}$	Sound level exceeded 10% of the time, averaged over 18 hours
LBIA	Local business impact assessment
LCL	Lower critical load
LDP	Local development plan
µg/m^3	micrograms per cubic metre
mph	miles per hour
MtCO_2e	Million tonnes of carbon dioxide equivalent
NART	"A New Approach to Regional Transportation"
N-dep	Nitrogen deposition
NDP	National Development Plan
NIE	Northern Ireland Electricity
NIEA	Northern Ireland Environment Agency
NH_3	Ammonia
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
OBC	Outline business case
OCoW	Ornithological clerk of works
OOR	**"**Overtaking Opportunities Report"
OPW	Office of Public Works
PM	Afternoon
$PM_{2.5}$	Fine particulate matter
PM_{10}	Particulate matter
PPS 2	Planning Policy Statement 2 – Natural Heritage
PPS 6	Planning Policy Statement 6 – Planning, Archaeology and Built Heritage
PPS 15	Planning Policy Statement 15 – Planning and Flood Risk
RDS	Regional Development Strategy
RIAA	Report to inform an appropriate assessment

RIPS	Railway Investment Prioritisation Strategy
RSPB	Royal Society for the Protection of Birds
RSTN	Regional Strategic Transport Network
RSTNTP	Regional Strategic Transport Network Transport Plan
RTS	Regional Transportation Strategy
SAC	Special Area of Conservation
SAP	Strabane Area Plan 1986-2001
SAR 2	Stage 2 Scheme Assessment Report
SMP	Silt management plan
SPA	Special Protection Area
SPPS	Strategic Planning Policy Statement for Northern Ireland
TAG	Transport Analysis Guidance
TEN-T	Trans European Transport Network
TFR	Traffic Forecast Report
TII	Transport Infrastructure Ireland
UFU	Ulster Farmers' Union
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
WHO	World Health Organization
WS2+1	Wide single carriageways with overtaking lanes
WTC	Western Transport Corridor

SCHEME MAP


N
LONDONDERRY
Possible
Link to the West
J1
New Buildings
J2
Possible
A5 / A6 Link
Magheramason
Donegal
Bready
Burndennett
Ballymagorry
J3
Link to
N14/N15
Lifford
J4 J5 J6
Strabane
J7
J8
Sion Mills
Tyrone
SECTION 1
SECTION 2
Victoria Bridge
J9
Newtownstewart
J10
TYRC
J11
SECTION 2
SECTION 3
Omagh
J12
J13
J14
Garvaghy
Ballygawley
J15
J16
Aughnacloy
J17
Link to
N2
Monaghan
Fermanagh
Indicative Scheme Phasing
Phase 1A (J1 - J3)
Phase 2 (J3 - J13)
Phase 1B (J13 - J15)
Phase 3 (J15 to Border)
J10 Junctions
Existing A5

1.0 INTRODUCTION

1.1 The Department for Infrastructure (DfI), Roads (formerly the Department for Regional Development, Transport NI) is promoting a scheme to construct a new road in what is known as the Western Transport Corridor (WTC) from Newbuildings, County Londonderry to a point close to the border with the Republic of Ireland to the south of Aughnacloy, County Tyrone.

1.2 The proposed road would be "off-line", that is to say it would take a separate course to that of the existing A5 which serves the WTC. It would be about 85 kilometres (53 miles) in length. Except for a mile-long stretch adjacent to Newbuildings and a shorter stretch in the vicinity of Aughnacloy, the new road would be a dual carriageway. The scheme includes the dualling of the existing A4 road for a distance of 1 kilometre westwards from its intersection with the existing A5.

1.3 In 2011 public inquiries were held into the A5 scheme by inspectors appointed by the Department at which an environmental statement (ES) was considered. The then Minister accepted their main recommendations and in July 2012 announced his intention to proceed with the scheme and with the making of a Direction Order designating the proposed road as a trunk road, and Vesting Orders providing for compulsory land acquisition.

1.4 Following an application for judicial review by the Alternative A5 Alliance (AA5A), an association of objectors to the scheme, the High Court quashed these decisions in April 2013 because of a failure to make an appropriate assessment (AA) of the implications of the scheme for designated habitats of nature conservation importance – see *Alternative A5 Alliance's Application* [2013] NIQB 30. (The relevant legal requirements relating to such habitats are outlined in Chapter 4 of this report.)

1.5 A new ES and draft Direction Order, draft Vesting Orders and draft Stopping Up of Private Accesses Orders were subsequently prepared and advertised for comment. The Commission was appointed to conduct an inquiry into representations made and this took place between October and December 2016. The Commissioners presented their report in May 2017 and recommended that, with the exception of Phase 3 from Ballygawley to south of Aughnacloy, the scheme should proceed.

1.6 In November 2017, DfI announced that it was proceeding with the whole scheme and making a Direction Order for the proposed route from Newbuildings to Ballygawley, and Vesting Orders for Phase 1a from Newbuildings to north of Strabane. Following another application for judicial review by the AA5A, the High Court quashed these decisions in November 2018. DfI submitted to judgment in recognition of the absence of Ministerial authority for its purported decisions.

1.7 In March 2019, DfI published for consultation an addendum to its 2016 ES (hereafter referred to as the 2019 ESA) and reports to inform appropriate assessments (RIAAs) relating to designated habitats. The addendum incorporated by reference a document titled "Quarrying in the Townland of Urbalreagh".

1.8 In September 2019, DfI appointed the Commission to hold an inquiry into the addendum and the RIAAs, together with opinions expressed in relation thereto. The Commission convened a pre-inquiry meeting, which took place on 4th December 2019. When queried about the legal basis for the inquiry, DfI acknowledged Article 67 of the

Roads (Northern Ireland) Order 1993 did not make express provision for a procedure by which the promoter of a project may provide up-to-date information by way of an addendum to an ES. However, in DfI's submission, neither the legislation nor case law prohibited such a procedure.

1.9 DfI considered that the procedure it followed was lawful, having regard to the overriding requirement to ensure that the likely significant effects of a project upon the environment were subject to environmental impact assessment (EIA), which included the preparation of an ES and consultation on its content. Since those effects might change prior to a decision on whether to proceed with the scheme, effect could only be given to the overriding legal obligation if the ES could be updated. DfI reasoned that since an addendum to an ES formed part of the ES, its power under Article 67A(5) to cause a local inquiry to be established was available where it received opinions from the public following advertisement of an addendum.

1.10 DfI indicated at the pre-inquiry meeting and confirmed in writing afterwards that it wished the Commission to conduct an inquiry which permitted consideration of all the representations made in response to the updated environmental statement, including those that related to whether the project should proceed. It stated that it was preparing to address the following issues – need/justification, alternatives, options appraisal, benefits, economic case, business case, funding/phasing, vesting and human rights. These matters are described in this report as strategic issues.

1.11 DfI also made clear at the meeting and confirmed in writing afterwards that it did not anticipate further public consultation in relation to the draft Direction Order or the Notice of Intention to Make a Vesting Order, both published in 2016.

1.12 Following the pre-inquiry meeting, the Commission decided to hold the proceedings in two stages. Stage 1, to consider the effects of the scheme on the environment and habitats, took place over four days in February 2020. Stage 2, at which the non-environmental issues were discussed, occupied three days in March 2020. A total of 274 representations were considered at Stages 1 and 2.

1.13 The Commission provided an interim report to DfI in September 2020, which reached the following main conclusions:

- It would not be environmentally responsible to proceed with the scheme without first undertaking an up-to-date flood risk assessment (FRA) which takes account of recent flooding events and the latest technical guidance.
- It is incumbent on DfI, before authorising itself to proceed with a scheme that requires the confiscation of extensive areas of land, to satisfy itself that the aim and objectives it set for the scheme cannot be met adequately by any means that are less intrusive on human rights. All reasonable alternatives must be considered. An obvious alternative, which DfI was pursuing until the scheme was mooted, is provision of town bypasses and selected improvements to the existing A5. The suitability, environmental effects and human rights implications of alternative options of this kind must be properly assessed.
- If the scheme is to proceed, phasing needs to be reviewed and priority given to those stretches of the proposed road that offer greatest benefit. Phase 3 is unjustifiable and should be removed. Transparency requires clear reasons to be given for whatever phasing choices are made.

- Some people have had to endure the uncertainty for over 10 years of not knowing whether or when their land and property is going to be taken against their will. This has had serious effects on their lives. Mental health has suffered. As there is considerable doubt over funding to complete the scheme, it would be unfair and unreasonable to continue pursuing any part of the scheme for which there is no money. Only proposals for which funding is guaranteed should be retained.

1.14 As the topics of flood risk and alternatives were not properly dealt with in the ES, the Commission considered that a further addendum was required. It therefore adjourned the inquiry. It expected that any reconvened inquiry would focus on the matters left over for further consideration, plus any significant developments that might occur between September 2020 and the time of re-opening. It saw no need for matters that were disposed of in the Interim Report to be revisited.

1.15 In an interim statement issued in March 2021, DfI accepted the recommendations relating to flood risk and alternatives and gave a response to every recommendation in the Interim Report. In March 2022 it published a new addendum to the ES along with updated RIAAs and a notice of intention to vest additional lands. The addendum included a revised version of every chapter in the ES, a new FRA, an alternatives study, a phasing report and agricultural industry and local business impact assessments.

1.16 On 30th September 2022, DfI provided the Commission with copies of 219 representations it had received to its March 2022 consultation. On 19th October 2022, the Commission wrote to the people who had made those representations and to participants in the inquiry in 2020 to advise that the inquiry would re-open in January 2023 and that a mid-inquiry meeting would be held on 15th November 2022.

1.17 On 31st October 2022, DfI informed the Commission by letter of its intention to publish seven additional items of environmental information. The Commission had no previous notice of this initiative. The new consultation documents were of a technical nature and comprised 507 pages. The deadline for submission of representations was 23rd December 2022.

1.18 At the mid-inquiry meeting, the Commission invited views on whether DfI's new consultation could be accommodated within the existing timetable. Having concluded that it would be unfair to members of the public to attempt to do so, the Commission postponed the re-opening of the inquiry. The November 2022 consultation generated 920 representations.

1.19 At the meeting, the Commission drew attention to the absence from the ES and its addenda of illustrations showing the vertical alignment of the proposed road structures. Publication of information on the design and size of the project is required by Article 67(6) of the Roads Order and is essential to the assessment of the landscape and visual effects of the scheme. The Commission therefore requested dimensioned elevations and long sections showing proposed road deck altitudes in relation to existing ground levels, construction materials and the external appearance of the road.

1.20 In January 2023, DfI made available a report containing layout drawings covering the entire length of the scheme together with longitudinal profiles and cross sections. This consultation generated 112 representations. Meanwhile, in December 2022, DfI produced an environmental assessment matrix which depicts the relationships between the 2016 ES and the 2019 and 2022 addenda.

1.21 The AA5A provided the Commission with two lever-arch files containing papers, some redacted, documenting DfI's internal deliberations following receipt of the Interim Report. The AA5A's solicitors had obtained this material by means of requests under the Environmental Information Regulations 2004.

1.22 In advance of the re-opening of the inquiry, the Commission asked DfI to provide additional documents to supplement its evidence and to complete 10 spreadsheets. The Commission also asked DfI to arrange for the attendance of various experts from public bodies in Northern Ireland and the Republic of Ireland. We are grateful to DfI for fulfilling these requests and for making available the 2022 outline business case (OBC) for the scheme, which updated the previous version produced in 2017.

1.23 Stage 3 of the inquiry took place over nine days in May/June 2023. The AA5A was again represented. A new campaign group known as Enough is Enough (EiE), which was formed on the initiative of Tyrone Gaelic Athletic Association (GAA) to support the proposed scheme in the aftermath of recent fatal accidents on the existing A5, was also represented. There was a large attendance by EiE supporters throughout Stage 3 and especially on the day when road safety was discussed.

1.24 We wish to record our thanks for the help and co-operation we received from everyone who participated in the inquiry. DfI provided projection facilities which enabled those attending to follow more readily the diffuse and often complex subjects being discussed. The staff of the Strule Arts Centre and the Omagh Enterprise Centre made us welcome and assisted in numerous practical ways. The inquiry administrators, Ms Lyra Huo in 2020 and Ms Ruby McLaren in 2023, provided invaluable logistical support in the lead up to, and throughout, the proceedings.

1.25 The Planning Appeals Commission, as an independent statutory tribunal, is committed to the principles of openness, fairness and impartiality. We, the authors of this report, have no personal association with any person or group involved in the inquiry. We are not beholden to any interest or pre-disposed to any viewpoint. We sought to lead a structured but inclusive debate, where everyone was free to express their opinions about the scheme.

1.26 The purpose of this report is to provide DfI with information to help the ultimate decision maker determine whether and how to proceed with the scheme. Along with 16 days' oral evidence, we were presented with a vast array of written material, including the multi-volume ES and its addenda, the RIAAs, the OBCs, numerous political, policy and technical guidance documents, voluminous written evidence, and a substantial body of case law. All of this we have endeavoured to assimilate, sift and synthesise. We have followed the logic of the evidence to reach a series of conclusions which are <u>underlined</u> and highlighted in yellow. We have sought, as is our duty, to offer clear, robust and timely recommendations on all key issues. Our recommendations are set out in **bold** text in a light green box.

2.0 STRATEGIC ISSUES

2.1 The Regional Development Strategy (RDS) for Northern Ireland 2025 was published in 2001 under the title "Shaping our Future". Key Diagram 4 identified a core transport network of important regional routes (road and public transport) to be known as the Regional Strategic Transport Network (RSTN). The RSTN incorporated 5% of the road network, which carried around 30% of total vehicle travel, and all of the rail system.

2.2 The core transport network identified in the RDS included the Western Transport Corridor (WTC). Key Diagram 4 referred to Londonderry – City of the North West as having a major inter-regional gateway role. There were arrows pointing from Londonderry to Letterkenny, from Strabane into Donegal and from the southern extremity of the WTC past Monaghan towards Dublin.

2.3 The RDS sought to develop and maintain the RSTN to enhance accessibility on an integrated basis for all users, including freight. It referred to targeted upgrades to the road and rail network and local improvements at significant traffic bottlenecks. It also sought to contribute to the creation of an integrated transport network for the island of Ireland as a whole. It said that the development of a co-ordinated approach to spatial planning between Northern Ireland and the Republic of Ireland would assist the effective development of cross-border roads and public transport routes and help the tourism industry.

2.4 The Regional Transportation Strategy 2002-2012 (RTS) was a daughter document of the RDS. It identified strategic investment priorities and considered potential funding sources and affordability of planned initiatives. It was a £3.5 billion strategy which earmarked 63% of potential expenditure for roads and 35% for public transport. It was to be implemented through three transport plans, including the Regional Strategic Transport Network Transport Plan (RSTNTP).

2.5 The RSTNTP 2015 identified strategic road improvement schemes on the WTC which were completed, under construction or in preparation. An A5/N14 Strabane Bypass to Lifford link was in the forward planning schedule. It had performed well when assessed at feasibility stage and was expected to be implemented within 10 years or so. The RSTNTP also listed eight widened single carriageway schemes in the WTC that were under consideration for 2004-09 and three that were under consideration for the rest of the plan period. All the schemes in both lists were on the existing A5.

2.6 In January 2005, the Department's Roads Service, Western Division, prepared a document titled "Overtaking Opportunities Report". It identified potential schemes involving the widening of single carriageways to create overtaking lanes (WS2+1) between Magheramason and Ballygawley in locations which appear to correspond with those shown in the RSTNTP.

2.7 In 2006, the Department issued a consultation document "Expanding the Strategic Road Improvement Programme 2015". A scheme proposed to be added to the programme was a new route to 2+1 standard to run for 30 kilometres between Londonderry and Victoria Bridge. It was to include bypasses at Newbuildings, Magheramason, Strabane and Sion Mills. The cost was £130 million (at the time). A scheme that performed well in the assessment but was deemed not affordable within the funding envisaged was an outer bypass of Omagh to single carriageway 2+1 standard for strategic through traffic. The document did not proceed beyond consultation stage.

2.8 On 17th July 2007, a plenary meeting of the North/South Ministerial Council took place involving the then First and Deputy First Ministers and Taoiseach. The joint communiqué included the following:

"The Council noted the Irish Government's intention to make available a contribution of £400 million to help fund major roads programmes providing dual carriageway standard on routes within Northern Ireland serving the North West Gateway and on the eastern seaboard corridor from Belfast to Larne. The Northern Ireland Executive confirmed its acceptance, in principle, to taking forward these two major road projects … The route serving the North West Gateway will be taken forward in line with funding and accountability, planning, management and delivery arrangements agreed between the Irish Government and the Northern Ireland Executive. Relevant Ministers will take forward the necessary steps to progress this project, including the early commencement of a route corridor study."

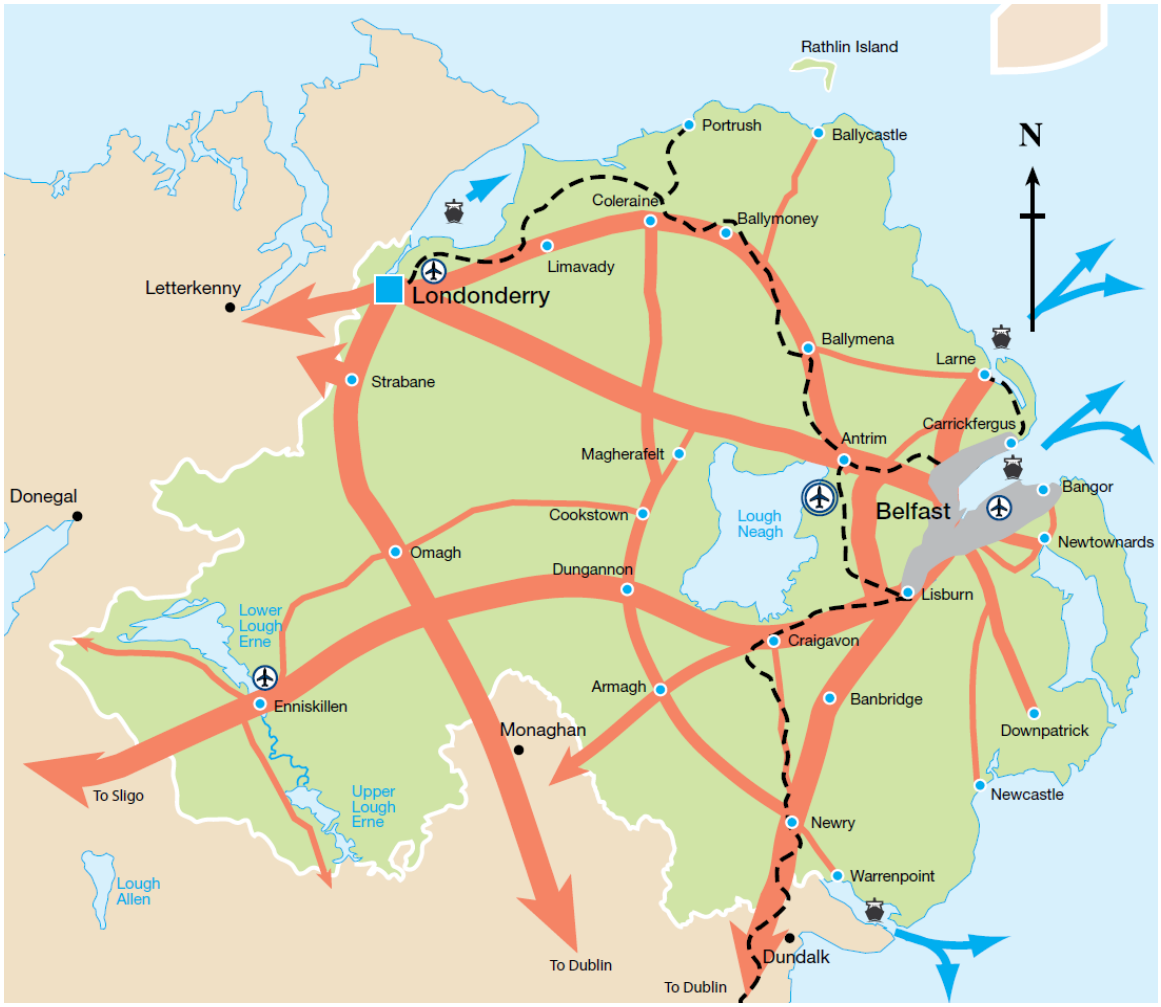
2.9 The Northern Ireland Executive's Programme for Government 2008-2011 contained a commitment to progress plans to extend a dual carriageway on the A5 WTC. In 2008 a study area for the dual carriageway scheme was defined and was the subject of a public consultation. Three potential corridors were then evaluated – one focused on the existing A5, one to its west and one to its east. In early 2009, public consultation was carried out in relation to the preferred corridor and route options. In July 2009, the Minister for Regional Development announced the preferred route.

2.10 Following receipt of ground investigation studies, flood modelling, information on costs and feedback from landowners, a number of alternatives to the preferred route were considered and published. The combination of the preferred route and adopted alternatives became the proposed scheme on which draft statutory Orders were based.

2.11 In late 2011, in the face of severe economic problems, the Irish Government deferred the majority of its £400 million contribution. Following a review of its spending priorities, the Northern Ireland Executive announced in February 2012 revised budgetary plans that would allow two phases to progress – from Newbuildings to the north of Strabane and from south of Omagh to the A4 at Ballygawley. These were referred to in the ES as Phase 1a and Phase 1b respectively. The section from north of Strabane to south of Omagh was referred to as Phase 2 and the section from Ballygawley to the border at Aughnacloy was referred to as Phase 3. The locations of these phases are shown on the Scheme Map at the start of this report.

2.12 The RDS 2025 was replaced by a new, undated, RDS covering the period to 2035 published under the title "Building a Better Future". According to Paragraph 1.12, the policy development process was influenced by an environmental report. That report was a strategic environmental assessment published pursuant to the Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004.

2.13 One of the aims of the RDS 2035 was to support strong sustainable growth for the benefit of all parts of Northern Ireland. Tackling regional imbalance was a critical issue. Another aim was to improve connectivity to enhance the movement of people, goods, energy and information between places. Diagram 3.3 was similar in content to Key Diagram 4 of the RDS 2025. It showed the WTC with arrows pointing into the Republic of Ireland at the same places. It also denoted Londonderry – North West Region and the city's gateway function.



Regional Development Strategy 2035, Diagram 3.3

2.14 Paragraph 3.4 discussed transport infrastructure but contained no specific proposals for new construction. Its focus was on managing the use of road and rail space and how to use the network in a better, smarter way. It referred to maximising the potential of the RSTN and to its contribution to building an integrated regional economy.

2.15 Paragraph 3.52 of the RDS 2035 noted that Strabane had a close cross-border relationship with Lifford. It stated that both could benefit from sharing services and functionality and their locational advantage would be further strengthened when the A5 linking Dublin and Omagh to Strabane and Londonderry was improved. This would create the potential for an economic corridor from Aughnacloy to North Donegal.

2.16 The RDS 2035 was followed by "Ensuring a Sustainable Transport Future – A New Approach to Regional Transportation" (NART), again undated. It stated that unlike the RTS, the new approach did not include details of schemes or projects. Rather, the Department had set high-level aims and strategic objectives against which strategic transport interventions beyond 2015 could be assessed. The new approach revolved round the movement of people and goods rather than vehicles. The high-level aims were to support the growth of the economy, enhance the quality of life for all and reduce the environmental impact of transport. There was a reference to completing the work identified in the RSTNTP and strategic road improvement programme while new programmes of work were developed for the main roads and railways.

2.17 In its statement of case submitted prior to the inquiry in 2020, the AA5A argued that none of these policy documents contained any technical justification for the scheme or established a need for it. It pointed out that the RDS 2025 and the RTS had been superseded. The RDS 2035 referred to an A5 upgrade but went no further. NART referred to strategic objectives without specifically mentioning an A5 scheme.

2.18 The AA5A contended that the scheme was being promoted because of a political promise between the Northern Ireland Executive and the Irish Government. It said it was telling that before 2007 the Department was upgrading the A5 incrementally by adding stretches of online carriageway along with bypasses to avoid or relieve the build-up of traffic.

2.19 At the inquiry in 2020, DfI's representatives agreed that it was a political decision to promote a dual carriageway scheme and that they had been charged with delivery. They pointed out that the RDS 2035 was published in 2012, prior to the quashing of the first decision to proceed with the scheme. The reference in the RDS to the improvement of the A5 should therefore be read as a reference to the Department's dual carriageway scheme. We accept that it is a reasonable interpretation that the RDS was written in the expectation that the scheme would be going ahead and to that extent is supportive of it.

2.20 It seems to us that political declarations such as the July 2007 communiqué are statements of intent but do not constitute government policy. And while ministers may have policies, they must always be prepared to consider, having regard to special circumstances, departing from those policies.

2.21 Table 2-1 of the 2022 outline business case (OBC) is titled "Alignment of Proposed Scheme objectives to strategy plans and policy documents". It lists nine "place specific" strategies, three "business" strategies and 19 "wider" strategies. These 31 documents are a strange miscellany of draft local development plans (LDPs) and associated studies, outdated financial statements, political agreements, policy reports and statutes. Counsel for DfI described the table as a transparent analysis of how the scheme objectives are consistent with government policy. He said the decision on whether to proceed with the scheme is not governed or constrained by any of the documents.

2.22 Table 2-1 of the OBC refers to three draft LDPs, only one of which has been adopted to date. In the meantime, the Derry Area Plan 2011 (DAP), the Strabane Area Plan 1986-2001 (SAP) and the Dungannon and South Tyrone Area Plan 2010, although long past their respective end dates, remain the statutory development plans for their areas. The OBC makes no mention of the Dungannon and South Tyrone Area Plan.

2.23 At Paragraph 2.2.11, the OBC asserts that the A5 scheme is well aligned to the following DAP transport objectives:

- implement a road works programme which will focus on the improvements and upgrading of key strategic routes;
- a new dual carriageway will reduce journey travel times for users, increase road safety and relieve congestion.

2.24 The second of these bullet points is not a transport objective of the DAP, nor do these words appear anywhere else in the plan. There is in fact no reference to the proposed new dual carriageway in the DAP. The OBC has, no doubt inadvertently, misrepresented the transport provisions of the plan.

2.25 The first bullet point in Paragraph 2.2.11 of the OBC is just one of eight elements of the DAP's transportation strategy (see Pages 103 and 104 of the plan). It is important to read these elements together. The other elements include encouraging alternative travel modes and reducing dependence on the private car; encouraging a high quality accessible public transport system; and improving pedestrian links and cycling facilities. With one exception, the proposed road works programme involves improving and upgrading existing routes rather than building new roads.

2.26 Proposal TR 1 of the DAP lists the strategic highway proposals, including Newbuildings to Magheramason widening. Map 1 of the plan confirms that this relates to the existing A5 and is not a proposal for an off-line dual carriageway. It must be concluded therefore that the DAP affords no support to DfI's current scheme.

2.27 The OBC notes that the SAP was adopted in 1991. It quotes Paragraph 16.3 which says that "the proposals in the Plan are geared primarily towards the improvement of the Omagh-Strabane-Londonderry road, the reduction of traffic congestion and vehicular/pedestrian conflict in urban areas and the improvement of the existing road system to remove traffic hazards and to facilitate future development". On a plain reading, this sentence supports improving the existing A5 and the existing road system. It is fanciful to suggest that DfI's current scheme is well aligned with the SAP.

2.28 The Fermanagh and Omagh LDP 2030 Plan Strategy was adopted on 16th March 2023. It must be read together with the Omagh Area Plan 1987-2002 and any conflict resolved in favour of the Plan Strategy. The Plan Strategy notes in Part One, Paragraph 6.32 that whilst Omagh is currently well connected by road to Belfast, Derry-Londonderry and the transport gateways by the Key Transport Corridors, there are issues with journey time reliability, due to slow travel speeds on account of the town's location and predominantly single carriageway roads. It goes on to say in Part Two, Paragraph 6.37 that the Council will support proposals for transportation which improve travel times, alleviate congestion and improve safety as well as providing more sustainable modes of transport including buses, walking and cycling. However, the Plan Strategy does not articulate any specific support for DfI's A5 scheme.

2.29 In a written representation submitted in 2022, Tyrone GAA referred to the draft Programme for Government signed off by the then First Minister and Deputy First Minister in January 2021. It was built round nine desired outcomes, all of which, it was argued, are being compromised on a daily basis due to lack of action on the A5.

2.30 The desired outcomes included the following:

- Our children and young people have the best start in life.
- We enjoy long, healthy, active lives.
- Everyone can reach their potential.
- Everyone feels safe.

2.31 A DfI witness confirmed that the draft Outcomes Framework, though put out for public consultation, was never finalised by the Northern Ireland Executive and that there is currently no Programme for Government. The consultation document did not contain any specific commitment to the A5 scheme.

2.32 Even though there is political support and some limited policy support for the scheme, that does not suffice to sweep aside the objections that we have been tasked to consider, nor does it inevitably lead to the conclusion that the scheme should proceed.

Conversely, a finding that the scheme would interfere with human rights or have significant adverse environmental effects would not necessarily mean it should be rejected. Ultimately a balanced judgment must be made, taking account of all relevant factors. The next step is to consider the need and justification for the scheme.

Justification

2.33 Objections submitted in 2019 and 2022 described the scheme as a waste of taxpayers' money that would be better spent on the health service and schools. It was argued that it would be immoral to spend over a billion pounds on an unnecessary road in a period of economic uncertainty when there have been substantial cuts in public services and it was obvious that money was in very short supply. It was claimed that normal criteria were being sidestepped in pursuit of a "white elephant" scheme and that the road would provide mostly disbenefit for Tyrone people and businesses.

2.34 The need and justification for the scheme must be assessed against its stated aim and objectives. Notwithstanding the persistence of divergent wording in different scheme documents, it was confirmed at the inquiry in 2023 that the objectives of the scheme are those set out in the environmental statement addendum (ESA) of March 2022, namely to:

- improve road safety;
- improve the roads network in the west of the province and North/South links;
- reduce journey times and improve journey reliability along the A5 WTC;
- provide increased overtaking opportunities along the A5 WTC; and
- develop a scheme proposal in light of safety, economics, environment, accessibility and integration considerations.

2.35 The 2022 ESA goes on to say that achieving these objectives would also contribute to the higher-level objectives of balancing regional infrastructure, improving competitiveness and economic prosperity through improving connectivity and accessibility across the region.

2.36 The AA5A argued that the first four of the bulleted objectives could be met by alternative schemes not involving a dual carriageway and that the fifth relegates the importance of the environment to one consideration amongst others. It submitted that the importance of environmental issues has increased since the inception of the scheme in 2007.

2.37 We observe that the scheme objectives and higher-level objectives lack measurable performance indicators. On a literal reading, they are not very challenging. The full scope of what DfI is seeking to achieve through the scheme can be better appreciated through careful study of its evidence. It seems to us that the principal justifications now being advanced for the scheme can be distilled into road safety, regional balance, North/South links, journey times and economic competitiveness.

Road safety

2.38 The existing A5 route runs from Londonderry to the border with the Republic of Ireland, just south of Aughnacloy, where it links to the N2 route travelling southwards towards Dublin. It passes through or adjacent to the settlements of Newbuildings, Magheramason, Bready, Cloghcor, Ballymagorry, Strabane, Sion Mills, Victoria Bridge, Newtownstewart, Omagh, Garvaghy, Ballygawley and Aughnacloy. We were told that

there are 20 changes in the speed limit along the existing A5 as it passes through these settlements.

2.39 The 2022 OBC states that the existing A5 is a single carriageway road throughout its entire length with a number of stretches comprising a wide single carriageway with overtaking lanes (WS2+1) on rural inter-urban sections (covering approximately 12% of the route). The existing road is of differing widths and the stretches of climbing lanes and overtaking opportunities are intermittent. Between Newbuildings and Strabane, the cross-section of the carriageway ranges between 6.3 metres and 14.7 metres and, on occasion, does not meet the current standard requirement either in terms of road or verge widths, or by the absence of a hard strip along the edge of the carriageway. These frequent changes in cross-section can confuse drivers and increase the risk of accidents, particularly where WS2+1 overtaking sections begin and end. In the 34 miles between Londonderry and Omagh there is just one 2+1 passing lane in each direction.

2.40 A design check for the 85 kilometres of the existing A5 indicated that for approximately 32.3 kilometres it does not meet the appropriate design standards for speeds currently in place. This means that the existing road is sub-standard along 38% of its length. Six stretches of the A5 to the south of Omagh have inadequate stopping sight distances.

2.41 The topography through which the A5 runs from north to south is generally undulating, ranging from the flat lands along the floodplains of the Foyle, Mourne, Finn and Burn Dennet, to the moderately sloping foothills of the Sperrin Mountains and Bessy Bell. The elevation of the existing road ranges from 3.5 metres above Ordnance datum (AOD) in Strabane to 167 metres AOD at Garvaghy. Therefore, road users experience steep climbs and sharp falls during their journeys. This has led to an inconsistency in road design through certain areas of the route.

2.42 In total, over 200 side roads connect with the existing A5, primarily by priority junctions, and there are approximately 1370 at-grade junctions/private accesses along the route. The private accesses include commercial, residential and agricultural uses. The number of accesses and adjoining junctions hinders the efficiency of the existing single carriageway A5 in moving people and goods. Congestion can occur as vehicle speed decreases so that vehicles can safely turn into these accesses and side roads. Vehicles turning on the existing A5 must wait until a suitable gap becomes available within the on-line traffic flows. This can lead to driver frustration during periods of heavy traffic on the existing A5 and in turn endanger both the oncoming vehicles and on-line vehicles due to unsafe turning movements.

2.43 The efficiency of the existing road is also compromised by the conflict between local (including slow-moving agricultural) and strategic traffic. The OBC states that there is a high proportion of heavy goods vehicles (HGVs) using the existing A5 due to the movements of freight and the agricultural industry, which is one of the main providers of employment in the west. Written evidence was received from the Freight Transport Association, also known as Logistics UK, and the inquiry heard evidence from various companies that use the A5 for haulage. HGVs are limited to 40 miles per hour (mph) on single carriageways and long tail backs can develop behind them on the existing A5. HGVs and agricultural vehicles frequently force lighter vehicles to slow down, causing driver frustration which can lead to overtaking at unsuitable locations, increasing the possibility of collisions.

2.44 In comparison to a general declining trend in road accidents and fatalities on trunk roads across the United Kingdom (UK), there is a rising trend for both on the existing A5. DfI provided statistics on accidents reported over the last 12 years on the A5. Over this period, an average of 69 accidents were reported annually, or one every 5.3 days. However, the trend appears to be increasing with 76 accidents in 2022, or one every 4.8 days. We were told that many other accidents go unreported. DfI accepted that its statistics are likely to underestimate the number of accidents.

2.45 Fatal collisions have been increasing from 1.75 fatalities per year in the period 2011 to 2014 to 3.33 per year from 2020 to 2022. Twice in the past two years, three lives were lost in a single incident. Forty seven lives have been lost on the A5 since the scheme was first proposed in 2007. The existing A5 represents 0.32% of all roads in Northern Ireland by length, but sadly accounted for 10.9% of all road deaths in Northern Ireland in 2022. The statistics indicate that the existing A5 is more dangerous than roads in Northern Ireland generally. The OBC states that if this (rising) trend continues, the economic assessment of accident savings reported there could be seen as an underestimate.

2.46 The OBC states that the local data shows that accident rates on the A5 are, in general terms, slightly lower than national average rates for single carriageway roads. This statement appears to under sell the road safety case for the proposed scheme, at least in comparison to other roads in Northern Ireland. In any case, DfI highlighted that the national average should not be regarded as acceptable, that some sections of the existing A5 exceeded the national average (the observed rates in the Omagh Urban section and from Ballygawley to Aughnacloy are double the national average for the type of road), and that, given the increasing trend, in five years most of the A5 will exceed the national average if nothing is done to tackle it.

2.47 The OBC states that there are accident hotspots on the stretches from Newbuildings to Bready, Ballymagorry to Strabane, and at Sion Mills, Omagh and Ballygawley. It also recognises that new accident hotspots in areas like Garvaghy are also emerging. It appears to us that the road between Ballygawley and Omagh is particularly treacherous. A witness for DfI accepted that this was an emerging trend.

2.48 At the inquiry, the barrister representing the AA5A recognised the need to upgrade the A5 and expressed sincere sympathy to those who have lost loved ones in road accidents. He agreed that road safety must be considered. The AA5A's objection was not to the principle of upgrading the road, but to the means proposed.

2.49 Since the inquiry in 2020, there has been a significant increase in support for the scheme, as reflected in the large number of letters of support received in response to DfI's three consultations in March 2022, November 2022 and January 2023. The predominant reason given for supporting the proposal was road safety.

2.50 Furthermore, the EiE campaign was launched in January 2023 by members of the Tyrone GAA. They were concerned about the safety of the existing road for their members attending some 3000 fixtures across the county each year and their training centre at Garvaghy, close to the A5. Sadly, several of their members have died in accidents along the route. Although the group generally represented those associated with the GAA, some of their representatives highlighted that the proposed road was for everyone and it enjoyed broad support across the community and political spectrum.

2.51 EiE supporters faithfully attended throughout the 2023 inquiry and on the day when road safety was discussed, a larger venue than originally planned was necessary to accommodate the number of people wishing to show their support for the scheme. We were told that over 10,000 people have signed a petition in support of the scheme and we appreciate the strength of public feeling on this issue.

2.52 The inquiry heard heartrending evidence from many bereaved relatives about the human cost of delays to the planned upgrade of the road. The founder of an organisation set up to support bereaved families set out the challenges of coming to terms with the loss of a family member in a road accident. Some families have lost loved ones on multiple occasions. Some of those who have lost a loved one said they would gladly give their land for the construction of the new road.

2.53 Others spoke of their fear of using the road and worry for family members and work colleagues who must travel on it. They highlighted the dangers of crossing the A5 or turning right onto it. It was argued that the provision of safe roads to travel on is a human rights issue. When rights clash, the right to life is paramount. People are forced to use the A5 because of the lack of viable public transport options and the absence of joined-up connections between trains to the North-West and the bus network.

2.54 We also heard from members of the emergency services, first responders and a trauma nurse who have had to treat casualties of the road. While there are particular accident hotspots, accidents and fatalities have occurred in many places along the entire length of the A5. When there is a collision on the A5 mainline, it is closed for hours to allow the emergency services to do their work, putting intolerable pressure on the surrounding smaller roads and causing long delays. A community representative who had been involved in four serious accidents on the A5 stated that we have run out of cheap, short-term measures and a new offline dual carriageway was required.

2.55 Supporters of the scheme emphasised that they were not anti-environmental, but argued that the environmental issues that have thus far prevented the building of the proposed scheme must be secondary to the preservation of lives. The environmental effects can be mitigated or compensated for, whereas human lives cannot.

2.56 It was argued that the existing road hinders access to services including education and healthcare. With the loss of acute services in the South West Acute Hospital in Enniskillen, there is more traffic on the A5 heading to Altnagelvin or Craigavon. The low speeds and lack of safe overtaking opportunities on the existing road delays such journeys including those by ambulance. When accidents occur, there is a “golden hour” for treating trauma patients. We were told by a retired fire and rescue officer that there is an 85% survival rate if they get to a trauma hospital within an hour of the accident, but this is rarely possible on the A5.

2.57 The past carnage on this route is tragic and it is reasonable to suppose that accidents and deaths would continue at similar or worse levels if nothing is done. However, it is of critical importance to consider the prospect of future accident reduction if the proposed scheme is implemented. The proposed scheme aims for a minimum of 5% reduction in accidents three years post full scheme opening.

2.58 The OBC calculates the benefit from savings in accidents in the entire modelled area (which includes all of Northern Ireland and the northern part of the Republic) using the COBALT (Cost and Benefit to Accidents – Light Touch) programme produced by UK

Department for Transport (DfT) and data from the traffic model. Table 3-9 projects that 2,733 accidents would be saved as a result of the proposed scheme during the 60-year appraisal period (2027 to 2086). Table 3-10 then predicts that the scheme would save 36 lives in the modelled area during the same period. Paradoxically, DfI's Spreadsheet 3, which considers only the existing and proposed A5, predicts a larger saving of 45 fatalities. This analysis is based on an Irish metric (taken from Transport Infrastructure Ireland (TII) Project Appraisal Guidelines for National Roads Unit 6.1.1 – National Parameters Values Sheet). Either way, the scheme would likely save a significant number of lives.

2.59 It is DfI's case that if the proposed scheme is implemented, accidents will still occur within the surrounding road network, but few are likely to take place on the new A5. DfI and supporters of the scheme drew attention to the sharp decrease in accidents on the A4 from Dungannon to Ballygawley following its dualling. On the A4 the rate now stands at four accidents per year compared to 70 per year on the existing A5. The same rate of improvement in safety would reduce accidents on the new A5 to 15 or 16 per year and these are less likely to be fatal with two separate carriageways.

2.60 The predicted accident, casualty and fatality savings referred to above have increased significantly since the 2017 OBC (Tables 3-9 and 3-10 therein predicted 2016 fewer accidents and 19 fewer deaths). We were advised that COBALT takes account of the observed accident rates and because this trend has increased since 2017, the predicted savings have also increased. The updates to the traffic model also affect the overall total.

2.61 The OBC goes on to put a monetary value on the accident savings over the appraisal period. Accidents have a number of impacts, in addition to the impact on those directly involved in the incident. These impacts include financial costs associated with the police, medical assistance, insurance and court proceedings and impacts on local businesses and commuters as a result of associated delays. While such impacts may be monetised, we consider that long-term injury and loss of life cannot be.

2.62 Each of the political representatives who appeared at the inquiry emphasised the road safety case for proceeding with the scheme. The dignified testimony of victims and the bereaved, which was personally difficult for them to give, was powerful in emphasising the social impacts of past carnage on the road. The expertise of medical professionals who have had to deal with the consequences of accidents added a vital consideration to the road safety picture. It appears to us that DfI's traffic model may underestimate the casualties that would be saved by the scheme given the rising trends that are apparent, and they did admit that the model is conservative. We regard it as indisputable that the saving of human lives and a reduction in the suffering caused by road accidents would be a large benefit of the scheme.

2.63 We conclude that the scheme would have a large beneficial effect on road safety.

Journey times

2.64 The OBC states that without the provision of a new dual carriageway which meets current design and safety standards, congestion at pinch points is likely to worsen and journey times are expected to become more unreliable. For the morning peak period, traffic demand is predicted to increase by 14% between 2015 and 2028 and by 34% by

2043. Average end-to-end journey times along the existing A5 during the morning peak period were estimated to increase by 4% by 2028 and by 9% by 2043.

2.65 DfI's consultants developed a traffic model to represent three distinct time periods for an average weekday, as follows:

Morning (AM) peak period	7.30am to 9.30am
Afternoon (PM) peak period	4.00pm to 6.00pm
Inter-peak period	9.30am to 4.00pm

2.66 Tables 3-3 and 3-4 of the traffic forecast report (TFR) indicate that with the scheme in place, there would be a reduction of 2.88% in total network travel time by 2028 and of 3.63% by 2043 compared with the no-scheme scenario. The reductions would be 3.56% and 4.39% respectively during the morning peak period. The AA5A's traffic planning consultant described these time savings as unremarkable.

2.67 Table 3-7 of the TFR provides more relevant quantification of the scheme's journey time savings. It shows average two-way model journey times in minutes from Newbuildings to south of Aughnacloy for each scenario:

Period	Base Year 2015	No Scheme 2028	No Scheme 2043	With Scheme 2028	With Scheme 2043
AM peak	70.8	73.8	77.5	50.0	50.2
Inter-peak	67.9	69.5	72.8	49.9	50.0
PM peak	71.2	73.2	77.5	50.0	50.2

2.68 An objector suggested that the scheme would not necessarily reduce congestion in towns like Strabane and Omagh as congestion in the towns themselves might reduce or absorb some or all of the time saved on the A5 route.

2.69 DfI's response to this objection was that the scheme was predicted to transfer most of the long-distance strategic traffic away from the existing A5. This was likely to lead to reduced congestion within towns as there would be fewer vehicles and fewer conflicts for vehicles to navigate. All users along the A5 corridor would experience some benefits whether they used the new road or remained on the existing A5. The scheme included a clear junction strategy which was developed to ensure good access for local communities to and from the new road. The end-to-end journey time would differ depending on the individual trip's origin and destination. With the scheme, delays would reduce by approximately 3.5 minutes between Strabane and Omagh in 2028 and overall journey time would reduce by approximately 7 minutes.

2.70 It seems to us that an average journey time reduction of 27.3 minutes or 35% along the length of the proposed road in 2043 and the increase in average journey speed on the 53-mile route from 41 to 63 mph can only be described as substantial. The predicted reductions in delays between Strabane and Omagh would also be substantial. We are satisfied that the scheme would alleviate congestion in towns and not create it.

2.71 DfI helpfully provided a further set of figures showing expected time savings in 2043 with the scheme in place. We have re-ordered these figures and re-calculated the percentages to provide greater clarity and accuracy.

Time Savings Band (minutes)	Annual Average Daily Traffic	Percentage
30 to 32	290	0.11%
28 to 30	127	0.05%
26 to 28	737	0.28%
24 to 26	808	0.31%
22 to 24	591	0.23%
20 to 22	1,814	0.69%
18 to 20	1,391	0.53%
16 to 18	2,057	0.79%
14 to 16	2,614	1.00%
12 to 14	2,083	0.80%

Time Savings Band (minutes)	Annual Average Daily Traffic	Percentage
10 to 12	4,296	1.64%
8 to 10	3,769	1.44%
6 to 8	6,036	2.31%
4 to 6	15,422	5.89%
2 to 4	24,673	9.43%
0.5 to 2	42,884	16.39%
-0.5 to 0.5	144,027	55.04%
-2 to -0.5	8,072	3.08%
Total	**261,961**	**100.00%**

2.72 It can be deduced from this table that with 261,961 vehicles using the proposed road on a typical day:

- 4,367 (1.7%) would save more than 20 minutes;
- 12,441 (4.8%) would save between 10 and 20 minutes;
- 25,227 (9.6%) would save between 4 and 10 minutes;
- 67,557 (25.8%) would save between 30 seconds and 4 minutes;
- 144,027 (55.0%) would experience no significant change in journey time;
- 8,072 (3.1%) would be delayed by between 30 seconds and 2 minutes;
- the average time saved per vehicle would be just over 2 minutes; and
- the total time saved by all vehicles would be about 9,170 hours.

2.73 DfI estimated that two-way traffic in 2043 using the full length of the scheme between the proposed Junction 1 and the proposed Junction 17 would be around 1,250 vehicles, of which around 430 would travel between Londonderry and the Republic of Ireland to the south of Aughnacloy. The figures indicate a preponderance of shorter journeys on the proposed route. However, that does not alter the fact that the total time saved by all vehicles would be substantial.

2.74 An objector queried how the proposed road could be regarded as a key transport corridor when it would not link directly to Northern Ireland's second city, Londonderry. The road would stop several miles from the city, the port, the airport, the hospital and the A6 to Belfast. He referred to evidence given on behalf of DfI at the 2016 inquiry that on completion of the scheme it would take longer to travel between Newbuildings and Craigavon Bridge, Londonderry than it does currently.

2.75 A DfI witness explained at the inquiry in 2020 that there was no space for a dual carriageway between Newbuildings and Craigavon Bridge. Buildings would have to be knocked down. The absence of a dual carriageway over this short stretch did not undermine the argument that a dual carriageway is necessary on the WTC. The delays at Craigavon Bridge would be caused by a bunching of vehicles using the proposed road.

2.76 DfI helpfully provided information in 2020 and again in 2023 on predicted average drive times between the northern end of Newbuildings and the eastern end of Craigavon Bridge in 2043, from which it is possible to derive the following table:

Average Drive Time	AM Peak on Weekdays Northbound	PM Peak on Weekdays Northbound	Annual Average Daily Traffic in Both Directions
Without scheme	329 seconds	292 seconds	250 seconds
With scheme	437 seconds	304 seconds	261 seconds
Delay	108 seconds	12 seconds	11 seconds

2.77 At the inquiry in 2020, DfI's witnesses were unable to estimate the length of queues on approach to Craigavon Bridge but said that with the scheme in place there were likely to be two extra vehicles per minute using the junction during the morning peak, or four vehicles per 110-second traffic signal cycle. It was not anticipated that traffic congestion at Craigavon Bridge would be exacerbated by dualling the A5. Traffic signal timings would be kept under review and optimised to deal with any changes in traffic patterns that might materialise on the A5 approach to the junction. DfI argued that these delays had to be seen in the context of the overall improvement in transport connections along the A5 corridor which would benefit Londonderry, even though the road would not extend to it. Reference was made to longer-term proposals for strategic links to the A2 to the west and the A6 to the east of the city.

2.78 An objector submitted a transcript of part of a discussion which took place at the 2011 inquiry at which, if we understand it correctly, it was put to Departmental witnesses that the proposed route was deliberately chosen to create a bottleneck at Newbuildings, thereby making it inevitable that there would have to be a new bridge over the Foyle near the proposed Junction 2, as well as a new link road to the A6. One of the witnesses explained that addressing traffic problems in the city was outside the remit of the A5 scheme but the scheme had been future proofed to keep options open for the eastern and western links. This, it seems to us, was and remains a reasonable approach. We return to this matter in Chapter 3 where we consider the cumulative environmental effects of the scheme.

2.79 DfI's evidence suggests that delays on approach to Craigavon Bridge would be confined to a relatively short period in the working day, would be relatively brief and would be capable of being mitigated. Free-flowing peak-hour traffic is not always attainable in an urban area. The main impact would fall on Newbuildings residents commuting to work in the city but other users of the new A5 would have benefitted earlier in their journey. We consider that the overall journey time savings offered by the scheme would outweigh the delays that would be suffered by a relatively small minority of users.

2.80 Objectors suggested that traffic to Dublin could use the A6. A new dual carriageway from Derry to Dungiven was completed in April 2023 and there is a dual carriageway and then a motorway from Castledawson to Belfast. In 2020 DfI's team estimated that travelling via Belfast would add 27 miles to the journey and take 20 minutes longer. We are not persuaded that with or without the A5 scheme this would be most people's

preferred option. It would be even less attractive to people who wished to travel to Dublin from Strabane, Omagh or other places along the WTC.

2.81 Other objectors argued that new off-line roads such as that proposed best serve only the two ends and are of minimal benefit to the communities through which they pass. As the proposed dual carriageway would have limited access or exit points, a considerable proportion of local traffic would continue to use the existing A5. They maintained that downgrading of the existing A5 to a B-class road would not be in the best interests of those who would still be using it daily. They also pointed out that the scheme would not benefit all members of society; 37% of households in the Derry and Strabane area had no access to a car.

2.82 Figures C-7 to C-9 of the TFR predict that with the scheme in place in 2043 there would be a substantial reduction in annual average daily traffic using the existing A5:

Approximate Location	Without Scheme	With Scheme	Relief on Existing A5
South of Newbuildings	16,900	2,300	14,600
Bready to Ballymagorry	16,500	800	15,700
Balymagorry to Strabane	25,700	12,000	13,700
North Strabane	21,500	14,200	7,300
South Strabane	20,800	6,800	14,000
South of Sion Mills	16,500	2,600	13,900
North of Newtownstewart	15,900	2,800	13,100
South of Newtownstewart	17,100	5,900	11,200
Omagh (North)	32,400	24,500	7,900
Omagh (South)	23,800	15,200	8,600
South of Omagh	16,600	4,600	12,000
North of Ballygawley	16,800	2,300	14,500
North of Aughnacloy	10,300	5,400	4,900
South of Aughnacloy	8,400	200	8,200

2.83 We are satisfied that the scheme would be of considerable benefit to local communities. It would greatly ease conditions and thereby speed up traffic on the existing A5. Short-distance and long-distance users of the new road would experience substantial journey time savings – a total of over 9,000 hours daily.

2.84 We conclude that the scheme would have a large beneficial effect on journey times.

Regional balance

2.85 At our request, DfI helpfully updated a table previously provided to the Commission in 2020, which compared traffic flows on all the strategic highways that comprise the RSTN. The tables record available traffic census data at counter locations. We have combined them to find the highest and lowest recorded flows for each stretch of road over the period 2015 to 2023. The stretches of motorway had annual average daily

traffic (AADT) flows in the range 20,160 to 70,690 vehicles. As the scheme under consideration does not involve a motorway, we have excluded these results.

2.86 The other results are set out below. The letters "CL" signify a single carriageway with a climbing lane.

Corridor	Highway	AADT	Standard
Eastern Seaboard	A1 Lisburn to Banbridge	23680 to 42700	Dual
Northern	A26 Antrim to Ballymena	32010	Dual
Eastern Seaboard	A1 Banbridge to Newry	19460 to 28890	Dual
Northern	A2 Limavady to Londonderry	15050 to 28500	Dual/Single
South Western	A4 Dungannon to Ballygawley	13020 to 20370	Dual
Eastern Seaboard	A1 Newry to Border	20170	Dual
North Western	A2 Londonderry to Border	19600	Single
Northern	A26 Ballymena to Coleraine	18980	Dual/2+1/Single
North Western	A6 Toome to Castledawson	18960	Dual
North Western	A6 Randalstown to Toome	18630	Dual
Western	**A5 Omagh to Ballygawley**	**12490 to 17210**	**2+1/CL/Single**
Eastern Seaboard	A8 Larne to Glengormley	16050 to 16820	Dual
Western	**A5 Strabane to Omagh**	**9910 to 16335**	**Single**
North Western	A6 Dungiven to Londonderry	14490 to 16080	Dual/Single
Northern	A26 Moira to Antrim	8610 to 15530	2+1/Single
Western	**A5 Londonderry to Strabane**	**11590 to 14824**	**2+1/CL/Single**
North Western	A6 Magherafelt to Dungiven	11730 to 14780	Dual/2+1/CL/Single
South Western	A4 Ballygawley to Enniskillen	6560 to 11790	2+1/Single
Northern	A37 Coleraine to Limavady	10460	2+1/Single
Western	**A5 Ballygawley to Border**	**8173 to 9801**	**2+1/Single**
South Western	A4 Enniskillen to Border	3640 to 3930	Single

2.87 The AA5A's traffic planning consultant stated that traffic flows are generally lower on the A5 than on other parts of the road network where there are dual carriageways. He asserted that the existing infrastructure is fit for the purposes of current demand and said there is a trend away from the predict and provide approach to road building.

2.88 We disagree with the AA5A's interpretation of the figures. We find it noteworthy that all the key transport corridors except the WTC have existing dual carriageway provision. The A8 was completed to dual carriageway standard some years ago and a dual carriageway from Dungiven to Londonderry recently opened. The Omagh to Ballygawley and Strabane to Omagh stretches of the A5 have AADT flows similar to those recorded at the locations where the new dual carriageways have been built.

2.89 A comparison of traffic flows does not support the entirety of DfI's scheme. Flows on the Ballygawley to Border stretch are well below those on any existing dual carriageway in the region. We are satisfied, however, that the construction of a dual carriageway on the WTC would enable it to keep pace with improvements to other corridors and would be consistent with the aim of the RDS 2035 to support strong sustainable growth for the benefit of all parts of Northern Ireland.

2.90 The Design Manual for Roads and Bridges (DMRB), TA 46/97 provided an indication of the range of traffic flows over which each carriageway standard is likely to be economically justified. It was withdrawn in March 2020 and not replaced but a DfI witness told us it is still widely used. The recommended opening year flow ranges for new non-motorway rural road links are as follows:

Carriageway Standard	Opening Year AADT
Single 7.3 metres	Up to 13,000
Wide single 10 metres	6,000 to 21,000
Dual two-lane all purpose	11,000 to 39,000
Dual three-lane all purpose	23,000 to 54,000

2.91 The following predictions for AADT flows on the proposed new road are derived from Figures C-4 to C-9 of the TFR and Table G2-2 of the OBC:

Phase	Stretch	Opening Year 2028	Design Year 2043
1a	Newbuildings to Ballymagorry	17,050	20,400
2a	Ballymagorry to Strabane South	17,375	21,933
2b	Strabane South to Omagh North	14,867	18,533
2b	Omagh North to Omagh South	12,500	17,200
1b	Omagh South to Ballygawley	14,150	18,550
3	Ballygawley to south of Aughnacloy	6,525	8,225

2.92 It can be seen by comparing the last two tables that a dual carriageway two-lane all-purpose road between Newbuildings and Ballygawley would be consistent with the previous DMRB recommendations and would not constitute overprovision.

2.93 The DfI team emphasised that achieving regional balance is not only about traffic capacity. It is also about equal access to comparable public services. The AA5A's traffic planning consultant argued that roads can be socially exclusive and enhancements to

public transport are more equitable. Counsel for the EiE campaign maintained that roads are a social imperative for the isolated west.

2.94 It seems to us inevitable that in places such as the western part of Northern Ireland where there is a relatively low population density, social facilities are less plentiful and more dispersed than they are for example in the Belfast travel-to-work area. That makes people who live in the west more dependent on roads, for travel not only by private car but also by taxi and bus. To our minds, this social equity consideration strengthens the case for dual carriageway provision on the WTC.

2.95 We conclude that provision of a dual carriageway on the WTC would make a significant beneficial contribution towards balancing infrastructure provision across the region.

North/South links

2.96 The second listed objective of the scheme is to improve the roads network in the west of the province and North/South links. We asked DfI whether this objective meant additional physical links but a witness stated that what DfI had in view was wider than just physical links. Improved physical links would lead to economic and social opportunities across the region. The scheme would facilitate opportunities for joined-up transport across a wider area. We recognise that there is currently a problem in this area as the inquiry heard evidence that bus and rail services to and from the north west do not join up. An improved road network may encourage public transport providers (including those that work across the border) to ensure that onward journeys by different modes were more feasible.

2.97 The A5 forms part of the strategic transport route from Dublin to the north west of the island. The Chief Executive of Donegal County Council told the inquiry that the proposed scheme was the most significant missing transport link on the island of Ireland. An Assembly member described an internal accessibility problem on the island. There are increasing levels of cross-border activity which would benefit from improved accessibility. The implementation of the scheme would present an opportunity for improved physical links to the Republic of Ireland in two principal locations: the Finn Crossing at Strabane/Lifford and a link to the N2 south of Aughnacloy.

2.98 The proposed Finn Crossing would be a new multi-span structure across the River Finn and the associated flood plain. It is designed to connect to the scheme at the proposed Junction 7 at Strabane – an at-grade roundabout. The other end would link to the N15 Lifford to Donegal Town road at a point to the south west of its junction with the N14 Lifford to Letterkenny road. It would improve upon the existing link from Strabane at Lifford Road Bridge. As it would be a dual carriageway, it would become the main transit route between Tyrone and Donegal. The development was approved in 2012 but, given the passage of time, it seems likely that that approval has expired. According to Appendix 16-1 to the 2022 ESA, the project has been the subject of an oral hearing conducted by the Commission's counterpart in the Republic, An Bord Pleanála, and is awaiting approval to coincide with approval of the A5 scheme.

2.99 One of the planning conditions attached to the 2012 approval required the provision of a footpath across the structure. As a high-quality dual carriageway, the proposed scheme would not have provision for pedestrian footways. However, we were told that the footway across the River Finn bridge could drop down onto Urney Road in Strabane, and from here it could form part of a cross-border circular greenway link. We consider

that this link would be beneficial for local communities in Strabane and Lifford while the road bridge would serve the wider area.

2.100 Implementation of the proposed scheme and the Finn Crossing would also facilitate wider road improvements in Donegal under the Trans-European Transport Network (TEN-T) – a selection of strategic transport corridors that have been identified to play a key role in the mobility of goods and passengers through the EU. Three sections of the TEN-T network in Donegal have been prioritised for improvement including the N56/N13 Letterkenny to Manorcunningham and the N14 Manorcunningham to Lifford / Strabane / A5 Link. A business case has been submitted to the Irish Government and the inquiry was told that the scheme could be constructed in 2026/27 which could tie in with the proposed A5 scheme.

2.101 Even in the absence of the wider improvements under the TEN-T project, the Finn Crossing itself (which is independent of TEN-T) would deliver significant improved north-south links in the Strabane/Lifford area. Given Donegal County Council's support for the project, we consider that if DfI's scheme is constructed, there is a reasonable prospect that the Finn Crossing would follow. We conclude that by facilitating the Finn Crossing at the Tyrone/Donegal border, the scheme would have a significant beneficial effect on North/South links.

2.102 At the other end of the A5, planned improvements to the N2 in County Monaghan are less advanced. A representation highlighted that large portions of the N2 route from the border to Dublin are not dualled. Most of the N2 is currently a wide single carriageway. The nearest dual carriageway section of the N2 currently stops 72 miles south of the border near Ashbourne, County Meath.

2.103 There have been three phases of single carriageway improvements on the N2 from Emyvale to Monaghan since 2007. This involved removing bad bends and areas of poor forward visibility. The road has a low design speed due to the challenges of topography and properties. Monaghan County Council with funding from Transport Infrastructure Ireland (TII) is developing an upgrade to a 28-kilometre section of the N2 from Clontibret to the border which has potential to link with the A5 scheme. A scheme is also being developed for a separate 32-kilometre section of the route from Ardee to Castleblayney.

2.104 Several objectors to DfI's scheme stated that the Irish Government has stopped all major road construction. However, witnesses from Monaghan County Council told the inquiry that this was not the case. The TII grant allocations to local authorities for 2023 amount to some €237 million including €600,000 for the N2 Ardee to Castleblayney scheme and €2,500,000 for the N2 Clontibret to the Border scheme to match fund an EU grant towards planning and design. We were told that the total budget for new roads in the period 2021 to 2025 was €1.1 billion and for the period 2026 to 2030 would be €4 billion.

2.105 The N2 Clontibret to the Border scheme is of greatest significance to the A5 dualling project. In a briefing to the DfI Minister dated 2nd April 2021, it was stated that while some planning and design work was undertaken on the N2 scheme between 2008 and 2012, it was suspended for economic reasons. Funding had however become available again to progress the planning and design of the scheme. An Option Selection Report documenting the process of selecting the preferred route corridor was published in

February 2021. The preferred route corridor is typically 400 metres wide and indicates the lands within which the N2 road scheme could be developed. Along the border, there is an extended corridor some 1.5 kilometres wide for interface with the A5.

2.106 The N2 scheme is still at an early stage. It has reached Phase 2 of TII's management, development and delivery process. Still to come are:

Phase 3 – Design and Environmental Evaluation
Phase 4 – Statutory Processes
Phase 5 – Enabling and Procurement
Phase 6 – Construction and Implementation
Phase 7 – Close out and Review

2.107 The next stage in the design process (Phase 3) will involve further development of the scheme, including design of the road, identifying the land take required, junction design and the preparation of an EIA. It would then have to go through statutory processes, enabling and procurement before construction could commence.

2.108 At the inquiry, we asked Monaghan County Council if any progress had been made on the scheme since February 2021. We were told that design work with TII is ongoing, but the publication of a detailed design, EIA, and completion of statutory processes including a hearing by ABP is likely to take until 2028/29. Counsel for the AA5A stated that we can't assume satisfactory completion of the statutory procedures and therefore the prospect of this scheme being developed cannot be given much weight.

2.109 The Option Selection Report for the scheme states that the exact route and tie-in point with the A5 scheme has yet to be fully established. Neither has the carriageway type been finalised. The report states:

"Any future tie in point which may differ from the current arrangement shown at the interface of the N2 and the A5 at Moy Bridge / River Blackwater may be subject to a future transboundary / cross border scheme which will require planning and design phases with periods of public consultation."

2.110 Given the wide route corridor identified in the vicinity of the border, it appears that the design for Phase 3 of the A5 scheme is not final, but a placeholder. A witness for Monaghan County Council agreed that this was the case. As the funding presently available is not sufficient to take the scheme through design stage and statutory procedures, never mind to construction, we consider it unlikely that any such scheme could be constructed to coincide with the completion of DfI's scheme as currently programmed.

2.111 DfI's witnesses stated that they talk to the N2 team regularly and in any event, their scheme is independent of any upgrades to the N2 as it ties in to the existing road network including the A28 Caledon Road and the A5 Monaghan Road at Aughnacloy. However, the scheme as presently designed stops some 270 metres short of the border and the last section south westwards from the proposed Junction 17 would be single and not dual carriageway. There would be no new North/South link at the southern end of the scheme.

2.112 While traffic flows are expected to exceed 10,000 vehicles per day on the sections of the N2 close to Monaghan town, the Option Selection Report indicates that modelled future flows to the north of Emyvale range from 5825 to 8695. It can be seen from Table 4.15

of the report that such flows fall far short of the 14,000 threshold for a Type 3 dual carriageway which applies in the Republic. There is a Type 3 dual carriageway (2+1 with a central barrier) further south at the Castleblayney bypass, but we were told that these are problematic to maintain and no Type 3 schemes are currently being advanced. If a Type 3 dual carriageway is ruled out, Monaghan County Council could find it hard to justify a Type 2 dual carriageway for this part of the N2 as the threshold is 20,000.

2.113 The report argues that despite the low traffic figures on this section of the N2, a Type 2 dual carriageway should be provided for consistency in cross section with the A5. The predicted traffic flows for Phase 3 of the DfI scheme are also below those expected to justify a dual carriageway. It can be seen, therefore, that the promoters of each scheme are relying on the other scheme to provide justification for exceeding the normal design specifications. A design for the N2 upgrade has yet to be drawn up and even if a Type 2 dual carriageway were proposed, the funders would have to examine whether the investment was justified and represented value for money. Monaghan County Council was keen to promote the case for its being a Type 2 dual carriageway, but to our minds it is by no means certain that the N2 from Emyvale to the Border will be a Type 2 dual carriageway given the traffic figures.

2.114 Constructing Phase 3 of the A5 scheme as proposed to terminate in a single carriageway 270 metres short of the border near the existing Moy Bridge would not create a new North/South link and may result in abortive works if the N2 upgrade selects a different tie-in point. We conclude that the scheme is incomplete and does not involve a new physical North/South link across the Tyrone/Monaghan border.

Economic competitiveness

2.115 A DfI witness told the inquiry in 2020 that the economic performance of the west of Northern Ireland was at the bottom of the UK league table. Top-50 exporters and foreign direct investments were almost all in urban areas or on transport corridors. Traditional industries were located on the A5 and average salaries were about £5,000 lower than elsewhere. There was little movement across the full length of the WTC. People were not willing to spend more than 30 minutes travelling to work. There were very few commuters to Belfast from beyond the A29 (Coleraine to Armagh) road.

2.116 The 2022 OBC summarises the strategic case for the scheme by saying that the inadequacy of the existing A5 is widely recognised as a barrier to economic growth. Local people and the business community view journey times as unreliable, due to congestion caused by bottlenecks at junctions in key towns. As well as a lack of overtaking opportunities, there is also slow-moving traffic along the route. If the scheme is not provided, congestion at pinch points is likely to worsen, journey times are expected to become more unreliable and economic growth could be inhibited.

2.117 The OBC goes on to say that the provision of a new dual carriageway to replace the existing A5 would support the economic vitality of Northern Ireland, including the key centres and communities along the route – Londonderry, Strabane, Omagh, Ballygawley and Aughnacloy. It would encourage competitiveness and economic prosperity through improving connectivity and accessibility across the region. It would facilitate the movement of people and goods along a modern, high-quality corridor and improve access to international gateways such as Londonderry Port, to the Republic of Ireland, and to market towns and tourist areas. It would potentially also attract inward

investment to the districts of Derry and Strabane, Fermanagh and Omagh and Mid Ulster, making them better places to live in, work in and visit.

2.118 In a written representation, Derry City and Strabane District Council submitted that the positive economic impacts of the A5 improvement would include the following:

- It would reduce vehicle emissions as vehicles would not be subject to the heavy congestion that exists on the road today with slow moving vehicles impeding other traffic.
- It would open up the west and north west to a market of two million consumers within the greater metropolitan area of Dublin, thereby increasing productivity, efficiency and value added.
- It would encourage and facilitate increased domestic and international tourism as the accessibility of the whole north west region is improved.
- It would assist in attracting foreign direct investment as road infrastructure, travel time and easy access to international markets are critical and important considerations for firms.
- It would Increase the potential labour market for existing and potential new firms as commuting time is reduced.

2.119 The Council's Head of Business attended the inquiry and made the following points. The Derry and Strabane area suffers from severe economic deprivation. It has the highest unemployment rate, the lowest average salary and the highest economic inactivity rate of any district in Northern Ireland. It performs poorly against similar areas in Ireland.

2.120 The witness said that the north west has growing indigenous industries and has attracted 40 foreign direct investments. The Council wishes to bring the key economic indicators into line with the Northern Ireland average but is fighting an economic war with one hand tied behind its back. It is constrained by poor connectivity to Dublin Airport from which there are 120 flights per week to the United States, carrying 350,000 people. It subsidises the City of Derry Airport because of lack of connectivity. Since the A6 dual carriageway opened, there has been a reduction in travel time from the South but the north west is still hampered by the absence of an A5 upgrade.

2.121 Donegal County Council's Director of Economic Development described the north west as a single cross-border economic unit bound together by familial ties. There has been a dearth of investment in the region over the past 100 years. Most other parts of Ireland are within a two-hour "sweet spot" travel distance of Dublin but there is no motorway in the north west. The isolation has been exacerbated by Brexit. The development of a new N14/A5/N2 route could help overcome the huge challenge of accessibility. Tourism is critical for Donegal, with 20,000 people employed in the sector. The A5 scheme would strengthen Donegal's tourism capacity and that of its neighbours.

2.122 A letter of support for the scheme was submitted by Logistics UK, whose members operate over 200,000 goods vehicles – almost half the UK fleet – and some one million liveried vans. In addition, they consign over 90% of the freight moved by rail and over 70% of sea and air freight.

2.123 Logistics UK noted that the maximum speed limit for goods vehicles on single carriageway roads in Northern Ireland is 40 mph and on a dual carriageway it is set at 50 mph. Cars on the same road can drive at a maximum 60 mph which leads to long tailbacks of cars travelling behind lorries. These tailbacks lead to longer and unreliable

journey times. Analysis of alternative scenarios shows that conflict between HGVs, agricultural vehicles and other road users is likely to worsen with traffic growth in the absence of the provision of a new dual carriageway to separate different vehicle types and to provide an additional lane for overtaking.

2.124 Logistics UK stated that modern Euro 6 goods vehicles are extremely fuel efficient when driven at a consistent speed, normally under cruise control. The average fuel consumption of a 40-tonne truck travelling at 50 kilometres per hour with no stop is 28 litres per 100 kilometre. However, when the same vehicle has to stop once every kilometre over the 50-kilometre distance, fuel use increases by 85% to 52 litres per 100 kilometres. Fuel represents 30% of operating costs, therefore a road network that allows goods vehicles to travel at a safe, consistent speed reduces the use of fuel thereby delivering economic benefits and reduced emissions. The operating cost for a typical 44-tonne lorry is £1 per minute, therefore the improved journey time, along with more efficient fuel use, would result in economic benefits for those operating goods vehicles on the proposed new road.

2.125 Logistics UK maintained that the existing A5 currently provides inadequate access to key economic centres in Northern Ireland and County Donegal, including Derry/ Londonderry, Strabane and Omagh. It supported the scheme because it would significantly improve access to these key trading hubs as well as to international gateways. It described Foyle Port as a key marine gateway to the north west of Ireland for its members. It pointed out that the primary access route from the south to Foyle Port is via the existing A5, which connects with the A2 at Craigavon Bridge. It said the A5 road is also a vital strategic route for freight that connects the north west economy with the ports of Belfast and Warrenpoint as well as Dublin Port. Construction of the scheme would significantly improve freight movements and assist in enhancing the development of the port.

2.126 Logistics UK went on say that it is also well acknowledged that airports play a prominent role in the economic development of a region. It supported the scheme because it would contribute to a high quality route connecting the City of Derry airport, affording greater opportunity to expand trading potential. Its members were concerned that without the scheme the importance of Foyle Port and the City of Derry Airport as regional hubs for international trade could potentially come under jeopardy. They also supported the scheme because this resilient transport infrastructure would greatly improve access to current and future developments along the north-south corridor; strengthening links and opening up new opportunities for trade and economic growth throughout a region which has suffered from a long-term lack of growth.

2.127 A representative of the LCC Group told us that the company has an oil terminal and coal yard in Derry. It sends 50 vehicles a day from Lisahally to Aughnacloy. If the new road were constructed, the company could save 250 man hours per week which are currently lost in traffic jams. That would make a huge difference to the business.

2.128 Manfreight Limited is a logistics company based in Portadown which operates across the UK and Ireland. It has 280 trucks and trailers and moves 600,000 containers. Its representative explained that when it turns wheels it makes money but delays are a big cost. Its routes to market must be effective. It is at its most efficient when it can set a fixed speed and use cruise control. Time is critical; there is always a risk of missing a

ferry. The maximum speed for a truck is 56 mph but the top speed permitted on the existing A5 is 40 mph.

2.129 We also heard from a representative of the Terex Corporation, an American-owned engineering company which has nine manufacturing facilities in Northern Ireland and County Monaghan. It employs 2,200 people in Northern Ireland and an equal number are employed in its supply chain. It exports 95% of the equipment it produces. Loads can weigh up to 120 tonnes. Customers are discouraged from coming to its premises at Omagh and Campsie (near Londonderry) by the lack of a dual carriageway. It can take 65 minutes to travel between these two sites, even though they are only 35 miles apart. Visiting corporate team members always comment on the poor standard of the A5 between Ballygawley and Omagh.

2.130 Another Terex witness emphasised the importance of engineering to the economy of the western part of Northern Ireland but stated that sustainability and attractiveness to foreign investment depend on connections. She wanted the area to become a centre of manufacturing excellence.

2.131 Strathroy Dairy is a family company based in Omagh. Two hundred and fifty farmers from across Ireland supply it with milk. We were told that it is finding it difficult to attract employees because of road safety concerns. The company undertakes 200 road journeys per day and a 4% reduction in travel time would be significant.

2.132 The President of Omagh Chamber of Commerce highlighted potential for future investment in the town when the planned Strule Education Campus is completed in the next few years. This would make available the existing sites of a number of schools around the town for redevelopment. There would be opportunities to build on the area's engineering excellence, but they need safer and more reliable means of transporting manufactured goods to market. He also raised the prospect that tourists arriving into Belfast on cruise ships could take trips to Omagh if the journey time was reduced. He said the scheme was supported by other industry bodies, including Retail NI and Hospitality Ulster. A spokesman for Manufacturing NI, whose members employ 90,000 people, also voiced support for the scheme.

2.133 Public representatives echoed many of the points made by the business people. The unreliability of the existing road is a deterrent to investment, an economic handbrake. The current low level of cross-border travel on the A5 is due to its poor standard. Omagh and Strabane are choked off and there is congestion on Lifford Bridge. Young people are leaving to find work. It is hard to attract doctors and other professionals to the area. Invest Northern Ireland brings little business to West Tyrone. Given Brexit, it should be an economic hotspot but inward investment is not happening because of lack of connectivity. Foyle Port handled 1.63 million tonnes of cargo a decade ago and much more could be achieved. Agri-food innovation clusters require infrastructure. The goal is to be a prosperous community, bursting with economic activity.

2.134 At the inquiry in 2020, an objector stated that not one shred of evidence had been produced to support the bold claim that the scheme would bring economic benefits, jobs and industry to the north west. He pointed out that Ballymena has a dual carriageway leading to it and at that time jobs were being lost in their thousands.

2.135 In rebuttal evidence, DfI referred to the Northern Ireland Executive's document "Economic Strategy – Priorities for Sustainable Growth and Prosperity", published in

2012, which advised that the positive relationship between modern economic infrastructure and economic growth was well established. The quality of the business environment, including transport infrastructure, had been identified as a significant factor which impacts on the ability of locations to attract, develop and retain competitive businesses. It was recognised that it was the major urban centres which provide the catalyst for growth in Northern Ireland and that modern infrastructure was necessary to ensure that the benefits of economic growth were accessible to all.

2.136 To our minds, the job losses in Ballymena demonstrate that a good road network does not guarantee freedom from economic problems. However, we are persuaded by the overwhelming evidence presented to us that long-term economic prosperity is unlikely to be achieved without modern transport infrastructure. While the scheme would not overcome all the problems associated with peripherality, we are convinced that the greatly improved connectivity it offers, to Dublin, to Belfast, and within the WTC itself, would open up new economic opportunities for the west and north west.

2.137 We conclude that the scheme would have a large beneficial effect on economic competitiveness and could be transformative.

Funding

2.138 The 2022 OBC closely follows the DfT Five Case Model, which is intended to ascertain that proposals:

- are supported by a robust case for change – the strategic case;
- optimise value for money – the economic case;
- are financially affordable – the financial case;
- are commercially viable – the commercial case; and
- can be delivered successfully – the management case.

2.139 The OBC includes an economic appraisal, prepared with reference to the Treasury's Green Book – Appraisal and Evaluation in Central Government, updated in 2020, and current DfT guidance. It establishes the present value of the scheme construction costs and of the costs for its maintenance and operation over 60 years. It also considers monetised benefits as well as impacts that are not quantified in monetary terms.

2.140 The economic appraisal encompasses established monetised impacts where the method for estimating the monetary value is tried and tested:

- economic benefits to road users, including time savings and vehicle operating costs;
- economic benefits to road users resulting from a reduction in delays during periods of maintenance and disbenefits due to delays during the scheme construction period;
- accident savings and associated economic benefits; and
- monetised benefits and disbenefits from changes to noise, local air quality and greenhouse gas emissions.

2.141 The appraisal also captures evolving monetised impacts where some evidence exists to support the estimation of a monetary value but it is less widely accepted and researched. The wider impacts include agglomeration (higher business density leading to greater productivity), and an increase in output due to more competitive markets. It

was confirmed at the inquiry that the model takes into account wider economic benefits to the north west region, including Donegal.

2.142 The appraisal also involves an assessment of non-monetised environmental impacts – journey time reliability, noise, local air quality, greenhouse gases, landscape, historic environment, biodiversity, water environment and social and distributional impacts. These assessments took the form of commentaries, the majority of which drew on material in the updated ES. They are not factored into the benefit/cost ratio (BCR).

2.143 The OBC provided the following assessment of the costs and benefits of the whole scheme at 2010 prices discounted to 2010:

Costs and Benefits	**£ million**
Consumer User Benefits: Commuting	159.88
Consumer User Benefits: Other	215.03
Business Benefits	463.53
Total Economic Efficiency Benefits	**838.44**
Accident Benefits	124.92
Construction Benefits	-1.44
Maintenance Benefits	26.14
Carbon Benefits (Greenhouse Gas)	-39.91
Monetised Noise Benefits	-0.64
Monetised Air Quality Benefits	5.27
Indirect Tax Revenue	6.92
Present Value of Benefits	**959.70**
Wider Benefits	208.13
Adjusted Present Value of Benefits	**1167.83**
Construction Costs	807.76
Maintenance Costs	58.16
Present Value of Costs	**865.92**
Net Present Value	**301.91**
BENEFIT TO COST RATIO (BCR)	**1.35**

2.144 The OBC set out the value for money categories defined in the DfT guidance. A very high BCR is above 4; a high BCR is between 2 and 4; a medium BCR is between 1.5 and 2; a low BCR is between 1 and 1.5; and a poor BCR is between 0 and 1. Sensitivity testing was carried out to take account of uncertainty in national trends such as population and economic growth, and fuel prices. This produced high and low growth scenarios and alternative BCRs of 1.65 and 1.13. The final value for money category for the complete scheme was determined as **low**.

2.145 The OBC includes a distributional analysis of user benefits derived from non-business journeys. It applies indices of multiple deprivation to a system of 220 zones. It finds that the highest benefits would accrue to the most deprived areas – 34% of the benefits would go to the most deprived 20% of the population, whereas 2% would go to the least deprived 20%.

2.146 The main purpose of the economic appraisal is to assure approving authorities that the scheme is likely to represent value for money and satisfy accountability requirements. It contains information which is useful in identifying the advantages and disadvantages of the scheme but it is not in itself decisive for the purposes of our inquiry. The parties

were agreed that we should scrutinise the process by which conclusions on cost, value for money, affordability and financial risk were reached and satisfy ourselves that the authorities are committed to providing the necessary resources, but that it is ultimately a political decision as to whether the scheme is regarded as value for money.

2.147 The methodologies used in the economic appraisal appear to us broadly consistent with relevant parts of the Green Book and DfT guidance. It is stated in Paragraph 3.6.16 of the OBC that the road user costs that would arise with the scheme in place were subtracted from those that would arise without the scheme in order to derive the net road user benefits. Paragraph 3.6.17 states that the benefits are calculated for all users of the network, including those travelling on the new road and on all existing roads

2.148 At the inquiry in 2020 objectors queried whether disbenefits to road users and losses to the agricultural sector and individual small traders along the existing road were factored into the economic appraisal. We do not find the appraisal deficient in these respects. It is reasonable to expect that the loss of agricultural production would be priced into the compensation paid for farm land, which forms part of the estimated construction cost of the scheme. Appendix F to the OBC focuses on the macro-economic impact of the scheme over 60 years and not on short-term impacts on individual businesses.

2.149 In its Interim Report of September 2020, the Commission noted that while adverse effects of the scheme on the landscape, cultural heritage and biodiversity were mentioned in the economic appraisal that formed part of the 2017 OBC, they did not contribute to the BCR calculations. The Commission commented that had it been possible to monetise these effects, the final value for money category might well have been different.

2.150 In a letter received by DfI in July 2021, the AA5A pointed out that Annex 1 to the Green Book provides guidance on how environmental factors should be treated in the appraisal process and specific approaches to non-market valuation techniques and generic values. The AA5A urged DfI to consider that guidance and make changes to the BCR in the light of the Commission's comments.

2.151 In its statement of case, the AA5A referred to DfI's March 2023 publication "Protecting, Enhancing and Restoring Natural Places: An Environmental Mission Statement for Infrastructure Development and Management", which includes the following passages:

"While we have long established environmental protection measures in place, it is accepted that on some occasions we do not always get it right. This includes how we plan, design and carry out works which impact on our irreplaceable natural resources. This may, in part, be due to the business case process we use to evaluate options and decide on a particular course of action. Historically, there has always been a requirement to include environmental impacts in the decision-making process, ensuring the economic costs and benefits are quantified and monetised where possible. However, it is often difficult to place a monetary value on such factors, and as such they are often accounted for within the non-monetary analysis, not least because they do not capture all the material factors."

"In evaluating business cases for proposed projects, we intend to explore how we can more accurately measure the economic value of environmental protection actions and ensure that those measures form the foundation of any business case and are, in future, seen as an integral part of the costing process."

2.152 As we have noted, certain environmental effects are still not monetised in the 2022 economic appraisal. We can understand why this is so. Having studied Annex 1 of the Green Book, we are not persuaded that it provides useable techniques for monetising impacts on receptors such as landscape, cultural heritage and biodiversity.

2.153 The OBC acknowledges that the non-monetised impacts of the scheme are generally adverse. In our view they are if anything more adverse than the OBC commentaries indicate. In Chapter 3 of this report we identify various places in the updated ES where rounding techniques have the effect of masking significant or even large adverse impacts on specific environmental assets.

2.154 In the course of the inquiry, our attention was drawn to DfT's Transport Analysis Guidance (TAG) Unit A3 titled "Economic Impact Appraisal". Paragraph 5.3.19 states that a scheme should be assessed according to the most adverse assessment of the key environmental resources affected and that highly adverse impacts should not be diluted or masked by less adverse impacts. This version of the document was published in May 2023, too late to be taken into account in the 2022 ESA or the OBC, but we consider that it represents best practice and should be followed in future.

2.155 An environmental impact which is monetised in the economic appraisal is the emission of greenhouse gases (GHGs). We are surprised that the detrimental effect of carbon emissions is valued at minus £40 million in the 2022 OBC, whereas in the 2017 OBC it was valued at minus £104 million. Paragraphs 4.2.10 and 4.2.11 of TAG Unit A3 recommend that, where feasible, proportionate whole life carbon assessments are conducted. Whole life impacts include those of capital carbon (emissions associated with scheme construction). We can find no reference to such emissions in Appendix E to the 2022 OBC. The figure of 547,503 tonnes quoted in Worksheet 1 appears to relate to the operational phase only and to ignore the 322,000 tonnes that would be generated during the construction phase – see Tables 15.20 and 15.23 in the 2022 ESA.

2.156 An objector queried the distinction which Worksheet 1 makes between traded and non-traded carbon. DfI explained that non-traded emissions are emissions from petrol and diesel cars, whereas traded emissions are emissions from electric vehicles. The workbook reports changes in both traded and non-traded emissions, but monetary values are applied only to non-traded emissions. This is because the value of traded emissions should be internalised in the fuel/energy prices used in the appraisal. We accept this explanation.

2.157 The OBC states that there are positive non-monetised impacts on journey time reliability and journey quality. It goes on to say that the non-monetised social impacts and the distributional impacts to an extent offset some of the non-monetised environmental impacts and the net outcome of the non-monetised impact assessments is not considered sufficient to warrant any adjustment of the initial value for money category. No further reasons for this conclusion are given.

2.158 The OBC draws on data generated by the traffic model, the reliability of which we consider in Chapter 3 of this report. The OBC sets out the results of sensitivity tests which were conducted to take account of uncertainty in national trends such as population, economic activity and fuel prices by using high and low growth scenarios. The tests comprise a proportion of base year demand to be added to or subtracted from the core scenario (loosely described as the ±2.5% rule). A 2.5% uplift or reduction is not

compounded year on year but, in accordance with DfT guidance, is applied using the formula ±2.5*√N%, where N represents the number of years into the future with respect to the base year. This results in a variation of 13% between the base year (2015) and the design year (2043), an average of 0.46% per annum.

2.159 The outcome of the sensitivity tests is that the adjusted BCR ranges from 1.13 in the low growth scenario to 1.65 in the high growth scenario, corresponding to low and medium value for money respectively. The net present value ranges from £111 million to £567 million. The OBC concludes that as the net present value is above £100 million in all the growth tests, the results confirm that the investment would provide a positive return.

2.160 Table 4 in Appendix I to the OBC sets out nine additional scenarios ST00 to ST08, all of which culminated in a positive return. ST03 assumes that 10% of traffic present in the 2019 demand is removed from all forecast years. According to Paragraph I 2.5 of the OBC this was thought to be an appropriate test, based on traffic monitoring data published by DfI for January to May 2022, which showed a reduction of around 8% to 10% when compared to Spring 2019 data. The 10% threshold was chosen to demonstrate a worst-case scenario. According to Table 4, the ST03 scenario would result in a net present value of £122.6 million and a BCR of 1.14, both parameters being somewhat higher than in the low growth scenario. Under the ST03 scenario, the scheme would still be in the low value for money category.

2.161 The AA5A drew attention to the revised version of TAG Unit M4 dated November 2022 in which DfT recommended that a ±4% rule be substituted for the previous ±2.5% rule. The AA5A did not accept that the low growth scenario is enough to address uncertainties surrounding the pandemic. It referred to an August 2022 DfT document "Forthcoming change note to common analytical scenarios databook" which states:

"Where the low growth appraisal results are reported, it should be emphasised that the potential long-run impact of Covid is an additional risk on top of those (non-Covid related) risks represented by the low growth scenario. Eventually, we expect that promoters will rebase their transport models post-Covid, which will account for observed Covid impacts at that particular point in time. Where and when this is done, there can be greater confidence that the potential longer-term impacts of Covid have been accounted for."

2.162 In its response, DfI pointed out that the November 2022 version of TAG Unit M4 did not become definitive until May 2023. In line with the forthcoming change note of August 2022, which acknowledged a need for sufficient data and evidence in order to make a reasonably robust estimate of the longer-term impact of Covid, DfI had continued to monitor traffic levels and had commissioned surveys in September 2022. We consider these survey results in Chapter 3 of this report.

2.163 As we understand it, the high and low growth scenarios relate to potential future demographic and economic trends, whereas ST03 is premised on a once in a generation behavioural shift having already taken place. We asked, therefore, whether a further sensitivity test should be run to combine the ST03 lost demand scenario with the low growth scenario. DfI's witness at first said there was no difference between the two scenarios and then said they could not occur at the same time. He eventually conceded that it might be possible to provide a wider range of scenarios to the decision maker.

2.164 In its written representation, the AA5A noted that the BCR has decreased significantly. (It was calculated as 2.02 in the 2017 OBC.) The AA5A also noted that at a meeting in October 2022, Department of Finance (DoF) officials had expressed concern about the possibility of this trend continuing. The AA5A submitted that as time goes on, as the costs of the project continue to increase and the construction timetable becomes more and more compressed, the BCR is likely to come under more strain. It considered that on any objective analysis, the justification for the project was fading.

2.165 DoF approved the OBC on 31st May 2023, which was, perhaps coincidentally, the day the economic appraisal was discussed at the inquiry. Approval was provided on the basis of DfI's assurance on affordability (in order words, availability of funding) and subject to the preparation of a full business case for each of the three proposed sections. We consider that when preparing the full business cases, DfI should take the opportunity to update its methodology, taking account of the latest available DfT guidance.

Recommendation 1

We recommend the Department, when preparing a full business case for any part of the scheme:

(a) to adopt the "most adverse category" principle set out in Transport Analysis Guidance, Unit A3 when assessing non-monetised environmental effects;

(b) to take into account greenhouse gas emissions arising during the construction phase;

(c) to carry out sensitivity testing in accordance with the most up-to-date Department for Transport guidance; and

(d) to ensure that at least one of the sensitivity tests combines the effects of Covid-related changes to working patterns and low future growth.

2.166 When the preferred route for the A5 scheme was announced in July 2009, the cost was estimated at between £650 million and £850 million. A contribution of up to £400 million was expected from the Republic of Ireland. However, due to a financial crisis this was scaled back; £8 million was received from the Irish Government in 2009/10 and £14 million in 2011/12.

2.167 The Northern Ireland Executive's revised budget of February 2012 outlined plans to invest £500 million on road infrastructure over the subsequent four-year period. A £300 million investment in the A5 would have allowed two sections to progress. The Investment Strategy for Northern Ireland 2011-21 stated that a balanced programme of improvements was being delivered on the strategic road network to provide a dual carriageway on the A5 between Newbuildings and Strabane and between Ballygawley and Omagh. In fact no construction work took place as the decision to proceed was quashed in April 2013.

2.168 "A Fresh Start: The Stormont Agreement and Implementation Plan" was published in December 2015 following cross-party talks involving the UK and Irish Governments. It included this statement by the Irish Government:-

"The Irish Government remains supportive of the commitment under the St Andrews Agreement to co-fund the construction of the A5 through Northern Ireland to Derry-

Londonderry, which will improve access to Derry-Londonderry and North Donegal ... Under this Agreement the Irish Government reaffirms its existing commitment to providing funding of £50 million for this project. It will also commit an additional £25m to ensure that Phase 1 of the project can commence as soon as the necessary planning issues have been resolved by the Northern Ireland authorities. In accordance with the revised project timeline, the Irish Government funding will be provided in three tranches of £25m in the years 2017, 2018 and 2019 respectively … The first section will be the route between Newbuildings (outside Derry-Londonderry) to north of Strabane."

2.169 The Northern Ireland Executive's budget for 2016/17 was published in January 2016. It stated that although the Executive was agreeing only a single-year budget, the nature of some capital projects meant it was important to provide funding certainty beyond that time span. A number of flagship projects were therefore identified where funding was agreed for future periods. In regard to the A5 scheme, the Executive made a total allocation of £229.2 million for the expected five-year term of the Assembly elected in May 2016.

2.170 Following a snap Assembly election in March 2017, political disagreements made it impossible to form an Executive. The hiatus continued until January 2020 when the "New Decade New Approach" document was agreed and a new Executive came into being. Paragraph 23 of "New Decade New Approach" stated that by April 2020, informed by a detailed stakeholder engagement process, the Executive would publish a new strategic-level outcomes-based Programme for Government aligned to a multi-year budget with a sustained approach to public finances and prioritised investment in infrastructure and public services. No final Programme for Government or multi-year budget had been agreed by the time the Executive ceased to function in 2022.

2.171 In Annex A to "New Decade New Approach", the UK Government said this:-

"The Executive will benefit from increased funding for capital infrastructure investment as a result of the UK Government's infrastructure revolution. Infrastructure funding will enable the Executive to invest in a range of potential capital projects such as … A5/A6 roads …"

2.172 In Annex B of "New Decade New Approach", the Irish Government said this:-

"We believe this is an immediate opportunity to move forward quickly together to deliver on plans to complete key infrastructure projects including the A5 ... The Government will deliver on its funding commitments to those projects, including a total of £75 million up to 2022 for the A5."

2.173 The cost of delivering the scheme has effectively doubled since 2009. Construction sector inflation, which has been in double digits in the recent past, has been a major factor in this rise. The OBC indicates that the latest estimate of the cost of the whole scheme is £1,697,776,585 at price levels that prevailed in the second quarter of 2022. The inquiry was told that this includes an allowance for optimism bias which is supposed to take account of projected inflation during the construction programme and all environmental commitments. Sunk costs (money spent to date which cannot be recovered) amount to £89,152,309 which leaves a total of £1,608,624,276 to be found over the course of fewer financial years to deliver the scheme. In the context of the Northern Ireland capital budget, this is an enormous amount of money. However, it

seems quite possible that the cost of the scheme will turn out to be substantially more than currently estimated.

2.174 DfI remains committed to a planned opening date of 2028 for all phases of the proposed scheme. Therefore the construction programme has been compressed and it is now envisaged that work on the three sections will overlap substantially, necessitating a particularly high level of funding in the years 2025/26, 2026/27 and 2027/28. Although the breakdown of costs is heavily redacted in Table 4-2 of the OBC, it gives the total funding required in each financial year as:

Year	Scheme Cost
2022/23	£5,327,475
2023/24	£27,521,640
2024/25	£83,492,455
2025/26	£396,072,623

Year	Scheme Cost
2026/27	£628,051,409
2027/28	£380,806,902
2028/29	£58,176,254
2029/30	£13,905,726

Year	Scheme Cost
2030/31	£10,030,085
2031/32	£4,875,449
2032/33	£364,260

2.175 A senior DfI official told us that the total capital budget for Northern Ireland in 2023/24 is £2.239 billion. The budget is already under great strain, with many other pressing priorities, including health, education and justice. We asked the witness how an Executive could afford to fund this scheme given the other pressing priorities and the need to repay the overspending of last year's block grant. He argued that the total capital allocation exceeds what is needed for the A5 and that while there is always a longer list of projects than the funding available, the scheme is shovel ready and a flagship project.

2.176 Section 64 of the Northern Ireland Act 1998 provides for single year budgets which must be agreed annually by the Executive and voted through by the Assembly. There is currently no statutory basis for multi-year budgets. We asked whether multi-year budgets could be agreed for flagship schemes. The witness stated that the Executive was intending to provide a multi-year budget before its collapse. We queried how secure such budgets would be in subsequent years. He replied that while it was possible that budgets could be altered or reduced, there is no reason to believe that this would be done in practice if contracts had been signed.

2.177 Other DfI witnesses expressed confidence that they would be able to assemble the funds necessary to deliver the scheme in full by 2028. It was highlighted that despite the continuing absence of an Executive, the project remains a flagship scheme and this status will endure unless it is changed by a future Executive. The most recent ministerial confirmation of this was delivered by the then Finance Minister in March 2022. His letter to this effect was provided to the inquiry and he highlighted the flagship status of the scheme in his own testimony to the inquiry. A witness explained that as a flagship project, the A5 would be funded first before funds are allocated to other capital projects that may come forward.

2.178 The OBC states that final value for money and affordability factors will be considered again in detail as part of any decision to authorise the scheme; however, at this stage (our emphasis), DfI does not foresee any difficulties with either. DfI clarified at the inquiry that this statement means, at OBC stage. The OBC was approved by DoF on the

basis of DfI's view that Irish Government contributions could be sufficient to address any pressures, particularly in the peak expenditure years.

2.179 Counsel for the AA5A argued that the DoF approval of the OBC could hardly be in more conditional language. He argued that civil servants ought not to assume that the scheme will retain flagship status as this would have to be re-visited by a new Executive. Notes of meetings between DfI and DoF officials as recently as October 2022 show that there was concern about the cost of the project and how the funds would be raised. Counsel for DfI responded that civil servants can't be wrong to make the starting assumption that the scheme remains a flagship project. It is a requirement of the Northern Ireland (Executive Formation) Act 2022 that in exercising their functions they take account of established policy.

2.180 The AA5A provided evidence of various financial challenges facing DfI. A Northern Ireland Assembly Research and Information Service Briefing Paper on Departmental Pressures Arising from the Draft Executive Budget 2022-25 showed that DfI had received a significantly lower capital allocation than it bid for. The Committee for Finance remarked that there was a significant funding gap, noting that there *"would be insufficient funding to address flagship, inescapable and pre-committed schemes in total. This will require prioritisation of schemes over the budget period, which could result in the delay of some schemes into later years."*

2.181 The Draft Budget 2022-25 indicates that DfI faces significant challenges in regard to preventative maintenance of roads, water and sewerage infrastructure, the public transport network, vehicle test centres and inland waterways, greenways and blueways. The DfI senior official told the inquiry that the challenges on the resource budget were exceptional, and they were seeking views on options to close a £100 million gap. However, he considered the capital budget to be much healthier. £792 million had been allocated for the current year which would allow them to take forward 63 projects. £821 million had been proposed in the Draft Budget.

2.182 Work was ongoing to re-profile some spending that had been planned, for example, reducing the structural maintenance budget by £25 million. Flagship schemes would still be funded first, for example the Belfast Transport Hub. While there is always pressure on the capital budget, the A5 upgrade is at the front of the queue for funding. The witness considered that the Assembly Research Paper referred to by the AA5A was now out of date since the budget had been set, that funds can be supplemented by in-year monitoring rounds and that he was happy to stand over his understanding of DfI's financial position.

2.183 The AA5A also contended that the sums of money proposed to be invested in the A5 are not consistent with the requirement under Section 22 of the Climate Change Act to spend a minimum of 10% of the overall transport budget on active travel. The senior official stated that DfI wanted to take a strategic approach to active travel measures over a longer period. It has already implemented the easier schemes, but this target is a challenge and will require a fundamental shift in approach. It needs to move from currently spending £16 to £17 million per year on active travel schemes to £50 to £75 million and it is working to expand capacity for this. He was of the opinion that the "transport budget" may not include any Irish contributions to the A5 project. Counsel for the AA5A was of the view that if DfI spends Irish money on the A5, it would be part

of the transport budget. Either way, it will require a significant increase in DfI's expenditure in this area.

2.184 DfI also pointed to the prospect of contributions from the Republic of Ireland towards the scheme. The OBC notes that Ireland's National Development Plan 2021-2030 (NDP) lists the proposed scheme as one of its strategic investment priorities and the recent update to the Irish Government's *Building a Shared Island*, extends the budget to 2030 with a €1 billion commitment ring-fenced for investment in collaborative North/South projects to deliver key cross-border initiatives. The wide scope of the fund is evident from Page 165 of the NDP and includes health care, greenways, canal restoration, rail and air services, and education. Road infrastructure improvements are also included, with a particular priority to the A5.

2.185 Statements from Irish Government ministers were provided to the inquiry including:

- An email from the Minister for Transport dated February 2023 which states that the Irish government remains committed to supporting this crucial infrastructure project. He reiterates the previous commitment to provide £75 million towards the project once the statutory planning process is concluded.
- Letters from the Taoiseach dated January and March 2023, again describing it as a crucial infrastructure project and a priority transport corridor under the NDP. He concludes that as the pathway and timeframe for the project becomes clearer, the government stands ready to engage constructively on next steps.
- A transcript of the Oireachtas Joint Committee on the Implementation of the Good Friday Agreement in April 2023 where Deputies and Senators and officials from the Department of the Taoiseach discuss cross-border projects including the A5. An official referred to recent comments by the Taoiseach that *"once we can see the pathway to the actual delivery of the A5, we can then engage on the funding commitments, but it is simply not feasible at this point without knowing that the project is cleared to go ahead."*
- Copies of remarks made in the Dáil in May 2023 by ministers including the Taoiseach, the Tánaiste and the Minister for Finance. The Taoiseach referred to the initial promise of £400 million, its reduction "at a time when we were very strapped for cash here", that we are now in a much better position financially and we would be happy to talk to the new Executive, when it is up and running, about making a greater contribution. The Minister for Finance, when asked if the Government would commit to a 50% contribution, as promised in the 2006 St. Andrews Agreement, stated, *"we are prepared to have that discussion once we have an approved project and once we have people to sit down with to discuss this issue"*. The Tánaiste stated that the Government has put €1 billion aside for a range of cross-border projects, including the A5 over the next decade.

2.186 Elected representatives who gave evidence to the inquiry highlighted the cross-party support for the A5 scheme. Although no unionist representatives appeared at the inquiry, Counsel for the EiE campaign stated that both the Democratic Unionist Party and the Ulster Unionist Party had attended the initial meeting of the group and offered their unqualified support. All of the district councils along the route and across the border from it had passed motions in support of the scheme. It was argued that there is no prospect of a political decision to strip the scheme of its flagship status given the position of all parties entitled to a seat in a re-formed Executive. The three largest

political parties in the Dáil also support the project. However, Counsel for the AA5A highlighted that the Irish Government won't put a figure on the support they will offer.

2.187 In support of the view that more money is likely to be forthcoming from the Irish Government, an elected representative stated that Ireland is projected to have a surplus of €65 billion over the next four years. Ministers have identified the A5/N2 corridor as a key priority and will be ready to invest in it if approval is granted. One politician argued that the commitment to fund half the cost was deferred, but not rescinded. He predicted that the Irish Government would restore its commitment to fund half the cost of the scheme if approval was granted and there was an Executive in place. We appreciate that the Irish Government cannot make any new financial commitments at this point in the absence of an Executive at Stormont and a final decision to proceed with the scheme. If these matters fall into place, we are persuaded that there is a high likelihood of an increased contribution from the Republic of Ireland.

2.188 It will be recalled that the Irish Government's commitment in the Fresh Start Agreement referred specifically to the commencement of Phase 1 of the project and stated that the first section will be the route from Newbuildings to north of Strabane. At the inquiry, we asked whether further contributions from the Republic of Ireland were conditional on construction of a dual carriageway all the way from Newbuildings to the border at Aughnacloy and on Phase 1a being constructed first. An Assembly Member who had corresponded with Irish Government ministers was of the view that they wanted to see the full project delivered. A DfI witness stated that the references to Phase 1a in the Fresh Start Agreement and elsewhere were simply because that was the plan at the time and it was presumed that work would start from Newbuildings. He did not believe that funding from the Republic of Ireland was conditional upon this.

2.189 The Commission's Interim Report referred to DfI's risk register for the scheme in which Risk 9 recorded a 50% risk of inadequate funding for completion of the scheme. We were disappointed that the current risk register appended to the OBC was redacted in full. A witness for DfI stated that the risk register contains information of which the contractors may not be totally aware. It is unclear why all the contents of the document are blanked out, given that the risk register was openly provided to the Commission in 2020.

2.190 Prior to the inquiry, we asked DfI for the Project Team's latest assessment of Risk 9 on the risk register for the scheme. We were told that the risk has evolved and been updated in the intervening period and is now described as WS.04. While there remains a risk that construction could be delayed, DfI assumes that the full capital allocation for the proposed scheme would be provided at the Executive level alongside contributions from the Irish Government, rather than being funded from within DfI's typical budget allocations. No percentage was put on the risk. This secrecy prompts the question as to whether DfI has something to hide.

2.191 The Interim Report also recommended DfI, before deciding to proceed with any part of the scheme, to ensure that ring-fenced funding is available for that part. DfI's Interim Statement accepted this in principle, but stated, *"The Department will take steps to ensure, as far as possible, that prior to commencing construction on any part of the scheme, funding will be made available to complete that part, without interruption. However, the Department recognises that it must operate within the limitations of public sector finance procedures and that these may not make it possible for the full*

anticipated funding requirement for any part, to be identified and ring fenced at the outset of construction of that part." A witness for DfI indicated that construction of any phase would not start if there was a prospect that the money would run out. The only qualification in the above response was that DfI's budgets are subject to the Northern Ireland Act.

2.192 There is no question that the current pressures on the Northern Ireland budget are more severe than in 2020. However, there is cross-party and cross-border political support for the scheme and a markedly improved financial position in the Republic of Ireland which increases the likelihood of Dublin contributing significantly to the scheme cost. Despite the challenges of raising £1.609 billion for a single project over a five-year period, we are persuaded that the political support for the project on both sides of the border makes this potentially achievable within the planned construction programme.

2.193 DfI's officials expressed confidence in their ability to assemble the funds necessary to deliver the scheme in full by 2028. Their strong performance attracted the enthusiastic backing of the EiE campaign and of the politicians who spoke at the inquiry. We accept on the balance of probability that sufficient money will become available. However, there remain obvious risks which it would be foolish to ignore.

2.194 The first risk is that the total cost of the scheme will increase to the extent that it will become unaffordable. The OBC figure of £1.6 billion includes an allowance for optimism bias but it is unclear whether it takes full account of the surge in inflation to double-digit levels which has occurred since the second quarter of 2022.

2.195 The second risk is that the Northern Ireland Executive may not be re-established by the time a decision on whether to provide funds for the scheme has to be taken and civil servants may conclude that they do not have the authority to make a public expenditure commitment of this magnitude. In recent years whenever an Executive has been absent, an annual budget for Northern Ireland has been passed by Parliament at Westminster.

2.196 The third risk is that the necessary contribution to the scheme from the Northern Ireland block grant may prove to be unaffordable in the current financial climate. Many public services are known to be under severe strain and the 2022/23 block grant was overspent. The Secretary of State has instructed civil servants to identify reductions in public expenditure as well as revenue raising measures.

2.197 The fourth risk is that the Irish Government's contribution, though generous, may not be sufficient to make up the shortfall in what the Northern Ireland administration can afford. One objector considered it ironic that the Irish Government is offering substantial funding for the A5 scheme in this jurisdiction but providing only limited funding for the N2 upgrade in its own jurisdiction.

2.198 A fifth risk may be described as "unknown unknowns". There has been a series of very significant unexpected events in recent years – the global banking crisis in 2008, the Brexit vote in 2016, the emergence of the Covid pandemic in 2020 and the full-scale invasion of Ukraine in 2022. At the time of writing, a war has just erupted in the Middle East. No one knows what may come next and how it might affect the A5 scheme.

2.199 DfI acknowledged in its Interim Statement that public sector finance procedures may not make it possible for the full anticipated funding requirement for any part of the

scheme to be identified and ring-fenced at the outset of construction of that part. This confirms that even when spending decisions are made, there are still residual risks.

2.200 We conclude that if the Department decides to proceed with the scheme it is more likely than not that funding will become available to complete the scheme by the end of the financial year 2028/29, but that risks remain.

2.201 A DfI ministerial submission dated December 2020, obtained by the AA5A, stated that in the event of any formal decision to proceed, the funding available and associated financial risks would be made clear expressly within the Departmental Statement. We were surprised, therefore, that at the inquiry DfI's officials declined to commit to a public-facing document about funding. Given the exceptional size of this project and the public interest in it, we consider it imperative that DfI is candid about the funding schedule and any risks. The information is bound to come out anyway. Public confidence would be secured more readily if DfI were to place the full facts in the public domain transparently rather than waiting for piecemeal disclosure to take place in some other manner.

Recommendation 2

We recommend the Department, if it announces a decision to proceed with any part of the scheme, to publish at the same time a paper, agreed with the Irish Government, specifying the total sums of money needed in each financial year until completion, identifying by whom those sums will be provided, and setting out expressly and clearly any known residual financial risks.

Human Rights

2.202 Section 6 of the Human Rights Act 1998 states that it is unlawful for a public authority to act in a way which is incompatible with a Convention right. That is a reference to rights and fundamental freedoms set out in the European Convention on Human Rights (ECHR), to which the UK is a signatory.

2.203 Article 6(1) of the ECHR states that in the determination of his civil rights and obligations, everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal established by law.

2.204 Article 8 of the ECHR states that everyone has the right to respect for his private and family life, his home and his correspondence. It goes on to say that there shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic wellbeing of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

2.205 DfI's Human Rights Act impact assessment (HRAIA) of March 2022 states that interferences with Article 8 rights could arise in the following ways:

(i) The lands to be vested include residential and commercial properties, community assets and agricultural lands. Severance of some holdings would also occur. Vesting is therefore likely to give rise to interferences with the private and/or family lives of those property owners whose land is vested.

(ii) For adjoining landowners there might be adverse amenity impacts, such as visual, air quality, noise and vibration, as a result of the operation of the road. During construction, disruption and similar amenity impacts are likely. In individual cases, the amenity impacts could reach the threshold for an interference with private and/or family life. Construction impacts would be short-term.

(iii) The configuration, alignment, design and construction of the new road would give rise to reconfigured crossing points, changes to existing side roads and some closures. These changes might have adverse impacts upon community cohesion and connectivity, which in individual cases could reach the threshold for an interference with private and/or family life.

(iv) A shift of traffic flows from the existing A5 to the new road could give rise to business impacts for individuals currently operating businesses which depend upon passing trade. The scheme would not prohibit or otherwise impair the entitlement of any business owner to continue in business. While some adverse impacts upon some businesses are expected, it is considered unlikely that the rights to family and private life of such individuals would extend to protect income levels. The extent of impact is unlikely to reach the threshold for an interference with private and family life. However, the possibility of interferences arising in some individual cases is not excluded.

2.206 Article 1 of the First Protocol to the ECHR states that every natural or legal person is entitled to the peaceful enjoyment of his possessions and that no one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principles of international law. It goes on to say that the preceding provisions shall not, however, in any way impair the right of a State to enforce such laws as it deems necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties.

2.207 The HRAIA states that property owners would experience an interference with their property rights where their property lies within the footprint of the route of the new road and where the land would be vested. The rights of adjoining property owners might also be engaged, where the construction of the new road might result in changes to the amenity of the property or a diminution in its value. The HRAIA says there is legal debate about whether this form of disruption would amount in every case to an interference with the property rights of adjoining owners, as distinct from their right to respect for private and family life.

2.208 The HRAIA specifies that the legal basis for the interferences with or limitations on the identified Convention rights is found in the Roads Order, which empowers DfI to construct new roads, provides the procedure for authorisation of schemes, and empowers DfI to acquire land and make Vesting Orders.

2.209 The HRAIA refers to the objectives of the scheme which, it says, are permitted aims for the purposes of ECHR Article 8 in so far as they are directed towards public safety in road transport (including the health and wellbeing of the population using road transport), the economic wellbeing of the country and the protection of the rights and freedoms of the population as a whole, including improved North/South connectivity. The HRAIA adds that for the purposes of Protocol 1, Article 1, these are objectives in furtherance of the general interest.

2.210 The HRAIA considers whether the interference with or limitation of Article 8 rights is necessary in a democratic society. It refers to the agreement reached at the North/South Ministerial Council in 2007. It says that alternative route corridors, options and alignments for a dual carriageway were carefully considered throughout the scheme development process, culminating in the route now proposed. Two alternative schemes were also considered and it had been determined (by DfI) that they would not meet the objective of both Governments in providing a route of dual carriageway standard and that they would only partly meet the scheme objectives. The proposed scheme is considered to be a necessary and proportionate means of achieving its objectives, having regard to the likely adverse impacts on property and private/family rights.

2.211 The HRAIA expresses the view that, having regard to the benefits of the scheme, any interference with Article 8 rights would be proportionate, taking account of the availability of compensation for vesting, mitigation measures to reduce any adverse effects on amenity value and a properly organised construction phase and the design of the works to minimise interference.

2.212 The HRAIA says the vesting of private property is inevitable with such an ambitious scheme that aims to bring benefits to an area less well served in terms of infrastructure than others in the province. A robust design process was followed with the result that no more land would be vested than is required for the proposed scheme, including necessary mitigation. DfI had many years' experience of vesting schemes and believes that localised impacts and concerns consequent on vesting could be approached in a sensitive manner (having regard to the fact that people would be losing their homes) and that adequate compensation would be available which could be independently assessed. It believes that the balance inherent in Protocol 1, Article 1 is appropriate and that the interference would be proportionate.

2.213 In regard to proportionality, the HRAIA goes on to say that houses acquired for the scheme would be limited to those essential to facilitate the most economical engineering solution for construction of the new road and the mitigation of its adverse effects. Every effort was made to reduce the impact on property and land as far as practicable. Where a house, property or land is vested, DfI would seek to agree accommodation works with owners to mitigate further the impacts of the scheme upon family, business or personal life. DfI considers that the interferences with Article 8 and Article 1, Protocol 1 rights which might be experienced by those living or working in the vicinity of the new road would be proportionate to the objectives of the scheme, for the benefit of the population as a whole. Similarly, any interferences with private and family rights as a result of a loss of connectivity or a reduction in business trade would be proportionate to the objectives of the scheme and the benefits likely to be delivered to the community and the region.

2.214 The HRAIA states that the total land take for the scheme would be approximately 1,209 hectares (nearly 3,000 acres) affecting 314 farms. It would involve the demolition of eight homes and one traveller site and temporarily affect direct access to over 180 dwellings. It would impact on seven areas of land used by local communities.

2.215 The Commission's Interim Report of September 2020 highlighted the distinction between two categories of persons – those who would suffer an interference with their Convention rights due to expropriation of their property, and those who might suffer an interference due to impacts on the amenity enjoyment of their land. It said that the

second category would not lend itself to quantification but DfI must already know who and what would fall into the first category. The Commission considered that the inclusion of numerical data in the HRAIA was necessary to demonstrate that decisions on the scheme were taken having regard to the best and fullest information available.

2.216 In its Interim Statement of March 2021, DfI accepted the Commission's recommendation and undertook, among other things, to state the number of households that would be affected by compulsory acquisition in the updated HRAIA. Unfortunately, DfI has not taken the trouble to fulfil this undertaking.

2.217 It is a reasonable inference from the available information that hundreds of households would suffer an interference with their Convention rights due to the expropriation of their property for the scheme and that there is potential for many other people to suffer an interference with or limitation on their Convention rights due to its impacts on the amenity enjoyment of their land. We conclude that the scheme would involve large-scale interferences with and limitations on rights identified in Article 8 of the ECHR and Article 1 of the First Protocol to the ECHR.

2.218 The AA5A claimed that there was a breach of Article 6 of the ECHR affecting people who had not had a chance to comment on the underlying merits of the scheme by reason of having recently purchased or moved into properties within or close to its footprint. We are not aware of anyone having been denied an opportunity to express an opinion on the scheme in response to DfI's public consultation exercises from March 2019 onwards. Anyone who wanted to make oral submissions at the inquiry was facilitated to do so, whether or not they had made written representations. No individual person has been identified as a potential victim. We are not persuaded that there has been any substantive breach of Article 6.

2.219 In its judgment on *James Stewart's Application* [2003] NICA 4, the Court of Appeal indicated that the State has to carry out a proper balancing exercise of the respective public and private interests engaged in order to satisfy the requirement that it act proportionately. In this type of balancing, the determining authorities carry out a scrutiny of the effect which the proposal will have on other persons and weigh that against the public interest in permitting appropriate development to proceed. In the vast majority of cases this will suffice to satisfy the requirements of Article 8 of the ECHR and Article 1 of the First Protocol, bearing in mind that the authorities are entitled to the benefit of a discretionary area of judgment.

2.220 It seems to us that the final decision on whether the scheme is to proceed will require all the advantages and disadvantages to be identified, weighed and balanced. Interferences with Convention rights (whose impacts may be partially offset by measures such as compensation) are material considerations to be integrated into the overall decision making process. They will go into the minus column along with adverse effects on the environment. Scheme benefits will go into the plus column. The decision maker's task will then be to strike a fair balance, ensuring there is no excessive or disproportionate effect on anyone's interests.

2.221 As the 2016 Notice of Intention to Make a Vesting Order is outside the remit of this inquiry, it would not have been appropriate for us to conduct a detailed examination relating to parcels of land which it is proposed to acquire under the Order. However,

the overall implications of the scheme for the identified Convention rights are material factors which fall to be considered when weighing up the merits of the scheme.

2.222 In 2020, the AA5A submitted impact statements by way of illustration. It is apparent that many of the authors have had their lives seriously affected by the threat of vesting. Several have suffered from anxiety and depression and have needed medical help. The uncertainty has been going on for about 14 years, which is a substantial portion of any person's life. While it is important to consider evidence dispassionately, the human dimension must never be overlooked.

2.223 One objector wrote to say that a farm which had been in her family's name since 1845 would be severely affected if the road went ahead. The uncertainty brought terrible emotional turmoil to her and her family members and continued to take its toll on the health of all of them. She said there were huge human rights (issues) that needed to be addressed. In its rebuttal, DfI recognised that the building of any new road can cause anxiety and stress. It acknowledged that the protracted nature of the A5 scheme will have caused frustration to many of those affected.

2.224 Another objector stated that the land and property of people living along the whole route were blighted for the foreseeable future. Another said many people were extremely worried about the destruction of their property and business and way of life. She asked what studies had been undertaken to mitigate the potential for mental anguish and illness arising from the proposal. DfI's response was that no studies had been undertaken but it sought to reduce uncertainty as far as possible by vesting lands and paying compensation as early as possible; informing landowners through their agents of compensation arrangements; and aiming to ensure that the scheme can be implemented as seamlessly as possible.

2.225 If the confidence expressed by DfI's officials about the availability of funding for the scheme turns out to be misplaced, it is conceivable that the prospect of implementation could stretch well into the 2030s. The preferred route was announced in 2009. In our opinion, the prolongation of blight and uncertainty into a third decade would have an excessive and disproportionate effect on the interests and wellbeing of persons whose lands and properties are proposed to be vested.

2.226 It seems to us that people whose human rights would be or might be infringed by the scheme are entitled to know whether it is going ahead or not. They need reasonable certainty so that they can make plans for their businesses and their lives. Any authorisation should therefore be time limited and not open ended.

2.227 It is a statutory requirement that every planning permission is granted subject to a condition that the development to which it relates must be begun within a specified period, normally five years. The purpose of this provision is to enable the merits of the development to be reviewed in the light of the circumstances then prevailing. As Counsel for the AA5A put it, it is a recognition that things can change.

2.228 The A5 scheme also needs a defined cut-off date. The ES was originally published in 2016 and was updated most recently in 2022. All the assessments are predicated on the new road being open to traffic by 2028. The information on which the assessments rely will become increasingly stale as time goes on. Assessments that rely on the processing of numerical data (traffic flows, economic effects, air quality, noise, climate and so on) will rapidly lose their validity once the assumed completion date passes.

2.229 We therefore consider that any authorisation for any part of the scheme should lapse unless a material start has been made by the end of 2028/29. By a material start we mean actual physical work on the ground. If DfI believes its own evidence that it will be able to raise sufficient money to complete (and not just start) the entire scheme by 2028, then it should have no difficulty in accepting the following recommendation.

Recommendation 3

We recommend that any decision to proceed with any part of the scheme is expressly stated to be time limited, so that if physical construction of any phase or section so authorised has not begun by the end of the financial year 2028/29, the authorisation will lapse in respect of that phase or section.

Alternatives

2.230 We gained the impression that all participants in the inquiry were committed to preventing, as far as possible, further loss of life on the WTC and that what was disputed was how best to achieve this common goal. The parties were agreed that alternatives should be evaluated by making a judgment as to whether they would (i) unacceptably compromise the scheme objectives; (ii) have unacceptable environmental effects; and (iii) be more or less intrusive on human rights than DfI's scheme.

Non-car modes of transport

2.231 Some objectors to the scheme argued that non-car modes of transport should be promoted as an alternative. DfI Roads, like all government departments, has committed to sustainable development. It has a responsibility to reduce car usage and increase bus and train patronage, cycling and walking. People should be encouraged to travel less. Ways to reduce vehicular traffic should be explored. There should be facilities for active travel and the use of the existing A5 as a cycle route.

2.232 An objector maintained that the alternative of reducing the volume of traffic along the A5 corridor had not been examined properly. The route was barely busy enough to justify a dual carriageway. Home working; better, cheaper (even free) public transport; car pooling; and active travel along the route would each contribute to a reduction in traffic overall. The 2022 ESA did not examine any of these alternative individually or collectively. This was a major gap in the information presented.

2.233 DfI did not engage with the objector's ideas for reducing the volume of traffic on the WTC in its rebuttal evidence. It argued instead that the existing A5 could benefit active travel users upon completion of the proposed scheme. The reduced traffic flow on the existing A5 might make it a more desirable route for pedestrians and cyclists, with reduced congestion and pollution within the corridor. Precise details of improvements would be considered further, but might include prioritisation of cyclists at junctions, provision of improved bus stops and increased provision of walking and cycling facilities.

2.234 At the inquiry in 2020, DfI maintained that the A5 scheme would offer a benefit to public transport. Significant investment had gone into purchasing Goldliner coaches. Park-and-ride sites could be developed with facilities for cyclists. DfI acknowledged that it was important to ensure public transport was a viable alternative to the private car.

2.235 It seems to us that public transport in the form of coaches and buses is dependent upon an efficient road network. Improvements to roads and provision of such types of public transport are not alternatives but complement each other. Well laid out roads also facilitate cycling and walking. However, rail travel where available is an alternative to travel by road and to that we now turn.

Rail alternatives

2.236 Diagram 3.3 of the RDS 2035 (reproduced earlier in this chapter) illustrates railways by dashed lines. It shows that there is no access by rail to anywhere in the western part of Northern Ireland other than Londonderry. Omagh and Strabane are identified as main hubs in the RDS but they are completely isolated from the existing rail network.

2.237 In May 2014, the Department produced its Railway Investment Prioritisation Strategy (RIPS). In his foreword, the then Minister noted that rail passenger numbers had almost doubled since 2002. Whilst the railway service was not extensive, its role was increasing as a travel mode of choice.

2.238 The first and second priorities identified in RIPS related to the existing network. The third priority, to extend or enhance the network, included feasibility studies into longer-term extensions of the network along the A6 corridor between Antrim and Castledawson and along the M1/A4 or the A3/A29 corridor towards Dungannon/Armagh. There was no proposal to consider a new railway in the WTC.

2.239 It was noted in the executive summary of RIPS that rail does not generate surplus revenue. Northern Ireland Railways is dependent upon capital grant from the Executive to maintain and improve the track, rolling stock and other assets. Progress in delivering the strategy would depend on the amount of funding that could be made available from the Executive's budget.

2.240 RIPS did not envisage a demand for development of rail freight facilities before 2035. Whilst moving freight onto rail and off road is a key objective of UK transport policy, it stated that rail freight becomes commercially viable only when a large volume of goods is transported over longer distances, usually greater than 400 kilometres (240 miles). Since 2003 no freight had been carried on the Northern Ireland Railways network and business investors had demonstrated little interest in developing freight services.

2.241 RIPS went on to say that re-opening lines to areas previously served in the early Twentieth Century might not be viable. Areas in the west had lower population densities. The majority of former track beds were no longer in the ownership of Northern Ireland Railways and some had been built over. Re-instatement of tracks would require land acquisition.

2.242 RIPS stated that rail can provide the core part of many journeys and that where direct rail links were not sustainable a range of multi-mode options should be considered. The creation of an integrated transport system linking modes was key in achieving modal shift. Within a more integrated transport system, there could be potential to extend the rail network to key locations such as intersections on the strategic road network. Sites were likely to be on major commuting corridors providing park-and-ride facilities and offering opportunities to integrate rail services with improved local bus services. However, the cost of providing rail services directly to the Strabane and Omagh hubs was likely to be prohibitive over the period to 2035.

2.243 An objector stated that when contemplating new infrastructural development between Aughnacloy and Derry-Londonderry, DfI should first have considered a sustainable alternative. The lack of reference to a railway had biased the population of Tyrone/Donegal/Londonderry in favour of the proposed dual carriageway. Outside Belfast, no new railway track had been laid since the end of the Nineteenth Century but track had been taken up in numerous closures in the 1940s, 1950s and 1960s.

2.244 The objector maintained that in contrast to inherently dangerous roads, rail is a far more comfortable and safe means of travel. Translink's Goldliner coaches travel from Omagh to all parts of Ireland but, according to the objector, they are cheap and lightly built and vibrate uncomfortably. Studies showed that the motorist was more likely to favour rail than bus or coach. Re-introducing rail to the north west could be a means of promoting modal shift.

2.245 Another objector argued that it was not too late to consider extending the railway system to Omagh. It could be done in stages as funds were found. Rail was surely the most economical way for future transport of heavy loads – steel on steel and powered by electricity produced from wind.

2.246 Another objector stated that every year that passes makes rail a more viable option. Three million passengers per year used the Derry line now, and usage was growing. Social media revealed a huge desire for increased rail services. The A5 scheme would be the largest ever construction project in the North and would effectively rule out the return of rail for generations. For the amount of time, effort and money already invested in the scheme, there could have been a good start, if not completion, of a railway extension from Derry to Strabane and preparations for continuing it on to Omagh. The real inequality was the lack of rail services in the north west serving populations along the route of the A5. The dual carriageway scheme should be paused until a complete review of transport policy was undertaken.

2.247 In its rebuttal evidence, DfI stated that the land-take requirements for rail lines would exceed those for a dual carriageway as there was considerably less flexibility in both horizontal and vertical alignments. The land required for stations and associated infrastructure, such as car parks and connections to bus depots, would all be in built-up population centres and would impact on many more people over a longer construction period and be much more expensive than a dual carriageway. A railway approach, in whole or in part, would not deliver similar benefits to those of its own scheme. Heavy vehicles serving businesses would be likely to remain on the A5 whether it was upgraded or not.

2.248 At the inquiry in 2020, objectors produced a map showing the extensive rail network that existed in the northern part of Ireland in 1914. The Great Northern Railway had a line that ran from Londonderry to Strabane via County Donegal and on to Omagh. From Omagh, it had a line to Enniskillen and another to Portadown via Dungannon. Portadown was on the main line from Belfast to Dublin (as it still is). There was also a narrow-gauge railway from Londonderry to Strabane which ran to the east of the River Foyle through County Tyrone.

2.249 The objectors also produced a map showing the general route of a proposed "Tyrone Line" from Derry to Portadown via Strabane, Omagh and Dungannon. They wanted the line which was closed in 1965 to be re-opened. The Omagh to Newtownstewart line still

existed and the line through Donegal was still substantially complete. New railway stations would possibly have to be on the outskirts of towns such as Omagh and Strabane.

2.250 The objectors referred to the Scottish Borders Railway (from Edinburgh to Tweedbank, a distance of 35 miles), which re-opened in 2015 at a cost of about £10 million per mile. Since then it had seen a huge increase in patronage, overachieved its targets and reduced road accidents. The largest town on the line had a population of only 15,000. To counter DfI's view about the commercial viability of rail freight, it was pointed out that minerals are conveyed by train from Tara Mines in County Meath to Dublin Port, a distance of roughly 70 kilometres or 40 miles.

2.251 The objectors were of the opinion that, by comparison with other jurisdictions, Northern Ireland was starved of public transport investment. There were 320 miles of railway per million people in Scotland, 319 miles per million people in Wales and only 102 miles per million people in Northern Ireland. Northern Ireland had 16,000 miles of road and only 220 miles of railway. DfI's witness confirmed that those figures were about right.

2.252 Another objector pointed out that Derry City and Strabane District Council's Draft Plan Strategy to 2032 proposes that a feasibility study be undertaken for the extension of the rail network to "Strabane/Omagh etc". He argued that a proper cost/benefit analysis was necessary. Trains and cyclists went well together. Park-and-ride facilities could be provided at railway stations.

2.253 Objectors made some further points. Given the growing popularity of train travel, a new railway in the west of Northern Ireland was not a fantasy. It was going to become illegal to have petrol or diesel cars and electric cars would be very expensive, with the result that there would be a need for improved public transport. Better public transport would mean less car use. The expansion of railways would lead to reduced carbon emissions. Railway engines in France and Germany are powered by hydrogen and emit only water vapour.

2.254 We observe that a new railway from Derry to Portadown would traverse only about two thirds of the WTC. It would not link Aughnacloy or Ballygawley to the gateway destination of Derry or to any other urban centre in the west of the region. It would contribute to road safety by taking some pressure off the A5 but it would not improve the road network or provide increased overtaking opportunities. It would be likely to increase, rather than reduce, many origin-to-destination journey times as passengers would be restricted to travelling in accordance with the railway timetable. It would improve the balance of regional infrastructure but would not facilitate new North/South links. It would improve connectivity and, to some degree, economic competitiveness.

2.255 Given the broad-brush nature of the route proposed by the objectors, we find it impossible to say whether the land-take requirements and amenity impacts of a new railway from Derry to Portadown would be more or less intrusive on human rights than DfI's dual carriageway scheme. However, on the available evidence, we find that substituting the proposed railway for the proposed dual carriageway would result in the some objectives of the scheme not being fulfilled. Overall, it would unacceptably compromise the achievement of those objectives.

2.256 We conclude that a new railway from Derry to Portadown would not be an adequate alternative to the dual carriageway scheme.

The All-Island Strategic Rail Review

2.257 The All-Island Strategic Rail Review (AISRR) was launched in April 2021 by the Minister of Transport in the Irish Government and the then Minister for Infrastructure in the Northern Irish Executive. A purpose of the review was to consider how the rail network on the island of Ireland can improve to promote sustainable connectivity into and between the major cities, enhance regional accessibility and support balanced regional development.

2.258 An objector who had previously advocated a rail alternative to the A5 scheme made a further representation in March 2023. He expressed the opinion that no final decision should be made on the scheme until the review report is published. Media reports suggested that expansion of rail in the north west would feature prominently. Even if it were decided to proceed with DfI's scheme, two questions would need to be answered. First, what impact would a railway more or less along the route of the A5 have on future traffic figures for the scheme and its cost/benefit analysis? Second, what impact would the scheme have on any proposed route for the railway? If a decision were made to route the railway along the eastern side of the Foyle via Newbuildings, rather than on the route of the former railway via the western side and Donegal, would the scheme block the railway or add much to the cost of constructing it? There is not much land available near Newbuildings to accommodate both, the objector said.

2.259 We convened a session of the inquiry and put these questions to DfI. Its response to the first question was that the AISRR would not weaken the case for the A5 scheme. It was not an either/or choice; there could be scope for a multi-modal approach.

2.260 In regard to the second question, DfI's technical adviser told us that alignments for rail are more confined and restrictive than those for roads. To fit a railway between the A5 and the River Foyle would be very challenging. Reinstating the old line through County Donegal would be impractical. Light rail might be an option, with reduced speed. The road impacts on the flood plain and a railway would have a similar impact. There is very limited space but gradients would not be a problem. Further to the south the terrain would be more difficult. If the dual carriageway scheme were already in place, there is no way a railway line could be built in parallel with it without affecting the constraints. The land take would be far greater.

2.261 The AISRR was guided by a steering group which included the rail operators in both jurisdictions. An initial public consultation was held between November 2021 and January 2022. There was a particularly strong response from the north west where many respondents expressed interest in seeing the reinstatement and improvement of passenger railway services. The technical content was delivered by the engineering consulting firm Arup. A draft report and associated strategic environmental assessment were published for further consultation on 25th July 2023, after the public inquiry ended.

2.262 The AISRR explores the case for investing in the island's railways. It seeks to inform policy and strategy for the future development of the railways in the coming decades and aims to describe what appear to be the most promising opportunities and interventions for rail. It states that ultimately it will be for the Irish Government and the Northern Ireland Executive to consider which of the recommendations should be taken forward for further development. Each recommendation would be subject to separate appraisal and decision in line with applicable governance processes in each jurisdiction.

2.263 The AISRR identifies several opportunities in Northern Ireland where rail is well placed to improve connectivity. These include restoration of the rail line between Derry-Londonderry and Portadown. This would link the large towns of Strabane, Omagh and Dungannon to the rail network and greatly improve intercity connectivity between Derry-Londonderry and both Dublin and Belfast, as an alternative to the indirect and constrained existing route. The roadmap prioritises that route over other new railways as it would deliver key regional objectives and serve a relatively large population. Figure 18 of the report shows significant reductions in indicative in-vehicle passenger journey times between Dublin and Derry, Belfast and Omagh, and Belfast and Derry when current rail and car journeys are compared with future rail journeys.

2.264 Under the heading "West Coast", the AISRR identifies as a separate opportunity the development of a new rail link from Letterkenny to Derry-Londonderry. This would connect the major urban centres of the north west to each other and greatly improve access to Belfast and Dublin.

2.265 The AISRR presents a timeline for possible future development and delivery of key interventions. In the short term (2023 to 2030) corridors, routes and key stations (new lines, potential lines and major hubs such as Portadown) may need to be safeguarded in the planning system to enable their future development. The AISRR identifies a start to the extension of the railway from Portadown to Derry-Londonderry and Letterkenny as a medium-term intervention for the period 2030 to 2040. Completion of the new railway is described as an intervention that will likely take longer to deliver in full, probably into the 2040 to 2050 period.

2.266 The AISRR says that the phasing of the implementation of these interventions would need to be determined in detail in each jurisdiction. More work is needed to test the feasibility and environmental impact of many recommendations included in the report as well as to secure necessary funding to take projects forward.

2.267 Given the timing of the AISRR report, the Commission accepted post-inquiry evidence. The objector noted that the vision and some goals of the review, which include improving connectivity between major cities, enhancing regional and rural accessibility and fostering economic activity, are similar to those of the A5 scheme. The other goals relate to decarbonisation and sustainability, which the A5 scheme cannot match. Benefits to non-rail users would include reduced road congestion, fewer accidents, a reduced carbon footprint in the transport sector, and modal shift. While DfI argues that the existing A5 would become safer if traffic transferred to the proposed dual carriageway, that would also happen if drivers and their passengers transferred to rail, the objector said. Opportunities for transferring freight to rail would reduce risk further.

2.268 With reference to a recommendation of the review that a network of inland terminals close to major cities on the rail network should be developed, the objector suggested that Omagh could put forward a case to become a terminal based on the importance of the engineering sector in Tyrone. Rail would open up a whole new option in transport.

2.269 The objector drew attention to Figure 18 of the AISRR which, he said, shows how journey times, Derry to Dublin, would be significantly faster by rail than by car. The time would be more productive, as work can prepared on the train. He pointed out that railways serve vulnerable, less well-off sections of our community, the elderly, disabled,

and young. The rail option would facilitate access to education in Derry, Coleraine and Belfast for Tyrone students and reduce the need to move to Belfast.

2.270 The objector saw a huge risk that if the money is spent on A5 scheme, the north west would lose out on rail investment on the basis that "you've had your lot". A way must be found to divert the resources intended for the scheme towards extending the railway into Tyrone, Derry and Donegal in a much shortened timescale. The A5 scheme would likely consume all the funding for the rail extension at huge environmental cost and with limited long-term benefits. The rail extension would provide a real choice in transport.

2.271 The AA5A submitted that as an emerging document of relevance to the A5 scheme, the AISRR is a material consideration which the Commission and subsequently DfI must consider. Of particular significance is the recommended short-term objective that the corridors and routes for the proposed new lines should be safeguarded. On DfI's analysis, the A5 scheme is going to be constructed over the course of the next five years. It is essential during this period, the AA5A argued, that development capable of prejudicing the future safeguarding of routes for this railway is avoided or designed in such a way as not to prejudice future route selection.

2.272 The AA5A noted the barrier posed by the Sperrin Mountains and the geographical constraints at Strabane. There is little space between the developed areas of the town and the River Foyle. If the dual carriageway were established along its proposed route, it would not be possible to run a railway between Strabane and the river without the wholesale vesting and removal of housing. That would be likely to prejudice the future delivery of a railway line at this location. The alternative of routing a transport artery to the east of Strabane is difficult due to the hilly terrain and glens round Knockavoe Hill.

2.273 At the end of its post-inquiry evidence, the AA5A invited the Commission to recommend that DfI proceeds with the A5 scheme only if satisfied that it would not prejudice the future delivery of a new railway from Portadown to Derry via Omagh and Strabane. If DfI is unable so to conclude, it should revisit the route options for the scheme.

2.274 DfI's response to the objector's post-inquiry evidence pointed out that the AISRR does not propose that the potential Portadown to Derry-Londonderry line carries freight. While it notes that rail journey times between the largest cities would be significantly reduced and in some cases halved, this does not specifically (apply to) the potential line between Portadown and Derry-Londonderry. The indicative car-based journey time savings in Figure 18 do not take into account future road schemes such as the proposed A5 dual carriageway. DfI anticipates that the A5 scheme will be built over the course of the next few years and it cannot reasonably be determined that this would in any way impede further investment in infrastructure in the north west over the coming decades.

2.275 DfI emphasised that the AISRR has not yet been finalised and must be signed off by the governments in both jurisdictions. Only then can any feasibility studies and/or development be taken forward. Assuming a feasible route option can be identified and the necessary funding and approvals secured, the Portadown to Derry-Londonderry rail project is indicatively listed for completion between 2040 and 2050 in the draft report. In the interim, the A5 scheme does not preclude the processes of feasibility and conceptual design of the rail corridors and routes. The content of the strategic rail review will be taken into account by the decision maker at the time of any decision on whether to proceed with the scheme.

2.276 DfI's response to the AA5A's post-inquiry evidence stated that the safeguarding of routes for a potential rail line is possible only when the relevant preparatory work has been undertaken to inform a preferred corridor. This is a standard part of the planning process for major infrastructure projects. A route would be considered for safeguarding once the process has been completed for the feasibility and conceptual design of a rail corridor. The further development of all interventions would be directed by the governments and legislatures and subject to separate appraisal and decision in line with applicable governance processes at the relevant time.

2.277 DfI's response also made the point that the draft AISRR report does not meet the level of certainty recommended by TAG Unit M4 to enable it to be considered within other scheme assessments, hence the impact of a potential rail project on the A5 scheme does not fall to be assessed at this stage.

2.278 We appreciate that a restored or new railway line from Portadown to Derry-Londonderry would be a substantial addition to infrastructure in the western part of Northern Ireland. It would benefit sections of the community that do not have ready access to a car. However, in our opinion it would complement an A5 upgrade, rather than doing away with the need it. We do not accept that investment in the A5 scheme in the 2020s would preclude investment in a Portadown to Derry-Londonderry railway in the 2040s.

2.279 To those who have advocated this railway option, the draft AISRR must be a source of satisfaction. From their point of view it represents a significant advance on RIPS. As DfI has pointed out, however, the document is but a first step. Further steps include:

- finalisation of the review following strategic environmental appraisal;
- adoption of the recommendation for a Portadown to Derry-Londonderry railway by the Northern Ireland authorities;
- commissioning of a feasibility study to identify potential corridors and routes, almost certainly involving public consultation; and
- choice of a preferred route.

2.280 It is only when the preferred route has been chosen that it can be safeguarded in the planning system. If in the meantime a decision is taken to proceed with the A5 scheme, the feasibility study for the railway would have to take the scheme into account when examining potential routes. We accept that with the scheme in place it might be more difficult to find a suitable route for a railway but we find it hard to imagine that it would become impossible. In any event, we do not consider that it would be reasonable to recommend DfI to shelve the A5 scheme until decisions are made about the proposed railway. While the AISRR is a material consideration in the A5 inquiry, for the reasons we have given significant weight cannot be attached to it at the present time.

Extension of the M1 motorway to Derry

2.281 A participant at the inquiry in 2020 voiced the radical suggestion that as an alternative to the A5 scheme, the M1 motorway could be extended to Derry. The M1 and A4 constitute the South Western Corridor from Lisburn to Enniskillen, passing close to Coalisland and Dungannon. The M2 and A6 form the North Western Corridor from Belfast to Derry. The RDS 2035 identifies the A29 between Dungannon and Maghera as a link corridor between the M1/A4 and the A6. The RDS does not envisage a motorway running from East Tyrone to Derry.

2.282 The inquiry participant did not specify a particular route for his proposed M1 extension. A glance at a map suggests two broad options – to follow the existing route of the A29 and A6 or to work north westwards across the Sperrin Mountains. The first option would represent duplication while the second would pose significant engineering and environmental challenges.

2.283 The proposed M1 extension would outflank the WTC. It would not improve links between any of the urban centres in the west or provide a strategic link between them and Derry. It would not reduce journey travel times or improve journey reliability along the WTC, nor would it provide increased overtaking opportunities along the WTC. It would result in the aim and some of the objectives of the scheme not being fulfilled. The achievement of the aim and objectives would be unacceptably compromised.

2.284 We conclude that the suggested extension of the M1 to Derry would not be a suitable alternative to the Department's scheme.

Improvements to the Omagh throughpass

2.285 An objection submitted in 2019 noted that the existing A5 carried a lot of strategic traffic in larger towns like Omagh and Strabane. Omagh had a throughpass through which at times nothing passed. The strategic and local traffic met and came to a complete halt. An underpass was suggested to stop this happening and divert strategic traffic away. Another objection suggested a flyover or underpass at the Omagh Homebase roundabout.

2.286 DfI acknowledged that an improvement at the Homebase junction would deliver some localised journey time savings and accident reduction but argued that these would be very much less than those of the proposed dual carriageway and would not meet the overall scheme objectives.

2.287 While it is common case that a tactical intervention on the Omagh throughpass would be beneficial, we are not persuaded that it would provide a complete answer to the needs of the WTC. It would not alleviate congestion or improve road safety elsewhere on the A5 or improve connectivity between urban centres and with international gateways. It would not assist in balancing regional infrastructure, facilitate new North/South links, or contribute to the economic competitiveness of the corridor. It seems to us that DfI's proposal to build a bypass round Omagh has more to commend it.

2.288 We conclude that improvements to the Omagh throughpass would not be an adequate alternative to the Department's scheme.

Improvements to the existing A5 between Waterside and Cloghcor

2.289 At the inquiry in 2023, an objector described a survey she had conducted on the existing A5 between the Waterside in Derry and McKean's Moss. She started to the south east of Craigavon Bridge where there are footways on either side of the carriageway. She paced out the total width and it came to 41 feet, of which 32 feet were occupied by three traffic lanes. She used that figure as a benchmark.

2.290 The objector found that in the vicinity of McKean's Moss there is a 2+1 stretch of the existing A5 road within a hedge-to-hedge distance of 58 feet. She believed there would be room to extend the 2+1 stretch northwards from there. The width available at Cloghcor is 40 feet and at a bus stop near Burndennet Bridge it is 48 feet. At Drumgauty there would be only 25 feet available and it would be necessary to take people's

gardens in order to provide for three lanes of traffic. There is a climbing lane to the south of Magheramason and in the village itself the road is straight with good forward vision. At Tully Bridge to the north of Magheramason it would be necessary to remove vegetation and to build the road at grade to facilitate bicycle use. In the centre of Newbuildings the available width is 50 feet which would be sufficient for three lanes.

2.291 The alternative scheme put forward by the objector relates to a stretch of about 7 miles, whereas DfI's scheme is for a new road of 53 miles in length. While she has gone to a lot of trouble to provide her analysis, it does not take account of modern engineering standards, which are the product of many years of study and experience. Her proposals do not adequately address the undulating vertical alignment of the road or do anything to alleviate the dangers posed by numerous side roads and private accesses. By facilitating increased speed on the existing road without tackling these deficiencies in its layout, her proposals could actually lead to more accidents and loss of life.

2.292 The objector suggested that capacity on the existing A5 could be increased by permitting vehicles to be driven on the hard shoulder. At the inquiry in 2020 she suggested that this is allowed in County Donegal. She told us in 2023 of an incident when a motorcyclist diverted into the hard shoulder on the A5 to avoid being hit by her car. As Counsel for the EiE campaign pointed out, it is a criminal offence in Northern Ireland to drive on the hard shoulder, except in an emergency. The risk of a collision with vehicles coming out of side roads and private accesses is too great.

2.293 We conclude that improvements to the existing A5 between Waterside and Cloghcor, and the use of the hard shoulder by moving vehicles, would not be an adequate or safe alternative to the Department's scheme.

Town bypasses and selected improvements to the existing A5

2.294 Most objections to the scheme did not dispute the need to upgrade the WTC but argued that it could be done differently. The alternative put forward by the AA5A was to construct town bypasses to dual carriageway standard in the vicinity of Omagh and Strabane and introduce 2+1 overtaking opportunities at places along the existing A5 as part of a phased upgrade. It will be recalled that the provision of WS2+1s on rural road links with an opening year AADT flow range of 6,000 to 21,000 would be consistent with DMRB, TA 46/97.

2.295 DfI's scheme involves bypasses to dual carriageway standard to the west of Omagh running for 13 kilometres (7¾ miles) between Junctions 11 and 13 to the south west of the town, and for 7.5 kilometres (4½ miles) between Junctions 3 and 8 to the west of Strabane. These bypasses are a common feature of the proposed scheme and the AA5A's alternative.

2.296 At the inquiry in 2020, DfI was reluctant to engage fully with the AA5A's alternative, arguing that the project team's brief was to prepare a dual carriageway scheme. In its Interim Report, the Commission pointed out that DfI has a twofold responsibility. It is not only the scheme promoter but also the decision maker. It is required to stand in judgment in its own cause. As there are significant environmental and human rights objections to the scheme, DfI must consider with scrupulous care all reasonable alternatives, including that which the AA5A had put forward.

2.297 The Commission went on to recommend DfI to make an assessment of the suitability, environmental effects and human rights implications of options comprising town

bypasses and selected improvements to the existing A5 to WS2+1 standard and to incorporate it in an addendum to the ES. Much to its credit, DfI accepted this advice, rose to the challenge and prepared a detailed study.

2.298 The study provides a high-level review of alternative options previously considered in the Overtaking Opportunities Report (OOR) of 2005 and the "Expanding the Strategic Road Improvement Programme 2015" consultation document published in 2006. It presents two alternative options:

- Alternative 1 – Town Bypasses and Selected Improvements. This consists of bypasses for Strabane and Omagh and WS2+1 overtaking opportunities along the remainder of the existing A5.
- Alternative 2 – Blended Hybrid. This consists of bypasses for Strabane and Omagh, a WS2+1 road following the route of the proposed scheme between Newbuildings and Victoria Bridge, and WS2+1 overtaking opportunities along the remainder of the existing A5.

2.299 To be consistent with the standards to which the proposed scheme was designed, the study uses older DMRB guidance, including TD 70/08 – Design of Wide Single 2+1 Roads. Matters previously covered by TD 70/08 are now addressed in new standards, including CD 109 – Highway Link Design. The study states that there are no differences of any significance in the new standards that would affect the assessment of the alternatives.

2.300 TD 70/08 distinguishes between relaxations of standards and departures from standards. It says that in difficult circumstances relaxations may be introduced at the discretion of the design organisation, having regard to all relevant local factors, but only where specifically permitted by the standard itself. In exceptional situations the overseeing organisation may be prepared to agree to a departure from standard where the standard, including permitted relaxations, is not realistically achievable for social, economic or environmental reasons. In Northern Ireland, DfI is in the uniquely powerful position of being both the design organisation and the overseeing organisation.

2.301 In the Interim Report, the Commission stated that the purpose of reviewing WS2+1 options would be to make a fair assessment of what would be realistically practical, rather than to find fault with the options. An imaginative and pragmatic approach should be taken and the possibility of obtaining a departure from standard should be borne in mind.

2.302 DfI's study does not consider departures from standard or relaxations as part of its assessment of alternatives. It says that it is general good practice at feasibility/options development stage to maintain design flexibility and not use parameters that are over-designed or overly restrictive. It claims that this approach aligns with that taken in the Stage 2 Scheme Assessment Report of 2009 (SAR 2). That is factually incorrect. It can readily be established by examining the report that in numerous instances departures or relaxations were considered. Examples can be found relating to all three sections of the scheme – see Pages 178, 192, 266, 273 and 333. There is an obvious danger that DfI's zeal to promote its own scheme may cloud the objectivity it is required to bring to bear when examining alternatives in a quasi-judicial capacity.

Alternatives Study, Figure 3-1 - Minimum Length of WS2+1 Road used in Assessment

2.303 Figure 3-1 of the Alternatives Study illustrates the minimum length of the components of a WS2+1 road and the same information is set out in Table 3-2:

Double white line (DWL)	100 metres
Initial taper	175 metres
Overtaking section	800 metres
Final taper	315 metres
Double white line (DWL)	100 metres
Total	**1490 metres**

2.304 Table 3-4 sets out the minimum distance between existing accesses or junctions:

Distance of access/junction from taper (including DWL)	500 metres
Initial taper	175 metres
Overtaking section	800 metres
Final taper	315 metres
Distance of access/junction from taper (including DWL)	500 metres
Total	**2290 metres**

2.305 Tables 3-2 and 3-4 ignore the fact (which is recorded in Table 3-1) that TD 70/08 states that the desirable minimum overtaking lane section length is 800 metres but that a length of between 600 and 800 metres is permitted as a relaxation. When this was put to DfI's witness, he conceded that 600 metres could be substituted into Tables 3-2 and 3-4 and that the totals would then become 1290 metres and 2090 metres respectively.

2.306 Prior to identifying suitable locations for WS2+1 overtaking opportunities, a schedule of constraints was produced to signify locations that were not viable. The constraints included groups of properties in close proximity to one another and sections of sub-standard alignment. With respect to the sub-standard alignment, horizontal geometry was reviewed to identify sections with curvature radii that fall considerably below the desirable minimum of 720 metres and would require substantial realignment of the carriageway to develop into feasible overtaking opportunities.

2.307 The Alternatives Study rules out any 2+1 opportunity between Newbuildings and Magheramason, mainly due to inadequate road length, substandard vertical alignment and impacts on properties. It also rules out any 2+1 opportunity between the end of the existing southbound overtaking section out of Magheramason and the settlement of Bready, the main difficulty cited being the horizontal and vertical alignment.

2.308 The OOR identified an overtaking opportunity at Drumgauty, between Bready and Cloghcor. The Alternatives Study states that the design standards have become more onerous since that report was published and due to the requirement to provide a 500-metre distance between junctions or accesses and the start of a WS2+1 taper, an overtaking lane at this location would no longer be viable. In order to provide an upgraded WS2+1, a number of junctions and accesses would have to be relocated and stopped up which would require collector roads of significant length to be constructed.

2.309 The OOR identified an overtaking opportunity at Woodend, to the south of Ballymagorry. The Alternatives Study states that due to the requirement to provide a 500-metre distance between junctions or accesses and the start of a WS2+1 taper, an overtaking lane at this location would no longer be viable. The main constraints are the settlements of Ballymagorry and Strabane. There are also a number of junctions, accesses and an existing overbridge at Spruce Road. Between Ballymagorry and a

proposed roundabout which would link the existing A5 to the proposed Junction 3 at the northern end of the Strabane Bypass, there is a length of 1350 metres available to construct a WS2+1 road. However, stopping up of the existing junctions at Woodend Road, which provide access to a significant number of properties in Ballymagorry and Strabane, would be required. The existing overbridge at Spruce Road would have to be reconfigured to accommodate widening of the carriageway cross section.

2.310 We asked DfI whether the position of the proposed Junction 3 was regarded as immutable or whether the bypass could start further to the south. We were told that even if the position of the roundabout on the A5 were moved, the other reasons for not constructing a WS2+1 road at this location would remain. There is a dwelling with direct access to the A5 and a commercial right of way across the A5 just to the south of the Spruce Road overbridge. There are also agricultural field gate accesses.

2.311 Woodend Road adjoins the A5 at Ballymagorry and runs generally southwards from there to just north of Strabane, where it rejoins the A5. We accept that the number of properties served by Woodend Road would make it impractical to close either junction. The distance between the junctions is roughly 2100 metres. A WS2+1 road could in principle be accommodated in that interval with a relaxation of (or a minor departure from) standards, either of which would be in the gift of DfI. The removal or reconstruction of the overbridge would be required and it would be necessary to close direct accesses to the A5 and extinguish the right of way. The dwelling to the south of Spruce Road could be accessed from Woodend Road. The A5 would have to connect to the Strabane Bypass further to the south than currently proposed.

2.312 We consider that it would be physically possible to create a 600-metre overtaking opportunity at Woodend but in our opinion the disruption caused would be disproportionate to the benefit gained.

2.313 In summary, the Alternatives Study finds that, notwithstanding the inclusion of site-specific proposals in the RSTNTP and the OOR, no stretch of the existing A5 between Newbuildings and the northern outskirts of Strabane is capable of being improved to create a new overtaking opportunity in accordance with modern engineering standards. No one at the inquiry voiced disagreement with this finding or wished to present an analysis of 2+1 options in the Section 1 area other than those discussed in the study.

2.314 The Alternatives Study accepts that in the area between Strabane and Ballygawley the previously identified overtaking opportunities at Milltown, Urbalreagh, Castletown, Lislimnaghan and Gortaclare would be viable. The A5 would need to be realigned in various places and some side roads diverted. New collector roads, overbridges and an underpass for cattle would be required. Extensive earthworks would be needed in places. Mature trees, hedges and woodland would be lost and some land would have to be acquired. We were told that the Castletown WS2+1 would impact on the designated nature conservation area at Grange Wood and would have hydrological effects. The approximate overtaking lengths recorded in Table 3-13 of the study are significantly shorter than the equivalent lengths mentioned in the OOR. DfI's witness said this is due to the more onerous geometrical requirements introduced by TD 70/08.

2.315 The study also states that the existing WS2+1 road at Tattykeel, to the south of Omagh, could be upgraded to increase its overtaking length. No one proposed any other 2+1 opportunities in the Section 2 area or in the Phase 1b area within Section 3.

2.316 The existing A5 to the south of Ballygawley was upgraded for a distance of 3.1 kilometres in 2010. The upgrade used 9.6 hectares of higher grade, best and most versatile agricultural land. There are two existing WS2+1 roads – Tullyvar Road southbound and Tullyvar Road northbound. Table 3-13 of the Alternatives Study indicates that their overtaking lengths are 1135 metres and 730 metres respectively. The study states that both these overtaking sections comply with TD 70/08, except that they include several direct accesses. No significant works to the existing carriageway are required to bring it up to full compliance. The study considers removing the direct accesses by providing realigned side roads and private accesses.

2.317 We queried why the upgraded road was not constructed in accordance with TD 70/08, which was in force in 2010. We were told that the Tullyvar 2+1s were designed before the guidance was published and their construction was part of the A4 contract. We asked whether there was any evidence of operational problems that demonstrated a need to carry out the suggested remedial works. A DfI official told us he was unaware that the road had caused any practical difficulties. Counsel for the EiE campaign said turning right from a 2+1 road is dangerous because it is necessary to slow down in the overtaking lane. He pointed out that Tullyvar Road is unlit.

2.318 An objector asked for the existing A5 into Aughnacloy to be improved. DfI's response was that the geometry does not allow it. One of its witnesses pointed out that the bad bend to the north of the town where three people were killed in April 2023 coincided with Junction 16 of the proposed scheme and the hazard would be removed if the scheme were constructed. The objector made the obvious retort that the existing road could be improved at much less expense without the scheme.

2.319 The Commission asked DfI, in reviewing the options, to set out for comparison purposes the locations of any WS2+1 schemes completed anywhere in Northern Ireland since August 2008 and of any such schemes currently in preparation or planning. Table 2-2 of the Alternatives Study provides such a list. The Magherafelt Bypass with 2+1s in both directions opened in 2016. Bypasses for Cookstown and Enniskillen with 2+1s in both directions are in preparation.

2.320 At the inquiry, we asked DfI whether there is a less extravagant way of bypassing the much smaller town of Aughnacloy than by means of a dual carriageway. We were told that the landscape feature to the west of the town known as "The Thistle", which is a scheduled monument, represents a major constraint. It seems to us that a WS2+1 or single carriageway bypass round the eastern periphery of Aughnacloy, perhaps following some or all of the route of DfI's scheme, would be a reasonable alternative to the proposed dual carriageway between Junctions 15 and 17.

2.321 Alternative 2 – Blended Hybrid consists of adopting Alternative 1 improvements between Strabane and Aughnacloy and connecting into an off-line length of WS2+1 overtaking sections between Newbuildings and Victoria Bridge. It is proposed to follow the line of the proposed scheme as it has already been selected as the preferred route through the area, with regard to engineering and environmental impacts.

2.322 At the inquiry, DfI accepted that as traffic would travel more slowing on a WS2+1 road than on the proposed dual carriageway, Alternative 2 would lead to less bunching of northbound traffic arriving at Newbuildings and reduce peak-hour delays on approach to Craigavon Bridge. It also accepted that as the verge-to-verge footprint of the WS2+1

road would be less than that of the dual carriageway, it would have a lesser effect on flood risk in area to the north of Ballymagorry.

2.323 In Alternative 2, the off-line WS 2+1 would merge with the existing A5 at a roundabout just to the south of Victoria Bridge. The Milltown overtaking opportunity would run southwards from the roundabout. There would also be a direct connection from Victoria Bridge to the off-line WS2+1 road in the general area where Junction 9 is proposed as part of DfI's dual carriageway scheme.

2.324 Alternatives 1 and 2 account for only part of the existing A5 between Newbuildings and the border south of Aughnacloy. The study says that to improve efficiency and safety on the road further and mitigate the increasing severance in the communities along the A5 as traffic flows increase, DfI would ideally need to consider a range of improvement works on the remaining lengths of the A5. Those lengths can be categorised under one of four carriageway standards – urban, rural single carriageway, rural wide single carriageway or rural WS2+1 (pre TD70/08 standard).

2.325 The Alternatives Study points out that constructing the dual carriageway bypasses and 2+1 schemes under either alternative would introduce two improved road carriageway standards on to the A5 corridor, resulting in the road user travelling on up to five different carriageway standards during any journey. The DMRB advises against continual changes in carriageway standard as it confuses the road user and impacts on road safety. TD 70/08, Paragraph 2.7 states that the implementation of a WS2+1 road should always be viewed in the context of the overall route strategy to ensure the driver is not confronted with numerous types of road layout.

2.326 The study goes on to say that with the development of each of the alternatives, the urban areas would continue to be used by strategic traffic. As traffic flows increase through the urban areas, the conflicts between turning and manoeuvring traffic and pedestrians and vehicles increase, as do accident risks. Road and roadside features such as footways and verges restrict the opportunities to improve road safety by providing, for example, right-turn ghost islands, pedestrian refuges and improved visibility splays at junctions. Vesting land would in many cases be necessary in such an environment, which would be costly.

2.327 The Alternatives Study lists a number of improvements that would be beneficial in improving the safety and efficiency of the rural single carriageway sections of the A5:

- improving horizontal and vertical alignments to improve driver visibility;
- improving junction layouts;
- improvement of direct residential/commercial/community accesses; and
- reducing the number of direct field accesses onto the A5.

2.328 The study states that implementation of the measures required to upgrade the remaining key transport corridor to a standard comparable to but not fully compliant with modern standards would result in further significant and direct disruption and inconvenience to through traffic and the communities along the A5 over an elongated time period. DfI's witnesses told the inquiry that such measures would not increase capacity but would slightly improve road safety. However, the Moylagh, Garvaghy and Ballymacilroy junctions would continue to be accident hotspots. The heavily used access to the GAA training centre at Garvaghy would not be improved.

2.329 The AA5A's transport planning consultant said it was curious that there is no reference to improving the existing A5 as part of the proposed scheme. The Alternatives Study does not examine the feasibility and cost of such works. Any intervention should be proportionate. CD 109 states that overtaking lane sections between 800 metres and 1500 metres in length are sufficient to disperse platoons of traffic but not so long as to cause frustration for drivers in the single lane section. The Alternatives Study makes qualitative judgments but provides no quantitative data. It would be normal for assessments of this kind to be based on traffic modelling.

2.330 Counsel for the EiE campaign said that only the proposed scheme offers the certainty that traffic progression and road safety would be improved. Individual supporters of the scheme pointed out that the alternatives would not segregate local and strategic traffic or provide consistent engineering standards along the whole route. While they would increase speed, they would also increase danger and lead to more accidents.

2.331 A fire officer argued, by reference to the A4, that a dual carriageway is safer than a 2+1 road. If a driver makes a mistake on a dual carriageway, it is less likely to result in a collision as oncoming traffic is segregated. He referred to two fatalities which had happened on 2+1 sections of the existing A5.

2.332 A retired highway engineer described his experience in carrying out on-line maintenance and improvement works. It is a dangerous environment for the workforce. The road has to be partially closed and traffic management arrangements put in place. Drivers can jump the queue or stall. Temporary traffic lights can break down. Local residents and disabled people have to be accommodated and utility services, such as gas mains, navigated. Bus stops located in the working area have to be closed. Sometimes traffic has to be diverted. This causes difficulties for emergency services and older drivers get confused. Two HGVs can meet on a side road and block it. Side roads may have to be closed to other traffic to put construction vehicles and wide loads through. The side roads can be wrecked by the excess traffic. On-line works have an unpredictable failure rate and do not last as long as a newly built road, which can be guaranteed for 40 years. The A5 is constantly disintegrating and excavations have to go progressively deeper.

2.333 Objectors made the point that every scheme caused disruption and requires traffic management. The disruption that the proposed scheme would cause to farms would last for ever. The minor roads in the vicinity of the scheme would have to be repaired when the new dual carriageway is finished.

2.334 A representative of Barrack Hill Quarries told us the company has 100 staff and over 80 lorries using the A5 seven days a week. They do heavy haulage for the crushing industry using vehicles with a capacity of 30 to 150 tonnes with 9-foot wide trailers. They travel at a maximum speed of 30 mph and need a special permit to use the road. At Ballymacilroy Hill their vehicles travelling at 6 mph are a danger to other users of the existing A5. The need for a dual carriageway is a no-brainer. It would reduce fuel consumption and carbon emissions.

2.335 Another supporter of the scheme stated that upgrades to the A1, A4, A8 and A6 have been an unqualified success. The existing A5 should be returned to local people. DfI witnesses said the number of accidents is related to the volume of traffic. When the bulk of the traffic is removed from the existing A5 it would be de-trunked and prioritised for maintenance and improvements.

2.336 The Alternatives Study indicates that the existing carriageway length from Newbuildings to the border south of Aughnacloy is 80,710 metres. Under Alternative 1, the total overtaking lengths including the bypasses would be 24,759 metres northbound and 24,390 metres southbound. Under Alternative 2, they would be 31,645 and 29,359 metres respectively. It seems therefore that under Alternative 1, out of a total of 161 kilometres of carriageway in both directions, 112 kilometres would remain unimproved single carriageway. The equivalent figure under Alternative 2 would be 100 kilometres.

2.337 The Alternatives Study states that the minimum overtaking value for different road categories is specified within the DMRB and for the A5 it is 30%. The overtaking value is the length of overtaking sections expressed as a percentage of the route. Tables 3-12 and 3-19 of the study set out overtaking values for Alternatives 1 and 2. The values are calculated in two different ways – excluding and including the town bypasses:

Bypasses	Length in Metres	Alternative 1		Alternative 2	
		Northbound	Southbound	Northbound	Southbound
Excluded	67,870	15%	14%	25%	21%
Included	80,710	31%	30%	39%	36%

2.338 DMRB, CD 109 states that lengths of dual carriageway forming part of a route which is otherwise predominantly single carriageway can be taken into account when calculating the overtaking value. We conclude that both alternatives would achieve the minimum overtaking value under current DMRB standards. DfI's witness accepted that.

2.339 In evaluating the relative road safety advantages of the proposed scheme and the alternatives, the study relies on input parameters in Unit 6.11 of TII's project appraisal guidelines which predict the number of personal injury collisions per million vehicle kilometres for different road types. Table 7-1 of the study sets out these results:

Option	Road type	Accident Rate	AADT Flow	Length in Kilometres	Accidents per Year (365 days)
DfI's scheme	Dual	0.033	15,725	85	16
Alternative 1	Single and WS2+1	0.080	15,725	67	30
	Dual (bypasses)	0.033	15,725	15	3
Alternative 2	Single and WS2+1	0.080	15,725	67	30
	Dual (bypasses)	0.033	15,725	15	3

2.340 These figures suggest that with DfI's scheme in place there would be 16 personal injury collisions per year, whereas with either alternative there would be 33. Both figures can be compared with the number of accidents on the existing A5 from 2011 to 2022. According to DfI's Spreadsheet 2 the annual average was 69, although this may include accidents where no personal injuries were sustained. Setting that possibility aside, one could conclude that the proposed scheme would lead to a reduction of 77% in personal injury collisions, whereas for either alternative the reduction would be 52%.

2.341 The TII document indicates that where 2+1 roads have a central reserve barrier, their accident rate drops to 0.033, which is the same as the rate for dual carriageways. It is stated on Page 82 of the Alternatives Study that opportunities provided by the alternatives would not have the added protection of vehicle safety barrier in the central median. We asked, therefore, whether 2+1 roads forming part of Alternatives 1 and 2 could be designed to include such a barrier. We were told that there is no direct equivalent in Northern Ireland to a 2+1 road with a central reserve barrier. The introduction of central reserve barriers in the Republic of Ireland was a pilot scheme and was found to have a safety impact in the tapering area when the overtaking lane comes to an end. No further roads are being constructed to that standard in the Republic.

2.342 We are surprised that Table 7-1 applies the same accident rates to Alternatives 1 and 2, even though according to DfI's Spreadsheet 3, Alternative 1 would have 730 road junctions and private accesses whereas Alternative 2 would have only 355. The point is made on Page 81 of the Alternatives Study that the same number of vehicles would ultimately require access on to the A5. It is our understanding that the proliferation of accesses on to a main road is in itself dangerous and that is why planning policy restricts the creation of such accesses. We consider that Alternative 2 would be safer than Alternative 1. The proposed scheme with only 17 junctions would be safer still.

2.343 While we see no objection in principle to the use of TII parameters, we are not convinced that the road types they refer to are exactly the same as those in use in Northern Ireland. The AA5A's transport planning consultant described the assessment as crude and said that a fuller cohort analysis would have been better. While DfI could undoubtedly have provided better numerical evidence, we are nonetheless satisfied that its scheme would be a lot safer than either of the alternatives.

2.344 It is stated on Page 83 of the Alternatives Study that bypasses aside, a speed restriction of 60 mph would remain applicable to the alternatives, with lower speed restrictions of 50 mph, 40 mph and 30 mph in place through the various built up areas, where conflict between local and strategic traffic would also remain. HGV traffic is unlikely to benefit from any improvement in journey times with the speed limit remaining on single carriageways at 40 mph as opposed to 50 mph on dual carriageways. Although the alternatives would introduce improvements along the route as a whole, there would remain existing single carriageway sections which would not provide reduced journey times and improved journey reliability. Convoying of traffic would remain an issue, in particular at peak times. A professional lorry driver pointed out that two HGVs travelling in the same direction at 40 mph can block both lanes of a WS2+1 road.

2.345 The AA5A's traffic planning consultant argued that the main improvements in journey times would occur on the Omagh and Strabane Bypasses. A DfI witness referred to Spreadsheet 5, which indicates that the scheme would save 10 minutes in Omagh and Strabane combined, whereas the total saving on the WTC would be 21 minutes. He said that in the alternative scenarios, much of the time saved on the bypasses would be lost when returning to the existing A5. The AA5A's expert again complained about lack of traffic modelling.

2.346 DfI's Counsel responded by making the important point that for EIA purposes all the scheme proposer is required to furnish is an <u>outline</u> of the main alternatives studied (see Article 67(6)(d) of the Roads Order and Chapter 3 below). The information provided is more than adequate, he said.

2.347 We are satisfied that the information available is sufficient to demonstrate that neither alternative would deliver journey time savings and enhanced connectivity on the scale necessary to achieve a meaningful rebalancing of regional infrastructure and a substantial improvement in the economic competitiveness and prosperity of the WTC.

2.348 The Alternatives Study identifies environmental constraints and opportunities relevant to each of the alternative options as well as the proposed scheme, enabling a high-level comparison to be undertaken. The findings can be summarised as follows:

Air Quality. The proposed scheme would result in more receptors experiencing an improvement in air quality and fewer experiencing a deterioration than the alternative options. Alternative 1 would result in the least number experiencing an improvement and the most experiencing a deterioration.

Cultural Heritage. The proposed scheme has potential for a greater number of indirect impacts on scheduled monuments and State Care monuments, whereas the alternative options have greater potential for indirect impacts on architectural heritage assets as they pass through Conservation Areas containing large numbers of listed buildings. Alternative 1 has less potential for direct impacts on known and currently unknown heritage assets as it mainly follows the existing A5.

Landscape and Visual. Alternative 1 being predominantly on-line would result in less impact on landscape and visual constraints compared to the other two options, which are more likely to result in a greater disturbance and change to highly sensitive landscape features and rural views.

Ecology and Nature Conservation. Alternative 1 would involve the least amount of habitat loss and disturbance to local wildlife given that this option simply involves upgrading sections online with the existing A5.

Geology and Soils. For potentially contaminated sites, the proposed scheme is likely to be the most favourable option as fewer high, moderate and low risk sites are identified compared to either alternative.

Noise and Vibration. The proposed scheme would result in more receptors experiencing a decrease in noise level and fewer experiencing an increase in noise level than the alternative options, whilst Alternative 1 would result in the least number experiencing a decrease and the most experiencing an increase.

Effects on All Travellers. The proposed scheme would provide greater certainty and confidence for travellers by providing a single type of carriageway along its full length, thereby having the most positive potential impact on driver stress levels. The scheme performs better than the two alternatives as it results in the greatest potential to relieve existing severance at numerous towns and villages across the study area. Alternative 2 is predicted to have a negative effect on the largest number of designated non-motorised user routes.

Community and Private Assets. Alternative 1 is likely to affect the largest number of residential properties on temporary basis with both alternative options permanently impacting on more residential properties than the proposed scheme. Alternative 1 is also likely to affect the largest number of community assets and land, and business premises when compared to the proposed scheme and Alternative 2. The proposed

scheme is predicted to result in a greater loss of high-grade agricultural land than either of the alternative options.

Road Drainage and the Water Environment. In comparison to the proposed scheme, the alternative options pass through smaller zones of identified flood risk to the north of Strabane but through larger flood risk zones in the central and southern parts of the WTC. The proposed scheme has less superficial cover, with associated higher groundwater vulnerability, in various locations. The alternative options are more likely to disturb peatland adjacent to the existing A5 carriageway, as the proposed scheme would cross less peatland. The proposed scheme involves more construction activity with potential adverse impact to surface water channels but is generally more offset from watercourses. The proposed scheme also offers more opportunity to gain longer-term beneficial impacts from improved water quality during the operational phase.

Cumulative. The Alternative 1 option is closest to the greatest number of committed developments.

2.349 One of the consultation documents published by DfI in November 2022 bears the title "Alternative Scheme Options Environmental Review Summary Report (including Greenhouse Gas Emissions)". We asked whether the final page of this document can be summarised by saying that the proposed scheme would cause more GHG emissions at both the construction and operational stages than either alternative and that Alternative 1 would cause fewer GHG emissions than Alternative 2. DfI's witness agreed that this is a fair summary.

2.350 Given the breadth and complexity of the comparative assessment provided in the Alternatives Study, it would be an almost impossible task to judge which option would be best or least bad in environmental terms. Fortunately, we do not have to make that judgment. What we can say is that the proposed scheme and the alternatives would have mostly negative environmental impacts but would have some positive ones also. Those impacts would vary from place to place but none of the options would be unacceptable from an environmental point of view across the whole of its length.

2.351 DfI's Spreadsheet 10 provides the following estimates, which we were told are based on working assumptions about what mitigations would be necessary, of the likely impacts of the proposed scheme and the alternatives on private property:

Impact	DfI's Scheme	Alternative 1	Alternative 2
Land taken (hectares)	1,209	295	400
Farm parcels affected	551	481	534
Properties demolished	8	34	41
Dwellings affected	189	640	318
Community areas affected	6	13	7

2.352 This table indicates that the proposed scheme would have a more severe impact on farmland and farming than the alternatives. However, the alternatives would have a more severe impact on buildings, dwellings and community facilities than the scheme.

The results are inconclusive overall and it cannot be said unequivocally that the scheme would be more or less intrusive on human rights than either alternative.

2.353 The Alternatives Study estimates the road construction cost of the options – £322 million for Alternative 1, £437 million for Alternative 2 and £935 million for DfI's scheme. We asked how the last of these figures was arrived at, given that the OBC puts the scheme capital costs at £1,608.62 million and the study itself mentions a cost rate of £12.97 million per kilometre, indicating a total cost of £1.1 billion. We were told that the £935 million figure does not take account of land acquisition and preparation costs and the £12.97 million figure is the "parametric" or standard cost per kilometre of town bypasses at prices prevailing in the third quarter of 2021.

2.354 We asked why the cost of upgrading the existing Tullyvar 2+1 roads to meet TD 70/08 standards is quoted as zero in both alternatives. DfI's witness said that this was again due to "parametrics" being used. There were no "cost attributes" that could be put into the formula. We were told that in reality the cost would be roughly £6 million.

2.355 It would have been helpful if the Alternatives Study had calculated costs using methods that were consistent with those used in the OBC and that did not yield absurd results. However, we have no difficulty in accepting the general proposition that Alternative 2, which would take up much less land and involve much less work, would be less costly than the proposed scheme and that Alternative 1 would be cheaper still.

2.356 The Alternatives Study paints an extremely gloomy picture of what would happen if it were decided in late 2023 to reject the proposed scheme in favour of an alternative. It indicates that in a best case scenario the alternatives would be completed by 2034. From inception to "construction activities" would take four years, 2024 to 2028. Detailed design and construction of the town bypasses would not commence until 2028 and would take another four years ending in 2032. Detailed design and construction of the WS2+1 improvements would not commence until 2030 and would also take four years, ending in 2034. Works to the remainder of the A5 would happen after 2034. The penultimate paragraph of the study ends with the thought that as traffic flows increase further into the future, the need for a dual carriageway is unlikely to recede.

2.357 It is obvious, and perhaps understandable, that DfI does not want to contemplate any alternative to its own scheme. However, while we do not underestimate the tendency of public authorities to procrastinate, we see no good reason why it would take 11 years from now to implement either of the alternatives. The study assumes that the alternatives would be split into smaller schemes instead of being delivered under a single contract. We do not accept that detailed design and construction could not start until 2028 or 2030. Exaggeration does not assist DfI's case.

2.358 Counsel for the AA5A said it had been important to discuss alternatives to the proposed scheme. He argued that DfI's study shows that the alternatives are feasible and would meet the scheme objectives in full. He conceded that an off-line dual carriageway would have greater benefits but submitted that the question for the Commission is whether the alternatives would compromise the scheme objectives.

2.359 We have come to the view that neither of the alternatives studied by DfI would be suitable. The alternatives would only partially meet the scheme objectives and the higher-level objectives, whereas the proposed scheme offers the prospect of a transformative improvement to road safety, journey times, regional balance and

economic competitiveness. To adopt either alternative would be to forego an opportunity that may not recur.

2.360 We conclude that both alternatives studied by DfI, involving town bypasses and selected improvements to the existing A5, would unacceptably compromise the scheme objectives and provide an inadequate response to the needs of the WTC.

Phasing

2.361 The question of phasing became an important issue around ten years ago when financial constraints north and south of the border meant that there was insufficient funding to construct the whole scheme in one go and certain sections of it had to be prioritised. After the deferral of the Irish £400 million contribution to the scheme in November 2011, the Northern Ireland Executive subsequently announced in February 2012 revised budget plans for a £330 million investment in the A5 scheme, which would allow two parts of the scheme to progress – the route from Newbuildings to the north of Strabane (Phase 1a) and the route from south of Omagh to Ballygawley (Phase 1b). The route from north of Strabane to south of Omagh would follow later as Phase 2 and the route from Ballygawley to south of Aughnacloy would become Phase 3. This approach to phasing has generally persisted in the following decade. We were told that the main reasons for these phasing decisions were buildability and affordability.

2.362 The 2019 ESA anticipated that the scheme would be constructed in four phases depending on the availability of funding:

Phase 1a	Newbuildings to north of Strabane	2019 to 2022
Phase 1b	South of Omagh to Ballygawley	2020 to 2023
Phase 2	North of Strabane to south of Omagh	2023 to 2025
Phase 3	Ballygawley to south of Aughnacloy	2026 to 2028

2.363 The Commission's Interim Report analysed the phasing strategy and the benefits of constructing the scheme in the order set out. The greatest benefits would accrue from Phase 2 which included the town bypasses of Omagh and Strabane and had a BCR of 3.37 indicating high value for money. The inquiry was told in 2020 that the town bypasses themselves might have a BCR above 5. Phases 1a and 1b would have BCRs of 0.96 and 0.77. These figures represent a negative rate of return and DfI accepted that these stretches would not be viable on their own.

2.364 The Commission considered that there was an overwhelming case for a fundamental review of the phasing strategy. It recommended DfI to remove Phase 3 from the scheme, to review the phasing of the remainder of the scheme, to set out in a public document clear reasons for its decisions and to give priority to those parts of the scheme which offer the greatest net benefits when assessed against its stated aim and objectives.

2.365 In its Interim Statement of March 2021, DfI did not accept these recommendations. It did agree to set out in further detail the current scheme phasing strategy and the background to it. It was of the view that the A5 scheme is one overall project and its stated aims and objectives would not be fully realised until the completion and linking up of all of its phases.

Phase 3

2.366 Phase 3 of the proposed scheme would run south-eastwards from the proposed at-grade junction with the A4 at Ballygawley. It would bypass the village of Aughnacloy in a large loop to its eastern side. The dual carriageway would terminate at a new roundabout on the A28 Caledon Road. A 1-kilometre single carriageway section would connect this roundabout to the existing A5 near the border with County Monaghan.

2.367 The authors of the previous reports into the scheme (dated 2012, 2017 and 2020) have all been unconvinced of the need for Phase 3. The 2012 Inspectors' Report stated: *"We recommend that the Department should consider the postponement of the Ballygawley to Aughnacloy segment until the location of the link with the N2 at the border has been clearly identified."* The Department accepted this recommendation in its statement of July 2012.

2.368 Despite having apparently accepted that Phase 3 should be postponed, DfI included it again in the 2016 ES, although it published no statutory Orders for it. At that time work on the N2 project remained in suspension, nothing having changed since 2012. The Commission's 2017 report on the public inquiry recommended *"that the Phase 3 segment (Ballygawley to the Border at Aughnacloy) should be removed from the proposed scheme altogether"*. In its response dated November 2017, DfI did not accept this recommendation on the basis that both the Northern Ireland Executive and the Irish Government were committed to upgrading the A5 in full. It confirmed, however, that progression of Phase 3 had been deferred and that it was not included in the current Direction Order or Vesting Order processes.

2.369 The inquiry in 2020 heard evidence regarding Phase 3. It was noted that:

- the existing A5 Tullyvar Road was upgraded in 2010 at a cost of £5.5 million;
- the predicted opening year and design year traffic flows on this section would not qualify for dual carriageway provision under the DMRB;
- Phase 3 would produce zero journey time savings and is therefore unlikely to enhance economic competitiveness in the WTC to any meaningful extent;
- it offered only modest road safety benefits (one fatality would be saved every 600 years); and
- the BCR for Phase 3 was just 0.60, so that it would deliver significantly less benefit than the cost of constructing it.

2.370 The Commission concluded that this was symptomatic of overprovision and recommended that Phase 3 be removed from the scheme. In its Interim Statement of March 2021, DfI's response was: *"Not Accepted. Both the NI Executive and the Irish government are committed to upgrading the A5 WTC in full and the Department considers that it continues to be appropriate to implement that commitment, including delivery of Phase 3 of the scheme."*

2.371 DfI has a duty under Article 67 of the 1993 Roads Order to take into consideration opinions expressed in writing about the project and the report of the person who held the inquiry. In *South Buckinghamshire District Council v Porter (No. 2)* [2004] UKHL 33, Lord Brown, addressing the duty to give reasons for decisions in a planning context, stated that the reasons for a decision must be intelligible and they must be adequate. They must enable the reader to understand why the matter was decided as it was. It seems to us that DfI's response quoted above was an assertion of power which did not

attempt to grapple with any of the evidence about Phase 3 presented at the inquiry in 2020, or with the Commission's analysis of that evidence.

2.372 At the inquiry, Counsel for DfI argued that *South Bucks* refers to reasons supporting a final planning decision. He considered that DfI's Interim Statement provided sufficient information as it signalled an intent to continue with the scheme. A DfI witness stated that officials did grapple with the evidence internally, but that it was an Executive decision to pursue the totality of the scheme.

2.373 Counsel for the AA5A noted that *South Bucks* has been cited in non-planning case law. The reader of a departmental statement must be able to understand the reasoning, especially where an expert body has set out its conclusions. It is not enough to say a decision was taken at political level. It must be rational and adequately evidenced.

2.374 The process for authorising a road scheme has many parallels with the planning system and we consider that the principles set out in *South Bucks* are relevant to the A5 scheme. As implementation of Phase 3 would involve infringements on rights guaranteed by the ECHR, it was particularly important for DfI to demonstrate that it has given proper consideration to the representations from the public and the views of the Commission. We appreciate that civil servants may have put forward a more considered and balanced appraisal of the advantages and disadvantages of Phase 3 in private internal discussions but in our opinion the reasoning published as DfI's corporate response was wholly inadequate.

2.375 The greatest difficulty we see in DfI's response is that it appears to represent a pre-determination of an issue that was still live in the context of an inquiry that at the time stood adjourned. It is indicative of an immutable determination to press on with Phase 3 regardless of any new evidence that might be presented or any analysis of that evidence that might be offered. We are concerned at the potential for prejudice to the inquiry process. Although DfI invited further opinions on the scheme in 2022, people may well have asked themselves what is the point of making representations about Phase 3 when DfI has so obviously made up its mind.

2.376 The evidence now before the inquiry in the 2022 OBC and Spreadsheet 5 shows that Phase 3 would save 30 seconds in journey time and one fatality every 30 years. The BCR for this phase is now 0.48. This is a value-added figure, calculated on the assumption that the rest of the proposed road is already open. It means that for every £1 of taxpayers' money spent on Phase 3, the monetised benefits returning to the community would amount to only 48 pence. The projected benefits have not greatly increased since the 2017 OBC was produced but due to increased construction costs the BCR has declined significantly. Expected traffic remains well below the DMRB threshold for a dual carriageway. All the indicators point to overprovision and there is a reasonable alternative in the form of a single carriageway or 2+1 bypass round Aughnacloy.

2.377 We conclude that, when assessed in an exclusively Northern Ireland context, Phase 3 of the scheme offers no significant benefits and represents overprovision.

2.378 A memorandum addressed to the then Minister, dated 1st December 2020, obtained by the AA5A, contains the following passage:

"The Project Team considers that Phase 3 remains important to the overall scheme proposals, particularly in the interests of continuity of route and consistency of

carriageway type, thereby avoiding driver confusion and the consequential risk of collisions. Varying road characteristics along a proposed route in this manner is contrary to road safety best practice. Phase 3 also extends to the border. Pending final decisions by the Irish Government, the A5 WTC scheme proposals do not include the final detailed arrangements for connection to the road network in the south."

2.379 Having regard to the actual layout for Phase 3 which DfI was and is promoting, it was not correct to say that it offers continuity of route and consistency of carriageway type. Whether or not Phase 3 is constructed, the continuity of travel along the WTC will be interrupted at a roundabout junction with the A4. In the absence of Phase 3, the existing roundabout would facilitate a safe transition between a dual and a single carriageway. The proposed road would change from a dual carriageway to a single carriageway at Junction 17 and then merge with the existing A5. The standard of the existing A5 from Aughnacloy to the border is broadly consistent with that of the adjoining stretch of the N2, which is currently a single carriageway.

2.380 The memorandum was also factually incorrect and misleading in stating that Phase 3 extends to the border. The dual carriageway section of the road would terminate in open countryside about half a mile to the north of the border. As previously noted, the single carriageway section would re-join the existing A5 about 270 metres from the border. At no point would DfI's proposed new road meet with any existing or proposed road in the Republic.

2.381 DfI's technical adviser made the argument, not presented in 2020, that although the volume of traffic that Phase 3 would carry falls well below the threshold for a dual carriageway, it would be justifiable to adopt that standard to provide continuity of carriageway type on the A5/N2 route. He gave the example of the Athlone to Ballinasloe section of the M6 in the Republic of Ireland. That stretch is 18½ miles in length, about 14% of the total distance of 129 miles from Dublin to Galway on the M6. By contrast, Ballygawley is about 78 miles from the nearest dual carriageway section of the N2. Phase 3 of the proposed scheme, 6 miles in length, cannot be justified on the basis that it constitutes the filling in of a small gap within an otherwise continuous dual carriageway.

2.382 The Phasing Report describes the 2028 opening date for Phase 3 as "indicative" whereas the opening dates for the other phases are described as "anticipated". At the inquiry in 2023, a DfI witness stated that the development of proposals for the N2 Clontibret to the Border scheme had moved it up the agenda. Phase 3 was included in the 2022 ESA for efficiency in statutory procedures, although there is no current notice of intention to vest the land required for Phase 3. The Project Sponsor confirmed that despite the absence of a Vesting Order, DfI would be likely to object to any planning application for built development within the potential vesting lines shown on maps in the non-technical summary of the ES. It seems to us that blighting these lands for an indefinite period of time is unfair to the landowners concerned.

2.383 The Project Sponsor described Phase 3 as running "a little behind the rest of the scheme". This, in our view, is an understatement. If a draft Vesting Order and Direction Order were published, there would be a right of objection and a public inquiry would be almost inevitable. The reason why there are no draft Orders is that the scheme for Phase 3 is incomplete. Changes to the scheme would be required to link to the N2 when a design for it is brought forward.

2.384 The Preferred Route Corridor and Option Selection Report has identified a corridor area stretching 1.5 kilometres along the border where the N2 upgrade could meet the A5. We asked DfI how a dual carriageway link from the N2 might be connected to the proposed Junction 17 if the border crossing point were further to the east than Moy Bridge where the current crossing is located. We were told that if a dual carriageway scheme came forward in the Republic, the single carriageway link from Junction 17 to the A5 Monaghan Road would not be built and the southern arm of the roundabout would be realigned towards the new border crossing.

2.385 It seems to us that if the final proposal for the N2 turns out to be a single carriageway, then in view of the similar low traffic flows a single carriageway between the border and Junction 15 would also be appropriate.

2.386 DfI's technical adviser said that the general direction of the proposed road could have been indicated on the scheme map by an arrow and the words "To the South", but then DfI would have been accused of salami slicing the project. Having worked on the A1/M1 cross-border scheme between Newry and Dundalk (completed in 2007), he suggested that the best way to deliver the cross-border part of the route would be to bring forward a discrete short scheme which could go through statutory processes in parallel in both jurisdictions.

2.387 We consider that it would be unreasonable for DfI to take a decision to proceed with the current scheme for Phase 3 without knowing for sure where it would connect with the N2. The current proposal for Phase 3 and any extension to tie in with the new N2 would have the same promoter, DfI. Both stretches would be functionally interdependent and the extension would be an integral part of the Phase 3 road. The entire length of the proposed road from Ballygawley to the border would therefore constitute a single indivisible project. A new ES covering the entirety of the revised Phase 3 proposals, together with a draft Direction Order and a draft Vesting Order including lands not shown within the indicative vesting lines, would be required, and a new public inquiry would be likely. A proper cross-border scheme for the A5 and the N2 is needed, where designers from both jurisdictions are united with regard to route, standard, border crossing point, timing and funding.

2.388 It is clear from DfI's evidence that Phase 3 of the scheme is politically driven. When a final decision is made on whether to proceed with Phase 3 as currently proposed, the decision maker must be careful not to be blinded by its supposed cross-border benefits. It would stop short of the border. It would not create a new North/South link. It would not redress regional balance given its low traffic figures. It would not significantly improve road safety or journey times. In the absence of a coherent cross-border scheme to link with the N2, there is no compelling case in the public interest to proceed with Phase 3 as currently designed.

Recommendation 4

We recommend the Department to abandon the current incomplete design for Phase 3 and to await publication of a detailed design for the new N2 Clontibret to the Border road, including confirmation of the intended construction standard and route, and agreement on a tie-in point and synchronised completion date.

The Phasing Reports

2.389 Even though DfI formally rejected the Commission's recommendation to review the scheme phasing and set out clear reasons for its phasing decisions, it published a Phasing Report as a supporting document to the ESA in March 2022. Counsel for DfI candidly admitted that the Phasing Report was in actual fact such a review. We welcome this acknowledgement.

2.390 The Phasing Report was supplemented by a Phasing Report – Addendum published in November 2022. This Addendum report reflects DfI's latest thinking in terms of constructing the scheme in three sections rather than phases, the sections being in line with the contracts awarded to the three contractor joint ventures. The passage of time during statutory processes has meant that in order to achieve the 2028 scheme opening date, the overall construction period has become more condensed and the timing of the three construction contracts would overlap significantly. If this approach is followed, it would be more akin to the original plan set out in 2010 and the question of phasing would be of less relevance.

2.391 The Phasing Report, its Addendum and the OBC each set out slightly different construction sequences. A witness for DfI told the inquiry that with a project of this size, the programme of delivery is constantly evolving. We were told that the timeline set out in Figure 6-2 of the OBC is what DfI is working towards. It sets out the current start and end dates for construction site works on each section and phase from north to south as follows:

Section 1, Phase 1a	2023/24, Quarter 4 to 2026/27, Quarter 3
Section 1, Phase 2a	2024/25, Quarter 4 to 2027/28, Quarter 3
Section 2, Phase 2b	2024/25, Quarter 4 to 2027/28, Quarter 3
Section 3, Phase 1b	2024/25, Quarter 4 to 2027/28, Quarter 4
Section 3, Phase 3	2026/27, Quarter 1 to 2028/29, Quarter 2

2.392 It can be seen that construction would be ongoing in all sections from 2024 to 2028 with all sections completed by September 2028. DfI recognised that this construction programme was challenging, but expressed confidence that the road can be delivered in this format given its early engagement with the contractors. Its representatives stated that much of the programme had been supplied by the contractors. It was contended that delivering the project in sections as originally envisaged (rather than phases) would provide better value for money due to economies of scale.

2.393 Common law principles on public consultation are set out in *PL v Boundary Commission for Northern Ireland* [2019] NIQB 74. McCloskey J. quotes the following from an earlier case: *"To be proper, consultation must be undertaken at a time when proposals are still at a formative stage; it must include sufficient reasons for particular proposals to allow those consulted to give intelligent consideration and an intelligent response; adequate time must be given for this purpose; and the product of consultation must be conscientiously taken into account when the ultimate decision is taken."*

2.394 At the inquiry, we asked DfI whether it had adhered to these principles in the consultation on its phasing strategy. Its Counsel stated that phasing is a product of several factors which lead to the conclusions reached, but it is not yet a fixed view and could still be changed. Counsel for the AA5A said he would dispute whether there has been conscientious consideration with an open mind. He pointed to what he described as an extraordinary statement in a note of a meeting with the Infrastructure Minister on

14th January 2021 at which an official stated that phasing as currently programmed was originally a political direction and as such not flexible.

2.395 Repeated references are made in the Phasing Report to the Executive's commitment to deliver Phase 1a of the scheme first, including in the Fresh Start Agreement and "New Decade New Approach". We were advised that this was simply because it was the published plan at the time and that beginning at Newbuildings was not a "set in stone" requirement or a condition of Irish Government support. Nevertheless, it seems to us that the Phasing Report attempts to rationalise the political decision to start work at Newbuildings rather than providing a justification for the strategy adopted. We welcome the acceptance that the phasing sequence can still be changed. To say otherwise would render meaningless the public consultation on these documents and their examination through the public inquiry.

2.396 The Phasing Report stated, *"under the new EIA Directive, a change in the phasing sequence which resulted in Phase 1a not being taken forward first would likely require a new Environmental Statement and therefore whole new statutory procedures"*. We are not convinced that this is a requirement under the relevant provisions of the Roads Order. There is no evidence to suggest that if the whole scheme is ultimately constructed, its likely significant long-term environmental effects would vary depending on the phasing of the works. At the inquiry, Counsel for DfI accepted that the above statement was overly stark and unduly pessimistic.

2.397 We asked DfI whether the phasing proposals were influenced by contractual obligations or penalty clauses. A witness stated that there were no penalty clauses and that the approach they have set out is optimal in terms of the earthworks balance along the scheme corridor and the ability to tie in to the existing A5 close to the end of each section. We asked if it would be possible to change the contract limits set in 2008/09, or to withdraw from the contracts and enter new ones. We were told that this was still possible, but changes are not contemplated as the contractors have done extensive design work on their respective sections and new contractual arrangements would cause further delay. However, DfI does have a Plan B if it has to re-tender.

2.398 The Commission's request for data on the costs and benefits of the scheme in advance of the inquiry included the BCR for the three sections of the scheme now being promoted. DfI did not provide these data and they are not found in the OBC. Counsel for DfI stated that any BCR is only indicative to inform a value for money assessment. Partial BCRs for parts of the scheme are even less useful and will be affected by which parts of the scheme are already constructed. Counsel for the AA5A stated that BCRs show that the benefits of the scheme are weighted to certain sections of it. While we recognise that the BCR is not the only method of assessing whether the scheme is worthwhile, DfI clearly has BCR data for the phases and providing it for the sections would have been helpful.

2.399 The BCRs for the scheme and its phases have generally decreased since 2017 as costs have increased. However, the BCR stated for Phase 1b has doubled from 0.77 to 1.53 in this time. There is a similar disparity between Phase 1b and the rest of the scheme regarding monetised accident benefits which have increased by 121% here compared to an 8.4% reduction in Phase 2. The expected net consumer benefits, business user benefits and wider benefits of Phase 1b have also more than doubled since 2017. We asked why this was the case.

2.400 A DfI witness stated that the 2017 BCRs were based on the Treasury Green Book guidance. Revised guidelines were published in July 2021 resulting in schemes experiencing a 15% to 20% reduction in benefits. Costs have also increased and the monetary value attached to journey time savings has changed. In 2017, Phase 1b was independent whereas it would now follow on from the other phases to the north. Given that the appraisal period for the full scheme is 60 years and that the factors referenced above should have placed downward pressure on the BCR, we are surprised that changing the construction sequence could cause the BCR for this phase to double.

2.401 The Phasing Report refers to two principal approaches that have historically been adopted for road corridor improvement:

- Approach A: in a piecemeal manner, upgrade selected sections one at a time until complete; or
- Approach B: developing and expanding the network outwards from major urban areas and existing provision.

2.402 The Phasing Report states that historically Approach A would have been adopted by the majority of road authorities. It asserts that with increasing trends in traffic volumes, best practice has changed the approach to strategic road development linking major towns and cities. Motorways and high-quality dual carriageways introduced a whole new concept of strategic travelling providing fast and efficient journeys for the road user. Development of the strategic motorway / dual carriageway network in numerous countries has moved to Approach B, the report claims.

2.403 At the inquiry, a witness for DfI gave the A4 dualling from Dungannon to Ballygawley as an example of Approach B as it extended the existing M1 from Belfast. Another example was the A6 dualling from Randalstown to Castledawson which extended the M2/M22. He maintained that the Republic of Ireland moved to Approach B in the 2000s. However, we pointed out that upgrades to the N2 including bypasses round Monaghan, Castleblayney and Carrickmacross (and the two new rural stretches currently in contemplation) would appear to follow Approach A. The witness stated that the Monaghan bypass was prior to the change in approach and the two current schemes are more strategic in nature.

2.404 Another DfI witness stated that any improvements to the key transport corridors identified in the RTS now follow Approach B. The Phasing Report argues that a dual carriageway from Ballygawley to Omagh would be a natural continuation of the A4. On this logic, it would appear to us that the A5 dual carriageway should be constructed from the existing A4 at Ballygawley northwards rather than starting at Newbuildings where there is no existing provision to link to. It is disappointing that none of the phasing scenarios presented in the reports allow for construction to begin at Junction 15. A DfI witness argued that this approach would improve east/west linkages in Northern Ireland, but not north/south links.

2.405 The Phasing Report states that with phased delivery, the key date is not the start of construction but the completion and opening to traffic date. There is a need to tie in completed phases to the existing road network until subsequent phases are ready to open. The Report identifies Junctions 1, 3, 8, 11, 13, 15 and 17 as suitable locations for a phasing tie in. It also takes account of the earthworks balance and looks in detail at how traffic would transfer from the existing network to the completed phase and vice versa. This would generally involve construction of complete junctions and some

temporary works. In some cases, slip roads would have to be constructed wider than planned to accommodate two-way traffic. Some of the routes for traffic through these junctions are described as "tortuous" and some of the temporary works would require additional land take.

2.406 In a sectional approach as set out in the Addendum Report, the sections would meet at Junctions 8 and 13, both of which are relatively close to the existing A5 to facilitate temporary traffic arrangements. They would use the permanent works at these junctions regardless of the order in which the sections were opened and would not require additional temporary land take. However, if Section 2 was to be opened first, it would require some works within Sections 1 and 3. This should be achievable given the overlapping construction programme.

2.407 Alternative phasing sequences were considered to increase costs due to inefficiencies in construction, require additional vesting of land for temporary tie-ins, increase environmental construction impacts due to increased material haulage distances and cause greater short-term traffic impacts along the existing A5 due to changes in traffic patterns (platooning) which could increase severance in communities close to tie-in points. When asked how much it would cost to rectify the earthworks imbalances in an alternative phasing scenario, DfI was unable to put a figure on it.

2.408 In light of our conclusions regarding likely funding availability to complete the scheme, we consider the question of phasing to now be of less importance than in 2020. There is merit in returning to the original sectional approach to delivery with the sections completed over a relatively short period. This would limit the need for temporary works and take advantage of economies of scale. We do not agree that it is essential to begin construction with Section 1 as the Executive commitment to begin with Phase 1a was due to the financial picture at that time and the situation is now different. DfI should now be free to contemplate other starting points for construction, such as working north from Ballygawley.

2.409 We accept that overlapping construction of individual sections of the scheme as proposed would be the most satisfactory way to proceed.

3.0 THE UPDATED ENVIRONMENTAL STATEMENT

3.1 Part V of the Roads (Northern Ireland) Order 1993 provides for road projects to be subject to EIA. This legislation was amended in 1999, 2007 and 2017 to give domestic effect to changes to European Union (EU) Directives. It was further amended in 2019 to take account of Brexit, the then impending withdrawal of the UK from the EU. Provisions relating to content and procedure introduced in 2017 do not apply where, in relation to a proposed project, the Department prepared an ES before 16th May 2017. References in this report to provisions of the Roads Order do not include those introduced in 2017.

3.2 Article 67 of the Roads Order provides that all projects listed in Annex I of Directive 85/337/EEC as amended by Directive 97/11/EC must be subject to EIA. All "relevant" projects listed in Annex II of that Directive which are likely to have significant effects on the environment by virtue, among other things, of their nature, size or location must also be subject to EIA. A "relevant" project is one where the area of the proposed works exceeds 1 hectare or is situated in whole or in part in an area subject to any of six specified environmental designations. Projects for the construction of a new road of four or more lanes which would be 10 kilometres or more in continuous length are included in Annex I. The A5 scheme fits squarely within that description.

3.3 Annex IV to the Directive gives an indication of the type of information which an ES is normally expected to contain. This comprises, among other things, a description of the aspects of the environment likely to be significantly affected by the project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between those factors. It also comprises a description of the likely significant effects of the project on the environment. This description should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the project.

3.4 Article 67(5) of the Roads Order provides that an ES need not contain information referred to in Annex IV if the Department does not consider it relevant to the specific characteristics of the project and the environmental features likely to be affected by it; or if it does not consider that the information may reasonably be gathered, having regard to matters such as to current knowledge and methods of assessment.

3.5 Article 67(6) states that the ES must include at least:

(a) a description of the project (comprising information on the site, design and size of the project);
(b) a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects;
(c) the data required to identify and assess the main effects which the project is likely to have on the environment;
(d) an outline of the main alternatives studied by the Department and an indication of the main reason for its choice (taking into account the environmental effects); and
(e) a non-technical summary of the information in (a) to (d).

3.6 Article 67A(1) requires the Department to publish any determination made by it as to whether or not a relevant project should be made subject to EIA. Such determinations, often referred to as screening decisions, must be made having regard to the selection

criteria contained in Annex III to the Directive. Article 67A(3) requires notice of the ES to be published to ensure that members of the public who are likely to be concerned are given a reasonable opportunity to express their opinion before it decides whether to proceed with the project. Article 67A(4) requires the Department to ensure that relevant district councils and authorities with specific environmental responsibilities are given an opportunity to express an opinion on the project and the ES.

3.7 Article 67(7) requires the Department before deciding whether to proceed with the project to take into consideration the ES; opinions expressed in writing about the ES and the project, including opinions obtained through trans-boundary consultation; and, where a local inquiry is held, the report of the person who held the inquiry.

3.8 In its summary of legal principles, the AA5A relied on *Berkeley v Secretary of State for the Environment* [2000] UKHL 36 as authority for the proposition that there must be substantial compliance with the EIA Directive. Lord Hoffmann spelt this out in the following manner:

"The directly enforceable right of the citizen which is accorded by the Directive is not merely a right to a fully informed decision on the substantive issue. It must have been adopted on an appropriate basis and that requires the inclusive and democratic procedure prescribed by the Directive in which the public, however misguided or wrongheaded its views may be, is given an opportunity to express its opinion on the environmental issues".

3.9 Lord Hoffmann went on to say this:

"[Counsel for the Secretary of State] says that the equivalent of the applicant's environmental statement can be found in its statement of case under the Inquiry Procedure Rules, read (by virtue of cross-referencing) with the planning authority's statement of case, which in turn incorporated the comprehensive officers' report to the planning sub-committee, which in turn incorporated the background papers such as the letters from the National Rivers Authority and the London Ecology Unit and was supplemented by the proofs of evidence made available at the inquiry. Members of the public had access to all these documents and the right to express their opinions upon them at the inquiry.

My Lords, I do not accept that this paper chase can be treated as the equivalent of an environmental statement… The point about the environmental statement contemplated by the Directive is that it constitutes a single and accessible compilation, produced by the applicant at the very start of the application process, of the relevant environmental information and the summary in non-technical language… But I do not think it allows Member States to treat a disparate collection of documents produced by parties other than the developer and traceable only by a person with a good deal of energy and persistence as satisfying the requirement to make available to the public the … information which should have been provided by the developer."

3.10 The AA5A argued, by reference to *Mooreland and Owenvarragh Residents' Association's Application* [2014] NIQB 130, that in the absence of an up-to-date environmental baseline, DfI cannot lawfully assess the environmental implications of the scheme. This case concerned a proposal to replace a rundown sports stadium in Belfast. The planning authority erroneously treated the theoretical capacity of the existing stadium as the baseline instead of its actual usage.

3.11 The AA5A drew attention to the principle established in *R v Cornwall County Council* ex parte *Hardy* [2001] Env LR 25 that information capable of meeting the requirements of the EIA Directive must be provided and considered before a decision to proceed can be made. It also contended, by reference to *Smith v Secretary of State for the Environment, Transport and the Regions* [2003] EWCA Civ 262 and *R (Blewitt) v Derbyshire County Council* [2004] EWHC 2775, that a decision taken on the basis of environmental information which does not contain an assessment of all potentially significant environmental effects and/or consideration of mitigation measures would be unlawful.

3.12 We have carefully studied the *Smith* and *Blewitt* judgments and are of the opinion that the conclusions reached were more nuanced than the AA5A's submission suggested. *Blewitt*, a planning case, contains the following passage:

"In an imperfect world it is an unrealistic counsel of perfection to expect that an applicant's environmental statement will always contain the "full information" about the environmental impact of a project. The Regulations are not based upon such an unrealistic expectation. They recognise that an environmental statement may well be deficient, and make provision through the publicity and consultation processes for any deficiencies to be identified so that the resulting "environmental information" provides the local planning authority with as full a picture as possible. There will be cases where the document purporting to be an environmental statement is so deficient that it could not reasonably be described as an environmental statement as defined by the Regulations … but they are likely to be few and far between."

3.13 When the High Court quashed the Department's first purported decision to proceed with the scheme in April 2013, it also quashed consequential Vesting and other Orders. These included a supplementary Vesting Order, published in 2012, which had been intended to facilitate amendments arising out of the 2011 public inquiry. An objector argued that the refusal of her request for a public inquiry into that supplementary Vesting Order renders the present proceedings invalid. As the 2012 supplementary Vesting Order is no longer effective, it can have no bearing on the present proceedings. The process started afresh in 2016 with the publication of a new ES and new Orders.

3.14 The updated ES for the A5 scheme comprises the following documents, which contain a total of nearly 10,000 pages:

- the ES published in three volumes in February 2016 (Volume 3 being subdivided into five parts);
- the ESA published in March 2019;
- the report on quarrying in Urbalreagh, also published in March 2019 and incorporated by reference into the 2019 ESA;
- the ESA published in March 2022, with 18 chapters, 35 figures and 35 appendices and accompanied by five supporting documents;
- seven supplementary information documents published in November 2022;
- the layout drawings, longitudinal profiles and cross-section report published in January 2023; and
- Revision D of the non-technical summary, dated January 2023.

3.15 At the resumed inquiry, the AA5A argued that the project has changed and it is not open to DfI to continue publishing addenda in order to circumvent procedures. In substance there is a fresh ES. The Air Quality chapter of the 2022 ESA uses the word "supersede"

(in relation to baseline data, traffic data and mitigation measures) and this word is found throughout the ESA. Navigating the documents was becoming a paper chase.

3.16 We acknowledge that the repeated adding of environmental information makes it difficult for interested parties, even those with professional representation, to make sense of the ES and express their opinions. Finding the most up-to-date assessment of a particular environmental issue can be vexing, time-consuming and amount to a paper chase. DfI's environmental matrix is of limited assistance.

3.17 It seems to us, however, that the project to construct a mainly dual carriageway road on a defined route has not materially changed. What has changed is the environmental baseline; some significant new environmental information has become available. DfI chose to update the 2016 ES rather than to produce another new ES. In our view, notwithstanding the difficulties experienced by readers, that was a choice it was entitled to make. The updated ES is a compilation produced by the scheme promoter and includes an updated non-technical summary. It is not, in Lord Hoffmann's phrase, a disparate collection of documents produced by other parties. We agree with DfI that as the ES was published prior to May 2017, the more elaborate procedures required by the 2017 amendments to the Roads Order do not apply.

3.18 The AA5A's representations to the inquiry in 2020 included a written submission from an expert on environmental assessment, who did not appear in person. He complained that key impacts on the community and people had been overlooked in the ES. The ES considered impacts on people only as travellers or users of local roads. It considered only land and property owned by the community or privately. It failed to consider the community in terms of social impacts, he submitted.

3.19 The AA5A's expert stated that good practice in road EIAs includes an assessment of changes in key areas such as people's way of life; their culture; their communities; the current political systems; the current environment; health and wellbeing; personal and property rights; and fears and aspirations. He gave the ES for the Mersey Gateway project, published in 2008, as an example where socio-economic effects were included. It considered deprivation levels, population change, education and skills, regeneration, employment opportunities, pressure on facilities, relationships between construction workers and local residents, and displacement of businesses.

3.20 One must not lose sight of the fact that the purpose of an ES is to assess the significant, or main, effects that a project is likely to have on the environment. An ES is not an academic treatise on the characteristics of the host community. The relevance of socio-economic impacts depends on the nature, scale and location of the scheme concerned. The AA5A produced no persuasive evidence that the matters considered in the socio-economic section of the Mersey Gateway ES are likely to be significant in the A5 scheme. We therefore find this particular criticism of the ES to be unjustified.

3.21 Article 67B provides for trans-boundary consultation where it appears to DfI that a project is likely to have a significant effect on the environment in a State which is in the European Economic Area. The Republic of Ireland is such a State and consideration of any significant effects upon its environment forms an integral part of the EIA process for projects proposed to be carried out in Northern Ireland. Any such effects, although external to Northern Ireland, are factors to be weighed when considering whether the project, or any part thereof, should proceed.

3.22 The United Nations Economic Commission for Europe (UNECE) Convention on EIA in a Transboundary Context was agreed at Espoo, Finland in 1991 and has been ratified by the UK and the EU. Articles 3 to 5 of the Convention contain provisions similar to those in Article 67B of the Roads Order. The United Nations Conference on Environment and Development, which met in Rio de Janeiro, Brazil in 1992, also considered transboundary effects and adopted much the same approach. Principle 19 of the Rio Declaration, to which the UK and Ireland have both subscribed, says this:

"States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith."

3.23 In its submission to the inquiry in 2020, An Taisce – The National Trust for Ireland argued that the information provided was inadequate to meet the requirements of the Espoo Convention. However, it presented no substantive evidence to support this claim. The evidence indicates that DfI complied with Article 67B of the Roads Order and hence with the Convention by alerting relevant public bodies in the Republic of Ireland to the scheme and to the likelihood of its having significant effects on the environment in the Republic. Authorities with specific environmental responsibilities in the Republic and members of the general public living there had an opportunity to give opinions for onward transmission to DfI.

Reliability

The use of a specimen design

3.24 The 2022 ESA describes the proposed scheme design on which the assessment of impacts and the identification of mitigation measures are based as a specimen design. Paragraph 5.3.3 of the ESA states:

"This design information may be refined by the appointed Contractors during the detailed design stage and prior to and during construction. This may result in some changes to the design and the environmental mitigation measures defined in the ES 2016, ESA 2019 and ESA 2022 to address predicted environmental effects. However, the design of the Proposed Scheme must be developed in a manner such that it has no material change to the effects of the Proposed Scheme as reported in this ES. The design will still be deemed to comply with the ES 2016, ESA 2019 and ESA 2022 provided that any design developments are subject to environmental review to ensure that the environmental impacts would be no worse than those reported."

3.25 The concept of the specimen design was explored at the inquiry. Article 67(6)(a) of the Roads Order requires the ES to describe the project, not a possible manifestation of the project which could then be subject to change. Witnesses for DfI stated that "specimen design" was a term describing the level to which the scheme was developed to allow EIA. It is detailed enough to build the scheme, but not detailed enough for contracts. However, as the joint-venture contractors have been involved in the design process for the A5, the design in this case could be described as "specimen plus", but not yet fully detailed. The use of specimen designs was presented as standard for this type of project. A consultant stated that the term has been used consistently since design and build contracts became the norm and pointed to its use in a project in Scotland. The

early contractor involvement means any changes would not be radical and the end product would be very similar to the specimen design.

3.26 The AA5A's traffic expert stated that "specimen design" is not a term that he recognised from the DMRB. The Scottish example referred only to a particular project. The term is not found in policy. Counsel for the AA5A submitted that the project must be defined with sufficient certainty to make a robust assessment at consenting stage. Public participation in this process is crucial. The detail is important and minor changes can have significant effects. There is no formal recourse to citizens if they disagree with future changes made by DfI, he argued.

3.27 DfI expressed confidence that the specimen design adequately described the project as required under the legislation. The ES sufficiently designs the parameters but cannot predict where every tree would be planted. If DfI decided to proceed with the scheme, it would publicly commit itself to the measures in the schedule of environmental commitments set out in the ES through an adoption statement.

3.28 DfI's representatives argued that the following safeguards are provided:

- the requirement that the contractors work within the parameters of the specimen design;
- the outline Construction Environmental Management Plan (CEMP) for each section of the scheme controls the effects of its construction;
- any changes must result in no material change to the effects of the scheme as reported in the ES; and
- the effects must be not environmentally worse than those described in the ES.

3.29 It seems to us that the latter two tests are somewhat conflicting. While we accept DfI's submission that a change which was environmentally worse would automatically be material, it is possible that a change that was judged to be no worse in environmental terms could nonetheless be material.

3.30 We recognise that the level of detail provided in the ES and supporting documents is significant and that it describes the project as currently envisaged by DfI. It is adequate for the purposes of EIA and the public inquiry. As we have nothing else to go on, we will base our consideration of the environmental effects of the project solely on the specimen design presented in the updated ES. However, we remain concerned at the potential for subsequent changes and how decisions on them would be taken.

3.31 We are concerned at the suggestion in Paragraph 5.3.2 of the ESA that reducing delivery costs could be a prime motivation for subsequent changes to the scheme. This may leave elements including the horizontal alignment, vertical alignment, construction materials, external appearance, ancillary structures, accesses, watercourse diversions, culverts, flood compensation areas, earthworks and landscaping vulnerable to change after the public inquiry. We asked DfI what confidence people could have in the specimen design if the above elements were subject to change. DfI stated that local changes would be subject to consultation with landowners as the scheme is progressed. Such consultation would intensify as construction approaches. However, consulting only with landowners may deny other interested parties a right to comment on unheralded changes to the scheme after the inquiry.

3.32 The inquiry then investigated the process whereby design changes proposed by a contractor would be approved or rejected. We asked where in the design and build

contracts the constraints on changes to the specimen designs and the verification procedures for design updates were spelt out. DfI was unable to point to any such references. The Project Sponsor stated that proposed changes would be strictly policed by the consultants WSP and overseen by DfI. This emphasis on internal procedures appears to overlook the statutory right of the general public to have a say on proposed departures from the specimen scheme presented in the ES.

3.33 Counsel for DfI emphasised that no changes to the specimen design are planned at present and stated that it was hard to answer in the abstract whether any change to the specimen scheme would require a fresh EIA determination as thresholds would have to be applied on a case-by-case basis. He was of the opinion that if a change remained within the parameters of the specimen design, it would not be material. Only changes or alterations that exceeded the threshold would require EIA screening. We recall that in DfI's Interim Statement of March 2021, it accepted without qualification that should it wish to make changes to the scheme as a result of quarrying in the townland of Urbalreagh, it would make an EIA determination.

3.34 One of the projects in Annex II to the EIA Directive is described, in Paragraph 13, as any change to or extension of projects listed in Annex I or II, already authorised, executed or in the process of being executed, which may have significant adverse effects on the environment. Counsel for the AA5A pointed out that "may" is a low threshold.

3.35 The implications of this paragraph were considered in *The Queen (on the application of Baker) v Bath and North East Somerset Council and Another* [2009] EWHC 595 (Admin). The court held that that in determining whether EIA is required for such changes or extensions, regard must be had to the development as a whole and not only to the modification itself. The court acknowledged that for every modification, however small, there was a need at the very least to consider screening. This judgment leads us to conclude that the 1-hectare threshold can have no part to play in screening decisions for proposed changes to road projects that fall into Paragraph 13 of Annex II.

3.36 Should DfI, having decided to proceed with the scheme, later wish to make design changes promoted by its contractors, it would be required to determine whether the changes are to be subject to EIA, taking into account the relevant selection criteria in Annex III. That determination would involve an evaluative judgment as to whether, as a result of the changes, the changed scheme may have, or would be capable of having, significant adverse effects on the environment. Should DfI answer that question in the affirmative, it would be necessary to prepare a further ES.

3.37 It is important to note that any time DfI makes a screening determination, whether to instigate EIA or not to instigate it, it must publish notice of its determination. That is a vital safeguard against arbitrary or unreasonable decision making.

3.38 We accept the proposition that, exceptionally, some proposed changes may be non-material, that is to say their effects on the environment would inevitably be trivial and uncontroversial. Some potential changes, such as the size of pipe to be used in a drain, may fall into this category but that will depend on the site-specific context. Members of the public may legitimately take a different view to that of DfI on the materiality of a change. We advise DfI to exercise great care to satisfy itself that a proposed change is truly non-material and if there is any residual doubt to make a screening determination.

3.39 Paragraph 5.3.4 of the ESA refers to procedures which the appointed contractors would be required to follow, which include "documentation of appraisal" to demonstrate that design changes would not be environmentally worse than the specimen scheme. It was established in *The Queen (on the application of Mellor) v Secretary of State for Communities and Local Government* [2009] EWCA Civ 1201 that a competent authority is obliged to communicate its reasons for screening out an Annex II project if an interested party requests them. To engender public confidence in the assessment of any proposed changes to the specimen design, we consider that DfI should not wait for a formal request but voluntarily make such appraisal documents available whenever it publishes a screening determination.

Recommendation 5

We recommend the Department:

(a) that if, having announced a decision to proceed with any part of the scheme, it then wishes to alter that part of the scheme from that presented as a "specimen" in the updated environmental statement in any manner which is likely to result in more than a trivial change to the environmental effects of the scheme, it will publish a determination as to whether the proposed alteration will be subject to fresh environmental impact assessment; and

(b) when publishing any such determination to make all appraisal documents prepared in support of the proposed alteration available on its website for perusal by interested members of the public.

Adaptive monitoring

3.40 DfI produced a report on what was called "adaptive monitoring" in December 2019, which although marked "internal" was placed on its website. It detailed a programme of desk-based reviews and site monitoring. It said environmental commitments made would evolve iteratively as new information emerged and/or the scheme developed and progressed. Changes identified through baseline monitoring could be incorporated into the detailed design. It described the CEMP as a living document. Where a deviation from surveys specified in the ES was recommended, it said the relevant bodies would be consulted and any changes would be included in updates to the report.

3.41 In submissions to the inquiry in 2020, the AA5A argued that it was no answer to say that the information would be updated in the course of construction. That approach was unlawful. Information sufficient to reach a view on likely environmental impacts must be provided at the earliest possible opportunity and subject to public consultation.

3.42 The Commission's Interim Report recognised that adaptive monitoring could be a valuable means of keeping environmental data up to date. However, it registered some concerns. It said DfI must be careful not to sidestep the statutory EIA process, which is designed to identify main environmental effects and measures to mitigate significant adverse effects. The adaptive monitoring process must not be operated so as to deprive citizens of their right to an opportunity to express opinions on new main environmental effects which may emerge or on new mitigation measures which may be proposed. Where entirely new environmental issues arise, it was not sufficient to rely on consultation with public agencies; the general public also has a part to play in identifying gaps in information and contributing to a well-informed decision.

3.43 DfI responded to these concerns in its Interim Statement as follows:

"The reference to "internal" in the Adaptive Monitoring Report (AMR) will be removed when the report is next updated. The wording in the Introduction of the AMR will be reviewed and amended as required to ensure clarity of purpose and how it aligns with the EIA process. The Department is aware of its obligations under the EIA process. The essential purpose of the Adaptive Monitoring Regime is to enable the Department to monitor any changes in the baseline environmental conditions with a view to keeping under review any proposals for mitigation. It is not a mechanism by which to avoid or by-pass the Department's legal obligations to conduct environmental assessment."

3.44 At the inquiry in 2023, we asked DfI if an updated adaptive monitoring report had been produced. We were told that this had been done internally. The AA5A again raised concerns that the use of adaptive monitoring suggests that lots of things could be changed post-consent and the developers could find a lot of latitude. DfI responded that the use of adaptive monitoring was an ongoing framework to monitor things like ecological and water quality and would help to inform licensing decisions, but that as the ES already presents the worst case scenario and describes the environmental effects, new main environmental effects or new mitigation measures are unlikely to emerge through the adaptive monitoring process.

3.45 Anyone who reads the Interim Statement would infer that the 2019 adaptive monitoring report was the first of a series and that future updates would be made freely available. We are left wondering why DfI has changed its mind about publication. It will be recalled that the *Berkeley* case law indicates that the public must be given an opportunity to express its opinion on the environmental issues. We can only reiterate our view that in the event that significant new environmental effects emerge through adaptive monitoring, they must be assessed through the EIA process and citizens must be kept fully informed in line with Recommendation 5 above.

Environmental commitments

3.46 Table 18-1 of the ESA presents a schedule of environmental commitments and mitigation measures, listing key requirements by topic. It is to be read in conjunction with Table 18.1 of the 2016 ES. We sought through questioning to elicit an assurance from DfI that all the commitments and measures found throughout the updated ES, whether included in these tables or not, would be implemented. The Project Sponsor provided that assurance. Counsel for DfI stated that it is open to further recommendations that may emerge from the public inquiry.

3.47 In the event of a discrepancy, including a difference of wording, between the schedules of environmental commitments and the rest of the updated ES, we asked which would prevail. DfI's representatives simply replied that if they came across any inconsistency, they would address it. Commitments could be clarified, including through the contractors' CEMPs, and could be publicly restated in any adoption statement. In our view, it is essential that the public can rely on every commitment in the ES and that inconsistencies do not lead to environmental safeguards being discarded or weakened.

3.48 Paragraph 5.3.4 of the ESA refers to "verification procedures to demonstrate that the relevant commitments and environmental mitigation have been delivered" but little detail of these is provided. With such a range of commitments and mitigation measures, it is essential that DfI keeps a strict eye on their implementation and also that

the public is appraised of the progress being made in relation to the environmental commitments. Counsel for the AA5A suggested a stakeholder engagement forum but that would be unlikely to involve everyone whose interests might be affected by the scheme. Public information has been provided during the construction of previous road schemes through regular updates to the scheme website. DfI undertook to do the same for the A5 scheme.

Recommendation 6

We recommend the Department:

(a) to ensure that all the environmental commitments and mitigation measures found anywhere in the updated environmental statement are rigorously implemented, irrespective of whether they appear in Table 18.1 of the 2016 environmental statement, Table 18-1 of the 2022 environmental statement addendum, or elsewhere; and

(b) to keep the public appraised, by way of regular updates on its scheme website, of progress being made in fulfilling the environmental commitments.

Construction environmental management plans and silt management plans

3.49 Throughout its evidence, DfI put heavy emphasis on the CEMPs as a means of ensuring that the mitigation measures presented in the updated ES would be observed and implemented. Appendix 5-1 of the ESA contains an outline CEMP. It is described as a template providing a summary of the generic principles applicable to construction of the road to achieve a consistent approach. The contractors would be required to develop their own CEMPs for their sections of the scheme. If the contractors were allowed to omit or dilute elements of the outline CEMP which they found irksome or inconvenient, that would undermine the credibility of the updated ES.

3.50 We therefore asked what reliance could be placed on the outline CEMP. DfI's representatives replied that each CEMP would have to include the contents of the outline CEMP as a minimum and the contractors' CEMPs would have to be approved by DfI and its consultants. Additions may include the contractor's own procedures. We are reassured by these undertakings. The same principles apply equally to silt management plans (SMPs) which are to be developed from an outline document which appears at Appendix 5-2 to the ESA.

Recommendation 7

We recommend the Department:

(a) to ensure that, without prejudice to any stricter requirements which may be specified in respect of particular places, every contractor's construction environmental management plan and silt management plan for any part of the scheme with which the Department decides to proceed faithfully and unambiguously replicates all the environmental safeguarding measures contained in Appendices 5-1 and 5-2 to the 2022 environmental statement addendum respectively; and

(b) to ensure that these measures are rigorously implemented.

The traffic model

3.51 For the purposes of the 2022 ESA, updated traffic forecasts were developed from a 2015 re-based traffic model, which itself represented an update to the 2013 base year model used to support the 2016 ES. The updated model used traffic data collected in Autumn 2015 and Spring 2016, comprising roadside survey interviews, volumetric traffic counts and journey time observations. The results are set out in a traffic forecast report (TFR), which was among the documents published by DfI in November 2022.

3.52 The AA5A pointed out that traffic patterns may have been subject to considerable change since 2015 because of the Covid-19 pandemic. It submitted that continued reliance on an old traffic model was unreasonable. At the inquiry in 2020, DfI referred to Department for Transport (DfT) guidance which advocated the use of survey data that are less than six years old. This advice was changed in May 2020 by Transport Analysis Guidance (TAG) Unit M2.2, which says this simple threshold should not be used as there can be significant changes that would make the use of more recent data inappropriate or there may have been little change and older data may be acceptable.

3.53 It seems to us that although the survey data are now more than six years old, the approach taken by DfI is consistent with current DfT guidance. The Trip End Model Presentation Programme and National Trip End Model Data release notes, issued in June 2022, advised practitioners who needed to build a model with a base year of 2020, 2021 or 2022 to look to see if they had an alternative, such as using an older model (possibly augmented with a current year validation exercise). It noted that traffic patterns in 2020 and 2021 were certainly atypical of usual travel behaviour. It said 2022 patterns were more normal, but it was too soon to regard them as stable.

3.54 The traffic model was set up for highways only; this is known as a fixed demand approach. There is no associated public transport modelling, which would represent a variable demand approach. The need for variable demand modelling was assessed and quantified using guidance published in TAG Unit M2.1, adopting an elastic assignment procedure to assess the change in demand in terms of its sensitivity to a change in travel cost effected by the scheme. This demonstrated that the likely impacts of the scheme on public transport and wider demand responses would be limited and would fall well within the thresholds set out in the guidance. It must be inferred that DfI does not foresee any significant modal shift in the Western Transport Corridor (WTC) before the design year of 2043.

3.55 The AA5A drew attention to DfI's June 2021 publication "Planning for the Future of Transport – Time for Change", which contains a sustainable transport hierarchy. The preferred mode of transport is walking and wheeling, followed by cycling, then public transport, then taxis, shared transport and goods vehicles. Private cars and motorcycles are the least favoured mode at the bottom of the hierarchy. These statements must be read in the context of the Ministerial foreword, which says that delivering on the promises of flagship schemes, including the projects in "New Decade New Approach", is a priority for DfI and the Executive but more must be invested to deliver the changes in behaviour needed to improve people's health and happiness.

3.56 An objector queried whether the absence of significant modal shift in the WTC would constitute a failure of policy. DfI acknowledged that the forecasts in the traffic model represent the Government's core scenario for demand growth and do not take account of any specific interventions to manage demand or to promote mode shift away from

private vehicles. It seems to us that modal shift is a long-term policy objective which cannot be attained everywhere and overnight. The WTC traverses a rural area with relatively small towns and a dispersed population, making continued reliance on road transport inevitable for the foreseeable future. As the 2022 outline business case (OBC) puts it, the rurality of the region means it is a necessity for people to travel by private car or public transport in order to reach a destination further afield in a timely and efficient manner. We are satisfied that a fixed demand approach to modelling is appropriate in this instance.

3.57 An objector queried why increases in fuel prices result in an upward adjustment in future highway demand forecasts in Table 2-3 of the TFR, instead of being offset against increases in income. Paragraph 7.4.14 of TAG Unit M4 indicates that car vehicle kilometres increase proportionately to income per car-owning household with a positive elasticity, whereas the elasticity of vehicle kilometre per car to fuel cost is negative. We are perplexed by the seemingly illogical methodology adopted but accept it is consistent with the worked example given in the TAG advice. DfI's expert told us that in any case the adjustment factors have only a marginal influence on the assumed growth pattern.

3.58 In response to a question from the objector, DfI confirmed that the model assumes that the vehicles using the proposed road would operate at a speed limit of 70 mph. DfI accepted that travel time savings are likely to reduce if a lower speed limit were assumed but this scenario was not appraised in the traffic model. While it is not inconceivable that a lower speed limit might be introduced in the interest of fuel efficiency (as happened briefly in response to the 1973/74 oil crisis), we have no reason to believe that this is likely to happen. We do not accept that the absence of a test for such a scenario represents a fundamental flaw in the model.

3.59 Tables 3-11 and 3-12 of the TFR show changes in vehicle kilometres and vehicle hours in low growth, core and high growth scenarios. The objector queried how much further traffic growth would have to reduce in order for there to be no growth in vehicle kilometres and vehicle hours. He suggested that a relatively small reduction, caused for example by modal shift, would negate any need for the scheme. In its rebuttal evidence, DfI pointed out that a 10% reduction in traffic volume (between core and low) resulted in just a 0.39% change in vehicle hours. If a similar trend is assumed, a further 70 to 80 percent decrease in traffic growth would be required to achieve no change in vehicle hours. Achieving this level of reduction in traffic growth through demand management or other means would be too ambitious, DfI said.

3.60 The AA5A complained that DfI was relying on demographic modelling which was potentially out of date in light of the 2021 Census figures, which were released after the 2022 ESA was published. According to the AA5A's solicitors, a brief analysis of the Statistical Bulletin released by the Northern Ireland Statistics and Research Agency showed a divergence between the census figures and assumptions made in the traffic model. DfI's response was that, when brought to a common baseline, the demographic projections on which the demand forecasts were based show a relatively marginal variation of less than 0.2% from the census data. The AA5A's transport planning consultant did not dispute the 0.2% figure. We are not persuaded that this divergence is of such significance as to undermine the credibility of the model.

3.61 A model verification note is included in the TFR as Appendix A. It provides an empirical data set against which the traffic model's forecasts can be compared. The available

traffic count data was cleaned, analysed and expanded to obtain the equivalent April 2019 average flows to be used in the comparisons. Bank holidays, school holidays and any statistical outliers were removed.

3.62 The model verification note states that the traffic count data often covered multiple non-neutral months between 2015 and 2019. Factoring was therefore required to address seasonal and annual variations and to get the data to typical April 2019 flows. The factors were derived using data from appropriate nearby locations. Whilst necessary, the use of factors (together with the relatively low overall number of observations at some sites) contributes to lower confidence in the observed data set. The note goes on to say that overall the modelled flows along the A5 route show a very good match to the observed data, with an average difference of around 2% and the modelled flows at most of the sites falling within 15% of the observed data.

3.63 The AA5A's transport planning consultant pointed out that Table 4 of the model verification note reveals numerous locations along the A5 mainline where the variation between the modelled and observed traffic flows exceeds 10 to 15 percent. He did not accept that the model is robust or that it continues to be a valid and appropriate tool to assess the likely impacts of the A5 scheme.

3.64 Table 4 quantifies two-way modelled and observed 2019 flows along the A5 mainline at morning and afternoon peaks and in the inter-peak period. We find it noteworthy that of the 21 locations for which data were available, only seven had variations of more than 15% in any period. In only two of these locations, the variations related both to the morning and the evening peak. These locations were described as South of Mourne River and Crevenagh Road Roundabout.

3.65 The TFR states that the South of Mourne River site is located on the A5 to the south of the Bradley Way roundabout; the model is shown to provide a close match, in all time periods, at the location immediately north of that roundabout, suggesting that any discrepancy in this area is likely to be very localised. It states that the Crevenagh Road Roundabout has observed data collected for a total of 10 days in 2019 (only seven of which were weekdays); it is possible that road works, accidents, or other atypical events may have affected the recorded flows at this site. In the absence of any alternative theories, we accept these explanations for the discrepancies.

3.66 DfI published a second model verification note in April 2023. It used volumetric traffic count data collected in the scheme area between 12th September and 2nd October 2022. The traffic data for the 28 sites presented (of which eight were on the A5) were cleaned and analysed to obtain the 2022 peak-hour observed flows used in the comparisons. Modelled flows on the A5 were said to be generally close to the observed traffic volumes, particularly at Prehen and between Strabane and Aughnacloy. Deviations of 4 to 15 percent and 13 to 27 percent respectively were observed at two count sites between Newbuildings and Strabane. These sites were affected by resurfacing works and message signs during the surveys, which may have deterred some road users. The note concluded by saying that traffic volumes along the A5 are recovering and close to being back to the pre-Covid levels and that the traffic model is robust and continues to be a valid and appropriate tool to assess the likely impacts of the scheme.

3.67 The AA5A's transport planning consultant pointed out that the results of this exercise again reveal numerous locations where the variation between the modelled and

observed traffic flows exceeds 10 to 15 percent in the morning peak, inter-peak and afternoon peak periods. He did not accept that the modelled flows along the A5 route show a very good match to the observed data.

3.68 In response to a query from the AA5A, DfI produced a note setting out the methodology adopted for traffic data cleansing. It documents the anomalies which were identified and gives the reasons for their removal. Data collected on 19th September 2022, an unanticipated bank holiday to mark the funeral of Queen Elizabeth II, were removed, as were results at variance with typical weekly patterns, and results which may have been influenced by an equipment malfunction. We are content with the approach taken.

3.69 In our opinion, DfI has adequately explained the deviations between modelled and observed flows at two of the eight survey locations on the A5. It has not offered an explanation as to why the observed flow exceeds the modelled flow by 19% in the morning peak at a third location, Monaghan Road, Aughnacloy. However, the modelled flows at the majority of the sites on the A5 fall well within 15% of the observed volumes. There is also a high correlation between modelled and observed traffic flows for the sites that are located in the scheme area but not on the A5 itself.

3.70 The September 2022 traffic data indicate that, taking the morning peak, inter-peak and afternoon peak periods together, overall observed flows were 1.9% lower than modelled flows in the scheme area as a whole and 3.7% lower on the existing A5. In written evidence, DfI argued that the survey data from September 2022 show that the difference in traffic volumes along the existing A5 corridor pre- and post-Covid is marginal. At a meeting with DoF officials on 12th October 2022, DfI advised that the assessment assumes traffic levels will get back to "pre-Covid scenario" by 2028.

3.71 Appendix 1 to the second model verification note compares traffic flows across Northern Ireland in each month from March 2020 to March 2022 to those recorded in the equivalent month in 2019. The results oscillated from a reduction of 63.9% at the height of the pandemic in April 2020 to a reduction of 3.4% in June 2021. In March, April and May 2022, reductions of 9.5%, 8.7% and 10.4% were recorded. Appendix 1 states that DfI stopped monitoring post-Covid traffic flows across Northern Ireland from June 2022 as, it asserted, the seven-day AADT values had more or less returned to pre-Covid levels and continue to rise closer to those levels.

3.72 As the AA5A's transport planning consultant pointed out, this assertion is not borne out by the figures presented. From July 2021 onwards traffic flows in Northern Ireland were between 5% and 11% lower than the equivalent month in 2019, with no obvious tapering off in early 2022.

3.73 In written evidence, DfI stated that Covid affected distinct regions differently. The potential for remote work is concentrated in a handful of industries, occupations, and geographies and focused primarily on computer-based office work. Northern Ireland is less dependent on such work but has a heavier reliance on agriculture, manufacturing, motor vehicle retail and repair, and human health and social work activities, than other parts of the UK. These industries have less potential to adopt remote working and continue to contribute to traffic movements at a level unaffected by the pandemic.

3.74 DfI's written evidence continued by noting that the Northern Ireland Index of Production has been steadily increasing and is 5.6% above the pre-pandemic level, compared with 3.6% for the UK as a whole. The Index of Services has also surpassed the

pre-Covid level in Northern Ireland, while in the rest of the UK it has not quite reached the pre-Covid level. The increase in productivity and services continues to contribute to traffic movements on strategic corridors like the A5.

3.75 In oral evidence, DfI suggested that home working has less impact in a rural setting such as the WTC. This led us to ask about the extent to which staff based in County Hall, Omagh currently work from home. We were told that as of May 2023, the occupancy rate was 60 to 70 percent. Hybrid working arrangements are in place but depend on the nature of each employee's job. This is an unscientific snapshot skewed towards a computer-based segment of the workforce but it tends to suggest that there has been at least some long-term change in the pattern of demand for road transport in the WTC.

3.76 Paragraph 4.15 of DfI's publication "Time for Change" states that the Covid pandemic has shown that people can change behaviour and that there is a desire not to return to the "old normal" of peak-period private vehicle commuting and the congestion and health and environmental problems this creates. It seems to us more likely than not that the traffic model has somewhat overestimated future traffic. If there turns out to be less road traffic on the WTC than the model predicts, some environmental impacts of the scheme (such as noise and carbon emissions) would also be less. However, in light of the evidence that productivity and services are increasing faster in Northern Ireland than in the UK as a whole, we cannot exclude the possibility that the traffic model has underestimated future traffic growth. All modelling is attended by uncertainty.

3.77 The AA5A remained concerned about the age of the traffic model and its reliability as a basis for future decision making. It submitted that the most robust way to proceed was to update the model, no matter how long that would take. At the very least, fresh baseline traffic counts and road user surveys should be undertaken to determine the extent to which travel behaviour has altered since 2015.

3.78 There is a reference in Article 67(5) of the Roads Order to information that may reasonably be gathered and an implied acceptance in the incorporated text of Annex IV to the EIA Directive that difficulties may be encountered in compiling information. The *Blewitt* case law establishes that it is not a legal requirement that the ES must contain full information about the environmental impact of the scheme.

3.79 Some of the AA5A's criticisms relate to things that happened in the year that elapsed between the publication of the ES and the re-opening of the inquiry. In an ever changing world, it may be unrealistic to expect an ES for a scheme of this complexity to be fully up-to-date. We do not consider the imperfections in the traffic model so fundamental that the updated ES could not reasonably be described as an ES. In our view, it would not be in the public interest to pause decision making on the A5 scheme again until better traffic data are available.

3.80 We are satisfied that the traffic model is adequate for EIA purposes.

Air Quality

3.81 Air quality is unquestionably a serious issue. According to the British Lung Foundation, referenced by one objector, around 800 people in Northern Ireland die early every year due to dirty air; 26% of nitrogen pollution and 7% of particulate matter ($PM_{2.5}$) pollution are attributable to road transport.

3.82 The 2016 ES considered the potential impacts of both the construction and the operational phases of the scheme on local and regional air quality. It stated that receptors within 50 metres of the principal dust-generating activities (site clearance, topsoil stripping, cutting and filling, handling and placing of road-base materials and aggregates, and landscaping) and downwind of the prevailing westerly and south-westerly winds would be at greatest risk of nuisance associated with construction-related dust. There would be high-risk locations to the north of Newbuildings, to the west of Magheramason, to the north of Strabane and on the western fringes of Strabane and Moylagh.

3.83 The ES outlined mitigation measures for controlling and suppressing fugitive dust emissions. Revised mitigation measures prescribed using a risk-based approach advocated by the Institute of Air Quality Management were included in the 2022 ESA. The ESA concluded that with the implementation of these measures via a CEMP, the residual effect of construction phase dust emissions on local air quality would be negligible and not significant. No one disputed this conclusion at the inquiry.

3.84 The ES also considered construction-related traffic emissions of the pollutants nitrogen dioxide (NO_2) and particulate matter with a mean aerodynamic diameter of less than 10 micrometres (PM_{10}). It considered three areas that would be worst affected – at the proposed Junction 3 near Ballymagorry, on the existing A5 to the north of Strabane, and at Strahans Road to the south west of Strabane. It found that while NO_2 and PM_{10} concentrations would increase during construction, in no case would the objectives established by the EU Directive on Ambient Air Quality be breached. This remains the case under the 2022 ESA.

3.85 The 2019 ESA reviewed the assessment of the potential impact of the scheme on local air quality contained in the 2016 ES. The ESA took into account changes to the proposed timing of construction phases, to the traffic model, to air quality standards, and to published methodologies and significance criteria. The ESA investigated fine particulate matter with a mean aerodynamic diameter of less than 2.5 micrometres ($PM_{2.5}$) as well as PM_{10} and NO_2.

3.86 The 2019 ESA compared the impacts, with and without the scheme, on 10,263 sensitive receptors in 2028. It concluded that for the vast majority of receptors, the air quality impact of the operational phase of the scheme would be negligible. However, should the scheme be implemented, more people would benefit from slightly reduced concentrations of air pollutants than would be subject to slightly increased concentrations. The reduction would be the result of the diversion of strategic traffic from the existing A5, where many of the receptors are located, to the new dual carriageway.

3.87 Despite some reservations about the age of the underlying data and the absence of site-specific data, the Commission's Interim Report accepted the premise that removal of traffic from the existing A5 and its transfer to a new road with fewer sensitive receptors close by should lead to a net improvement in air quality.

3.88 Although the Commission accepted the findings of the 2019 ESA, DfI decided, following receipt of the Interim Report, to update its air quality assessment. We were told at the inquiry that this followed from the updating of the traffic model, upon which the air quality assessment relies. The information in the 2022 ESA is based on the latest

available data and also includes information on ammonia (NH_3) which has recently emerged. This is of most relevance to ecological receptors, which are considered in Chapter 4 of this report.

3.89 A revised guideline on air quality assessment, LA 105, was introduced into the Design Manual for Roads and Bridges (DMRB) in November 2019. It removed the material on assessment of regional emissions relevant to climate change into a separate guideline. It also advocated the use of speed banding instead of daily average speeds for each modelled road link. LA 105 would require revised traffic modelling across the entire scheme area. Given the significant additional delay and expense that would have resulted from implementing this guidance, the project team relied upon transitional arrangements that enabled them to follow the previous guidance. We asked whether it was likely that materially different results would have been obtained had speed banding been used and we were told that this was not at all likely in the case of the A5 due to the free-flowing nature of the proposed road and the absence of congestion, so even if LA 105 had been adopted, it wouldn't have made a significant difference. On this basis, we are satisfied that it is not necessary to employ speed banding.

3.90 Compared to the 10,263 sensitive receptors considered in the 2019 ESA, the 2022 ESA models air quality impacts for just 3,051 sensitive receptors. This was described as "a proportionate approach" focusing on those receptors identified within 50 metres of the modelled road network – where impacts greater than "negligible" are more likely to occur – as opposed to all receptors within 200 metres. As the previous assessment extending to 200m found that that there were negligible impacts predicted at a minimum of 83% of receptors in terms of NO_2 concentrations and 99% of receptors in terms of PM_{10} and $PM_{2.5}$ concentrations, we accept the logic of focusing on those closer to the network.

3.91 For annual mean NO_2 concentrations, the Proposed Scheme is predicted to have a negligible impact at 72% of all modelled receptors, with 19% having a slight beneficial impact and 8% having a moderate beneficial impact. By contrast, 1% and 0.3% of receptors are predicted to receive a slight adverse and moderate adverse impact, respectively, but these do not result in any exceedances of the annual mean air quality objective.

3.92 In terms of annual mean PM_{10} and $PM_{2.5}$ concentrations, between 93 and 95 percent of all receptors are expected to experience a negligible impact with the Proposed Scheme implemented, with 5 to 7 percent experiencing a slight beneficial impact. Less than 1% of receptors are predicted to receive slight/moderate adverse impacts, with no predicted exceedances of the respective annual mean air quality objectives.

3.93 The transition towards electric and hybrid vehicles which tend to be heavier than petrol and diesel equivalents is likely to result in greater brake wear emissions and tyre pollution. These matters were referenced in the Commission's Interim Report, but research into them was at an early stage. Fine rubber particles, whether latex or synthetic, can lodge in lungs and enter the bloodstream. Excessive exposure can lead to reduced lung capacity, bronchitis, asthma, accelerated heart disease and death. One study claimed that nearly 60% of airborne tyre particles were small enough to be inhaled easily. Tyre dust deposited on the pavement gets washed by rain into lakes and streams. It had been shown that chemicals leaching out of tyre dust could kill water organisms such as algae, plants, minnows and snails. An Italian study had found that

organic components of tyre debris were toxic to frog embryos and to cultured human lung and liver cells.

3.94 We were told at the inquiry that little new research has emerged in the intervening period, but that the modelling takes account of the latest DfT projections on fleet mix and that the Emissions Factor Toolkit takes account of heavier vehicles with regard to braking. Less braking takes place on a dual carriageway in a rural setting than in an urban area. On the basis of current knowledge, we consider that the ESA deals satisfactorily with these matters.

3.95 One objector provided a research paper stating that emissions from interior components of motor vehicles and from exhaust fumes carried by ventilation supply air are significant sources of harmful air pollutants that could lead to unhealthy human exposure due to their high concentrations inside vehicles' cabins. DfI's witness accepted that there is some exposure within vehicles, but that this is the case on any journey and it is not particular to the proposed A5 dual carriageway. Therefore we see no deficiency in the ESA in this regard.

3.96 No one present at the inquiry took issue with the conclusion of the ESA that the scheme would have no significant effect on local air quality with respect to human health. We conclude that the net impact of the scheme on air quality would be beneficial but would not amount to a significant environmental effect.

Cultural Heritage

3.97 Planning Policy Statement 6 – Planning, Archaeology and the Built Heritage (PPS 6) sets out DfI's planning policies for the protection and conservation of archaeological remains and features of the built heritage. The policies apply to developments with implications for cultural heritage which are proposed by private sector developers and are equally applicable to DfI's own schemes. Paragraph 1.7 of the document indicates that decisions on the need for and siting of new roads will be informed by the Department's commitment to environmental stewardship of our archaeological and built heritage.

3.98 Paragraph A4 of Annex A of PPS 6 sets out the Department's approach to archaeological and built heritage on a new road scheme as follows:

"Where a new route is shown to be necessary or where alterations to the existing traffic network are needed the Department will initially identify and evaluate the significance of any archaeological remains and features of the built heritage including listed buildings, conservation areas and other historic sites. New routes, alterations and any other transport infrastructure should respect such features, but in each case a suitable balance needs to be struck between conservation, other environmental concerns, economics, safety and engineering feasibility."

3.99 The Preamble to PPS 6 recognises that occasionally there will be circumstances where other material considerations may outweigh policies. Where a policy is negative, stating what will not be permitted, it provides a general guideline but cannot be an absolute bar to a decision beneficial to the citizen. Each case must be considered on its merits to see whether an exception would be justified.

3.100 The 2016 ES assessed the likely impacts of the scheme on archaeological resources and built heritage within a 600-metre-wide study area centred on the proposed alignment and on historic landscapes within 1.5 kilometres of the proposed land take based on

DMRB guidance. The 2019 ESA identified five additional non-designated archaeological assets and discussed one listed building which was omitted from the original assessment. The baseline environment was reviewed for the 2022 ESA and no additional heritage assets were discovered, though 67 were revalued.

Policy for archaeological sites and monuments

3.101 Policy BH 1 of PPS 6 states that the Department will operate a presumption in favour of the physical preservation *in situ* of archaeological remains of regional importance and their settings. These comprise monuments in State Care, scheduled monuments and other important sites and monuments which would merit scheduling. Development which would adversely affect such sites of regional importance or the integrity of their settings will not be permitted unless there are exceptional circumstances. The amplification text states that in assessing proposals for development in the vicinity of State Care monuments the Department will pay particular attention to the impact on the critical views of, and from, the site or monument; the access and public approaches to the site or monument; and the understanding and enjoyment of the site or monument by visitors.

3.102 Policy BH 3 states that where the impact of a development proposal on important archaeological remains is unclear, or the relative importance of such remains is uncertain, the Department will normally require developers to provide further information in the form of an archaeological assessment or an archaeological evaluation. The amplification text defines these terms as follows:

- An archaeological assessment normally entails a desk-based study, by a qualified archaeologist, of existing information including records of previous discoveries, historic maps or geophysical surveys.
- An archaeological field evaluation involves ground surveys and limited and targeted licensed excavation which is quite distinct from full archaeological excavation.

3.103 Policy BH 4 states that where it is decided to grant planning permission for development which will affect sites known to contain archaeological remains, the Department will impose conditions to ensure that appropriate measures are taken for the identification and mitigation of the archaeological impacts of the development, including where appropriate the completion of a licensed excavation and recording of remains before development commences. A witness from the Department for Communities, Historic Environment Division (HED) told the inquiry that Policy BH 4 concerns post-consent archaeological evaluation and mitigation of impacts. The provisions of Policy BH 3 are applied prior to the granting of consent.

3.104 The amplification text of Policy BH4 indicates that in some circumstances it will be possible to permit development proposals which affect archaeological remains to proceed provided appropriate archaeological mitigation measures are in place which preserve the remains in the final development or ensure excavation recording prior to destruction. It goes on to set out a range of mitigation measures including design alterations, excavation recording and preservation *in situ*.

3.105 The fact that these means can be employed post-consent leaves open the possibility that the identification and mitigation of archaeological impacts are deferred until after a development has been approved. This is problematic in the case of a large road scheme

where the ES on which the public is consulted is expected to contain a description of the likely significant effects of the project on the environment and a description of the features of the project and measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.

Archaeological potential and mitigation during construction

3.106 DEM 156/15 is a Departmental memorandum entitled, "Management of Archaeological Investigations on Major Road Improvement Schemes". Its purpose is to provide guidance on the management of archaeological investigations, ensuring both the efficient delivery of major works and the preservation of archaeological heritage. It aims to complement existing DMRB guidance. The framework aims to:

- ensure the cost effective and efficient delivery of archaeological works associated with major road improvement schemes;
- protect Northern Ireland's archaeological heritage by improving recognition of archaeology, ultimately promoting and supporting archaeological outcomes;
- provide a consistent system for regulating archaeological works;
- provide a mechanism for dealing with all new discoveries of archaeological monuments and sites; and
- define lines of communication used in the decision-making process.

3.107 DEM 156/15 sets out a process of targeted identification of sites using desk-based research and non-intrusive methods including walkover surveys, trenching under licence from HED to further explore the significance and extent of particular sites, extension of trenching where finds are made, and reporting and publication of information on finds to address the public interest.

3.108 A Prosperity Agreement dated February 2016 between HED and the former Department for Regional Development, Transport NI (now DfI Roads) is appended to the DEM. It aims to bring about enhanced cooperation between HED and the roads authority so that the preservation and presentation of archaeological heritage becomes a key element of the delivery of sound and sustainable network improvements. It refers to inconsistent and inefficient approaches having been used on road improvement schemes throughout Northern Ireland and a need for a greater awareness of the reason for archaeological mitigation by Transport NI staff. We were advised at the inquiry that this refers to past issues and that the implementation of the DEM has delivered more consistency in recent schemes. A working group comprised of senior staff from both Departments is responsible for its implementation. An archaeologist who has worked on schemes across the UK described the guidance as better than any available in Great Britain.

3.109 PPS 6 accepts that there may be occasions when the presence of archaeological remains only becomes apparent once an approved development has actually commenced. On rare occasions the importance of such remains may merit their scheduling. In that event developers would need to seek separate scheduled monument consent before they continue work. It is also open to the Department to revoke a planning permission if deemed necessary.

3.110 DfI indicated at the inquiry that it is impossible to predict in advance what specific types of archaeological mitigation would be employed if previously unknown archaeological remains are discovered. However, DfI is committed to the principles of mitigation set out in the ES and its strategy is robust. No alternative strategy was put forward by

objectors. Archaeological mitigation would be done under licence from HED. The default position would be to preserve remains *in situ* if possible.

3.111 Counsel for DfI expressed the view that if archaeological remains are discovered and they are properly recorded, their removal would not constitute a significant adverse effect of the scheme. A DfI witness stated that archaeological finds can only be properly interpreted after excavation and recording. If remains cannot be preserved *in situ*, preservation by record is a good option as it would enhance the archaeological record of the area. There is a positive to come out of this process of discovery.

3.112 Counsel for the AA5A responded that it seems odd that you could find and excavate something significant but say that the environmental impact is negligible. We agree. While the enhancement of the archaeological record by interpretation of excavated sites will no doubt make interesting reading, we are not persuaded that the removal and recording of remains can objectively be assessed as a negligible impact of the scheme.

Archaeological surveys

3.113 The ES said that between March and June 2013, 80 archaeological trial trenches and strip map areas were excavated within the Newbuildings to south of Strabane and south of Omagh to Aughnacloy sections of the scheme corridor. It was planned to excavate a further 68 areas but this did not happen due to work on the scheme being suspended in mid-2013. The 80 excavated trench areas/strip map areas identified 18 potential archaeological sites. The findings at these sites were summarised in the ES. We asked DfI whether these findings were indicative of significant effects on the environment. The lead archaeologist explained that some of the sites were fully excavated and others were covered and preserved *in situ*. He accepted that there would be significant effects where the remains were entirely removed.

3.114 The ES 2016 stated that specialist analysis and reporting is currently ongoing for all of the above sites. At the inquiry in 2023, we were told that this is still ongoing. There had been some delays due to changes of staff. DfI accepted that full publication of results was required under the excavation licence. A witness stated that the results would be published for the road scheme as a whole upon completion. Ten years have already passed since the excavation began and there is the potential for many more years to pass before the full results are published.

3.115 However, DfI produced lengthy and comprehensive evaluation reports on Sections 1 and 3 in July 2013 which were provided to the inquiry. (No archaeological work was done in Section 2.) It is reasonable to suppose that these reports met the terms of the excavation licence. It would be in the public interest to make them more widely available in accordance with the principles set out in DEM 156/15 which states, "Once agreed with Transport NI, the results shall be prepared and presented to the public in a manner appropriate to their significance." This wording suggests that the presentation of results and the assessment of their significance are matters for HED. There seems to be no good reason why the reports on the 2013 excavations could not be put into the public domain now.

3.116 Counsel for the AA5A asked whether an assessment of the significance of particular sites and findings was possible before the final reports were completed. DfI's archaeologist confirmed that such an assessment can be made based on the date of the features and how they survive. It appears to us that such assessments have been made and

incorporated in the environmental information now before the inquiry, but that a comprehensive report on the archaeological findings relating to the scheme as a whole is still some way off. Nonetheless, information on specific sites is likely to be of interest locally and should be published when available.

3.117 Later in the ES it was stated that parts of the scheme corridor which had not already been subject to archaeological evaluation and excavation would need to be subject to a new evaluation methodology. All areas where it was proposed to carry out ground works (including compounds, storage areas, access roads and car parks) would need to be evaluated. All archaeological remains would need to be identified and investigated before construction work started. We asked how long this would take (given that 80 areas were excavated in four months in 2013). DfI would only state that it depended on the resources available.

3.118 At the inquiry in 2020, the AA5A asked when the public would be given a chance to comment on the intrusive investigations which were yet to be conducted. DfI did not respond to that point directly but acknowledged that further investigations could change some of the published assessments. These investigations would not take place until the land is vested. In its Interim Report, the Commission recommended DfI that in the event that it uncovers new significant effects on cultural heritage or identifies a need for entirely new mitigation measures, it should incorporate that information in a further addendum to the ES and make it available for public consultation.

3.119 Information obtained by the AA5A in a request under the Environmental Information Regulations indicates that the Project Team's initial advice to the Minister in September 2020 was that it was content to comply with this recommendation. However, in its Interim Statement dated March 2021, DfI did not accept the recommendation. It stated:

"Further archaeological investigations are not anticipated prior to a decision on whether to proceed with the scheme. In the event that the Department does decide to proceed and new archaeological or cultural remains are uncovered during investigations or excavations (prior to or during construction), mitigation measures for the preservation and removal of those remains would take place under license in close liaison with the Department for Communities, Historic Environment Division (HED). The publication of findings would be carried out in accordance with the Prosperity Agreement outlined in DEM 156/15, established by both Departments for the management of archaeological investigations in Northern Ireland. In the event of a decision to proceed, a commitment to this effect would be included within the final Departmental Statement."

3.120 At the inquiry, we asked DfI to explain this change of opinion from its initial advice. Counsel for DfI stated that if something unexpected was discovered post-consent, one can't rewind the clock to conduct an EIA. Mitigation would be employed and DfI couldn't commit to doing any additional post-consent consultation or enter into an unqualified commitment. HED would be consulted and depending on their views and the nature of what was found, a decision would be taken on the appropriate means of mitigation. On the recent A6 Londonderry to Dungiven dualling scheme, DfI was able to preserve previously unknown remains *in situ* without making changes to the road alignment or vesting boundary.

3.121 DEM156/15 states that licensed excavation might lead to significant finds that require changes to the road alignment. A witness for HED told the inquiry that the road alignment was essentially fixed. However, Counsel for the AA5A argued that if there was a very significant archaeological find, you can't just say that the alignment won't be changed. Each instance would need to be considered on a case-by-case basis. He submitted that the proper way to rectify any dispute is a modification to the design and re-consultation through the EIA process, allowing the public to have their say.

3.122 We asked the DfI whether it would be legally required to update and re-consult on the ES if changes to the road alignment did become necessary as a result of archaeological finds, noting that it had already accepted this principle with regard to potential changes at Urbalreagh Quarry (discussed later in this chapter). Counsel for DfI was of the view that the need to update the ES would depend on what was found, the views of HED on it, and the scale of the changes proposed. He drew a distinction between the planning and roads EIA context. There is provision for retrospective EIA in the relevant planning regulations, but there is no similar process under the Roads Order.

3.123 If what is being suggested is that there are circumstances in which DfI might carry out construction or related works without authorisation, then we would find that quite disturbing. The appropriate course of action would be to stop work until a fresh authorisation was obtained. That is what a private developer would be expected to do.

3.124 Counsel for the AA5A agreed that there was no process under the Roads Order but suggested that the context is therefore set by Annex II to the EIA Directive where it refers to "any change to or extension of projects listed in Annex I or II, already authorised, executed or in the process of being executed, which may have significant adverse effects on the environment."

3.125 Any significant changes to the scheme as a result of archaeological discoveries must be brought to the attention of the public by way of an EIA determination and, if necessary, a fresh EIA. A process that relies only on agreement between two branches of government without consulting the public is not lawful. In line with our earlier conclusions and recommendations regarding any post-consent changes to the scheme, we make the following recommendation.

Recommendation 8

We recommend the Department to give an undertaking:

(a) that if, having announced a decision to proceed with any part of the scheme, it later discovers previously unknown archaeological remains of such significance as to require alterations to the route or material changes to the design of the scheme, it will publish a determination as to whether those alterations will be subject to fresh environmental impact assessment; and

(b) that when publishing any such determination it will make all related information obtained in the course of the relevant archaeological investigations available for perusal by interested members of the public.

Revaluation of sites in the ESA

3.126 Sixty seven heritage assets were revalued in the 2022 ESA. The value of 62 sites was reduced and the value of five increased. We asked DfI why so many sites had been reduced in value. DfI stated that all sites were re-inspected and that some changes were due to errors in applying the DMRB methodology, some reflected changes in circumstances since the original evaluation was made (for example, where upstanding built remains had been removed by landowners), and some were as a result of excavation works carried out on behalf of the Department in 2013. Where physical remains have been removed, some of the sites have changed to a negligible impact.

3.127 While the changes reported may reflect closer adherence to the DMRB guidance, we are not persuaded that sites which were excavated in 2013 with the archaeological objects removed can legitimately be classified as a negligible impact. The removal of the items was a direct result of the scheme and it would seem logical to assess the archaeological impact based on what was there, not what now remains. We will return to some of the specific sites later.

Archaeological artefacts

3.128 When archaeological objects are discovered in the course of approved development works and they cannot be preserved *in situ*, they are removed from the land. There is not currently a central repository for such objects. The DEM states that the responsibility for the long-term storage of the excavation archive (consisting of the paper and digital archive plus objects and samples) is being discussed between the various Departments involved. At the inquiry, we asked if there had been any progress on this in the eight years since the DEM was published. We were very disappointed to be told by HED that there are still capacity issues in Northern Ireland and a working group is looking at it, but ministerial sign-off would be required to commission a new facility. As a result, artefacts recovered in 2013 are temporarily with the contractor who is based in County Cork. We were advised that there is an intention to bring all artefacts from the scheme together.

3.129 The continuing absence of a dedicated storage facility for archaeological objects arising from the scheme demonstrates that even with robust guidance in place, its implementation can be curtailed by outside factors. Resolving the province-wide storage issue is beyond the reach of the A5 scheme. DfI should ensure that once such a facility is set up, the archive is transferred to it.

Harry Avery's Castle

3.130 Harry Avery's Castle is a State Care Monument located on high ground above Newtownstewart and dates to the Thirteenth Century. The surrounding views and commanding position of the castle within the landscape are key to its heritage value.

3.131 The proposed dual carriageway would run in a cutting about 120 metres to the south of the castle. The maximum depth of the cutting would be 12.8 metres. The proposed road would interfere with critical views from the monument and impair the tranquillity of the site and hence its enjoyment by visitors. Its adverse effect on the setting of the monument would be reduced only partially by planting. It must be concluded that in regard to this monument the scheme runs counter to Policy BH 1 of PPS 6.

Errigal Keerogue

3.132 Errigal Keerogue is located to the west of Ballygawley and comprises a graveyard and the ruins of a medieval church. It was recorded as a monastic site in the Ninth Century. It is situated on the summit of a low drumlin with fine views to the south and east over the Blackwater Valley. A 2-metre-high sandstone cross stands to the west of the church. Errigal Keerogue is a State Care Monument but not a Scheduled Monument as defined by the Historic Monuments Act (Northern Ireland) 1971 and does not have a scheduled area. The area comprising the monument is defined by the existing boundary wall to the graveyard. No works are proposed in this area.

3.133 The proposed dual carriageway would emerge from a deep cutting and run about 65 metres from the south-western boundary of the graveyard. The ES stated that the road would have an impact on any below-ground remains associated with the earlier monastic site, but the 2022 ESA clarifies that the above statement incorrectly assumes that the location of the monastic site is known and evidenced to exist in a specific location. Historical records suggesting such a monastic site exists do not indicate a precise location. Therefore the interpretation should have made clear that the proposed scheme may have had direct impacts upon the area of archaeological potential in proximity to the Errigal Keerogue church and graveyard, rather than on a monastic site related to the State Care Monument itself.

3.134 The ESA goes on to state that the archaeological investigations conducted between March and June 2013 have provided evidence showing that any potential monastic site related to Errigal Keerogue does not extend as far as the proposed scheme boundary, with the excavations that took place at Errigal/Gort A discovering early prehistoric remains. The Section 3 assessment report says topsoil removal has identified a large, and previously unknown, site of archaeological significance within the area of the proposed road corridor. As currently designed, the construction of the A5 scheme would impact directly on all archaeological features and deposits identified at the site. Full Phase 2 excavation of the five areas identified at Errigal/Gort is therefore proposed. This will involve archaeological excavation of all identified features and deposits (both currently known and yet to be discovered).

3.135 An archaeologist confirmed at the inquiry that none of the pre-historic remains relate to the same period as the monastic site. The value of this asset has been reassessed to low from medium, as some remains were preserved in-situ. The remaining features of the asset are said to be of limited value but have the potential to contribute to local research objectives. However, we consider that this cannot be conclusively stated until full excavation has taken place.

3.136 A DfI witness told the inquiry that the possible existence of an older monastic site was based on speculation regarding the name of the area, but they have found no conclusive evidence that it existed. If it did, it would likely have been located on the same hilltop site as the present State Care Monument and not in the lower-lying area which the road would traverse. However, given the archaeological interest of the area as a whole, there remains the potential for below ground remains to be impacted.

3.137 While the changes to the assessment of this site in the ESA help to explain the limited potential to encounter remains of an earlier monastic site, the setting of the State Care Monument would still suffer a large adverse impact. The proposed road would interfere with critical views from Errigal Keerogue and impair the tranquillity of the site and

hence its enjoyment by visitors. Its adverse effect on the setting of the monument would be reduced only partially by the proposed planting. This again runs counter to Policy BH 1.

The Strabane Canal

3.138 The Strabane Canal is a scheduled monument. According to the ES, it was constructed in the 1790s. It extends northwards from the town for over 4 miles until it meets the Foyle. The proposed road would run within between 20 and 300 metres of the section of the canal to the north of the town known as Reach 2, where planting would be carried out to provide screening. Further to the south at Reach 3, in the urban area, the road would cross over a disused section of the canal. Scheduled monument consent would be required from HED prior to construction. Mitigation for Reach 3 would be through preservation by record. We agree with the assessment in Appendix 9E to the ES that the scheme would have a moderate adverse effect on the monument.

Sollus A

3.139 Sollus A, near Bready, was a previously unknown and therefore undesignated archaeological site discovered during preparatory work for the scheme. It is directly in the path of the proposed road. It was excavated under licence between April and June 2013, with works begun prior to the High Court quashing DfI's first decision to proceed with the scheme. The final report on the excavations was provided to the inquiry. An objector stated that archaeological work should have stopped when the challenge was brought. However, Counsel for DfI told the inquiry that an application for an injunction to stop works was refused, so there was no impediment to the works continuing until the final court decision to quash the consent.

3.140 The objector also alleged that the site was destroyed to remove an inconvenient feature in the way of the proposed road. DfI stated that the works were conducted in accordance with the mitigation strategy. Features requiring further investigation were discovered by a geophysical survey undertaken in 2012. This was followed by trial trenching and then a full excavation. In advance of the inquiry, DfI provided at the Commission's request a copy of the excavation licence granted in March 2013 for Sollus A. The licence included what an HED witness described as "standard conditions" including:

(4) The Licensee shall, during the progress of the works, take adequate steps to safeguard any monuments or other structures upon or adjoining the site.

(7) The Licensee shall, before the expiry of the Licence, restore the site and its surroundings as far as possible to their original condition unless the Department otherwise directs.

(8) The Licensee shall furnish to the Department, within four weeks of the completion or temporary cessation of the excavation, a short report stating its main archaeological results. On the final completion of the excavation the Licensee shall prepare and submit to the Department within six months a full report illustrated with drawings and photographs suitable for lodgement in the Northern Ireland Monuments and Buildings Record.

3.141 DfI provided a copy of the Method Statement on the basis of which the Licence was granted. It stated that all archaeological features within a 515m^2 stripped area would

be fully hand excavated and recorded. At face value, this would appear to contradict conditions 4 and 7 of the Excavation Licence. However, we were told at the inquiry that HED was content with the methodology and the work undertaken including the full excavation of the stripped area.

3.142 The final report on the excavations referred to an extensive spread of archaeology at Sollus A, principally dating to the later prehistoric period but with some post-medieval to modern drainage or other agricultural activity. Post-excavation analysis confirmed the presence of at least eight phases of activity. The earliest evidence for human activity on the site was from two later Mesolithic blades. A post-hole containing the remains of a substantial oak post was of Early Neolithic date (carbon dated to 4231–3991 BC). Cut features, deposits and Burnt Mounds provided evidence for Copper Age, Early, Middle and Late Bronze Age activities on the site. The largest cut feature was a ditched enclosure with at least one entrance, resembling a hengiform monument in shape, but with ditch fills firmly dated to the Middle Bronze Age. An assemblage of 396 prehistoric pottery sherds representing 36 Late Bronze Age domestic vessels was excavated. All the pottery was taken away, washed and studied and now forms part of the archive stored in County Cork.

3.143 The ESA 2022 revalued Sollus A as of negligible heritage value as the physical asset was excavated in its entirety and no longer survives. The objector disagreed with this approach. She suggested that the place name Sollus comes from the word *solas* in the Irish language, meaning light, according to local historian William Roulston. She drew a comparison with the well-known archaeological site at Newgrange, County Meath which is aligned with the rising sun at the winter solstice and which, she believed, emanated from a similar era. As a henge monument, she also compared it to Stonehenge and to the Giant's Ring near Belfast. The Sollus A site should have been assessed as rare, unique and irreplaceable, she argued. She was shocked that it had been excavated. She agreed with the assessment in the ES that the impact was large adverse and disputed the downgrading of the asset to negligible in the ESA.

3.144 At the inquiry, we asked the archaeologists how significant the discoveries at Sollus were in an Irish context. DfI's archaeologist told us that the main discovery was a burnt mound which had been ploughed flat in modern agricultural use. The ditch, when discovered, could have been interpreted as several different features, such as ring forts or raths which are incredibly common in Ireland. However, subsequent interpretation suggests it is a neolithic henge monument which is rarer.

3.145 We asked the witness from HED how common such features were in Northern Ireland and we were told that they regularly deal with such features across the province. There are other such sites, the best known of which is the Giant's Ring – a state care monument. He judged the Sollus site to be less significant and noted that the remains were not sufficient for clear interpretation. The ceramic assemblage of Bronze Age pottery found at the site was significant because there are few others of that size. The excavations were completed before the radiocarbon dates of up to 6,000 years were obtained. We went on to ask the witness whether HED would have scheduled the monument (thus requiring its physical preservation *in situ*) if its high value had been recognised earlier. He did not consider it worthy of being scheduled and stated that nothing overly remarkable was found.

3.146 DfI did not accept that the excavation of Sollus A without public consultation constituted a breakdown in the EIA process. An EIA was undertaken and consulted upon, consent was granted and the site was then excavated under licence as part of the mitigation strategy. In its legal context, the consent was quashed only because of non-compliance with the Habitats Directive (separate to the EIA process) and no other grounds of challenge succeeded. The findings of the archaeological work were able to be incorporated in the new ES produced in 2016.

3.147 We are satisfied that the potential existence of features of interest at Sollus only became apparent through the 2012 geophysical surveys undertaken after the initial decision to proceed with the scheme. The preliminary archaeological work undertaken in 2013, once interpreted, revealed a significant site with many phases of activity which would have remained unknown but for the A5 scheme. We accept the evidence provided to the inquiry that the site was excavated and recorded in accordance with the agreed methodology. We do not accept the objector's assertion that the site was "destroyed". Licenced excavation is a recognised means of archaeological mitigation which, when interpreted and reported on, adds to the historical and archaeological record of the area.

3.148 However, we do not agree with the approach of the ESA to downgrade the value of Sollus A to negligible because the physical asset was excavated in its entirety and no longer survives. While excavating and interpreting it has added significantly to the archaeological record, the site would remain but for the A5 scheme. The fact that it no longer survives is clearly an environmental effect of the scheme and we categorise it as large adverse in line with the ES. The revisionist approach of the ESA on this matter is not satisfactory and contradicts evidence given at the inquiry by DfI's archaeologist that there would be significant effects where the remains were entirely removed.

3.149 As it was not possible following suspension of work in mid-2013 to gain access to a large proportion of the area originally proposed for evaluation, it is likely that further trenches will be excavated at Sollus if the scheme proceeds. We asked whether any change of approach was contemplated in light of the previous experience. DfI considered that best practice was followed, but that as the area now has significantly higher archaeological potential, trenches may be closer together. In our view, until the results of the further excavations are known, the possibility of archaeological discoveries being made of such significance as to require a realignment of the road cannot and must not be ruled out.

Listed buildings

3.150 Policy BH 10 of PPS 6 states that there will be a presumption in favour of retaining listed buildings. The Department will not permit the demolition of a listed building unless there are exceptional reasons why the building cannot be retained in its original or a reasonably modified form. Where, exceptionally, listed building consent is granted for demolition, this will normally be conditional on prior agreement for the redevelopment of the site and appropriate arrangements for recording the building before its demolition.

3.151 In regard to built heritage, the ES stated that a Grade B1 listed building, Castletown House, Strabane would be subject to a large adverse effect. The Commission's Interim Report viewed this as an understatement as the building would in fact be demolished.

3.152 The ES bases its assessment of Castletown House on the outside of the building and its setting. We have visited it externally. It is located on the western fringe of the town and is separated from Urney Road by modern housing. It is accessed via a laneway and a stone bridge over a disused railway. From the rear of the building there are extensive views over the River Finn. It is a 1½-storey house with projecting bays and dormers and simple detailing. According to the ES it seems to have been largely remodelled but may contain original interior elements.

3.153 Appendix 9E to the ES states that an application for listed building consent for total demolition of Castletown House would need to be submitted. It acknowledges the presumption in favour of retaining listed buildings in PPS 6 but points out that there may be exceptions. It states that a permanent record of the building would be created through annotated plans, written descriptions and digital photographs. There is no doubt that the removal of this building would represent a loss of built heritage.

3.154 Policy BH 11 of PPS 6 states that development which would adversely affect the setting of a listed building will not normally be permitted. The amplification text states that the setting of a listed building is often an essential part of the building's character. The ES identified slight effects on the settings of eight other listed buildings as a result of the scheme:

- Bready Reformed Presbyterian Church;
- The Red House, Strabane;
- A gate lodge at Urney Road, Strabane;
- Gallany House south of Strabane;
- A gate lodge at Gallany House;
- Palymira Lodge, south of Ballygawley;
- Caledon Road Manse, Aughnacloy; and
- Annagh House, Aughnacloy.

3.155 Planting is proposed to reduce the impact of the scheme on the setting of these buildings. Notwithstanding this, we agree that their settings would suffer a slight adverse effect.

3.156 New Bridge at Newtownstewart is a Grade B1 Listed Building that was previously valued as low and of local importance. Given listed buildings are of regional importance, its value has been increased to reflect its listing.

Industrial and vernacular buildings

3.157 It is apparent from PPS 6 that there is no statutory or policy protection for industrial heritage sites unless they are comprised in archaeological sites or listed buildings. Industrial heritage features are however included in the Northern Ireland Monuments and Buildings Record maintained by HED. There is likewise no protection for non-listed vernacular buildings, although PPS 6 states that buildings of character which display local traditions of architecture and design are an important part of our heritage and regional identity and it is therefore sensible to rehabilitate and improve such vernacular buildings, rather than replace them or let them fall derelict. The ES noted that industrial buildings in the scheme area related primarily to Nineteenth Century linen production, corn milling, saw milling and railways. There were seven recorded mill sites.

3.158 Some of the heritage assets revalued under the 2022 ESA relate to former railway infrastructure, or to industrial buildings and other infrastructure such as mills and bridges that have been demolished since going out of use, and therefore have no surviving archaeological interest, or are of no architectural or historical note. The ESA stated that the previous assessment for the ES 2016 may have been unsure of the survivability of these heritage assets and erred on the side of caution when assessing their value. A further five heritage assets related to gravel, slate and lime quarrying have also been revalued from low to negligible to be consistent with similar heritage assets within the baseline, as these industrial assets are of very little archaeological interest.

3.159 A property at 94 Victoria Road was previously designated as a Grade B1 Listed Building but was de-listed in October 2015. As it is no longer of regional importance, its value was reduced. Roundhill House near Strabane, although interpreted as architecturally significant by the authors of the ES, is not a designated historic building and has not been fully surveyed to determine its regional importance. It has been reduced to low value rather than medium as would be the case if it was listed. No one disputed the above findings at the inquiry.

Historic landscapes

3.160 The ES assessed the effects of the scheme on five historic landscape types. It found that the effects on woodland, communications and industry, and parks and recreation would be neutral. The scheme would fragment field patterns and dispersed settlement patterns but would not significantly affect the legibility of either historic form. No one challenged these conclusions.

3.161 As the proposed road would have a large adverse impact on several regionally important archaeological monuments and require the demolition of a listed building, we conclude that the scheme would have a significant adverse effect on the cultural heritage.

Landscape and Visual Effects

3.162 The 2016 ES concluded that in landscape terms following mitigation planting 15 years after opening, 7% of the scheme corridor (4 miles) would suffer a large adverse effect, 28% (15 miles) would suffer a moderate adverse effect and 63% (33 miles) would suffer a slight adverse effect. Only 2% (1 mile) would experience a neutral effect. These findings were based on walkover surveys completed in 2009 and 2014 covering the whole scheme area.

3.163 The ES set out typical descriptors of predicted effects on landscape character derived from an interim advice note in the DMRB. A scheme would have a large adverse effect if it would be at considerable variance with the character (including the quality and value) of the landscape, degrade or diminish the integrity of a range of characteristic features and elements, and/or damage a sense of place. The typical descriptors of a moderate impact are conflict with the character (including the quality and value) of the landscape, adverse effect on characteristic features and elements, and/or a diminished sense of place.

Impacts on visual amenity

3.164 The ES predicted that out of 4,072 receptors assessed, the visual amenity of 459 would suffer a moderate or large adverse impact. The affected receptors would be distributed throughout the scheme corridor but concentrations were identified in the following locations – Newbuildings, Magheramason, Bready, Strabane, the northern fringe of Omagh, Doogary, Moylagh, Newtownsaville, Lisdoart and Aughnacloy.

3.165 The 2019 ESA reviewed developments approved since 2016 and identified about 350 potential new receptor locations within 250 metres of the proposed road. It assessed that 16 of these would potentially be subject to moderate or large adverse impact.

3.166 The 2022 ESA identifies and assesses 46 additional visual receptors with the potential to be subject to significant visual effects as a result of the scheme and examines new or changed significant effects on existing visual receptors as a result of modifications to the scheme. Modifications to the design which were considered include changes to accesses, the vertical alignment, modifications to the existing landform by third parties, installation of intelligent transport systems, additional woodland planting at Tully Bog, modifications to deposition areas and flood compensation areas and changes to flood risk mitigation along watercourses.

3.167 DfI confirmed at the inquiry that by adding the receptors identified in the three iterations of the ES/ESA, the total number of receptors whose visual amenity would still be suffering a moderate or large adverse impact 15 years after opening now stands at 465. One of the new receptors which would be subject to adverse effects is a recreational route – the Greenbrae public right of way in Strabane. Although its status is unclear in local Council records, it has been included for completeness. The increased number of significant visual effects is not considered to influence the overall conclusion of the 2016 and 2019 visual assessments.

3.168 In January 2023, DfI published, at the request of the Commission, a Layout Drawings, Longitudinal Profiles and Cross Sections Report. This provided further information on the design of the scheme including changes to its vertical alignment in particular locations. Having regard to this information, no one at the inquiry took issue with the ESA's conclusion that none of the proposed changes to the vertical alignment of the scheme would introduce new or different significant effects for any visual receptors.

3.169 The 2022 ESA also responds to the Commission's comments on landscape and visual impacts as set out in the Interim Report.

The lower Foyle Valley

3.170 The Derry Area Plan 2011, which currently operates as a local development plan, defines a strip of land alongside the existing A5 from Prehen to the north-eastern outskirts of Magheramason as an Area of High Scenic Value (AoHSV). Policy ENV 1 states that development which would adversely affect or change the quality or character of the landscape within the AoHSV will not normally be permitted.

3.171 The ES acknowledged that the introduction of the proposed road along the margins of Newbuildings and Magheramason would have a marked detrimental effect on the AoHSV, which defines the approach towards Londonderry through the river valley. The road, though traversing a sequence of generally shallow cuttings and low embankments, would fragment the gently undulating fields between the settlements and the river.

Mitigatory planting would be provided. The ES classified the impact as moderate adverse.

3.172 The Commission's Interim Report stated that as the scheme runs counter to an important provision of the development plan and would degrade and damage the landscape, it would be more accurate to describe the impact as large adverse.

3.173 The ESA reconsidered the landscape and visual impact of the scheme along this part of the route, but concluded that it remained moderate adverse at both year of opening and Year 15. While acknowledging that it would fragment the existing large and open field pattern, characteristic of the river margin landscape between the existing A5 Victoria Road and the River Foyle, it was argued that the scheme's low vertical alignment through this area and the proposed planting would mitigate the adverse effects on the landscape.

3.174 The ESA notes that one factor for which the AoHSV was designated is its proximity to the urban area and its contribution in providing a high-quality environmental image along the major approach roads to the city. It is therefore disappointing that the ESA did not provide views of the proposed scheme from the existing approach road in this area, the A5 Victoria Road. The introduction of the new road and Junction 2 to the south of Newbuildings would have a significant impact on the AoHSV and the setting of the city at this location.

3.175 A photomontage was provided taken from Ballougry Road on the western bank of the Foyle and the ESA stated that the fragmentation of field pattern would be evident although perceived against the broad scale of the Foyle Valley, the urban form of Newbuildings and a skyline of far distant hill crests and wind turbines. It then stated that there would not be a substantial change of character as a consequence of the proposed scheme, however the scheme would continue to represent a noticeable alteration of the landscape.

3.176 Having regard to the typical descriptors of a major adverse impact on landscape set out in the ES and the acknowledgement that the scheme would have a marked detrimental effect on the AoHSV that defines the approach towards Londonderry along the river valley, it seems surprising that DfI has again concluded that the impact would be only moderate adverse. At the inquiry, a DfI witness stated that the AoHSV relies on a wider context on approach to Londonderry and that the existing A5 already sits within this context as part of the landscape.

3.177 We consider that comparison with the existing A5 does not do justice to the landscape impact of the scheme. The existing A5 forms the eastern edge of the AoHSV whereas the proposed dual carriageway would be significantly wider and would cut through the middle of the designated area fragmenting the large open field pattern. Views of Newbuildings and rising land beyond the AoHSV would not overcome the stark impact of the insertion of a new linear feature so close to the river bank. We remain of the view that the visual impact of the scheme on the AoHSV would be large adverse.

3.178 The ES noted that a significant number of individual properties in Newbuildings would suffer a large impact on their visual amenity as a result of the scheme – particularly those on the west side of Victoria Road and in Ballyore Grove, Carrowreagh Park and Edgewater which would back on to the initial WS2+1 (wide single carriageway with overtaking lane) section of the scheme. At the inquiry, we asked what account was

taken of these individual property impacts in assessing overall landscape impact. A witness for DfI emphasised the vertical alignment of the new road and proposed mitigatory planting which would reduce the visual impact on these properties by Year 15. This would reduce the magnitude of change experienced.

3.179 However, we are not persuaded that planting which may take 15 years to mature can be used to justify a reduced impact on visual amenity for these properties which currently enjoy uninterrupted views towards the River Foyle. DfI acknowledged that additional mitigation in this area may introduce landscape elements not appropriate to the riverside setting and that additional direct screening at the properties themselves would not be desirable as it would impede existing views to the north west.

Sollus Hill

3.180 As the proposed road approaches Bready, it would move to the eastern side of the existing A5 for approximately 2.5 kilometres. This would require a large cutting to the east of Bready through an area known as Sollus Hill – the westernmost spur of the larger Gortmonly Hill which rises to over 200 metres AOD.

3.181 An objector alleged that the only reason for selecting a route to the east of the existing A5 for this short section was a desire to use Sollus Hill as a source of rock for construction of the scheme. DfI denied that this was the case at the inquiry. A route further west was rejected because it would have affected more known heritage sites and the River Foyle and Tributaries Special Area of Conservation (SAC), a designated European site. We are satisfied that the reasons given for selection of the route are valid and there is no persuasive evidence that it was chosen to obtain rock from Sollus Hill. While any road scheme will consist of cut and fill and will aim to maximise the use of site-won materials, we do not believe the route through Sollus was chosen primarily for the material it would yield.

3.182 The ES acknowledged that the proposed deep cutting on the west-facing slopes of Gortmonly Hill would "markedly influence" the distinctive form and appearance of this locally prominent hill. It would affect the perception of the hill when viewed from the wider landscape of the Foyle Valley immediately to the west and on approach from the south. Mitigation measures would include profiling and grassing of the cutting slope, retention of existing woodland, and scrub planting. It predicted a moderate adverse effect on the landscape at this location.

3.183 Cross sections of the proposed cutting and photomontages were provided in Appendix 10F of the ES. The photomontages illustrated views from Grange Road, Grangefoyle, a low-lying place about a mile to the south west. From there it would not be possible to see the position of the road, the extensive area where cutting would take place or the large deposition area proposed to the south of the cutting. At the inquiry in 2020, DfI conceded that a depiction of the view from a vantage point to the north of the proposed cutting would have included the road.

3.184 The Commission's Interim Report stated that the photomontages did not provide a fair representation of the overall impact of the scheme in this locality. It concluded that, notwithstanding the proposed mitigation measures, the Bready cutting would represent a drastic intervention in the landscape in a visually prominent location close to a settlement and that the scheme would have a large adverse, rather than a moderate adverse, impact on the landscape in this location.

3.185 The ESA reconsidered the effects of the scheme on the landscape at Sollus Hill and found it to be large adverse. At the inquiry, DfI stated that Sollus Hill was abstracted as its own element in contrast to the assessment of the wider Gortmonly Hill previously undertaken, as it could be argued that the rest of Gortmonly Hill is not affected. The ESA stated that the cutting at Bready would appear as a large-scale intervention of the natural landform of Sollus Hill, this being most evident where the notch in landform created by the cutting is visible against the skyline and in direct profile.

3.186 A number of new photomontages were provided including from viewpoints at Cloughboy Road to the north west of the cutting and at the Donagheady Road junction with the existing A5 to the south. These better illustrate the visual impact of this part of the scheme. Despite mitigation planting, the intervention of the cutting would represent a substantial and irreversible change of landform, with severance of landscape pattern and the loss of mature woodland and hedgerows across the hill slope. Having visited the area, we agree that the landscape impact at Sollus Hill would be large adverse.

The Foyle flood plain

3.187 The ES stated that between Grangefoyle and the Glenmornan River, the proposed road would be predominantly on embankment, extending into the flood plain landscape at the river crossings. It would initially be exposed and perceived as a new focus in the landscape. On approach to Strabane between the canal and the existing A5, it would fragment the local landscape. To the south of the proposed grade-separated Junction 3, there would be no visual differentiation between the existing and proposed roads and an increase in the influence of road traffic on landscape character. The junction and the traffic using it would constitute a prominent feature in the local landscape. Despite mitigation, a moderate adverse effect was predicted. The ESA reviews the effects on this landscape with the help of some new photomontages and again finds that the impact would be moderate adverse. We agree with this classification.

The Finn river corridor immediately to the west of Strabane

3.188 The dual carriageway would run along the south-eastern flank of the River Finn towards the proposed Junction 7, which would be lit. It would establish a new edge to the town and introduce new severance between the housing to the west of Urney Road and the river. The ES stated that, although the effect of the scheme on this part of the valley landscape would reduce as proposed planting matured, its influence would remain marked. In the outlook across the river from the Lifford waterfront, the new road and its traffic would initially appear more prominent than the existing A5. The ES acknowledged that the scheme would have a large adverse effect in this location.

Deerpark and Harry Avery's Castle

3.189 The dual carriageway would cross agricultural land on a low embankment at Deerpark, to the south east of the proposed grade-separated Junction 10 at Baronscourt Road. It would then pass immediately to the south of Harry Avery's Castle in a deep cutting. The ES recognised that a new modern road would cause severance to the historic landscape. Mitigation measures would include sensitive vertical and horizontal alignment, and planting. The ES acknowledged that despite these measures the scheme would have a large adverse effect in this location.

The Strule Valley and Bessy Bell

3.190 Approximately 5 kilometres of the proposed road would lie within the Sperrin Area of Outstanding Natural Beauty (AONB) – from Grange Road south of Newtownstewart to Killinure Road north of Mountjoy. Planning Policy Statement 2 – Natural Heritage (PPS 2), published in 2013, sets out DfI's planning policies for the conservation, protection and enhancement of natural heritage. Policy NH 6 requires the siting and scale of new development in an AONB to be sympathetic to its special character and to that of the particular locality.

3.191 The ES noted that the proposed road would follow an alignment along the western slopes of the lower part of the Strule Valley, about 100 metres to the west and above the line of the existing A5. It would sever the existing pattern of small and irregular pastoral fields and create a sequence of cuttings and embankments which would have a marked effect on the lower slopes. In combination with the river and the existing road, it would comprise a third, more visible linear component along the valley.

3.192 The ES acknowledged that the scheme would have a material effect on the quality of the landscape at this western limit of the Sperrin AONB. It would be seen above the existing A5, which is in a more contained location. It would be exposed in views from Mary Gray and Deers Leap, two hills on the opposite, eastern side of the Strule Valley, from where it would be seen against a backdrop of wind turbines on the upper slopes of Bessy Bell. According to the ES, the chosen alignment and proposed planting would reduce the impact but it would still be moderate adverse.

Moylagh

3.193 Moylagh is a small settlement about 6 miles to the south east of Omagh. The ES acknowledged that there would be a significant impact on its rural setting. The proposed dual carriageway would run immediately to the west of settlement and the proposed grade-separated Junction 14 would be located there. Existing open views to the south west would be interrupted. Deep wide cuttings to the north and south of the settlement would substantially modify the landform. There would again be planting for mitigation but the ES accepted that the long-term landscape impact would nonetheless be moderate adverse.

The Brougher Ridge

3.194 The ES stated that the dual carriageway would traverse the attractive and secluded ridge landscape of distinctive hills and woodland between Tycanny and Errigal, which is located to the north west of Ballygawley. The alignment of the road would be kept low to reduce its prominence on the skyline. There would be substantial modification to landform, with major cuttings at Tycanny Hill and below the church and graveyard at Errigal. The impacts of the cuttings would be apparent from the Clogher Valley to the south. Mitigation measures would include grading out the lower cutting slopes at Tycanny Hill to reduce the extent of visible exposed rock, and planting. The ES acknowledged that despite these measures the scheme would have a large adverse effect in this location.

Mitigation planting

3.195 In its response to the consultation on the ESA in March 2022, the Woodland Trust highlighted the importance of using locally sourced and grown trees as part the proposed scheme. They stated that whilst many of the mitigations are designed to reduce the ecological impact of the proposed scheme, importing trees can inadvertently

introduce new pests and diseases that can have a devastating impact on our native trees and woods. Planting locally sourced and grown trees is the most effective way to mitigate against this. They strongly recommended that the scheme specifies that trees are sourced and grown in the UK and Ireland from certified nurseries where the trees are fully traceable from seed collection through to planting. Tree species to be planted are set out in Tables 6.4 to 6.9 of the ES. DfI confirmed at the inquiry that it would commit to using locally sourced trees as recommended by the Woodland Trust.

3.196 The totality of the landscape and visual information now before the inquiry, along with our own inspections, confirms that the proposed road would detrimentally affect the visual amenity of hundreds of properties and would damage much of the landscape through which it would pass.

3.197 We conclude that the scheme would have a large adverse effect on the landscape.

Ecology and Nature Conservation

3.198 PPS 2 sets out DfI's policies relating to designated sites of international, national and local importance; priority and protected species; and biodiversity interests within the wider environment. Potential significant effects of the A5 scheme on sites of international importance – Special Areas of Conservation (SACs), Special Protection Areas for birds (SPAs) and Ramsar wetland sites – are discussed in Chapter 4. This section of the report considers potential impacts on other habitats and on species.

3.199 Section 1 of the Wildlife and Natural Environment Act (Northern Ireland) 2011 states that it is the duty of every public body, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions. DfI is a public body for the purposes of the Act. In relation to any type of habitat, conserving biodiversity includes restoring or enhancing the habitat. In complying with this biodiversity duty, a public body must in particular have regard to any biodiversity strategy designated as such by the Department of Agriculture, Environment and Rural Affairs (DAERA).

3.200 The 2016 ES, while acknowledging the existence of the new statutory duty to take action to further the conservation of biodiversity, noted that at that time guidance documents had not yet been published. Chapter 9 of the 2022 ESA made no reference to the Wildlife and Natural Environment Act or to the biodiversity duty.

3.201 In May 2016, DAERA published "The Biodiversity Duty – Guidance for Public Bodies". It lists five key aspects of biodiversity that need to be taken into account. These are:

- Protecting biodiversity from removal, damage and disturbance consistent with the body's main functions. In the first instance, avoid areas of biodiversity importance through design. Mitigate impacts through timing or design. If impacts still occur, compensate through habitat creation or restoration. Where this is not possible and habitat is irreplaceable, there should be reconsideration of the project.
- Maintaining biodiversity, for example, maintaining water levels, appropriate grazing or cutting regimes, removing invasive alien species, or avoiding over-fertilisation.
- Enhancing biodiversity, including, for example, planting local provenance native broadleaves, converting amenity grassland to wildflower meadow, provision of bat boxes and other homes for wildlife, creating new ponds and wetlands.

- Restoring biodiversity, for example, restoration of woodlands, wetlands or hedgerows, or extending priority habitats for priority species.
- Raising awareness of biodiversity and its importance.

3.202 It seems to us, having regard to the natural meaning of the words used in statute and to the contents of the DAERA guidance, that restoring or enhancing means something more than mitigating or compensating for adverse effects.

Areas of Special Scientific Interest

3.203 Part IV of the Environment (Northern Ireland) Order 2002 provides for the declaration of Areas of Special Scientific Interest (ASSIs) designated by reason of flora, fauna, or other features which need special protection. The Order also provides for management agreements with owners or occupiers of land included in an ASSI. Public bodies, including DfI, have a general duty under Article 38 of the Order when the exercise of their functions is likely to affect the special interest features of an ASSI to take reasonable steps to further the conservation and enhancement of those features.

3.204 Counsel for DfI submitted that Article 38 creates a general duty to take reasonable steps but this duty may not apply to every individual scheme. Enhancement is a target objective. If an ASSI is currently in good status and the exercise of a departmental function would reduce its status to a lower category, then the duty to enhance may be engaged. If the ASSI is not in favourable status, then the department concerned, in exercising its function, may be required to take steps that would not preclude recovery to favourable status.

3.205 Again, it seems to us that enhancement is a positive concept that means more than mitigation or remediation. It is possible for a site that is already in favourable status to be further enhanced. This may amount to what in modern planning jargon is called biodiversity net gain.

3.206 Policy NH 3 of PPS 2 concerns national sites of nature conservation importance, including ASSIs. The general thrust of the policy is that development likely to have an adverse effect on the integrity or special interest of an ASSI will not be permitted unless the benefits of the development clearly outweigh the value of the site. In such cases, appropriate mitigation and/or compensatory measures will be required.

3.207 There is an ASSI at Grange Wood to the south east of Newtownstewart. The declaration document states that due to the diversity of woodland communities it has one of the richest plant assemblages in the Sperrins region. The Woodland Trust expressed concern at the potential for an increase in emissions of air pollutants at Grange Wood ASSI as a result of the proposed scheme. It recommended mitigation through buffer planting of native species trees and hedges.

3.208 According to the ES, the scheme would be located 550 metres to the south west of Grange Wood. Air quality modelling reported in the ESA indicates that it would result in an improvement in annual mean nitrogen oxides (NO_x), annual mean nitrogen dioxide (NO_2) and nitrogen deposition (N-dep) at the ASSI. There would therefore be a significant positive residual effect. We have no reason to doubt these findings.

3.209 Two ASSIs have been declared at McKean's Moss, which lies to the north west of Ballymagorry. They were declared because of peatland flora and associated flora. There is a moderately well-defined dome. Both areas have been cut in the past and are

now dominated by woodland. Unlike other ASSIs in the scheme area, McKean's Moss has not been designated as a SAC. It is not within the remit of the inquiry to consider whether such a designation should be made.

3.210 The proposed new road would run to the east of McKean's Moss. The 2016 ES identified three potential impacts – dust deposition during construction, nitrogen deposition during operation, and changes in the hydrological regime.

3.211 According to the ES, the working areas required for the construction of the road would be located 100 metres to the north east of the ASSIs. At this distance upwind of the prevailing south-westerly winds, the risk of dust deposition having a material impact on the bog habitat would be very low. The progress of the works would nonetheless be monitored to determine whether measures such as damping down of earthworks would be required should extended periods of dry weather coincide with winds from a non-prevalent direction. The ES concluded that construction-related dust would not have a significant effect on the integrity of the ASSIs.

3.212 At the inquiry in 2020, DfI's representatives were asked how monitoring would work in practice. It was stated that contractors who defaulted on their obligations in the CEMP could be subject to financial penalties and required to provide redress. The Northern Ireland Environment Agency (NIEA) had a statutory duty to monitor effects on designated sites. While NIEA does not have lots of staff, the draft CEMP provides for regular meetings with it and liaison with the community. The ultimate sanction would be to stop work. These assurances were met with scepticism from some objectors.

3.213 While we do not doubt the sincerity of the promises made by DfI's inquiry team, not all of them may still be involved should the scheme proceed. At that stage, DfI's focus would inevitably shift towards trying to get the scheme completed on time and within budget. It is not hard to imagine environmental obligations being overlooked and mistakes being made.

3.214 The ES indicated that the nitrogen deposition rate at McKean's Moss would be higher in 2028 with the scheme in place than without it. The ES argued that the difference would be marginal but acknowledged that the rate would in any event exceed to a substantial degree the critical load of for the habitat set by UNECE.

3.215 The ES stated that field surveys had demonstrated a lack of competitive species, such as purple moor grass, on the bog surface that would take advantage of the increased nitrogen level to supplant the existing vegetation. The flora assemblage present would therefore not be expected to alter as a result of the change in nutrient input. The ES concluded that the marginal increase in nitrogen deposition should the scheme proceed would not constitute a significant effect on the ASSIs.

3.216 The ES noted that McKean's Moss lay on the Foyle flood plain at about 2 metres above Ordnance datum. In this location groundwater was close to the surface, although it might be affected by seasonal variation. The proposed road in this location would be about 6 metres higher than the bog. There could be groundwater flow from east to west which might contribute to water levels within the ASSIs. However, the drift geology in this area comprised sands and gravels and water would be expected to find its way through these layers and continue to flow. Any spring lines encountered during construction would be piped under the road. The ES concluded that the scheme would not have a significant effect on the ASSIs by virtue of changes to hydrology.

3.217 An objector pointed out that McKean's Moss has Burn Dennet to the north, the Glenmornan River to the south and the River Foyle and Strabane Canal to the west. She argued that it would be directly affected hydrologically via a proposed mainline ditch which would connect to a watercourse on the northbound side of the dual carriageway at Chainage 12407 (see Page 6I-30 of the ES). She referred to works on Ballydonaghy Drain which, she said, leaks into McKean's Moss directly. She was concerned that the drain would start a haemorrhage. She could not see how the bog would not be destroyed. Another objector said it could become a lake of dust turning to mud.

3.218 DfI disagreed with the suggestion of a haemorrhage. It said that drainage from the proposed road would be directed to a discharge point to be constructed along the eastern boundary of the moss and run along existing watercourses in a southerly direction. No major cuttings were proposed along the boundary or within the moss.

3.219 DfI's consultants confirmed at the inquiry in 2020 that piling would be necessary at this location. There would be ground stabilisation cutting to a maximum depth of 7 metres above the flood plain. Runoff would go into a large roadside attenuation pond where it would be treated before being discharged to the receiving water via a pollution control valve. Checks had been done to ensure there would be no significant adverse effect on water quality classifications and it was found that no mitigation would be required.

3.220 In assessing this evidence, it seemed to the Commission that as the UNECE critical load was already exceeded, any increase in nitrogen deposition, even if it could properly be characterised as marginal, was likely to exacerbate the existing detriment to the peatland and associated flora of the ASSI. When constructing the proposed road, DfI would be under a statutory duty to take reasonable steps to further not only the conservation but also the enhancement of the ASSI's special interest features. Under Policy NH 3 of PPS 2, appropriate mitigation and/or compensatory measures would be required. The Commission therefore recommended DfI, should it decide to proceed with the scheme, to put in place appropriate measures, including a management structure, to protect, restore and thereafter maintain the special interest features of the ASSIs and to ensure that those measures were successfully implemented.

3.221 In its Interim Statement of March 2021, DfI's response to the Commission's recommendation was as follows:

"Accepted in principle, with details to be agreed with NIEA. The Department proposes to adopt a proportionate approach to this recommendation. In the event that it decides to proceed with the scheme, it will liaise with NIEA in order to agree and to implement an action plan for the protection and restoration of McKean's Moss ASSI, taking account of the condition of the site, the advice of the NIEA and any unforeseen impacts which may have arisen from the construction or operation of the project."

3.222 When the inquiry resumed in 2023, we asked DfI what principle it had accepted. We were told that restoration works would be undertaken only if required. There would be a "proportionate" management plan. When questioned about the phrase "unforeseen impacts", DfI's representatives denied that they intended to wait until the proposed road is constructed and in operation before deciding whether any action is needed.

3.223 It is stated in Chapter 2 of the ESA that NIEA had advised DfI's consultants that McKean's Moss was assessed to be in favourable condition and had undergone NIEA-directed management up to 2017. There was likely to be minimal management or enhancement

to be done, although it depended on the nature of the works proposed. NIEA recommended that an updated condition monitoring survey be undertaken to gauge the condition of the bog habitat and other notified features associated with the ASSI to identify potential works which may be required and upon which NIEA could advise.

3.224 Paragraph 9.4.16 of the ESA reports on an updated survey of the McKean's Moss ASSIs undertaken in November 2020. Seven vegetation communities were identified, of which three were stated to be in unfavourable condition and one in favourable condition. This suggests that NIEA's assessment of the condition of the site may have been out of date or unduly optimistic. At the inquiry, an NIEA witness stated that it is possible for some areas to be in favourable conservation status even where the critical load is exceeded. While there may be adverse impacts on more exposed areas, it is the entirety of the site that must be considered.

3.225 Table 6.4-14 of the ESA indicates that with the scheme in place levels of NO_x would be greater than it would be without the scheme but that it would remain well below the critical level of 30 micrograms per cubic metre ($\mu g/m^3$). It indicates that levels of NH_3 are currently greater than the critical level (1 $\mu g/m^3$) by a factor of more than three. It predicts that with the scheme in place there would be a slight increase in NH_3 levels. However, according to Paragraph 9.5.21 of the ESA, this would affect less than 4% of the ASSI area and the area that would experience the increase is within the woodland fringe and not within the active bog surface. We were told that the woodland periphery is much less sensitive to increases in ammonia.

3.226 As regards N-dep, Table 6.4-14 states that on open bog surface the critical load is 5 kilograms per hectare per year (kgN/ha/yr) and in woodland (tree) habitats it is 10 kgN/ha/yr. It indicates that levels of N-dep experienced within the open bog and woodland areas of ASSIs are currently more than 340% and 320% respectively of the critical load. It predicts that with the scheme in place there would be greater N-dep than without the scheme. According to Paragraph 9.5.22, this would affect approximately 31% of the ASSI area but within the active bog surface the increase would be less than 1% of the lower critical load.

3.227 The ESA concludes at Paragraph 9.6.3 that the McKean's Moss ASSIs would experience an increase in airborne pollutants but no significant increase would occur within the raised bog area, therefore the impact would be trivial and not significant. At the inquiry, Counsel for the AA5A rejected that conclusion and argued that as the critical level and critical loads were already breached, adding more pollutants to an already precarious ecosystem must have an adverse effect.

3.228 To our minds, the ESA's conclusions are assertions rather than reasoned arguments. It is not explained why the increase in airborne pollutants within the raised bog area would not be significant or why impacts within the designated area but outside the raised bog area can be disregarded. There may be sound scientific reasons for these judgments based on widely accepted research findings but they have not been provided. On the evidence before us, we are not convinced that the ASSIs are unlikely to be significantly impacted by ammonia and nitrogen deposition as a result of the scheme.

3.229 Paragraph 9.5.23 of the ESA states that DfI is currently in discussions with NIEA regarding the development of an appropriate conservation action plan for McKean's

Moss ASSI. On 6th April 2023, in preparation for the re-opening of the inquiry, we asked DfI for a copy of the relevant correspondence.

3.230 It appears from the correspondence that DfI's consultants e-mailed NIEA in October 2021 seeking input on the design and implementation of the plan, including objectives and potential funding mechanisms. In January 2022, NIEA recommended that a rapid condition assessment be undertaken to provide baseline information. On 14th April 2023, shortly after the Commission's information request, a consultant ecologist e-mailed NIEA to say she had completed an updated vegetation survey in 2022 and also a rapid condition assessment using NIEA's guidelines. She suggested arranging a call to discuss the results and the proposed management plan.

3.231 We were told at the inquiry that there had been a telephone call and exchange of texts. NIEA had received an outline of the results of the condition assessment. The action plan was at an early stage of discussion but there was nothing in DfI's budget for McKean's Moss. As over two years had elapsed since DfI accepted the need for an action plan, we were disappointed at the meagreness of the progress achieved. To try to inject some momentum, we asked DfI and NIEA to put together a paper setting out specific protection, enhancement and restoration measures and the resources required to implement it. This they agreed to do.

3.232 A draft conservation management plan for McKean's Moss was produced by NIEA for discussion on the final day of the inquiry. It was stressed that it was not a DfI document and was not supplementary to the ES. The draft plan noted that the work carried out by DfI's consultants showed that in 2022 two attributes were unfavourable – the continued high dwarf-shrub cover and the cover of grasses, sedges and rushes. This led NIEA to the provisional conclusion that the condition of the raised bog feature has changed and is currently unfavourable. There were three current pressures on the ASSIs – altered hydrology, scrub/tree encroachment and nitrogen deposition. Future threats included emissions from traffic on the proposed new road, including pollutants and dust/tyre fragments, along with changes to hydrology and litter.

3.233 The draft conservation plan identified the following on-site management actions:

- Preliminary assessment of restoration potential
- Habitat mapping
- Establish management agreements to maintain habitats and undertake restoration works
- Tree removal from bog surface
- Blocking existing drains
- Water table monitoring
- Digital terrain map and surface modelling
- Cell bunding
- Establish the status of Northern Ireland priority species and locally important sphagnum species

3.234 We asked NIEA about resources and funding. We were told that ASSIs are of secondary importance to SACs and SPAs. There are about 390 ASSIs at present and NIEA's focus is on designating more areas. The witness wasn't sure how the conservation management plan would be implemented and didn't think the necessary funding was available.

3.235 Counsel for DfI stated that NIEA's plan was entirely consistent with its thinking. The Project Sponsor said DfI would pay all it possibly could to take the plan forward. Counsel for the AA5A supported the plan and said DfI should fund it. However, the plan would not overcome the impacts of increased ammonia and nitrogen deposition.

3.236 The NIEA witness noted that the scheme would cause some additional nitrogen deposition on woodland within the designated site, which would need to be retained. The road contribution would be trivial, below the level of detection and sufficiently small that it would not affect the site's conservation status. The modelling had been pushed to its limit. Around 50% of all nitrogen emissions in Northern Ireland are from agriculture whereas transport accounts for only 5 to 7 percent. DAERA was developing an ammonia reduction strategy which would require changes to farming practices and take time to implement. (This was a reference to a consultation paper published in January 2023.) In the meantime, on-site management and improvements to hydrology would deal with the other threats to the ASSIs.

3.237 We appreciate that NIEA's draft conservation management plan would not counteract the projected increases in ammonia and nitrogen deposition caused by the scheme. We nevertheless consider that it would represent a reasonable discharge of DfI's responsibilities under the Environment Order and the Wildlife and Natural Environment Act and an appropriate package of mitigation and/or compensatory measures consistent with Policy NH 3 of PPS 2. We welcome DfI's commitment to implementing the plan.

Recommendation 9

We recommend the Department, should it decide to proceed with Section 1 of the scheme, to commit the necessary funds to ensure that all nine site management actions identified on Pages 18 and 19 of NIEA's document "McKean's Moss ASSI Draft Conservation Management Plan" dated May 2023 are carried through to completion.

Protected Species

3.238 Policy NH 2 of PPS 2 concerns species protected by law. The policy indicates that development will be permitted only if it is not likely to harm a European protected species. Exceptions may be made where:

- there are no alternative solutions; and
- the development is required for imperative reasons of overriding public interest; and
- there is no detriment to the maintenance of the population of the species at a favourable conservation status; and
- compensatory measures are agreed and fully secured.

3.239 In respect of species that are protected at national level, Policy NH 2 states that development will be permitted only if it is not likely to harm any other statutorily protected species and if it can be adequately mitigated or compensated against. The policy goes on to say that developments are required to be sensitive to all protected species, and sited and designed to protect them and their habitats and prevent deterioration and destruction of their breeding sites or resting places.

3.240 European protected species (as they are still called) are listed in Schedule 2 to the Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995, while national protected species are itemised in the Wildlife (Northern Ireland) Order 1985.

3.241 A striking feature of PPS 2 is the extent to which it interlocks with the complex and sophisticated body of law which has grown up to support nature conservation. Most of its policies give effect to and elaborate on statutory requirements. The Habitats Regulations and the Wildlife Order provide protections to species by prohibiting certain actions or permitting them only under licence. It seems reasonable to interpret the policy presumption against harm to protected species in the light of those provisions.

3.242 Regulation 34(1) of the Habitats Regulations states that it is an offence—

(a) deliberately to capture, injure or kill a wild animal of a European protected species;
(b) deliberately to disturb such an animal while it is occupying a structure or place which it uses for shelter or protection;
(c) deliberately to disturb such an animal in such a way as to be likely to—
(i) affect the local distribution or abundance of the species to which it belongs;
(ii) impair its ability to survive, breed or reproduce, or rear or care for its young; or
(iii) impair its ability to hibernate or migrate;
(d) deliberately to take or destroy the eggs of such an animal;
(e) deliberately to obstruct access to a breeding site or resting place of such an animal; or
(f) to damage or destroy a breeding site or resting place of such an animal.

3.243 Regulation 39 states that Regulation 34 does not apply to anything done for certain specified purposes under and in accordance with the terms of a licence granted by DAERA. One of these purposes is preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment.

3.244 Article 4 of the Wildlife Order provides statutory protection for wild birds, their nests, eggs and young. Article 10 makes it an offence intentionally or recklessly to kill, injure or take any wild animal listed in Schedule 5 to the Order; to damage, destroy or obstruct access to any structure or place which it uses for shelter or protection; or to disturb any such animal while it is occupying such a structure or place. Article 18 states that Articles 4 and 10 do not apply to anything done for certain specified purposes under and in accordance with a licence granted by DAERA. Article 19 provides for the protection of deer of a species mentioned in Schedule 10 (namely fallow deer, red deer and sika deer). Article 21 empowers DAERA to grant licences for actions that would otherwise be prohibited by Article 19.

3.245 Objectors asked for confirmation that all relevant laws on red listing would be obeyed. DfI explained that the red-listing process was not a legal one. It is determined by the International Union for the Conservation of Nature. DfI said it would comply with the Wildlife Order and the Habitats Regulations throughout the road development process, applying for licences where required and consulting with NIEA to ensure appropriate measures are taken to safeguard the protected species.

3.246 Numerous species of bird are listed for protection in Schedule 1 to the Wildlife Order. The ES acknowledged that taking into account scheme design and mitigation measures,

barn owl is likely to experience a significant effect at county scale. The species is particularly sensitive to road mortality, with young birds dispersing to find new territories. Most wintering birds would experience at most a local negative effect but in the vicinity of Chainage 62300 to 63800 (Seskinore Road and Tattykeel Road), a significant effect at district scale was predicted as bog would be lost and not re-created.

3.247 Otter is a European protected species. The ES acknowledged that temporary disturbance of the breeding site at Strabane Nature Reserve could have a localised impact on otter. It stated, however, that taking into account other suitable breeding habitat nearby, it was extremely unlikely that the disturbance would have a negative effect on the conservation status of otter in the Foyle catchment. The ESA reported on otter surveys completed in 2020/21, provided a consolidated set of mitigation measures and concluded that the potential impacts of the scheme on otter as a species of conservation concern would not be significant. We consider this matter in detail in Chapter 4 of this report.

3.248 All species of bat enjoy the status of a European protected species in their own right. The ES identified several impacts – loss of bat roosts; disturbance of bats using roosts; loss of foraging habitat; fragmentation of commuting routes; increased light spill affecting foraging habitat; and possible killing or injury of individuals as a result of construction or future use of the proposed road. The ES then set out various mitigation measures but acknowledged that a significant effect on bat at local level would remain.

3.249 The ESA notes that the original assessment reflected the cumulative effects on individual bats and bat communities associated with the full 85-kilometre length of the scheme. It says that given the large scale of the scheme it is more appropriate to consider the significance of effects in a more representative context. The assessment of effects on bats was therefore reviewed and revised and it was concluded that while the impacts are still likely to pose adverse effects on bat populations at a local level they are unlikely to result in a detrimental change to the favourable conservation status of these species at a county or Northern Ireland level.

3.250 It seems to us that the consequences of the scheme forecast in the ES and the ESA – habitat loss, fragmentation, disturbance, killing and injuring individual bats – are likely, in combination, to result in harm to bat species. We are not attracted by the theory that it is more appropriate to consider the significance of the scheme's effects on bat species at county or Northern Ireland level. An action that interferes with bats will have the same impact on the species regardless of whether it is to facilitate a small development, such as a single dwelling, or a large infrastructural project. Regulation 34(c)(i) of the Habitats Regulations is directed specifically at disturbances likely to affect the local distribution or abundance of a European protected species.

3.251 Paragraph 9.5.72 of the ESA refers to the bat species known as Nathusius' pipistrelle, which is described as rare with a declining population. Although widespread across the UK and Ireland, its distribution in Northern Ireland is said to be largely restricted to northern, central and south-eastern areas. It is stated that the distribution of this species recorded in surveys to inform the ES suggests that the population in the vicinity of the scheme area was small, localised and peripheral to the species' core range. It is concluded that Nathusius' pipistrelle bats are of no more than local biodiversity value.

3.252 Paragraph 9.5.73 refers to Natterer's bat, with a single record of four roosting bats about 1.4 kilometres from the route of the scheme. This species is also recognised to be widespread with a stable population in Northern Ireland, although it is considered to be scarce, as reflected by the absence of any other records. Paragraph 9.5.74 asserts that because rare, uncommon and sparsely distributed species exist at such low density along the scheme corridor, any adverse effects would affect their populations only at that geographic scale.

3.253 We cannot accept this proposition. We appreciate that the focus of law and policy is on species rather than on specimens of species. However, it seems to us that individuals of a rare species are more important to a local population than individuals of more abundant species. Similarly, disturbance to species that are declining in numbers is likely to be more harmful than disturbance to species that are increasing in numbers.

3.254 The DfI representatives responded to concerns about bats by drawing attention to the licensing provisions of the Habitats Regulations. They were confident that DfI would be able to obtain Regulation 39 licences from DAERA. Licences were granted in 2012 when it was believed the scheme was going ahead. The granting of such licences was said to be a common occurrence. The matter had been discussed since 2008 and DAERA had raised no objection. A DAERA witness agreed with DfI that the impact of the scheme on bat species would not be significant.

3.255 The purpose of Regulation 34 is to safeguard European protected species from various harms. It seems to us that DfI's reliance on the licensing provisions of Regulation 39 to absolve it from the requirements of Regulation 34 implicitly acknowledges that the scheme would cause harm to bat species. We assume that the justification cited for granting any licences would be imperative reasons of overriding public interest. But harm even if confined to a local area is still harm. It has not been demonstrated that there would be no detriment to the maintenance of the population of each bat species, including its local distribution and abundance, at a favourable conservation status. We conclude that in regard to bat the scheme does not comply with Policy NH 2 of PPS 2.

3.256 In a representation dated December 2022, an objector stated that red squirrel and pine marten had been newly sighted at various places along the proposed route and should now be the subject of real-life field studies not desktop surveys. As the places where these sightings took place have not been identified, we are unable to assess the significance of this information.

3.257 Red squirrel is listed for protection in Schedule 5 to the Wildlife Order. The ES noted that the species is in decline throughout the UK as a result of habitat destruction and fragmentation, competition from grey squirrels and disease. It stated that populations that have survived these pressures to date within Northern Ireland are primarily located in the north west of the province.

3.258 The ES identified five locations where it is likely that red squirrel are active in woodland within the assessment study area – to the north of Newbuildings, Baronscourt, Seskinore Forest, Rattling Ford and to the east of Aughnacloy. In the wider countryside, red squirrel was well recorded within Favour Royal Forest to the west of the scheme corridor. The confirmation of grey squirrel within many of these areas indicated that red squirrel was likely to be displaced from the study area within 10 to 20 years unless active conservation measures are taken. The ES classified the red squirrel population to

the east of Aughnacloy as of national biodiversity value, with the other populations being of district biodiversity value.

3.259 The ES identified several impacts of the scheme – loss of dreys; loss of foraging habitat; fragmentation of habitat; and possible killing or injury of individuals as a result of construction or future use of the proposed road. The scheme would sever many hedgerows and tree lines throughout the corridor and certainly within the vicinity of the known red squirrel populations. Such fragmentation of habitat could contribute to the decline of the species and would affect the conservation status of the species in Londonderry and Tyrone. Direct killing or injury of red squirrels could occur during vegetation clearance or through the future use of the road, should they attempt to cross the carriageway. The ES went on to set out various design and mitigation measures but concluded that a significant effect at district scale would remain.

3.260 The ESA presented no new evidence about red squirrel but reviewed the conclusion reached by the ES. It predicted that while the potential adverse impacts on red squirrel could not be fully mitigated they would be minor, highly localised and unlikely significantly to affect the relevant red squirrel populations, regardless of the geographic scale at which those populations are valued.

3.261 Taking account of the evidence that red squirrel is in decline due in part to habitat destruction and fragmentation and that the scheme would exacerbate these problems, we accept the conclusion of the ES in preference to that of the ESA. We find that in regard to red squirrel the scheme does not comply with Policy NH 2 of PPS 2.

3.262 Pine marten and badger are both listed for protection in Schedule 5. The ES concluded that taking into account the proposed design and mitigation measures, no significant effect would remain in respect of either species.

3.263 Newt is listed for protection in Schedule 5 to the Wildlife Order. The ES stated that two ponds with a confirmed presence of smooth newt and one with a presumed presence would be destroyed during construction but the scheme allows for replacement of the affected ponds. The ESA provides some amendments to and clarifications of the proposed mitigation. The overall conclusion is that smooth newt would experience a positive local effect as a result of the scheme.

3.264 White-clawed crayfish are listed for protection in Schedule 5 to the Wildlife Order. This species is not mentioned in the 2016 ES. The 2022 ESA acknowledges the potential presence of small populations in watercourses within the Blackwater catchment. It says that there is a risk from pollution events, siltation and habitat loss as a result of the scheme. However, subject to NIEA licensing, an ecologist would translocate any white-clawed crayfish found from the Blackwater catchment into adjacent areas of the watercourse which would not be subject to disturbance from works.

3.265 An objector expressed concern about deer crossing the proposed road. The ES incorrectly stated at Paragraph 11.5.101 that none of the three species of deer found in Northern Ireland are legally protected. The correct position, as set out in Appendix 11N to the ES, is that all deer species in Northern Ireland are protected in relation to the times of year they may be hunted and the methods by which they may be killed. However, deer are game and the protections afforded to the species under the Wildlife Order are not as extensive as those given to other animals.

3.266 The ES stated that as the three species of deer recorded in Northern Ireland have an average home range of 5 kilometres and all have been recorded within 1.5 kilometres of the proposed route, it was certain that construction of the road would result in the loss of some foraging habitat and sever some deer territories. Deer records, and the lack of accident data relating to deer impacts with vehicles, indicate that deer are at a low density within the area surrounding the scheme corridor. However, the severance of habitat suitable for foraging and commuting might lead to deer crossing the highway.

3.267 The ES pointed out that the scheme makes provision for 25 minor roads to pass under the dual carriageway and 22 agricultural underpasses. These would provide some measure of connectivity for deer. Mitigation measures would be restricted to ensuring that tree and scrub planting leaves a clear zone at the carriageway edge, thus giving drivers greater chance to see deer and avoid collision. The ES predicted no significant effect on deer. We accept that while the scheme may have adverse effects on individual deer specimens, harm to deer as a species is unlikely.

Priority habitats and species

3.268 Policy NH 5 of PPS 2 concerns habitats, species and features of natural heritage importance. It is particularly relevant where these are found outside designated sites. It covers, among other things, priority habitats and species, active peatland (bog) and ancient and long-established woodland. Priority habitats and species are identified in lists published by NIEA. Development likely to result in an unacceptable adverse impact on or damage to such habitats, species or features may only be permitted where the benefits of the development outweigh the value of the habitat, species or feature. In such cases, appropriate mitigation and/or compensatory measures will be required.

3.269 Bogs which have not been designated as SACs or ASSIs were considered in the ES. As all the bogs surveyed within the scheme corridor had over 10% sphagnum coverage, they all qualified as priority habitats. It was stated that the scheme would directly take approximately 7 hectares of modified bog. In addition a further 7 hectares would be subjected to an increased risk of impacts through degradation in air quality and changes to drainage regimes. The aggregate loss of habitat would represent 3% of the total bog within the local area and 1% of the total bog within the former Omagh District.

3.270 The ES went on to say that all bogs within the construction area were declining in value and without conservation action they were likely to succeed to scrub or grassland habitats over coming decades. The loss and degradation related to the scheme would be very likely to accelerate this decline and would affect the conservation status of those remaining bog fragments adjacent to the proposed road. Due to their limited biodiversity value, at most sites this would not be a significant effect. However, the bogs at Mountjoy (Chainage 46400 to 47900) were of higher value and the impacts upon these sites would be significant at a local scale.

3.271 The 2022 ESA formally incorporated DfI's responses to concerns considered at the 2016 inquiry about the loss of bog habitat through direct land take and potential degradation. Measures would be investigated for a small area of bog within the proposed flood compensation area at Chainage 50500 (to the north west of Omagh). These would involve either restoring the acrotelm (layer) within the flood compensation area or creating an alternative wetland habitat adjacent to the bog. The extent and configuration of the deposition area adjacent to Tattykeel Bog, near Doogary (Chainage 62400 to 62700) would be altered at detailed design stage to avoid the bog habitat.

Mitigation for the loss of reedbed/swamp in an area of bog at Chainage 62500 would be provided through the creation of alternative habitat in the deposition area.

3.272 Despite these mitigation and/or compensation proposals, the evidence is that the scheme would result in the removal of priority habitat and would be likely to accelerate the decline of bogs within the construction area generally. We conclude that this would be at variance with Policy NH 5 of PPS 2.

3.273 The ES indicated that the scheme would entail the loss of 0.6 hectares of long-established woodland at Mulvin Parks, near Ardstraw. It was explained at the inquiry in 2020 that the alignment in this locality was chosen to avoid existing properties and an area where quarrying had been approved. Objectors referred to the presence of badgers and bats in the wooded mound of mostly oak and holly trees and the possibility that it was an ancient burial site. DfI's witness said this would need to be carefully investigated and any necessary licences obtained from NIEA before these protected species were disturbed. The ESA presented a bespoke landscape planting solution which should go some way towards reducing the impact of the loss of woodland.

3.274 The ES also indicated that 0.5 hectares of the ancient woodland at Routing Burn, to the south of Moylagh would be lost. The ESA states that "Woodland at Routing Burn would be demarcated and a briefing provided to the contractor, to ensure avoidance of woodland". The meaning of this sentence is far from clear but it appears to relate back to Theme Report 19 which was prepared for the inquiry in 2020. That report referred to a field to the west of the proposed road, which would be vested for a deposition area. It clarified that a 0.49-hectare woodland area within this field would not be impacted by the works. A revised layout for a proposed attenuation pond to the east of the road was annexed to the report. This would allow a reduction in habitat loss of 0.19 hectares.

3.275 The Woodland Trust referred to the statement in Paragraph 9.5.78 of the 2022 ESA that Old Deer Park Wood would be "severed" from the main portion of the Baronscourt Estate by the proposed road. It said fragmentation of ancient woodland risks disturbing centuries-old ecosystems and expressed concern about the impact of increased traffic noise and air pollutants on this irreplaceable habitat.

3.276 In its rebuttal evidence, DfI confirmed that there would be no loss of ancient woodland from Old Deer Park Wood. It acknowledged that there would be severance between it and the more extensive woodland of the wider Baronscourt Estate. However, it is already fragmented, as there is no contiguous woodland connecting the two sites and there are several minor roads in between. Old Deer Park Wood is at the periphery of the estate and represents only 5% of the habitat. An assessment of air quality impacts from vehicle emissions was not undertaken for Baronscourt because there were no affected road links identified nearby. Such emissions would not have a significant influence on air quality within the semi-natural habitats of the estate. We accept these conclusions.

3.277 The Woodland Trust argued that where any elements of the road scheme fall in close proximity to ancient and long-established woods, then a planted buffer zone should be established to ameliorate adverse indirect impacts. It was considered appropriate to allow for a buffer zone of at least 50 metres to avoid root damage and to allow for the effect of pollution from the development.

3.278 DfI responded by saying that all practicable measures to protect and preserve retained woodland during construction were secured within the scheme contract documents and best practice measures would be robustly implemented. Reference was made to the outline CEMP, Appendix 5-1 of the 2022 ESA. However, at Mulvin Parks the measures adopted to reduce the quantum of long-established wood being removed by the scheme would necessitate working in close proximity to the retained trees. To increase separation between the construction works and retained trees would require additional woodland clearance, which has been deemed less desirable.

3.279 In advance of the re-opening of the inquiry, we asked DfI to provide a copy of the design and construction contracts for the scheme. We can find no reference to woodlands in any of the contract documents provided, or in the outline CEMP. DfI's response treats the Woodland Trust's request for a planted buffer between the road scheme and priority woodlands as if it were a request for increased separation between construction works and retained trees. However, we consider that a requirement to provide a 50-metre planted buffer next to existing woodlands would be disproportionate and unduly onerous. We hope that if the scheme goes ahead, DfI and its contractors would take all reasonable steps to protect and preserve those ancient and long-established woods that are not being directly impacted.

3.280 Irish hare is a priority species. The ES identified several impacts – direct mortality during vegetation clearance; loss of habitat for feeding and resting; fragmentation of habitat; increased mortality through collision with vehicles using the proposed road; and disturbance during construction and use of the road. Taking into account design and mitigation measures, it concluded that a significant effect would remain at a local scale.

3.281 An objector (now sadly diseased) highlighted the size of the local angling fraternity and referred to hundreds of anglers visiting from overseas. Regardless of measures planned to lessen the impact of road building, he believed that there remained a real danger of total wipe out of salmon and trout stocks, which might never recover.

3.282 Various types of fish, including Atlantic salmon, sea trout and European eel, are priority species to which Policy NH 5 of PPS 2 affords protection. In 2021 DfI's consultants sought the advice of DAERA Inland Fisheries on sensitive salmonid watercourses as well as the design of watercourse crossings within the Blackwater River catchment. Inland Fisheries advised on its preference for two-stage culverts designed with a lowered central channel to maintain water flow and hence fish passage in low-flow conditions. It also recommended upgrading the crossing of the Roughan Burn from a closed-box culvert to a clear-span or bottomless structure.

3.283 In its representation made following publication of the ESA, DAERA Inland Fisheries complained that the ESA does not include a description of the recommended two-stage box culverts. Inland Fisheries had provided pictures of existing structures used in the construction of the Magherafelt Bypass, which were already included in Annex 1 to Theme Report 21, produced for the inquiry in 2020. In the culvert schedule in Appendix 5-4 to the ESA, these low-flow channel-type culverts are not referenced appropriately and the only comments relate to the provision of a ledge for mammal passage. The entry for Culvert S3-PC-34 at the crossing of the Roughan Burn does not say it is to be clear-span or bottomless. ESA Table 18-1 – Schedule of Environmental Commitments, Measure EC23 fails to list the crossings in respect of which Inland Fisheries made recommendations.

3.284 In a letter attached to the representation, DfI's consultant ecologist acknowledged inadvertent omissions from, and lack of clarity in, the ESA. He confirmed that all the crossings of important salmonid watercourses within the River Blackwater catchment as identified by Inland Fisheries would include two-stage, low-flow channels and that the Roughan Burn crossing would incorporate a bottomless structure, thereby avoiding undue disturbance to the river channel and retaining the natural channel bed. For the avoidance of doubt, he provided a list of 16 culverts.

Recommendation 10

We recommend the Department, should it decide to proceed with Section 3 of the scheme, to ensure that:

(a) two-stage low-flow culverts are installed on the crossings of all important salmonid watercourses within the Blackwater catchment at the places identified by, and to the description provided by the Department of Agriculture, Environment and Rural Affairs, Inland Fisheries; and

(b) the Roughan Burn crossing is upgraded to a clear-span or bottomless structure.

3.285 The ES acknowledged that the proposed works would impact on other habitat types including grassland and marsh, watercourses, ponds, reed beds and swamps. They were likely to result in the permanent loss, fragmentation and disturbance of these habitats in the construction and operational phases. It concluded, however, that taking into account design and mitigation measures, these effects would either be of no significance or of significance only at local scale. The loss of about 170 kilometres of species poor hedge and 7 kilometres of species rich hedge would be compensated for by the creation of over 190 kilometres of species-rich hedge, which would include trees.

3.286 Further mitigation measures are detailed in the ESA. A trial of creating wet grassland zones would be undertaken at each of the sustainable drainage ponds, which are proposed to be located adjacent to the new road. All watercourse diversions and areas where works require removal of bankside vegetation would have appropriate seeding.

3.287 The ESA goes on to say that DfI would deliver 15 to 20 percent of low-nutrient bio-diverse habitat along the road verges of the scheme. The flowers produced by the associated plant species would provide food for a variety of invertebrates and prevent highly nutrient-dependent grasses from outcompeting, overgrowing and quickly succeeding the shorter-growing wildflower sward. The sparser distribution of low nutrient wildflower swards would also provide gaps which wind-blown seeds of other low nutrient tolerant species might be able to colonise, thereby increasing floral diversity in the years following initial establishment. The wider benefits of low nutrient verges include aesthetic and amenity value through the variety of colours that the wildflowers produce, as well as reduced management time and costs since the shorter-growing wildflower sward requires significantly less mowing.

3.288 From the information in the updated ES, we have noted adverse impacts on barn owl, wintering birds, bat, red squirrel, bog, ancient and long-established woodland, and Irish hare. Having regard to PPS 2 and the cumulative impact of these losses, we conclude that the scheme would have a significant adverse effect on flora and fauna.

Geology and Soils

3.289 The 2016 ES stated that the scheme would not impact on any area designated to protect its geological interest. It identified 26 sites where the ground was known to be contaminated, mostly in brownfield areas round Strabane. Testing had identified areas of elevated levels of contaminants where soils could not be incorporated into the works. It said the contractors would undertake sampling and testing of soils in these areas and prepare method statements to ensure that site staff and the public would not be exposed to any potential hazard. Where soil was found acceptable, it would be re-used. It concluded that there would be no significant impacts on geology or soils.

3.290 The 2019 ESA said the content and outcome of the 2016 ES in terms of geology and soil receptors were still relevant and no new walkover surveys had been conducted. It was possible that additional fly-tipping areas were present.

3.291 The AA5A challenged DfI's reliance on information gathered between 2009 and 2014. In its Interim Report, the Commission said it was satisfied that the drift geology depicted in the ES would not have changed and noted that fly-tipping can occur anywhere anytime.

3.292 In a consultation response to the 2019 ESA, Derry City and Strabane District Council provided a list with co-ordinates of 13 additional sites that may be contaminated due to previous land uses. The sites included disused gravel pits, flax mills, a spade foundry, a tramway, a railway, a disused quarry and a mill pond. In its Interim Report, the Commission expressed disappointment that the information about contaminated sites was incomplete but found that the deficiencies in regard to contaminated land were not of a fundamental character.

3.293 The district councils provided input into the 2022 ESA. Derry City and Strabane District Council identified the additional 13 sites of potential contamination. It transpired that one of these sites, a mill pond, had in fact been assessed in the ES and did not require further updating. The remaining 12 sites are located within the scheme boundary or within 250 metres of it. They were assessed based on potential for contamination and magnitude of potential impact. Five sites were found to pose a low risk, three a moderate/low risk and four a moderate risk. The proposed mitigation is the same as for the 26 sites identified in the ES.

3.294 The other district councils recommended a review of the NIEA Historical Landuse Database held by DAERA which contains a list of sites where, based on their historic land use, there is potential for contamination to be present. Review of the database identified 86 sites of historic industrial land use and/or locations of waste licencing or waste exemptions within the scheme boundary or within 250 metres of it. Of these sites, 71 were found to pose a low risk, 14 a moderate/low risk and one a moderate risk. The potential contaminants, pathways and receptors are similar to those identified in the 2016 ES and therefore the proposed mitigation is unchanged.

3.295 A discussion took place at the inquiry in 2020 about movement of material during the construction process. DfI's witness explained it was best practice not to move topsoil over long distances. Stockpile areas would therefore be created. Soil on farmland is not left in a virgin state. Soils are living organisms which are affected by farming. Contractors are experienced in handling topsoil and aim to maintain its integrity.

3.296 In a consultation response, NIEA took the position that any material moved within the curtilage of land affected by a Direction Order is not "controlled waste" as defined in the Waste and Contaminated Land (Northern Ireland) Order 1997 and no waste authorisation was required for such movements. It indicated however that the statutory duty of care provisions apply to waste materials taken on to or off site. It recommended the production of a site waste management plan. DfI said its contractor would be required to do this.

3.297 The ES stated that contaminated material would be disposed of to a suitably licensed facility in accordance with the duty-of-care provisions of the Waste and Contaminated Land Order. In response to representations by NIEA and all three district councils through whose areas the proposed road would pass, DfI agreed that should any ground contamination or risks be encountered which were not previously identified, works would cease and the contamination would be fully investigated in accordance with the Environment Agency's model procedures. It said that the contract documents placed obligations on the scheme contractor as to how risks to health and safety from materials or substances were to be dealt with.

3.298 The DfI representative said it had not been determined where any imported fill would come from. He gave an assurance that contaminated soil, including overburden from any gold mine workings elsewhere in County Tyrone, would not be imported on to the construction site.

3.299 An objector referred to potential adverse effects on neighbouring farmland of damage to field drains caused by bulldozers on the construction site. He asked who would be responsible for compensating the farmer should mistakes happen. We are of the opinion that problems like this can be resolved only as and when they arise.

3.300 We conclude that the scheme is unlikely to have a significant effect on soil.

Noise and Vibration

3.301 The 2016 ES quantified the likely noise and vibration impacts of the scheme during construction and when the road is open for use by traffic. The 2022 ESA provided revised figures. The conclusions of the 2016 ES and the ESA were founded on noise monitoring surveys carried out at 54 locations in 2014. The daytime measurements at each location were conducted over three 15-minute periods on the same day. The night-time measurements at each location were conducted over one 15-minute period.

3.302 An objector challenged the choice of three noise monitoring locations in Derry – Salisbury Crescent, Foyle Road / Moat Road and Glenshane Road (A6), all of which are outside the scheme area. She believed this information was being gathered to support a future proposal for a new road round the south-eastern periphery of the city linking the A5 to the A6. The matter was discussed at the inquiry in 2020 and the Commission commented in its Interim Report that it was still not entirely clear why these locations were included. At the inquiry in 2023, DfI's witness denied that the continued use of the monitoring locations in Derry was related to the possibility of an A5/A6 link but stated that if they were excluded, the results would not be materially different.

Noise at construction stage

3.303 British Standard (BS) 5228-1:2009 "Code of practice for noise and vibration control on construction and open sites" provides guidance on methods that can be used to predict

and measure noise from construction activities and how to assess the impact on those exposed to it. It establishes 65 decibels (dB) as a threshold indicating potentially significant impact on weekdays during daytime (7am to 7pm) and on Saturday mornings (7am to 1pm). Lower thresholds apply outside those periods.

3.304 The 2016 ES identified four principal construction activities and the associated sound power levels:

Site preparation and earthworks	121 dB
Construction of road pavement	115 dB
Temporary building construction	116 dB
Bridge construction	125 dB

3.305 The 2022 ESA presented a calculated sound power level for each of 18 construction activities. The overall sound power levels adopted in the ES were the same or higher than those for corresponding operations taken from the ESA construction information. The ES data were therefore retained to represent a worst case.

3.306 The ESA identified 58 hotspots where, without mitigation, construction activity would be likely to result in noise levels in excess of 65 dB. The hotspots were associated with proposed junctions, cuttings, compounds, bridges, rock processing and earthworks. At the hotspots, 339 receptors would be likely to experience noise levels above the 65 dB threshold, of which 144 would potentially be exposed to noise levels above 70 dB and 62 to noise levels above 75 dB. The highest number of receptors potentially affected at any hotspot was 123 in the vicinity of the proposed Junction 1 at Newbuildings.

3.307 The ES said there would be 11 access routes where noise levels associated with construction traffic would be likely to exceed the 65 dB threshold. These comprised sections of the existing A5 (specifically at Chainage 9100 close to Grangefoyle and Chainage 11600 near McKean's Moss), Strahans Road, Peacock Road, Seskinore Road, Moylagh Road, Augher Point Road, Springhill Road and A4 Annaghilla Road. It was stated that the effect would be temporary and occur for periods of relatively short duration over approximately three years. The ESA did not change these conclusions.

3.308 Paragraphs 13.5.6 to 13.5.8 of the ES set out mitigation measures which also form part of the outline CEMP. These included prior notification to potentially affected receptors in the vicinity of working areas where there would be higher-order noise generating activity. The ESA claimed that with the measures in place, the effects of construction noise could be appropriately managed. It acknowledged, however, that some significant effects would remain, for example where works were necessary in close proximity to receptors.

3.309 It seems to us that the mitigation measures listed are standard good practice techniques that are unlikely to reduce construction noise impacts significantly below the predicted levels. Depending on household size, about 800 people are likely to be affected by high levels of noise at construction stage. We have not been persuaded that the impact of construction noise can be dismissed as insignificant, as the updated ES appears to do.

3.310 In Chapter 13 of the ES it was stated in a footnote that construction would occur during normal working hours of 7am to 7pm Monday to Friday and 7am to 4.30pm on Saturday, with hours during the winter season reducing to 8am to 5pm Monday to Friday. It was argued that although the example criteria in BS 5228-1 define Saturday afternoons as weekends and therefore subject to a lower noise limit, due to the

strategic nature of the development, it was reasonable in this instance to define the period 1pm to 4.30pm on Saturdays as daytime.

3.311 Chapter 6 of the ES had a broader definition of normal working hours. It stated that during the earthworks season (April to October) the working hours would typically be 7am to 9pm Monday to Friday and 7am to 4.30pm on Saturday. There would be no normal working on Sundays or bank holidays.

3.312 Theme Report 10 introduced even more flexibility by saying that some limited night-time working would be required on bridge construction, the placing of bridge beams and the construction of junction and side-road tie-ins, and any exceptions to normal working hours would be agreed with DfI in advance. Earthworks and bridge construction are among the noisiest construction activities. Night-time working is undefined and could potentially mean working right through the night, in other words for up to 24 hours a day.

3.313 Fermanagh and Omagh District Council and Mid Ulster District Council both recommended that site works should be carried out from 8am to 6pm on Mondays to Fridays and from 8am to 1pm on Saturdays and that there should be no operations on Sundays. These recommendations appear to relate to all construction activity anywhere and not just at the hotspots.

3.314 In its Interim Report of September 2020, the Commission expressed the view that, outside certain areas frequented by birds where working hours would be more restricted, the working hours set out in Chapter 13 of the ES were reasonable. It considered that in a prolonged project of this nature, it would probably be preferable to extend working hours into Saturday afternoons in order to get disruption over with in as few months as possible.

3.315 The Commission did not believe that a procedure whereby, on the application of its contractors, DfI would be able to waive any restrictions on working hours would command public confidence. DfI's main priority would be to get on with the work and the legitimate interests of residents could all too easily be overlooked. The Commission considered that the locally accountable district councils have the necessary institutional independence and technical competence to make balanced judgments about proposed departures from normal working hours.

3.316 The Commission therefore recommended DfI, should it decide to proceed with the scheme, to give a public undertaking that no site works or construction activities would take place outside the hours specified in Chapter 13 of the ES without the prior written agreement of the relevant district council. In its Interim Statement of March 2021, DfI's one-word response was *"Accepted"*.

3.317 The working hours restriction to which DfI agreed represents a vitally important environmental safeguard for residents in the scheme corridor, who would otherwise be entirely at the mercy of DfI's officials and contractors. It was reasonable to expect that the working hours and the arrangements for derogations would have been highlighted in Chapters 2, 5 or 11 and/or in Table 18-1 of the ESA. We were very surprised not to see a reference to these matters in any of those places.

3.318 ESA Table 18-1, Measure NV1 contains the following bullet: "consideration to whether a Section 61 application under the Control of Pollution Act 1974 should be prepared and

submitted to the Local Authority in advance of the commencement of the works". Section 61 provides that such applications shall contain particulars of the steps proposed to be taken to minimise noise resulting from the works. The authors of the ESA must have overlooked the fact that the 1974 Act does not apply to Northern Ireland and that the equivalent Northern Ireland legislation, the Pollution Control and Local Government Order 1978, does not apply to any construction works carried out by a government department. Nevertheless, we cannot exclude the possibility that the insertion of this bullet point in Measure NV1 was intended to supersede or sidestep the working hours commitment given in DfI's Interim Statement.

3.319 At the inquiry, DfI's representatives drew attention to the following passage in the outline CEMP:

"Working hours for normal site activities would typically be from 7:00am to 7:00pm Monday to Friday and from 7:00am to 4:30pm on Saturday. Working hours would reduce through the winter season and would typically be from 8.00am to 5.00pm Monday to Friday. During the earthworks season (April to October) the working hours would typically be 7.00am to 9.00pm Monday to Friday and from 7:00am to 4:30pm on Saturday. There would be no normal working on Sundays or bank holidays."

3.320 This passage is at variance in four important respects from the recommendation which DfI unequivocally accepted:

- The introduction of the words "typically" and "normal" takes away any certainty as to what the working hours would actually be. It does not preclude, for example, some all-night, Sunday and bank holiday working.
- By contrast to the "earthworks" season which is defined by reference to seven specified months of the year, the winter season is left undefined, thereby creating further unacceptable uncertainty.
- DfI's Interim Statement gave the impression that the proposal to extend working hours to 9pm (or possibly later) had been abandoned. The carrying out of construction work for (at least) 14 hours a day on five days of the week during seven months of the year over a three-year period would in our view unduly impair the living conditions of local people, who would need an assured respite in the evenings and who might be trying to get children off to sleep.
- In the Interim Statement DfI agreed to the district councils having a non-statutory oversight role in respect of exceptional departures from the daytime working hours defined in BS 5228-1. The failure to mention this role removes an essential safeguard intended to restrain the arbitrary exercise of power by DfI and its contractors.

3.321 We cannot avoid the conclusion that DfI has behaved in a slippery manner in regard to working hours. Citizens have the right to expect straight dealing from departments and their officials. They have the right to expect that whenever DfI gives a public undertaking, it will honour that undertaking. We are satisfied that the recommendation in the Commission's Interim Report struck a fair balance between expeditious progression of the scheme and minimisation of harm to residential amenity. We therefore restate that recommendation and urge DfI to abide by it.

Recommendation 11

We recommend the Department:

(a) to ensure that every contractor's construction environmental management plan for any part of the scheme with which the Department decides to proceed contains a requirement that, without prejudice to any stricter requirements which may be specified in respect of particular places, no site works or construction activities shall take place:

- **outside the hours of 7am to 7pm on Mondays to Fridays and 7am to 4.30pm on Saturdays, between 1st February to 31st October;**
- **outside the hours of 8am to 5pm on Mondays to Fridays and 8am to 4.30pm on Saturdays, between 1st November and 31st January; or**
- **at any time on Sundays or bank holidays,**

without the prior written agreement of the district council in whose area the operations are taking place; and

(b) to honour the public undertaking it has already given by ensuring that this working hours requirement is adhered to rigorously.

Vibration at construction stage

3.322 The ESA stated that without mitigation, receptors at 17 of the 58 construction hotspots would be subject to peak particle velocity levels above 1.0 millimetres per second due to impact piling or vibratory rollers. According to BS 5228-2, at this level it is likely that vibration in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents. A total of 63 receptors would be subject to potentially significant effects, including 38 at the proposed Junction 1. Potentially significant effects could also be expected at other receptors along the scheme corridor but those effects would typically be of shorter duration.

3.323 The ESA identified mitigation measures for construction vibration, some of which were previously mentioned in the ES. The ESA confirms that different construction vibration generative working operations would not be undertaken concurrently at any location and that contractors would be required to instigate a system for the prior notification of residents where there was a risk that vibration could cause concern or superficial (cosmetic) damage.

3.324 The ESA also sets out mitigation measures for blast-induced noise, vibration and air overpressure. To ensure compliance with acceptable blast-induced groundborne vibration limits, a series of groundborne vibration measurements for test blasts would be undertaken at sites requiring blasting. These measurements would initially be undertaken with smaller charge weights. The charge weights would be increased only following analysis of the measured vibration levels. Compliance monitoring would then also be undertaken for the determined higher charge weights (where these were determined to be acceptable), as well as periodic checks during on-going works.

3.325 These mitigation measures form part of the outline CEMP. The ESA concluded that with them in place, the effect of vibration at construction stage would not be significant.

Traffic-related noise during use

3.326 To evaluate the magnitude of change in traffic-related noise that would be brought about by the opening of the proposed road, the ES applied criteria set out in the DMRB, Volume 11, Section 3, Part 6, HD 213/11. This document advocates the use of the index $L_{A10,18h}$ dB, which is the sound level in decibels that is exceeded 10% of the time, averaged over the period 6am to midnight. It described an increase of more than 10 $L_{A10,18h}$ dB as major and an increase of between 5 and 9.9 $L_{A10,18h}$ dB as moderate.

3.327 The ES noted that the scheme included earth modelling and mounding in a number of locations to aid integration into the landscape or screen sensitive receptors from views of the road and its traffic. They would also serve to reduce traffic-related noise in many locations. Environmental barriers specifically focused on mitigation of traffic noise were included where it was predicted that there would be a long-term increase of 10 dB or more in traffic noise and the predicted long-term traffic noise level would be 58 dB $L_{A10,18h}$ or more at the most exposed façade. That is approximately equivalent to the threshold identified by the World Health Organization (WHO) in its 1999 Guidelines for Community Noise. Environmental barriers were proposed at nine locations, these providing a minimum reduction of 3 dB.

3.328 Derry City and Strabane District Council drew attention to WHO's 2018 publication "Environmental Noise Guidelines for the European Region". DfI accepted that this document superseded aspects of the 1999 guidelines but stated that the new recommended threshold for mitigation of road noise was not significantly different to that previously used.

3.329 The ES said it was recognised that, notwithstanding the reductions which earth modelling, mounding and environmental barriers would provide, traffic-related noise would have a significant effect on many receptors in the vicinity of the proposed road. It concluded that low-noise surfacing should be included as part of the proposals for the dual carriageway and the two sections of single carriageway. This would have the effect of reducing levels for a substantial number of receptors by between 2 and 3 dB.

3.330 Taking into account the now anticipated opening and design years for individual phases of the scheme, the 2022 ESA provided updated predicted impacts on residential receptors. It indicated that in the design year 2043, 10,587 residential receptors would suffer an increase in long-term traffic noise as a result of the scheme, 5,850 would experience a decrease and 511 would experience no change. There would be 417 and 602 receptors subject to major and moderate long-term increases in traffic-related noise respectively. We estimate that about 2,400 people would be affected by increased noise. The ESA confirmed the conclusion drawn in the ES that road traffic noise would constitute a significant environmental effect.

3.331 The Noise Insulation Regulations (Northern Ireland) 1995 place a duty on the Department to insulate buildings or make grants where the use of a road is expected to cause noise at a level not less than 68 $L_{A10,18h}$ dB. It is required to identify such buildings within 12 months of the date when the road is first open to public traffic. The Department also has power under the Regulations to insulate a building or make grants where works for the construction of a road are expected to cause noise at a level which, in its opinion, will seriously affect for a substantial period the enjoyment of the building.

3.332 In its November 2017 statement, DfI said it had extended the offer of noise insulation measures to 64 properties identified as having a modelled increase in noise of greater than 15 dB and a predicted noise level of greater than 58 dB at design year. Its expert stated at the inquiry in 2020 that offers would be made in respect of a total of 78 properties but the occupiers or their landlords would not be contacted until the scheme was approved.

Traffic-related vibration during use

3.333 According to the 2016 ES, 27 residential receptors would be located within 40 metres of the proposed road and could potentially be subject to significant airborne vibration associated with vehicles using the route. It predicted that nine properties would be subject to an increase in vibration nuisance of between 30 and 40 percent. No mitigation is proposed for these effects.

3.334 We conclude that the scheme would have a significant adverse effect on human beings by reason of noise and vibration.

Effects on All Travellers

3.335 The 2016 ES assessed potential impacts of the scheme on the users of long-distance routes, including pedestrians, cyclists and equestrians (collectively referred to as non-motorised users) and on users of local roads either for recreation or to access facilities used by local communities. It also evaluated changes to driver stress in relation to the existing A5 and the proposed new road. The 2022 ESA updated the assessment and made some relatively minor changes.

Effects on non-motorised users

3.336 The scheme would affect three locations along national cycle routes. The ES stated that in all instances provision would be made for the roads which form part of these cycle routes to cross beneath or over the proposed new road. There would be potential for temporary disruption during construction but the contractors would be required to provide safe access across the construction corridor. The 2022 ESA noted the potential for disruption to Sperrins Cycle Route 6, the North West Trail and the Mid Ulster Cycle Route, but this did not alter the conclusion that the scheme would not have a significant impact on the amenity value of cycle routes as a recreational resource.

3.337 The ES stated that the scheme would affect the Lough Bradan to Gortin quality section of the Ulster Way long-distance footpath. The proposed road would traverse the footpath at Beltany in the Strule Valley where it descends from the crest of Bessy Bell before continuing eastwards to the Sperrin Hills. The scheme makes provision for the continuation of the route by way of a proposed realignment of McCormick's Road and an underpass.

3.338 The scheme would sever the Scarva to Aughnacloy section of the Ulster Way where it approaches the town from the east along a farm track before joining local roads. The ES noted that this is a link section of the circuit, which is not way-marked and where the use of public transport is promoted as an alternative to walking on the public road. There are no proposals for a crossing beneath or over the proposed dual carriageway. Users would be required to divert to Rehaghy Road to the north or to the A28 to the south. The ES described this as a slight adverse effect.

3.339 The ESA considered the effects of the scheme on the International Appalachian Trail, the asserted public right of way at Glenbrae, the Strabane Towpath and on an undesignated walk with access off Finn View. Effects during construction and operation were said to range from moderate to negligible.

Effects on motorised users

3.340 The ES stated that the proposed dual carriageway would cross the 64-mile-long South Sperrins scenic driving route at four locations. Provision would be made for the roads which form part of the route to cross beneath or over the proposed road.

3.341 An objector argued that roads of this magnitude completely disrupt and sever families and communities living in close proximity to each other, resulting in distress and changed social interaction. The proposed road would cross existing local roads in over 100 locations. In most instances continued access would be provided for by the introduction of a bridge beneath or over the new road, accompanied in some cases by the realignment of the local road.

3.342 According to the ES, in the following nine instances severance of the local road network there would have a moderate adverse impact:

- At Chainage 14980, the access from Spruce Road to the existing A5 Victoria Road would be closed. Drivers seeking access to Woodend Road would have to negotiate three new roundabouts through the proposed Junction 3, an increased distance of 400 or 500 metres.
- At Chainage 17650, the access from Park Road to the existing A5 Barnhill Road would be closed. There would be a detour along a new road and drivers would have to negotiate three new roundabouts through the proposed Junction 4.
- At Chainage 22380, Peacock Road would be severed and drivers diverted through Primrose Park to the existing A5 Melmount Road, an increased distance of 570 metres.
- At Chainage 35300, Milltown Road would be severed and drivers diverted to Deerpark Road and Coolaghy Park, an extra distance of 2.1 kilometres. (We were told at the inquiry that this would affect only half a dozen properties.)
- At Chainage 37300, Drumlegagh Road North, Golf Course Road and Baronscourt Road would be severed and drivers would have to negotiate two new roundabouts through the proposed Junction 10, an increased distance of about 200 metres.
- At Chainage 49550, Drumlegagh Road South would be severed and drivers seeking access to the existing A5 would have to negotiate two new roundabouts through the proposed Junction 11, an increased distance of some 500 metres.
- At Chainage 49830, Todds Road would be severed and drivers seeking access to the existing A5 would have to negotiate two new roundabouts through the proposed Junction 11, an increased distance of 650 metres. (It was stated that this would affect only a single property.)
- At Chainage 62000, Seskinore Road would be severed and drivers seeking access to the existing A5 would have to negotiate three new roundabouts through the proposed Junction 13, an increased distance of 40 metres.
- At Chainage 75000, Cormore Road would be severed and the distance for drivers seeking access to Tullanafoile Road would increase by 1.3 kilometres.

3.343 Forty eight residents of Primrose Park, Sion Mills and the adjoining Rose Vale objected to the stopping up of Peacock Road as it would lead to Primrose Park becoming the

shortest route between the nearby settlement of Glebe and Strabane/Derry and result in a massive increase in traffic going past their homes in what is a quiet village street at present. They were concerned that the closure of Peacock Road would increase danger and pollution on Primrose Park.

3.344 The objectors described Primrose Park as a heavily built-up residential road not designed for large volumes of through traffic. Many houses are within 8 to 12 feet of the road edge and speed bumps had to be installed 18 years ago. Children play in the street. The traffic problem would only increase as more houses are built in the Glebe area in the near future. It was understood that the new area plan will zone another 34 acres for housing in that area.

3.345 In its report on the 2016 inquiry, the Commission recommended DfI to reassess the closure of Peacock Road. In response, DfI stated that it had carried out a reassessment but concluded that the cost of providing a new bridge and road realignment would be disproportionate to the benefits that would derive given the low volume of traffic that would use the road and the close proximity of Primrose Park which would provide the necessary connectivity for all road users in the area.

3.346 In rebutting the latest objections, DfI accepted that if the closure of Peacock Road were implemented traffic would transfer to Primrose Park. If all the Peacock Road traffic were to transfer, then the two-way 12-hour weekday flow on Primrose Park could be expected to rise from 990 vehicles in 2016 to 1,970 vehicles. If up to 50% of traffic on Orchard Road also transferred to Primrose Park this would result in a further increase in the two-way traffic of 685, taking the flow to 2,655 vehicles. Given the reduction in traffic along the existing A5 with the proposed scheme in place, there would be little change to the operation of its junction with Primrose Park, even in the event of traffic transferring from Orchard Road. Assuming 1% growth in traffic per annum for the period 2016 to 2028, it was expected that by the scheme opening year two-way 12-hour weekday traffic along Primrose Park would be around 3,000 vehicles.

3.347 Planning applications were considered in preparing the 2022 ESA and it was noted that new developments for which planning permission has been granted in the Glebe area are generally small scale. The Strabane Area Plan 1986-2001 doesn't include specifics for Glebe and is now out of date. The new draft plan strategy doesn't include any zoning either. It categorises the potential for more housing post 2017 at Glebe as low.

3.348 DfI stated that to keep Peacock Road open, a bridge over the proposed A5 dual carriageway would be required. The existing topography coupled with the gradient of Peacock Road would result in a lengthy and heavily skewed on-line structure with significant buildability issues, requiring considerably more land take and leading to associated high costs. The estimated cost (in 2016) was about £730,000. In conjunction with the foregoing, consideration would have to be given to the closure of Primrose Park. While this could lead to a cost saving, such a proposal was unlikely to be supported by many of the current users of Primrose Park.

3.349 DfI stated that along Primrose Park, an increase in roadside pollution had been modelled but the concentrations of NO_2 and PM_{10} would remain well below the standards for ambient air set out in regulations for the protection of human health and no significant health effects from air pollution were predicted as a result of the scheme.

3.350 DfI was content that Primrose Park would be capable of accommodating the volume of traffic that would arise. The current road layout, with extensive road frontage, adjoining footpath and evidence of on-street parking would self-enforce road speeds and there were existing traffic calming measures in place. In the future, if there was evidence of excessive speeds along Primrose Park DfI could monitor and look to mitigate where necessary.

3.351 At the inquiry, we asked DfI what criteria it uses when deciding whether to install speed bumps. We were told that the purpose of traffic calming measures is to control speed. Primrose Park is a straight section of road. There is potential for accidents due to the number of properties. The accident record would be a factor but the witness did not have information on that.

3.352 Counsel for DfI referred to the guidance document "Creating Places", which was published by the former Planning Service and the former Roads Service in 2000 and re-endorsed by DfI in 2019. Table 3 indicates that a 5.5-metre wide road is capable of serving up to 400 dwellings. At the rate of 10 vehicle movements per dwelling per day, that is up to 4,000 vehicles.

3.353 The preamble to "Creating Places" states that it is for use by all those involved in the design of new residential developments and the rejuvenation of existing housing areas. Chapter 18 provides advice on speed restraints as part of the design process. Primrose Park was built to an earlier standard and DfI formed a judgment nearly two decades years ago that traffic conditions required the retrofitting of speed bumps. We are not persuaded that the carrying capacity of a new street designed in accordance with "Creating Places" is relevant to the consideration of whether an existing street of substandard design can accommodate a threefold increase in through traffic.

3.354 We put it to DfI that 10 to 15 percent of the two-way 12-hour weekday traffic flow is likely to occur during the morning peak hour. It could be inferred that if Peacock Road were closed, 300 to 450 vehicles would use Primrose Park at the morning peak hour in 2028, one vehicle every 8 to 12 seconds. The Project Sponsor acknowledged that that could be difficult and would certainly merit further measures.

3.355 The proposed Junction 8 would be grade-separated with an overbridge linking a semi-circular western slip road to a new roundabout on the existing A5. We suggested that instead of providing a second overbridge to maintain the continuity of Peacock Road, a connection could be created between the south-western leg of Peacock Road and the western slip road. DfI's technical adviser told us it would be difficult to redesign the slip road. A watercourse would be a constraint and more land would have to be vested. However, the Project Sponsor said DfI was happy to reconsider in light of the representations that had been made.

3.356 Primrose Park is a settled community whose residents are used to their existing level of amenity. We agree with the Commissioners who conducted the 2016 inquiry that the residents' concern about increased traffic is well founded and that the negative impact on them would be grave. That impact could be avoided at relatively small cost by adjusting the geometry of Junction 8 and we welcome DfI's openness to considering that solution. We do not accept that maintaining linkage between Peacock Road and Strabane and Derry would necessitate closing Primrose Park which provides an important connection between Sion Mills and educational facilities at Glebe.

Recommendation 12

We recommend the Department to augment the scheme by connecting the south-western leg of Peacock Road to the western slip road of the proposed Junction 8.

3.357 The ES noted that the local road network provided for access within the larger towns and villages and between dispersed rural populations within the countryside. It set out in considerable detail the locations of commercial and retail centres, hospitals and doctor's surgeries, dental practices, opticians, colleges, schools and libraries used by local communities. It mentioned that Peacock Road, Drumlegagh Road North and Drumlegagh Road South formed part of established school bus routes.

3.358 The ES stated that the displacement of a large part of the traffic from the existing A5 to the proposed new road would reduce severance within existing communities and along rural sections of the existing road which link communities. The 2022 ESA updated the analysis, taking into account the new iteration of the traffic model. It predicted substantial relief from severance in Newbuildings, between Newbuildings and Ballymagorry and between Strabane and Victoria Bridge; and moderate relief from severance in Strabane, between Victoria Bridge and Newtownstewart, in South Omagh, between Gortaclare and Ballygawley and between Lissenderry and Aughnacloy.

3.359 The AA5A's EIA expert drew attention to the DMRB, Volume 11, Section 3, Part 8. It has a chapter on community severance, which it defines as separation of residents from facilities and services caused by new or improved roads or changes in traffic flows. It states that severance may sometimes be caused by the demolition of a community facility or by the loss of land used by members of the public. Aged people, the disabled and children are particularly vulnerable to disruption of their travel patterns and the assessment should pay particular attention to routes and facilities used by them.

3.360 The AA5A's expert complained about the apparent absence of an analysis of vulnerable groups and of the effects of community severance on the health and well-being of local communities. He referred to the ES, published in 2013, for the Morpeth Northern Bypass scheme in Northumberland as an illustration of the more in-depth treatment he was advocating. It identified the location of existing community facilities and determined the impact of the proposed bypass upon the ability of users to access the amenities of Morpeth.

3.361 The ES for the A5 scheme cannot be faulted for its account of existing community facilities. Figures 14.2 to 14.14 illustrate show the extent of the local road network and the location of the principal settlements and facilities used by communities. Although the text of the ES could have been clearer, a study of those maps indicates that there would be very little severance of communities from facilities. The introduction of three sizeable detours on school bus routes does, however, represent an adverse impact. The AA5A produced no examples of severances that were omitted and we are not persuaded that the ES is deficient in its coverage of this subject.

3.362 The 2022 OBC examined the social impacts of severance. It found that with the scheme in place 32 of the 36 schools analysed would experience a net reduction in traffic flows in the catchment area, ranging from -94% to -0.2%. Four schools were predicted to experience a slight increase in traffic flows, ranging from 0.8% to 2%. A net reduction in traffic flows across all schools of around 42% was predicted. It was concluded that this

reduction could lead to improved safety in the vicinity of schools and would be a significant benefit to the local areas around the schools.

3.363 The OBC also carried out an analysis of impacts on pedestrian crossing facilities, including crossings at road junctions, standalone signalised pedestrian crossings and non-signalised pedestrian crossings. It found that traffic flows would decrease at 46 of the 50 crossing places and increase at only four locations. It was further noted that 64% of the crossings would experience a traffic flow reduction greater than 50%. Counsel for the AA5A did not dispute the OBC's conclusions on schools and pedestrian crossings.

Driver stress

3.364 The DMRB, Volume 11, Section 3, Part 9 provides guidance on levels of driver stress relative to hourly flow per lane, average journey speed, urban or rural location and type of road (motorway, dual carriageway or single carriageway). It does not distinguish WS2+1 roads from other single carriageways. The stress ratings are given with the caveat that the assessment of specific routes can only be made in the light of full knowledge of local conditions.

3.365 The ES assessed that current users of the existing A5 were subject to levels of driver stress ranging from moderate, within the inter-settlement stretches, to high when passing through the larger settlements. It stated that outside the settlements, frequent side roads and private accesses and limited overtaking opportunities led to frustration and fear. Within settlements, where side roads and private accesses increased in frequency and there were larger numbers of vulnerable and unpredictable pedestrians, frustration and fear increased.

3.366 Taking account of the new iteration of the traffic model, the 2022 ESA compared driver stress on stretches of the existing A5 in 2043 should the scheme not be implemented with driver stress on the equivalent sections of the proposed road in that year should it be implemented. The findings indicated that without the scheme levels of driver stress would be moderate to high for all but one stretch of the existing A5, whereas with the scheme in place stress levels for the proposed road would be low, other than on the WS2+1 section passing Newbuildings where the level would be moderate.

3.367 At the inquiry in 2020, an objector referred to the evidence, considered in detail in Chapter 2 of this report, that with the new road in place, it would take longer to get from the north end of Newbuildings to the east end of Craigavon Bridge in Londonderry at peak times than it does at present. Driver stress is therefore likely to increase over that stretch. We reiterate the view expressed in the Commission's Interim Report that had increased driver stress on the existing A5 between Newbuildings and Londonderry been acknowledged in the updated ES, that would have given a fuller and fairer picture.

3.368 Although the ES shows the current driver stress level as low on the stretch between Lissenderry to the north west of Aughnacloy and the junction of the existing A5 and A4 roads at Ballygawley, a local resident expressed frustration and anger at the time it takes to get on to the roundabout from the Aughnacloy direction and asserted that at peak times there is a 2-mile tailback. We find this somewhat improbable.

3.369 The AA5A argued that driver stress on the existing A5 was overrated in the ES. The availability of existing overtaking opportunities would reduce stress. The AA5A produced no technical evidence in support of this argument but regarded it as common sense. While it is evident that the ES and the ESA have applied the DMRB stress ratings

without correcting for site-specific factors, we are not persuaded that a correction related to the 2+1 nature of parts of the existing single carriageway would accord with the guidance. In the absence of suggestions as to how specific ratings should be adjusted, we do not support this particular point of objection.

3.370 An objector queried why the impact of the severance of 100 side roads was not factored into the driver stress analysis. DfI's response was that there was no methodology to translate severance into stress. It seems to us that irrespective of methodologies, the permanent inconvenience at the nine locations identified in the ES where sizeable detours would be introduced (including three school bus routes) must be offset against the demonstrated improvements in stress levels for main road users. In bringing all the evidence arising from this part of the updated ES into balance, we conclude that the net impact of the scheme on human beings as travellers would not amount to a significant environmental effect.

Community and Private Assets

3.371 Chapter 15 of the 2016 ES considered the effects of the scheme on private land and property, agricultural land and farms, commercial and industrial businesses, land used by the community, and development land. Chapter 13 of the 2022 ESA made no changes with regard to private land and property, community land and commercial and industrial development as it considered that the baseline scenario or effects upon receptors remained unchanged. However, it provided updated findings in relation to development land, residential development and agricultural land and farms.

Private land and property

3.372 The ES stated that the scheme would result in the demolition of eight dwellings and the loss of a halting site in Strabane used by the travelling community. An additional 41 residential properties would suffer loss of garden, although the dwellings themselves would not be directly affected. We agree that this would constitute a significant environmental effect.

Land used by the community

3.373 The ES stated that the scheme would impact on Strabane Nature Reserve, a local rugby club and a waste management facility. It said that the impact on these facilities would not constitute a significant environmental effect.

Commercial and industrial development

3.374 The ES stated that the scheme would affect seven commercial and industrial facilities with impacts ranging from slight to moderate adverse. It said that the impact on these facilities would not constitute a significant environmental effect. At the inquiry in 2020, DfI's representatives described the likely impact on abattoirs arising from the loss of agricultural land as slight.

3.375 At the inquiry in 2020, concerns were expressed about the marginalisation of small businesses with direct access to the existing A5, in particular those that rely on passing trade. DfI undertook a local business impact assessment (LBIA) which was published as a supporting document to the ESA 2022, although it is not referenced in the text of Chapter 13 of the ESA.

3.376 The LBIA used traffic and business data to attempt to quantify the financial impact on the businesses of moving the A5 away from them. It found that roadside businesses

would remain dependent on and continue to benefit from local traffic and trade that would remain captive to the area. It predicted that business impacts would thus be limited, though annual business turnover in the villages of Newbuildings, Sion Mills and Aughnacloy would decrease by 8 to 10 percent. We consider that such impacts could potentially threaten the vitality and viability of these centres.

3.377 The report does not consider the possibility that some businesses may be forced to close due to diversion of traffic away from them. No actual discussion took place with the owners and operators of the identified businesses to inform the preparation of the LBIA. It was described by the author at the inquiry as "a high level survey". We therefore explored the methodology behind it.

3.378 DfI undertook an initial survey of the existing A5 corridor between Newbuildings and the border at Aughnacloy in Spring 2020. It identified 150 businesses within 200 metres of the existing A5 corridor. This was supplemented by Pointer data for non-domestic properties, increasing the total to over 400 businesses. The study was then restricted to those types of businesses which it was thought could be impacted by a potential loss of passing trade. This resulted in most of the original businesses identified by DfI being eliminated from the study including some filling stations and convenience stores between Omagh and Aughnacloy which were originally expected to suffer a substantial or medium impact. We were told at the inquiry that the elimination of these businesses followed "a high-level drive along the corridor". We note that this took place in January 2021 when some businesses were closed due to a Covid-19 lockdown. After a follow-up site visit in February 2022, a final list of 101 businesses was adopted.

3.379 Where the Pointer data was insufficient to identify the type of business, other desktop tools such as Google Maps, Google Street View imagery and individual business websites were used. Assumptions were made that smaller businesses would typically employ between one and five people while larger facilities (including superstores) would typically employ between five and ten. This appears to us like guesswork as the businesses were not consulted.

3.380 The guesses about the number of employees were then combined with Northern Ireland level turnover figures per sector to estimate the financial impact of the proposed road on the businesses. Counsel for the AA5A highlighted some of the improbable assumptions made, for example that a Costa Coffee outlet would have just three employees, or that a McDonald's restaurant would have just five.

3.381 The author of the report argued that the methodology adopted ensures an independent view and that consulting businesses during Covid-19 may have led to an incomplete data set. However, given some obvious anomalies in the information relied upon, we consider that the verification of these figures with the businesses would have enabled greater confidence in the results of the LBIA. Even incomplete data from actual surveys is likely to have been more reliable than that presented. We do not find the LBIA to be of significant help in weighing the impact of the scheme on existing businesses.

3.382 The LBIA also considered the potential benefits of the construction of the scheme to local employment. A Transport Infrastructure Ireland document on the employment benefits of investment projects suggests that capital investment of circa £1 billion would support over 9,000 direct construction jobs as well as an additional 3,700 indirect jobs in the supply chain. This appears to exceed significantly the peak number of employees

expected to be on site elsewhere in the ESA. Table 5-11 allows for a maximum of 1650 staff employed if all phases were running concurrently.

3.383 The LBIA predicted that many of the construction jobs are likely to be taken by workers who live along the A5 corridor whilst many supply chain businesses in the corridor would also be supported. The investment would also support apprenticeships. Local businesses would supply heavy plant equipment, construction materials and various types of vehicles needed during the construction programme.

3.384 The LBIA went on to assert that the majority of the expenditure is likely to be spent in the local area and would thus support businesses along the corridor. We asked for evidence of this and we were told that it was the case with other major schemes. However, an objector stated that in the past, the Department had fencing work for the scheme carried out by a company from the Republic of Ireland that employed foreign workers who did not stay in the area.

3.385 The AA5A questioned the evidential basis for the above economic claims as contractors had given no commitment to use local businesses or employees. However, the Principal of South West Regional College, in supporting the scheme, spoke of the college's extensive links with local business and industry in terms of apprenticeships and DfI's Project Sponsor highlighted enhanced social value clauses in the contracts regarding apprentices and the unemployed.

3.386 It seems to us that a project of this scale taking place in the A5 corridor would provide business and job opportunities both locally and from further afield. The construction industry is a key one along the corridor and we have no doubt that it would step up to take advantage of the opportunities that would arise. It is likely that some of the induced jobs would last only as long as construction lasts. However, the improved accessibility of the region and specific businesses along the corridor following completion of the scheme would also encourage job creation as businesses expand and find it easier to recruit and retain staff. Overall, the businesses that gave evidence to the inquiry were overwhelmingly in favour of the proposed scheme.

3.387 DfI did not accept the proposition that the scheme was likely to result in a transfer of expenditure and business activity from villages and isolated roadside sites to larger urban destinations in the corridor such as Londonderry, Strabane and Omagh. Its witnesses were confident that small local businesses would still cater for local markets. It was DfI's case that the scheme would create winners and losers in the business community, but that the A5 corridor as a whole would not lose out.

3.388 Notwithstanding the limitations of the LBIA report, we accept the logic of this position. We cannot rule out the possibility that the loss of passing trade may prove fatal to some businesses (for example filling stations on the existing A5 which are not near a junction on the new road). Notwithstanding the effects on individual businesses, we consider that the impact of the proposed scheme on businesses generally would not constitute a significant environmental effect.

Development land

3.389 The ES stated that there were 15 sites on which housing had been approved where development would no longer be able to proceed if the scheme went ahead. It said that the impact on these facilities would not constitute a significant environmental effect. Planning permission for some of the sites had expired in the period between the

publication of the ES and the preparation of the ESA, so the data was updated in December 2021. The scheme would require land take from 33 developments, of which 18 were residential.

3.390 In one case, a planning permission for the retention of a dwelling and garage at 46 Woodend Road, Strabane, the impact is considered to be substantial adverse. However, we note that this development is already constructed (so it might have been better categorised with private land and property) and the impacts upon it arise principally from re-organisation of the local road network and installation of a roundabout on the existing A5. The proposed dual carriageway would be approximately 300 metres to its west. A further eight applications are likely to be compromised to some level. In each of these cases, the impact is considered to be moderate adverse. Slight adverse impacts are anticipated in 20 cases, in which some amendments may be required to the planned development such as the access, but they would not be substantially compromised by the proposed scheme. There would be a negligible impact on four sites.

3.391 The ESA Paragraph 13.4.2 erroneously indicates that land has been zoned for housing development at Strabane, Glebe, Sion Mills, Magheramason and Bready since the publication of the 2016 ES and the 2019 ESA. These settlements fall within Derry City and Strabane District Council. Its draft Plan Strategy 2032 is currently undergoing independent examination by the Commission. It does not contain site-specific zonings for housing or other uses. These will follow in a later Local Policies Plan which is currently expected to be published for consultation in 2026. We note that the draft Plan Strategy does contain a policy protecting the route of new transport schemes like the A5 upgrade from development that would prejudice their implementation. We see nothing to suggest that the A5 scheme would adversely impact upon housing land in the abovementioned settlements.

Agricultural land and farms

3.392 As the terms of reference for the inquiry did not include hearing objections to the 2016 Vesting Order, we are unable to consider the impacts of the scheme on individual farms or properties. However, the environmental information published for consultation allows for assessment of the impacts on agricultural land and farms at industry level. Updates to the scheme boundary have resulted in the need to re-calculate the loss of agricultural land.

3.393 The total area of agricultural land required for the construction of the scheme now stands at 1,192 hectares (including around 250 hectares temporarily during the construction phase) which is 0.11% of the total agricultural land in Northern Ireland, 0.01% of the agricultural land in County Londonderry and 0.45% of that in County Tyrone. With regard to higher grade (best and most versatile) agricultural land (a particularly scarce resource and especially so in County Tyrone), 752 hectares are required – 10 hectares in County Londonderry and 742 hectares in County Tyrone. Based on these figures, the ESA uprates the impact of the scheme on agricultural land to moderate adverse in County Londonderry and substantial adverse in County Tyrone and Northern Ireland overall. The ESA considers that the loss of agricultural land in County Tyrone and Northern Ireland overall would constitute a significant effect of the scheme.

3.394 Some 314 farms would lose land to the scheme. The majority of affected farms are livestock based, primarily beef and dairy. Despite the addition of one newly affected farm as a result of additional land take, two of the originally identified farm businesses

have been merged leaving the total number the same as that reported in the ES. Farm data sheets have been compiled for each farm and DfI contacted the farm businesses through letter drops and meetings during the preparation of the ESA to update the data. Not all landowners engaged with this process. Feedback from landowner engagement during 2021 found that the condition of 95 farms has changed since information was collected for the ES, including practice, management, cattle movement and farm size. Of these 95 farms, 12 farms were identified as having a material change that required an updated farm data sheet. Data sheets were also updated for 11 farms impacted by additional land take.

3.395 DfI published an agricultural industry impact assessment (AIIA) report as a supporting document alongside the ESA in March 2022. It was prepared by Burnhead Rural Services Limited, an independent agricultural consultancy, and aimed to assess the impacts of the scheme on the agricultural industry as a whole, though it is based on the individual farm data. It appears that this report did not include the additional land take on 11 farms. An addendum to the AIIA was then published by DfI in November 2022 incorporating an assessment of these changes to the scheme boundary. After the publication of the addendum report, some further farm data sheets were updated by DfI in response to individual representations. The author of the report told the inquiry that he has reviewed these and determined that they would not change his conclusions.

3.396 The AIIA addendum report acknowledges that the loss of land to the scheme would render some farm businesses no longer practically or financially viable. However, it considers that the vast majority of impacted farm businesses would adapt and restructure to remain at or close to their current production levels. Overall, the cumulative effect of the scheme including the additional land-take on the agricultural industry as a whole is considered to be minor adverse. In considering the loss of higher grade agricultural land, it concludes that for Northern Ireland as a whole, and within County Londonderry, the impact would be negligible adverse, and within County Tyrone it would be moderate adverse. These impacts are considerably less than those stated in the ESA.

3.397 We asked whether the conclusions stated in the ESA should overrule those stated in the supporting documents and why there was inconsistency between them when they were based on the same data set. A witness for DfI stated that assessment of community and agricultural assets in the ESA was governed by DMRB criteria. DMRB Volume 11 does not provide specific impact ratings for agricultural land, so criteria were adapted to assess the impacts at project level. The AIIA reports are based on different parameters and assess the impact at a regional or industry level. Counsel for DfI stated that the ESA overstates the adverse impacts and the AIIA and its Addendum reflect the correct analysis that the impact on agricultural land in County Tyrone would be moderate adverse and that in County Londonderry and Northern Ireland as a whole, the impact would be negligible adverse.

3.398 Counsel for the AA5A did not accept the distinction of different parameters drawn by DfI. The ESA considers the likely significant effects on the environment, yet DfI has reached a different view in the AIIA reports. The methodology in the addendum report appears to transpose the DMRB impact criteria, but inexplicably reaches a different conclusion. He argued that DfI has chosen to depart from the DMRB criteria in this instance in order to downgrade the impact.

3.399 The AIIA stated that of the 314 farms affected by the scheme, 176 would suffer only a slight (or minor) adverse effect. A witness described this as including limited land take or severance, or a limited effect on stock numbers. Effects were considered slight where small adjustments to farming practices or day-to-day operations could overcome the loss. However, the adapted DMRB criteria referred to in the ESA describe a slight adverse effect as temporarily compromising or precluding use (for example, temporary loss of agricultural land). Permanent losses would sit in a higher category, moderate or substantial adverse.

3.400 The AIIA provides supporting information to Chapter 13 of the 2022 ESA and it would have been reasonable to expect the same parameters to be used and the conclusions to correlate. Departing from the DMRB guidance to downgrade the impact on agriculture does not sit well with the conclusions of the ESA and casts doubt on the validity of the AIIA exercise. We agree with the ESA that the loss of agricultural land, particularly in County Tyrone, would constitute a significant adverse effect of the scheme.

3.401 The AIIA went on to examine the impact of the scheme on various agricultural sectors, the supply chain, agricultural jobs and the overall economy. Of the 131 moderately and substantially impacted farms, 49 are specialist dairy farms. All would see a reduction in land area with the average land take across all 49 dairy farms being 4.53 hectares. The AIIA assumes that 60% of these dairy farms would be able to restructure their farm businesses to take into account the impact of land take and land severance from the scheme and to continue at or very close to their current stocking levels rather than reducing stock numbers. Means of mitigating the impacts were suggested including housing more cows, renting or buying additional land and becoming more technically efficient by getting more output from the same number or less cows or land. Stock reductions totalling 181 dairy cows were predicted across the remaining 20 dairy farms.

3.402 Farmers who are looking to restructure in response to the scheme would be faced with a combination of factors including loss of conacre land and a likely spike in conacre prices due to competition for replacement land, an increase in nitrogen loading where they would have more slurry than land available to spread it at the 170 kilograms per hectare limit set by the Nitrates Regulations (unless slurry is exported), and a reduction in entitlement to farm subsidies which are based on the area of land farmed. We consider that this combination of factors, when applied to individual farms, may make it difficult for many of them to continue at or very close to their current stocking levels.

3.403 While we are unable to make recommendations relating to individual farm businesses, evidence given by particular farmers at the inquiry highlights the sort of issues that famers could face locally. An arable farmer stated that he would lose 20 of his 160 hectares to the scheme and this would leave his enterprise unviable. The data sheet completed for his farm in 2016 when they were just starting arable is now out of date. A dairy farmer explained that he would lose 14 to 17 hectares of grazing land. He would therefore have to reduce cow numbers by 40 to 50, or house them all the time. The scheme would provide him with an accommodation bridge over the new road, but for him to be able to use this bridge to walk his 250 cows to and from milking twice a day (a total of 1000 cow journeys), he would need reception tanks for slurry at the bridge. He stated that DfI would not provide these.

3.404 It seems to us that individual decisions like this could have a significant effect on the overall running of farms and could potentially make some unviable due to severance,

even if the area of land lost could be overcome. DfI indicated that its liaison with farmers would intensify as the construction of the scheme approached.

3.405 Fifty five of the moderately and substantially impacted farms are in the beef and sheep sector. They would lose an average of 5.24 hectares of land. The AIIA expects that 80% of these farms could restructure to continue at or close to current stock levels, though the options for doing so are more limited as it is less practical to house these animals. Livestock farms would also be affected by the severance, conacre, nitrogen and subsidy issues referred to above. The AIIA acknowledged that 11 farms were likely to have to reduce stock numbers by a total of 143 beef cows, or 192 store cattle, or 768 ewes.

3.406 Intensive pig and poultry units can struggle to comply with nitrogen loading requirements. Two pig farms and four poultry farms would be affected by the scheme. Two of the poultry farms are likely to lose bird houses as a result of the scheme. In the case of a broiler house, this would reduce the farm's output by 51,800 birds per year. Two specialist arable farms would also be affected by loss of subsidy in addition to loss of productive land.

3.407 The individual agricultural impact assessments carried out for the ES did not look at loss of jobs on impacted farms. A witness for DfI explained that DMRB guidance did not require this and it focused on other areas such as land take, severance, type of husbandry, major accommodation works for access, water supply and drainage. The AA5A argued that loss of jobs should have been considered at farm level as the EIA must consider the impact of the scheme on human beings. The guidance should not override the Directive.

3.408 We consider that it is unfair of the AA5A to criticise DfI on the one hand for departing from the DMRB guidance (in classifying the impact on agricultural land), and to also criticise it on the other hand for only applying the DMRB guidance to the assessment of individual farms. For consistency, all of the assessments should have been based on the DMRB. However, the AIIA does go on to estimate job losses on the largest farms affected by the scheme. It predicts a loss of 18.4 standard labour units. This equates to 0.03% of jobs in the agricultural industry in Northern Ireland. We agree with the assumption that significant job losses are unlikely on smaller farms affected by the scheme as they are unlikely to provide full time employment or an adequate income solely from farming activities. It is also reasonable to expect that where restructuring is possible, jobs would not be lost as a result of the scheme.

3.409 The AIIA estimates that the total loss of revenue to the local economy as a result of reduced farm output would be £1.68 million per year. This equates to 0.07% of the total value of the agriculture sector in Northern Ireland. It rated this as a negligible impact on the agricultural sectors, the agricultural industry and the Northern Ireland economy. The AA5A criticised the inflation of the effects to national level in order to reduce their impact. We consider that a loss of £1.68 million in agricultural productivity due to land take is a significant effect of the scheme in any context. We also note that while the percentages may appear small at industry level, the effects for individual farm businesses and employees are stark, in some cases rendering them no longer viable. This is a significant adverse effect of the scheme.

3.410 The AIIA argued that one benefit of the scheme would be a lesser risk of collision with farm animals who have escaped onto the existing A5 due to lower traffic on it. An

objector challenged this assertion on the basis that there are few incidents of animals escaping on to the road. It was highlighted at the inquiry that the new road would have stock-proof fencing. Another objector stated that it would need to be better than that employed on the A4 upgrade near Ballygawley when numerous animals escaped. DfI stated that it would be further back from the road edge and would be maintained. We consider that it is difficult to completely prevent the escape of animals on to roads and that this can happen anywhere on the road network. The prospect of animals escaping does not therefore weigh in favour of or against the scheme.

Electricity network

3.411 The electricity network is important regional infrastructure. Although it is a material asset that serves the community, it was not discussed in Chapter 15 of the 2016 ES. However, in Chapter 6 it was indicated that electricity distribution apparatus would be affected by the scheme in about 120 places. Most of it was overhead high- and medium-voltage cable supported on single wooden poles. The affected apparatus would be moved, and if necessary raised, to provide sufficient ground clearance to the proposed carriageway. If this was not possible, then some cables would need to be diverted in ducts under the mainline or under re-aligned side roads.

3.412 The ES stated that electricity transmission apparatus would be crossed by the scheme mainline seven times and by associated side road works four times. These conductors were supported on a mixture of wooden portal poles, steel pylons and steel towers. To the north and south of Killynure Road (Omagh), diversionary works would be required to transmission apparatus for around 2 kilometres in total. This diversion would include realignment, raising of portal poles and construction of new angle towers and pylons.

3.413 The ES went on to say that at the remaining locations where the proposed road would cross transmission apparatus there was a preference for it to remain in its existing location and be raised as required to provide the necessary ground clearances. DfI would aim to minimise the impact to this apparatus, however in some locations portal poles, steel pylons and steel towers would need to be raised, and possibly moved.

3.414 In its 2019 consultation response, Northern Ireland Electricity (NIE) Networks stated that while it might in general be possible to divert the lower-voltage distribution network, the impact on the transmission overhead line network was of concern. The transmission lines potentially affected formed the main connections to Omagh, Enniskillen and Donegal. A 110-kilovolt circuit between Strabane and Omagh was of particular concern, as it was proposed that the road would follow the same route for 2 kilometres.

3.415 NIE Networks went on to say that further investigation would be required in each instance to determine whether an alteration to the network was technically feasible. Even if it was feasible, NIE Networks would still have to secure any necessary landowner agreements and/or planning approvals and agree with the systems operator any outages necessary to facilitate the work. In its rebuttal evidence, DfI said it would continue to liaise with NIE to identify affected apparatus and alterations required.

3.416 We conclude that the scheme would have a significant adverse effect on residential property, agricultural land and farm holdings.

Materials

3.417 The 2022 ESA has a chapter titled "Materials" which has no counterpart in the 2016 ES or the 2019 ESA. It reports the outcome of an assessment of likely significant effects arising from the scheme in the consumption of material assets and in generating and disposing of waste. The assessment uses available material and waste data provided by early contractor involvement based on the "specimen" design.

3.418 The following assessment findings and conclusions were reached in regard to materials:

- The scheme would achieve more than 90% overall material recovery/recycling (by weight) of non-hazardous construction and demolition waste to substitute for the use of primary materials. This would result in a slight adverse effect, which would not be significant.
- It is estimated that 2,895,500 tonnes of reused/recycled aggregates would be used on the scheme; this would equate to almost 57% of the total (5,140,000 tonnes). That would exceed the recycled aggregate target of 10% and would result in a slight adverse effect, which would not be significant.
- Although there are pockets of peat within the scheme boundary, to reduce potential effect peat has been treated as a design constraint. There is a strategy to manage this resource in order to minimise disturbance as far as reasonably practicable, with further refinement anticipated at the detailed design stage in terms of locations and cost-effective options for further reduction of effect and volumes of peat excavation. The overarching aim would be not to sterilise peat resources. Large and very large effect category thresholds for resource sterilisation in DMRB, LA 110 are not expected to be exceeded and hence the associated effects would not be significant.

3.419 The following assessment findings and conclusions were reached in regard to waste:

- For waste diverted from landfill, the baseline information suggests that there is sufficient recovery capacity within the region to accommodate surplus arisings from the scheme; use of specific facilities would be determined by the contractor during the construction phase.
- Anticipated volumes for waste disposal have not been quantified at this stage but, subject to the mitigation measures being adopted, are expected to be minimal in the context of 2018 landfill capacity. Waste to be disposed of is anticipated to result in a less than 1% reduction (equivalent to less than 153,000 tonnes for inert waste and 67,000 tonnes for non-hazardous waste) in remaining regional landfill capacity (as of 2018). This would result in a slight adverse effect, which would not be significant.
- Based on the available data, no waste disposal is expected to occur outside of Northern Ireland. However, it is important to note that should any hazardous waste be encountered, this would require disposal outside Northern Ireland – typically, to other regions of the UK, although there may be an opportunity to send to facilities in the Republic of Ireland. It is, nevertheless, reasonable to assert that any small volumes of hazardous waste that may need disposal would not, following the mitigation/treatment measures proposed, exceed 1% of the recipient landfill capacity. This would result in a slight adverse effect, which would not be significant.

3.420 The chapter concluded by saying that the overall significance of effect for material assets and waste was considered to be slight adverse in both cases. In accordance with the criteria and thresholds set out in DMRB, LA 110, the effects were therefore assessed to be not significant. No representations were made in regard to this chapter and we have no reason to disagree with its findings and conclusions.

3.421 We accept that the consumption of construction materials and the generation and disposal of waste would not amount to significant environmental effects.

Climate

3.422 The proposed dual carriageway scheme is larger than any road-building project ever undertaken in Northern Ireland. Chapter 15 of the 2022 ESA assesses its likely significant effects on greenhouse gas (GHG) emissions and the climate at construction and operational stages. It addresses the implications of the Paris Agreement (2015) and of legislation and policy relating to climate change.

3.423 As a member of the United Nations Framework Convention on Climate Change, the UK pledged to reduce GHG emissions under the Paris Agreement. The Agreement aimed to hold the increase in the global average temperature to well below 2 degrees centigrade above pre-industrial levels and pursue efforts to limit them to 1.5 degrees; to conserve and enhance sinks and reservoirs of GHG; and to reach global peaking of GHG emissions as soon as possible.

3.424 Pursuant to the Paris Agreement, the Climate Change Act 2008 (2050 Target Amendment) Order 2019 set a target to reduce net UK GHG by 100% from 1990 levels by 2050. Net Zero means any emissions would be balanced by schemes to remove an equivalent amount of GHG from the atmosphere, for example by planting trees or using technology such as carbon capture and storage.

3.425 The Strategic Planning Policy Statement for Northern Ireland (SPPS), published by DfI's predecessor department in 2015, highlights the importance of reducing GHG emissions. Paragraph 3.13 advocates mitigating and adapting to climate change by, among other things:

- shaping new and existing developments in ways that reduce greenhouse gas emissions and positively build community resilience to problems such as extreme heat or flood risk;
- promoting sustainable patterns of development, including the sustainable reuse of historic buildings where appropriate, which reduces the need for motorised transport, encourages active travel, and facilitates travel by public transport in preference to the private car; and
- requiring the siting, design and layout of all new development to limit likely GHG emissions and minimise resource and energy requirements.

3.426 At the inquiry in 2020, objectors drew attention to the fact that a climate emergency had been declared by the UK and Irish Governments, which they saw as an indication of the seriousness of carbon emissions from industrial civilisation. They argued that motor vehicles were a major contributor to GHG production. Northern Ireland already has a high car dependency level and building another road would encourage more car-based travel. In view of the potentially dire consequences for the planet of climate change, it was imperative to curtail environmentally damaging activity.

3.427 When asked whether the A5 scheme is compatible with the UK's climate change commitments and consistent with the SPPS, DfI's response was that the national-level commitments do not require every project to reduce GHG emissions. Net Zero is not a moratorium on all future development. Policy initiatives, such as the introduction of electric vehicles, will make a contribution towards GHG reduction.

3.428 The Climate Change Act (Northern Ireland) 2022 came into operation on 7th June 2022, nearly three months after the 2022 ESA was published. Section 52 places a duty on all Northern Ireland departments, including DfI, to exercise their functions, so far as is possible to do so, in a manner consistent with the achievement of the net Northern Ireland emissions targets. Section 1 requires net Northern Ireland carbon dioxide emissions to be reduced by 100% from 1990 levels by 2050; Section 3 requires the net Northern Ireland emissions account for 2040 to be in line with the target for 2050; and Section 4 requires net Northern Ireland GHG emissions to be reduced by at least 48% by 2030. The Act provides for sectoral plans, including for transport, showing how each sector will contribute to the achievement of the emissions targets. It also requires DAERA to set carbon budgets by regulation.

3.429 In February 2023, DAERA published a Northern Ireland Greenhouse Gas Projections Update. It estimated that emissions from Northern Ireland amounted to 28 million tonnes of carbon dioxide equivalent ($MtCO_2e$) in 1990 and 21 $MtCO_2e$ in 2020. It indicated that such emissions are expected to reach 18 $MtCO_2e$ by 2031, a trajectory only half as steep as the reduction to 15 $MtCO_2e$ by 2030 required by the 2022 Climate Change Act. It shows that transport GHG emissions amounted to 3.4 $MtCO_2e$ in 1990 and again in 2020; and that they are expected to decline to 3.1 $MtCO_2e$ by 2031, a reduction of 300,000 tCO_2e. It suggests that the projected 10% decrease in emissions from transport may largely be accounted for by new regulations for emissions from vehicles and by the expected increase in the uptake of electric vehicles. It states that in order to meet the statutory targets, additional policies and initiatives which provide emissions savings are being developed.

3.430 The Climate Change Committee, a statutory advisory body, produced a report titled "The path to a Net Zero Northern Ireland" in March 2023. It described the 2050 GHG reduction target as extremely stretching, going significantly beyond the Committee's previous advice on what would be a fair and achievable contribution from Northern Ireland to the achievement of UK-wide Net Zero emissions. That advice reached only an 83% reduction in Northern Ireland's emissions compared to levels in 1990 by 2050. The recommended pathway was already very ambitious, with most sectors decarbonising almost completely. Residual emissions in 2050 would come predominantly from the agriculture sector, which has a greater share of economic activity in Northern Ireland than in the UK as a whole, making Net Zero much more challenging to achieve in Northern Ireland.

3.431 The Climate Change Committee developed a "stretch ambition" pathway that reaches a 93% reduction in emissions on 1990 levels by 2050 and requires Northern Ireland to bolster the contribution of GHG removals and therefore balance some of the residual emissions from agriculture. It would entail a rapid ramp up in afforestation rates by a factor of six and engineered removals based on carbon capture and storage from both solid biomass grown in Northern Ireland and anaerobic digestion of wastes to produce bio-methane. It would require significant investment and infrastructure development.

It would involve a reduction of emissions from transport to 2.4 $MtCO_2e$ by 2030 and to 0.2 $MtCO_2e$ by 2050.

3.432 In Table 15.19 of the 2022 ESA, the total estimated GHG emissions arising from material use and transport, transport of waste, and from plant and equipment use during the construction phase of the scheme, ending in 2028, was calculated to be 322,000 $MtCO_2e$. It was stated that the land use change and forestry was likely to cause an increase in construction emissions due to the use or disposal of the felled timber and the disposal of extracted peat but data were not available to quantify this impact. There would also be an increase in carbon emissions as a result of soil disturbance due to the clearance of woodland but again data were not available. The 322,000 $MtCO_2e$ figure must therefore be regarded as an underestimate.

3.433 Some supporters of the scheme argued that the operation of the proposed new road would not cause a net increase in carbon emissions as most traffic would have transferred from the existing A5. However, Table 15.3 of the ESA listed the following emissions sources at operational stage:

- the replacement of elements of the scheme (for example, resurfacing) would release emissions, which have the potential to be large;
- emissions from operational energy use within the scheme (for example, lighting) have the potential to be large;
- the change in carbon sequestration due to the scheme may be large, as there is expected to be a significant land-use change due to its off-line nature; and
- changes to regional traffic flows are expected and have the potential to result in a large change in GHG emissions.

3.434 The ESA went on to say that the operational energy use from lighting had not been quantified due to data availability but it should be noted that it would cause an increase in carbon emissions. When asked about this at the inquiry, DfI's witness backtracked and said that the impact of lighting might not be very large. We were then told that lighting would be installed only at roundabouts. We were later told that 100% renewable energy would be used; it was not explained how that would be guaranteed. The magnitude of emissions from operational energy use requires proper clarification.

3.435 The ESA stated that the assessment was based on available information regarding the scale and nature of the scheme. The type and quantities of materials and waste, planting schemes, peat excavation, and traffic data provided were indicative due to the data constraints of working with a "specimen" design. As no data existed for the total area of cleared woodland resulting from the scheme, the estimated area was based on previous vegetation clearance plans prepared during the detailed design for a section of the scheme and then extrapolated for the whole length of the "specimen" design. The impact of the loss of cleared woodlands was calculated using data from the Woodland Carbon Code Carbon Calculation Spreadsheet for a mixed broadleaf woodland which is assumed to be 50 years old at the opening year of the scheme.

3.436 According to Table 15.22 of the ESA, the net increase in trees as a result of the scheme would lead to an increase in carbon sequestration:

Removed	40 hectares
Total loss of sequestration	6,800 tCO_2e
Emissions from establishment	120 tCO_2e
Planted	167 hectares

Total scheme sequestration	-94,000 tCO_2e
Total net impact	-87,000 tCO_2e

3.437 An objector said it should not have been too difficult to check whether the assumption that the trees to be removed were 50 years old bore any resemblance to reality. Many trees could be much older and older trees tend to sequester more carbon. He pointed out that according to Table 15.22, the trees to be removed would result in a loss of sequestration at the rate of 170 tCO_2e, whereas the trees to be planted would have a sequestration rate of 534.1 tCO_2e. He asked how newly planted trees could sequester more carbon than is lost by the removal of a similar area of older trees.

3.438 In its rebuttal evidence, DfI stated that the assessment was made in line with best practice. Carbon sequestration per hectare per year does not increase exponentially over time. The amount of carbon sequestered per hectare increases and peaks at about 15 to 20 years and then decreases. Therefore, older trees cannot be assumed to sequester more carbon.

3.439 DfI's rebuttal evidence went on to acknowledge that a discrepancy in the figures had been identified following a review of the sequestration calculations. This resulted in a reduction in the net benefit of change in the carbon sequestration and an additional 2.8% emissions overall. This was not judged to have a material effect. No detailed explanation was provided as to the nature of the error that had been discovered. At the inquiry it was confirmed that in Table 15.23 the figure of 575,000 tCO_2e for total GHG emissions in the operational phase (2028 to 2087) should be increased by 2.8%.

3.440 An objector noted that a new junction on the A14 in Cambridgeshire was given a development consent order on the understanding that 860,000 trees would be planted to offset emissions. However, 70% of those trees died. The cost of replacement is estimated at £2.9 million. Traffic rolls past all those empty tree guards that, being plastic, emit GHGs themselves, with no carbon offset at all. It seems there was no maintenance plan. The objector wanted to know what budget there is for tree planting along the proposed new A5 road and what is the plan and budget for maintenance in the years following planting. She provided a research article to show that plastics represent a source of climate-relevant trace gases that are expected to increase as more plastic is produced and accumulated in the environment.

3.441 At the inquiry, DfI drew attention to Figure 5.2 of the 2022 ESA which contains 26 drawings showing proposed planting. The contractor would be responsible for maintaining the trees for a period of time before handing that responsibility on to DfI. What happened in Cambridgeshire was due to an exceptional drought. There is very little potential for plastic tree guards to emit GHGs. It would be for the contractor to decide what type of guards to use, but bio-degradable products were being considered.

3.442 We do not see any commitment in the updated ES to the maintenance of the proposed landscape planting, which is necessary for carbon sequestration as well as for amenity. We are inclined to think that emissions from plastic tree guards would not be significant in the context of the overall scheme but, provided suitable bio-degradable alternatives can be sourced, their use is worthy of consideration.

Recommendation 13

We recommend the Department, should it decide to proceed with any part of the scheme to ensure that all landscape planting shown on the relevant sheets in Figure 5.2 of the 2022 environmental statement addendum is properly maintained and that trees or shrubs dying, removed or becoming seriously damaged within 15 years of being planted are replaced in the next planting season with others of a similar size and species.

3.443 In its evidence to the inquiry in 2020, An Taisce submitted that assessment of the transboundary impact of climate and traffic generation was systemically inadequate. The scheme would incentivise car-based travel from County Monaghan to County Donegal. Transport accounted for 20% of Irish emissions and Ireland had one of the highest per capita levels of transport emissions in the EU.

3.444 Neither the 2016 ES nor the 2019 ESA considered effects on climate from greenhouse gas emissions generated by scheme traffic in the Republic of Ireland. There was no consideration of induced trips within the Republic or from one part of the Republic to another, in other words additional trips that would not have been undertaken but for the new road.

3.445 In rebutting An Taisce's submission, DfI acknowledged that the phenomenon of new roads generating traffic had been recognised for some time. However, it said, this happens only in certain circumstances. For example, where a new road would afford significant time savings over a public transport alternative, some trips may transfer to the new road. In a network which is over capacity, the congestion relief and significant journey time savings provided by the new road may result in additional traffic. It stated that conditions favourable to induced traffic were unlikely to feature on the A5 corridor. Tests had been undertaken in accordance with DfT guidance on traffic modelling and these had confirmed there was unlikely to be significant induced traffic. This evidence appeared to relate only to Northern Ireland and not to the Republic.

3.446 In its Interim Report, the Commission expressed the opinion that the possibility of the scheme leading to increased GHG emissions in the Republic should have been mentioned in the ESA. An Taisce had highlighted a matter that the 2019 ESA missed. In its Interim Statement, DfI responded by saying it was content to review its assessment of these effects and to include any update in what became the 2022 ESA.

3.447 There is no mention of induced trips in the 2022 ESA traffic model or in the chapter on climate. At the re-opened inquiry, DfI fell back on the argument that such trips are marginal and their inclusion would not cause a significant jump in reported impacts. The A5AA's barrister commented that one of the justifications for the scheme was that it would bolster tourism by facilitating more people to visit from the Republic. We note that DfI has once again failed to consider this potentially important matter.

3.448 An Taisce made representations about environmental policy, transport services, fiscal measures and trade agreements which were, by a wide margin, beyond the remit of this public inquiry. We therefore make no comment on those matters.

3.449 Tables 15.24 and 15.25 of the 2022 ESA set out potential additional mitigations during construction and operation respectively. They are hedged about by the use of words like "recommended" and "should" and there is no certainty that they would be

implemented. In any case, both tables state that whilst the application of the mitigation measures would reduce GHG emissions, it would not alter the significance of effects as all GHG emissions are significant. At the inquiry, DfI's witness confirmed that the mitigations are generic and would not help much.

3.450 Table 15.23 includes a comparison of GHG emissions from the proposed scheme with the UK national carbon budget. Unsurprisingly, in that context the percentage impacts would be small. DAERA, the department with policy responsibility for the preparation of sectoral plans and carbon budgets under the 2022 Act, considered it appropriate for DfI to contextualise the assessment of effects against UK carbon budgets as no budgets for Northern Ireland are yet available.

3.451 We are not persuaded that Table 15.23 provides a suitable or meaningful comparison, given the existence of statutory emissions reduction targets in Northern Ireland. But in the UK context it is not without significance that the Climate Change Committee in its 2022 report to Parliament advised that substantial investment in road building should proceed only if it can be justified how it fits within a broader suite of policies that are compatible with the UK's Net Zero trajectory. The Committee noted that the Scottish and Welsh Governments have committed no longer to invest in road building to cater for unconstrained increases in traffic volumes.

3.452 At the inquiry, we asked a DAERA representative what signal a decision by a government department to proceed with a scheme known to cause substantial GHG emissions would send to Northern Ireland society at large. He accepted that it would be presentationally difficult but said the emissions targets relate to the region as a whole. Any decision would have to take account of road safety as well as climate.

3.453 The figures in Table 15.23 underestimate the GHG emissions likely to arise from the scheme. However, the table as presented indicates that in the operational phase emissions from the scheme would amount to an average of nearly 9,600 tCO_2e per annum. By 2031 the construction and operational phases would together generate about 350,000 tCO_2e and by 2050 they would generate about 532,000 tCO_2e. We were told that emissions arising from construction would be attributed to the business and industry sectors and not to the transport sector. That does not alter the fact that in the period to 2031 the scheme would, by itself, add more GHGs to the atmosphere than the anticipated reduction of 300,000 tCO_2e from the entire transport sector.

3.454 We conclude that, in the context of the current Northern Ireland emissions reduction targets, the scheme would have a large adverse effect on climate.

3.455 It is important to recognise that the need to reduce GHG emissions is not just one material consideration to be weighed against others; it is a legal imperative by virtue of the 2022 Act. It seems to us that it would not be lawful, having regard to Section 52 of the Act, for DfI to decide to proceed with any part of the scheme unless it can demonstrate that such a decision would not prevent the statutory targets being met.

3.456 If the Climate Change Committee is correct when it says that even a "stretch ambition" pathway would achieve only a 93% reduction in emissions on 1990 levels by 2050, then it is difficult to imagine how the emissions caused by the proposed scheme could be accommodated within the statutory target to achieve a 100% reduction. If the current trajectory of Northern Ireland GHG emissions continues, it is also difficult to envisage the scheme being compatible with the target to reduce such emissions by 48% by 2030.

3.457 The AA5A submitted that the answer to this problem is for the Commission to recommend that the scheme does not go ahead unless DfI comes up with credible plans to meet the legally binding targets in the 2022 Act which are consistent with delivery of the scheme. It drew attention to the announcement made by DfI in April 2023 that it was pausing development of a scheme to upgrade the A2 Buncrana Road in Derry-Londonderry pending the completion of a new Regional Transport Strategy and progress on a North West Transport Plan. According to the statement, these documents will set a new policy direction, enabling the reduced vehicle trips and modal shift required to address climate change obligations under the 2022 Act.

3.458 DfI's Counsel referred us to Section 23 of the 2022 Act, which places a duty on DAERA to set carbon budgets for five-year periods, specifying the maximum total amount of carbon emissions for each budgetary period. The first budgetary period will be 2023 to 2027 and the remaining budgetary periods are each succeeding period of five years. Section 24 requires departments to ensure that the net Northern Ireland emissions account for each carbon budget period does not exceed the carbon budget for that period. Section 27 places a duty on DAERA to set the carbon budgets for 2023 to 2027, 2028 to 2032 and 2033 to 2037 by the end of 2023. Section 25 requires the carbon budgets for 2023 to 2027 and 2028 to 2032 to be consistent with meeting the emissions targets for 2030 and 2040; and requires the carbon budget for 2033 to 2037 to be consistent with meeting the emissions targets for 2040.

3.459 Section 29 of the 2022 Act requires DAERA to prepare and publish a climate action plan for each budgetary period setting out proposals and policies for meeting the carbon budget for that period covering the areas of responsibility of each Northern Ireland department. When developing policies each department must ensure they are consistent with the targets set out in the carbon budget. Each Northern Ireland department must provide its proposals and policies for a budgetary period before the end of the first nine months of that period. In respect of the first budgetary period, therefore, DfI was required to provide its proposals and policies by 30th September 2023, but it appears that it has not fulfilled this statutory obligation.

3.460 In our view, the possibility cannot be excluded that DfI, in consultation with DAERA and the other Northern Ireland departments, might find a way to progress at least some parts of the scheme while staying within the carbon budgets. That would not be easy and there must not be a fudge. Clarity, certainty and transparency are essential. Recommendations 14 to 17 below outline the steps we consider necessary to reconcile the scheme with the emissions targets, if that is indeed possible.

Recommendation 14

We recommend the Department not to proceed with any part of the scheme unless it is satisfied that the construction and operation of that part of the scheme will not prevent the emissions targets specified in Sections 1, 3, 4 and 24 of the Climate Change Act (Northern Ireland) 2022 from being met.

Recommendation 15

We recommend the Department not to announce a decision to proceed with any part of the scheme until the Department of Agriculture, Environment and Rural Affairs has published:

- **carbon budgets for 2023 to 2027, 2028 to 2032 and 2033 to 2037; and**
- **a climate action plan for 2023 to 2027 setting out proposals and policies covering the areas of responsibility of each Northern Ireland department, including those of the Department for Infrastructure.**

Recommendation 16

We recommend the Department, if it announces a decision to proceed with any part of the scheme, to publish at the same time revised estimates of the total greenhouse gas emissions likely to arise from the part of the scheme being authorised, including:

- **an estimate, based on the best available information, of the quantum of emissions at construction stage caused by the use or disposal of the felled timber, the disposal of extracted peat, and soil disturbance due to the clearance of woodland;**
- **a properly researched and realistic assessment of the quantum of emissions from energy use at operational stage;**
- **a fully explained and mathematically accurate sequestration calculation; and**
- **an estimate of the quantum of emissions arising from induced trips originating or terminating in the Republic of Ireland.**

Recommendation 17

We recommend the Department, if it announces a decision to proceed with any part of the scheme, to publish at the same time detailed calculations, agreed with the Department of Agriculture, Environment and Rural Affairs, showing the expected trajectory of net Northern Ireland greenhouse gas emissions through 2030 to 2050 in the absence of the scheme, and the impact on that trajectory of the greenhouse gas emissions expected to arise from the construction and operation of the part of the scheme being authorised.

3.461 An ES is expected to provide a description of the aspects of the environment likely to be significantly affected by a project, including climatic factors. There is no requirement to consider the likely significant effects of the environment, including the climate, on the project. The 2022 ESA nevertheless includes a detailed assessment of climate resilience and the vulnerability of the proposed scheme to climate change.

3.462 The ESA states that throughout the lifespan of the scheme, climate variables are expected to become more inconsistent and intense. Precipitation is likely to increase in winter and decrease in summer, increasing the likelihood of flooding in winter and droughts in summer. Mean temperature along the scheme corridor is likely to increase

by around 3° to 4° Celsius by the 2080s and median extreme temperatures in summer could reach 34° under the worst-case scenario. Sea level rise, also under the worst-case scenario, is projected to increase by 0.6 metres with the potential to affect the fluvial and tidal flood plains between Strabane and Newbuildings.

3.463 The ESA finds that subject to embedded and essential mitigations, there would be no significant residual potential impacts from the climate variables assessed. It provides a table setting out essential mitigation within the construction phase – essentially a list of management measures concerning site compounds, materials, plant and equipment and the workforce. These measures are included in the outline CEMP and it was stated that they would be adhered to by the contractors. The ESA goes on to make recommendations about monitoring but contains no long-term commitment.

3.464 In the absence of any representations about this subject, we conclude that climate resilience is not a factor to be weighed in the overall assessment of the scheme.

Road Drainage and the Water Environment

3.465 The 2016 ES considered the impacts of the scheme on surface water, groundwater and flood risk. The 2019 ESA identified what it called minor alterations to baseline conditions and additional monitoring data but stated that these did not alter the significance outcomes or overall conclusion of the 2016 ES in regard to this topic. The 2022 ESA included a new flood risk assessment (FRA). It also provided an assessment of the implications of the revised scheme design in the vicinity of Strahan's Quarry, to the south of Strabane.

Surface water and groundwater

3.466 The scheme, as described in the ES, provides for the discharge of all road-related runoff to existing surface watercourses. It includes sustainable drainage systems involving a combination of concrete-lined channels, swales and grassed channels within the roadside verge or central reserve. In most instances, wet retention ponds and/or dry detention ponds would be introduced prior to discharge via the proposed outfalls.

3.467 The ES focused on potential pollution of watercourses as a result of construction activities, routine runoff, accidental spillage, changes in surface water flow and alterations to the availability of surface water abstractions. A wide range of mitigation measures were proposed, including good site environmental management, use of ponds to treat road runoff, installation of pollution control devices, appropriate design taking account of local flow and erosion/deposition characteristics, and monitoring of abstraction sites. The ES found that impacts on surface water would not be significant.

3.468 The ES assessed similar potential pollution risks in relation to groundwater and indicated that they could be successfully mitigated by similar means. It concluded that impacts on groundwater would not be significant.

3.469 DAERA Water Management Unit pointed out that a discharge consent under the Water Order would be required for any discharges to the aquatic environment. As the scheme would involve abstractions (for example, dewatering of an excavation) or impoundment (a pool of water formed by a dam or pit), a licence under the Water Abstraction and Impoundment (Licensing) Regulations (Northern Ireland) 2006 might be required. In its rebuttal evidence, DfI confirmed that the applicable permissions would be sought once each phase of the scheme was progressed.

3.470 At the inquiry in 2020, objectors argued that instead of building the proposed road, pollution controls could be put into the existing A5 at much less cost. A DfI witness said if the proposed road were built the existing road would remain as it is and traffic flows would reduce. If the scheme were not implemented there would be more pollution. The scheme therefore offered an improvement in his view.

3.471 We consider that the scheme has been carefully designed to minimise the risk of detrimental impacts on surface water and groundwater. While the objectors' comments are consistent with their view that improvements to the existing A5 would be preferable to DfI's scheme, they did not present any reasoned argument as to why the proposed measures would not be effective.

3.472 The proposed new road would run immediately to the west of Strahan's Quarry at Chainage 20450 to 20630. At this location, it would be within a deep cutting, with the mainline carriageway centre line ranging in level from 20 metres to 23 metres AOD. Existing ground levels surrounding Strahan's Quarry are about 40 metres AOD at the northern extent, sloping gently to about 34 metres AOD at the southern extent. The quarry is currently flooded to an estimated level of 27.8 metres AOD.

3.473 In order to construct the scheme as now designed, the large body of water currently within Strahan's Quarry would have to be drained and the quarry void infilled to meet the surrounding ground levels. The infill would use site-won materials that are surplus to the main engineering fill requirements for the scheme. Once the works were complete the final ground profiles would slope towards the main carriageway. This would necessitate the installation of a back-of-verge collection channel independent of the highways drainage system. Once operational this would prevent runoff from the quarry entering the main carriageway. The runoff would discharge into the Flushtown watercourse to the south of the proposed road and thence to the River Finn.

3.474 The ESA states that it is planned to infill Strahan's Quarry with inert material only. That would reduce the potential for any contaminant to be mobilised as leachate within the quarry material or discharged via the separate drainage system to the Flushtown channel. The quarry drainage system would require a discharge consent prior to development, setting out acceptable levels for applicable water quality parameters, appropriate treatment equipment and requirements for water quality monitoring and inspection of channels for scour undertaken throughout the dewatering process. The consent of DfI Rivers under the Drainage (Northern Ireland) Order 1973 would be required for each drainage outfall.

3.475 The ESA assessed that the dewatering of Strahan's Quarry would represent a minor magnitude impact upon a receptor of medium importance. It predicted a non-significant slight adverse effect on groundwater levels and pollution incidents.

3.476 The ESA stated that after the infilling of the quarry the infilled material would likely be of higher permeability than the surrounding bedrock and the groundwater would likely stabilise at a new equilibrium. This might result in a change in the nature of groundwater flows in the area and water levels in the infilled quarry would likely be similar to the surrounding groundwater. The materials transferred into the quarry would be tested regularly to ensure no polluting materials were infilled. Infilling at this location was considered to represent a negligible magnitude impact upon a receptor of

medium importance. A non-significant neutral effect on groundwater levels and pollution incidents was predicted.

3.477 Appendix 16E of the ES stated that where road cuttings penetrate into or close to the water table this can lead to permanent change to local groundwater levels and flow patterns, affecting local receptors. It noted that groundwater levels may change seasonally and hence the depth to the water table will alter, typically being shallower in wetter periods. The scheme design presented in 2016 involved a maximum cutting depth (estimated from long sections) of 14 metres in the vicinity of Strahan's Quarry.

3.478 According to the ESA, under the new iteration of the design the maximum cutting depth would be 17 metres and would be likely to pose a slightly higher risk to local receptors. However, the overall risk classification would remain moderate. The cutting at this location would represent a minor magnitude impact upon a medium importance receptor. The ESA predicted a non-significant slight adverse effect on groundwater levels and pollution incidents. This assessment is equivalent to that of the 2016 ES for road cuttings overall.

3.479 No representations were made in regard to the revised proposals for Strahan's Quarry and we have no reason to disagree with the findings and conclusions of the ESA.

3.480 We conclude that the scheme is unlikely to have a significant effect on the quality of surface water or groundwater.

Flood risk

3.481 Representations were made to the inquiry in 2020 objecting to the construction of the proposed road in the flood plain. It was argued that flooding in Strabane was going to get worse in coming years and the scheme would only exacerbate it. Photographs were submitted showing extensive flooding at a farm near Ballymagorry in December 2015. Oral evidence was given about serious flooding in Lifford affecting its sewage treatment works. Reference was made to catchment flood risk assessment and management reports produced for the Irish Government. A flood risk management plan had examined options for carrying out flood relief works in the Lifford and Ballybofey/Stranorlar areas. It was argued that as additional flood capacity is already required in the Foyle system, runoff from the proposed road would add to flood risk.

3.482 An objector drew attention to a document titled "Technical flood risk guidance in relation to allowances for climate change in Northern Ireland" which DfI had published in February 2019. It was stated in the 2019 ESA that as the scheme was already "in progress" and adopting the new guidelines would cause delays to completion, the scheme was not required to be updated in accordance with the guidelines. As discussion progressed, it became clear that the modelling work for the draft FRA was completed in 2012 and no site-specific data had been collected since then. The assessment predated serious flooding in the scheme area in 2015 and 2017.

3.483 In its Interim Statement of March 2021, DfI accepted the Commission's recommendations relating to flood risk. It agreed:

- to produce a fresh FRA, to take account of all recent flooding events affecting the scheme corridor;
- to take account of the most up-to-date technical advice, including its own February 2019 guidance and any related amendments to the DMRB, when devising any mitigation measures;

- to incorporate the final FRA in a further addendum to the ES and make it available it for public consultation; and
- to include within that addendum a full set of engineering drawings illustrating its final design and mitigation proposals relating to flood risk.

3.484 Appendix 16-1 to the 2022 ESA comprises a fresh FRA in three volumes with a total of 1,168 pages. Volume 1 sets out policy and guidance, gives details of available data, presents the findings of a preliminary flood risk assessment for the alternative routes considered, and identifies the watercourse flood plains crossed by the preferred route. A description of the development of the hydraulic models and existing flood plains is given in Volume 2, leading to the presentation of baseline flood maps. Those flood maps are used to assess the impact of the proposed scheme on flood risk and to determine what mitigation is required. Volume 3 presents impact tables and drawings. DfI is to be commended for the thoroughness with which this FRA has been compiled.

3.485 In a section headed "Flood Risk Assessment Policy", Volume 1 of the 2022 FRA refers first to the SPPS. In relation to flood risk, the SPPS aims to prevent future development that may be at risk from flooding or that may increase the risk of flooding elsewhere. DfI, as regional planning authority since 2016, has inherited this policy.

3.486 The FRA then refers to Revised Planning Policy Statement 15 – Planning and Flood Risk (PPS 15), dated September 2014, which sets out what are now DfI's regional planning policies to minimise and manage flood risk to people, property and the environment. It applies to private sector development proposals and is no less applicable to DfI's own schemes. In line with Paragraph 1.11 of the SPPS, as Fermanagh and Omagh District Council has adopted its own Plan Strategy, PPS 15 no longer has effect in that part of the scheme area. It still has effect in the Derry and Strabane and Mid Ulster districts.

3.487 Paragraph 1.2 of PPS 15 notes that floods have the potential to cause fatalities and injury, displacement of people, pollution and health risk, loss of drinking water and damage to buildings and the environment and to severely compromise economic activities. If not properly managed, flooding to property will also impact on property prices, the ability to get a mortgage agreement and the availability of affordable property insurance.

3.488 Annex B to PPS 15 discusses the impact of flooding on people and property. Paragraph B6 states that the severity of damage to buildings is often dependent on the depth and duration of the flood event. It presents the following table to illustrate flood damage to a typical residential property:

Depth of Flood	Damage to Building	Damage to Services/Fittings	Loss of Personal Possessions
Below ground level	Minimal damage to main building. Flood water enters basements, cellars and under floor voids. Possible erosion under foundations.	Damage to electrical sockets and other services. Carpets in basements and cellars may need replaced.	Possessions and furniture in basements and cellars damaged.

Depth of Flood	Damage to Building	Damage to Services/Fittings	Loss of Personal Possessions
Up to half a metre above ground floor level	Damages to internal finishes, plaster, wall coverings etc. Floors and walls become saturated requiring cleaning and drying. Flooring may require replacement. Damage to external and internal doors, skirting, etc.	Damage to electricity meter and fuse-box. Damage to gas meter, low level boilers and telephone services. Carpets and floor covering may need replaced. Kitchen units and electrical appliances may need replaced.	Damage to furniture and electrical goods. Damage to small personal possessions. Food in low cupboards contaminated.
More than half a metre above ground floor level	Increased damage to walls. Possible structural damage.	Damage to higher units, electrical services and appliances.	Damage to personal possessions.

3.489 In line with the SPPS, the primary aim of PPS 15 is to prevent future development that may be at risk from flooding or that may increase the risk of flooding elsewhere. Its main objectives include the following:

- seek to prevent inappropriate new development in areas known to be at risk of flooding, or that may increase the risk of flooding elsewhere;
- ensure that the most up-to-date information on flood risk is taken into account;
- adopt a precautionary approach … in those areas susceptible to flooding where there is a lack of precise information on present-day flood risk or future uncertainties associated with flood estimation, climate change predictions and scientific evidence. (A precautionary approach is defined in PPS 15 as the approach which requires that lack of full scientific certainty shall not be used to assume flood hazard or risk does not exist, or as a reason for postponing cost-effective measures to avoid or manage flood risk); and
- seek to protect development that is permitted within flood risk areas by ensuring that adequate and appropriate measures are employed to mitigate and manage the flood risks to the development and elsewhere.

3.490 Policy FLD 1 of PPS 15 states that development will not be permitted within the 1 in 100 year fluvial flood plain or the 1 in 200 coastal flood plain unless the proposal constitutes an exception to the policy. Where the exceptions test is met, the developer is required to submit a FRA. Permission will be granted only if the FRA demonstrates that all sources of flood risk to and from the proposed development have been identified and there are adequate measures to manage and mitigate any increase in flood risk arising from the development.

3.491 The justification and amplification text in Paragraph 6.1 of PPS 15 explains that flood plains store and convey water during times of flood. These functions are important in the wider flood management system. New development within a flood plain will not only be at risk of flooding itself but it will add to the risk of flooding elsewhere. The

cumulative effect of piecemeal development within a flood plain can also redirect flows and will also undermine its natural function in accommodating and attenuating flood water. Accordingly, to minimise flood risk and help maintain their natural function it is necessary to avoid development within flood plains wherever possible

3.492 Exception (d) listed in Policy FLD 1 is development for agricultural use, transport and utilities infrastructure, which for operational reasons has to be located within the flood plain. The amplification text in Paragraph 6.19 recognises that in certain cases, development or infrastructure has to be in such locations, as alternative lower flood risk sites would be neither practical nor available.

3.493 Policy FLD 1 goes on to say that a development proposal within the flood plain that does not constitute an exception to the policy may be permitted where it is deemed to be of overriding regional or sub regional economic importance and meets both of the following criteria:

- demonstration of exceptional benefit to the regional or sub-regional economy;
- demonstration that the proposal requires a location within the flood plain and justification of why possible alternative sites outside the flood plain are unsuitable.

Where the principle of development is established through meeting the above criteria, the planning authority will steer the development to those sites at lowest flood risk.

3.494 Amplification is provided in Paragraph 6.26, which states that there will be a requirement to demonstrate that a thorough search for sites outside the flood plain has been undertaken and to justify why these are considered unsuitable. Subject to the principle of development in the flood plain being accepted, the developer will be prompted to identify a suitable site in the least vulnerable parts of the flood plain.

3.495 The Fermanagh and Omagh LDP 2030 – Plan Strategy has a policy FLD01, which contains the same elements and much of the same wording as Policy FLD 1 of PPS 15 and, in so far as it relates to the A5 scheme, is not materially different.

3.496 Various changes to the proposed scheme, including changes to its vertical alignment, are identified in Chapter 5 of the 2022 ESA. Volume 3, Paragraph 3.1.1 of the 2022 FRA states that the road deck would be above the design flood level at all locations including a minimum freeboard allowance of 600 millimetres and that there would therefore be no risk of flooding to the scheme itself. We conclude that to this extent the scheme is in keeping with the SPPS and PPS 15.

3.497 According to Appendix 6H to the ES, the total length of the proposed road that would be in a flood plain would be about 13 kilometres (8 miles), of which 7.5 kilometres (4½ miles) would be in the Foyle flood plain. We were told at the inquiry that these lengths have not significantly changed. That means that about 15% of the entire route from Newbuildings to south of Aughnacloy would be in a flood plain.

3.498 Policy FLD 1 of PPS 15 establishes a presumption against flood plain development but we agree with DfI's Counsel that the proposed scheme could potentially fall within Exception (d), transport infrastructure. We also agree that the scheme could potentially be regarded as a development of overriding regional economic importance, as it would undoubtedly be of exceptional benefit to the sub-regional economy, however defined. However, as Counsel for the AA5A pointed out, either authorisation gateway requires

DfI to demonstrate that the scheme could not be located outside the flood plain and that alternative lower flood risk sites are neither practical nor available.

3.499 Prior to the announcement of the preferred route in 2009, four possible routes for Section 1 of the scheme (Newbuildings to south of Strabane) were examined. The Green Route remains on the higher ground throughout its length and ultimately passes to the east of Strabane with a spur road along the southern periphery of the town to connect with the proposed Finn Crossing. The Purple Route switches to the higher ground from the Foyle valley along a line parallel to Strabane Glen before passing to the east of Strabane. The Black and Pink Routes remain in the lower Foyle valley and ultimately deviate to the west of Strabane. Following consideration of environmental and engineering assessments, the preferred route was a combination of the Purple Route from Newbuildings to a location in the vicinity of Chainage 8000 (to the south of Bready); and the Black Route from there to and round the western side of Strabane.

3.500 The FRA, Volume 1, Table 6-5 compares the flood impacts of these four possible routes. The total length of each route that was located within the flood plain was as follows:

Green Route	1,590 metres
Pink Route	8,022 metres
Purple Route	7,592 metres
Black Route	9,022 metres

3.501 The FRA states that the River Foyle flood plain, including its upstream tributaries of the Mourne-Strule Extension and River Finn, are classified as of very high importance as more than 100 residential properties are protected by flood defences. There are flood defences through Strabane providing protection to the town and to a significant number of properties within the town centre and along the existing A5. The Pink and Black options both have potential to have a major adverse impact on this flood plain attribute. The Purple option also has potential for a large or very large impact at this location.

3.502 The Stage 2 Scheme Assessment Report of July 2009 (SAR 2) indicates that the Green Route was found to be the most favourable in Section 1 from a flooding and drainage perspective. However, it is apparent that when it came to choosing the preferred route, other considerations trumped flood risk. From an engineering perspective, the Green Route was seen as incurring significant problems due to buildability. It was also considered to have disadvantages relating to landscape and ecology.

3.503 At the inquiry, DfI's technical adviser enlarged upon the problems that would be associated with a route running to the east of Strabane. He told us that it would be necessary to change the alignment of Phase 1a in the vicinity of Ballymagorry, which could worsen flooding in that locality. The road would have to rise by about 100 metres over a short distance, requiring very challenging gradients of around 8%. The road would also have the potential to impact significantly on Strabane Glen ASSI.

3.504 The choice of preferred route presumably reflected the priorities and orthodoxies of 14 years ago. Since then there has been increasing concern about the impact of climate change on the propensity for flooding and the SPPS and PPS 15 have been published. It is well established that an authorisation decision must be made in the light of policy as it exists at the time the decision is taken.

3.505 We appreciate that there would be difficulties associated with any potential route; the proposed route itself has environmental drawbacks including the need to demolish a

listed building. However, we have not been persuaded by the written material available to us and the oral evidence given at the inquiry that it would be impossible to find a suitable route for Section 1 that traverses a shorter length of flood plain than the proposed route and that avoids the need to impinge on the most vulnerable part of the flood plain by constructing a bridge and embankment close to the confluence of the Mourne River and the River Finn. We conclude that Section 1 of the scheme is at variance with the locational requirements of Policy FLD 1.

3.506 The SAR 2 document indicates that the preferred route for Section 2, although not the shortest route through the flood plain, was considered to be one of the two most favourable options in respect of flooding and drainage. In regard to Section 3, the route with the largest potential for flood plain impacts was rejected and there were said to be no clear differentiators between the remaining routes.

3.507 DfI's February 2019 guidance generally recommends for the fluvial (river) context throughout Northern Ireland that a single +20% additional flow be applied to the estimated present day 100-year peak flow. It says, however, that where a strategically important development is being designed or assessed for climate impacts or, where risk to life or major economic losses could occur should design levels be overtopped, it may be more precautionary to use allowances based on a higher probability level. In such circumstances it recommends that a sensitivity test be undertaken based on a higher 90% probability level to determine whether there are any "cliff-edge" effects where the flooding consequences may suddenly become extremely severe. If this test yields potentially severe effects, adoption of the higher level of confidence is advised.

3.508 When the FRA was being prepared, DfI Water and Drainage Policy Division advised that for the higher 90% probability level a single climate change allowance of +35% additional flow should be applied to the "present day" 100-year peak flow. No one disputed that this is a reasonable elaboration of the guidance.

3.509 The February 2019 guidance states that for studies and designs of river flood defences, a freeboard allowance, commonly of up to 600 millimetres, was normally added to account, for example, for uncertainty in estimation of design flood levels. Allowance for climate change should (in future) be made separately from any additional allowance for freeboard / uncertainty in design.

3.510 The guidance states that the tidal hazard information available on DfI's geographical information system provides present day coastal levels and estimated climate change levels for the 2080s epoch. For studies and designs of coastal flood defences, a freeboard allowance, commonly of up to 600 millimetres, will normally be added for uncertainty in estimation of design sea levels. Allowance for climate change should be made separately from any allowance for freeboard. The guidance advises that it may be more precautionary to use allowances based on a higher percentile than the 50% probability level, in which case it recommends a sensitivity test based on a higher 95% probability level to determine whether there are any "cliff-edge" effects.

3.511 The FRA took into account data collected from DfI Rivers gauging stations between December 1978 and June 2020, including during the extreme flooding events of December 2015 and August 2017. Among the principal design changes to the proposed scheme introduced by the FRA were resized culverts, resized bridges, watercourse

diversions and additional flood compensation storage. The total area of land proposed to be vested for flood compensation was increased from 63 to 75.5 hectares.

3.512 The FRA also took into account the proposed new road bridge across the River Finn flood plain which is part of the A5 to N14/N15 road link scheme. The Finn Crossing would entail 178 metres of embankments on the Northern Ireland side and a 287-metre bridge consisting of seven piers.

3.513 The FRA, Volume 3, Table 3-2 (which is adapted from DMRB, LA 113, Table 3.71) sets out indicators for the magnitude of an impact on an attribute:

Major adverse	Increase in peak flood level > 100 millimetres
Moderate adverse	Increase in peak flood level > 50 millimetres
Minor adverse	Increase in peak flood level > 10 millimetres
Negligible	Change to peak flood level ≤ +/-10 millimetres

3.514 LA 113 defines the water attribute relevant to flood plains as conveyance of flow. It seems to us that the purpose of the relevant magnitude indicators in LA 113, Table 3.71 is to classify the extent to which a proposed road would disrupt flood plain connectivity. At the inquiry, we queried the appropriateness of applying the magnitude indicators to individual properties. We asked whether the flooding of someone's home to a depth of 49 millimetres (2 inches) can reasonably be said to have only a minor adverse impact. DfI's consultant said that properties might already be flooded in which case adding another 2 inches of flood water would be a minor impact. The DfI Rivers witness told us that his organisation does not apply the DMRB methodology when advising on planning applications, as PPS 15 requires there to be no increase in flood risk anywhere.

3.515 We find it significant that the table following Paragraph B6 of PPS 15 draws a distinction between flooding below and above ground level. Once there is any flood water above ground floor, there is a likelihood of at least some damage to the building, its services and fittings, and of loss of personal possessions. More water is likely to lead to more damage and more loss. In our opinion, the application of the FRA's magnitude indicators to individual properties, whether already flooded or not, understates and downplays the seriousness of the flooding experience and is inconsistent with PPS 15.

3.516 The FRA presented a series of hydraulic models for catchment areas that would be affected by the proposed scheme. Residual effects were calculated taking account of proposed mitigation measures. In addition to the Foyle river system, 26 other catchments were studied, including three in the Omagh system. It was found that there would be a beneficial effect on seven catchments, a neutral effect on 16 and an adverse effect on three. In the Omagh system, one dwelling on the Tully (Lislimnaghan Drain) flood plain would be subject to an additional flood risk of 6 to 7 millimetres and two farm buildings on the Fairy Water flood plain would be subject to an additional flood risk of 29 millimetres. In the Ravella Drain (Chainage 86990), water levels would increase by up to 20 millimetres but the flow would be contained within the channel.

3.517 We have no reason to disagree with these findings. We consider that Sections 2 and 3 of the scheme are broadly consistent with the flood risk management provisions of the SPPS, PPS 15 and the Fermanagh and Omagh LDP. We conclude that outside the Foyle river system, the scheme would not significantly add to flood risk.

3.518 At our request, DfI provided a spreadsheet to summarise the findings of the FRA, Volume 3, Tables 3-22 to 3-31 concerning the number of properties adjacent to the

Foyle river system that would be subject to adverse flooding impacts as a result of the scheme. The results are set out below:

Location	Flood Plain Properties	Adversely Impacted	"Minor" Adverse	Major/Moderate Adverse
Burn Dennet and Ballydonaghy Drain	38	3	2	1
Glenmornan and Park Road	33	7	7	0
Ballymagorry Junction	33	33	33	0
Strabane	425	27	12	15
Urney Road (South Strabane)	411	35	35	0
River Finn (Right Bank)	37	37	37	0
Northern Ireland Total	977	142	126	16
Swilly Burn	101	94	94	0
River Deele	27	24	24	0
Lifford	125	125	67	58
River Finn (Left Bank)	28	28	28	0
Republic of Ireland Total	281	271	213	58
FOYLE RIVER SYSTEM TOTAL	**1258**	**413**	**339**	**74**

3.519 It will be observed that these figures do not include properties with an increased flood risk of up to 10 millimetres, an impact dismissed as "negligible" in the FRA. The principal conclusion we draw from Tables 3-22 to 3-31 is that in the flood plain associated with the Foyle river system, the proposed scheme following mitigation would have a major adverse flood risk impact on at least 46 properties, a moderate adverse impact on at least 28 properties and what is described as a "minor" impact on at least 339 properties. The scheme would materially increase the risk of flooding across the catchment area, including but not confined to Strabane and Lifford. Two thirds of the impacted properties would be in County Donegal, including all of the flood plain properties in Lifford and nearly all such properties in the adjoining rural areas.

3.520 The FRA indicates that a flood relief scheme for Lifford is at development and design stage. A preferred option has not been established nor has it been confirmed whether the scheme will proceed beyond this stage. Liaison has taken place with the Irish Office of Public Works (OPW) to identify and discuss constraints and opportunities. Attention was given to the sharing of data and the potential for cumulative flood risk impacts. DfI's consultant confirmed at the inquiry that the mitigation measures being relied on in the FRA do not include the Lifford flood relief scheme.

3.521 The OPW made a representation about the 2022 ESA. It stated that it had a statutory duty to maintain the existing Deele and Swillyburn Arterial Drainage Scheme in Lifford and confirmed that it is developing a flood relief scheme for the Lifford urban area in partnership with Donegal County Council and as lead agency for co-ordinating flood risk

management in Ireland. It noted that a potential increase in flood risk is reported in the FRA for the A5 scheme in the areas of Deele, Swillyburn and Lifford, which cannot be managed or avoided. It would like the consultation between OPW and DfI to continue.

3.522 The FRA states that the Lifford Road properties in Strabane would have impacts classified as large or very large adverse for significance. Impacts in Lifford would be up to 70 millimetres maximum, although they would vary from "minor adverse" through to moderate adverse for magnitude of flood risk. Impacts on water levels across the Foyle flood plain show an increase in the vicinity of Lifford Bridge on both the Northern Ireland and Republic of Ireland sides.

3.523 Further mitigation measures were investigated through numerous iterations and testing in the hydraulic model. The general focus was on properties along Lifford Road, Strabane and in Lifford. The modelling showed that small changes in bund heights could cause major adverse impacts elsewhere. Options were excluded if it was clear that impacts were greatly increased on the County Donegal side or on other areas of the Foyle river system in Northern Ireland. Three mitigation options A, B and D were shortlisted and assessed in detail and on balance it was recommended to proceed with Option D. Residual flood risk would remain on both sides of the border which it would not be possible to mitigate fully as the proposed road embankment would cross through the River Foyle, Finn and Mourne flood plains.

3.524 The FRA explains that Option D is an option with the least intervention with the aim of managing the residual flood risk at a range of return periods. It would provide primary culverts to watercourses crossing the proposed new road, connectivity structures and culverts to connect flood plains to the north and south of Strabane (at the Urney Road and Balllymagorry areas) but would provide no extra measures in the vicinity of Lifford Road. Impacts are categorised as major adverse and the maximum additional flooding caused would be 495 millimetres (19½ inches). The FRA said that to put this increase in water level in context, flood plain depths for the fluvial-dominant design event in the field to the north of Lifford Road range from about 1 metre to about 3 metres.

3.525 Donegal County Council, in partnership with Derry City and Strabane District Council, is working on a project for a Riverine Community Park in Lifford and Strabane. The intention is to develop 30 acres of agricultural land and wetlands to incorporate indoor and outdoor recreational facilities, event spaces, educational features and riverside access along with a new pedestrian and cycle bridge connecting both sides of the border. The park would include the land to the north of Lifford Road, Strabane. The project manager wrote to say that the community park has been designed to be resilient to flooding events. Having examined the 2022 ESA, the project team was satisfied that any additional flooding impact arising from the A5 scheme could be fully absorbed by the flood mitigation measures already planned for the Riverine Community Park.

3.526 The FRA states that some high-level layout images of the Riverine project are available. Land use would be mainly green space and car parking and it was therefore anticipated that there would be minimal change in terms of roughness and ground levels, and hence flood risk. A visitor centre is proposed on the Republic of Ireland side accessed by a footbridge. The area on the Northern Ireland side would comprise wetland, water features and parking. With Option D in place, there would be some downstream impact on the Riverine site for the 1 in 50 year return period and above.

3.527 One of the objectors who attended the inquiry in 2020 owned a farm at Islandmore in the middle of the River Foyle. He was concerned that a rise in flood water as a result of the scheme could cause plant rot, create mudflats and lead to farming on islands in the Foyle having to be abandoned. According to the FRA, with Option D in place, Islandmore would experience a generally negligible impact. A participant in the inquiry in 2023 told us he had bought the island from the objector and supports the scheme.

3.528 Much of the Phase 1a area lies in the Foyle flood plain. We asked what mitigation is proposed for the properties that would be subject to increased flood risk at Victoria Road, Ballydonaghy Road and Moss Road, between Burndennet and Ballymagorry. The answer we were given was that the higher climate change allowance of +35% additional flow was applied in that area. That explains how the number of properties at risk from increased flooding in this part of the flood plain was calculated but does not address mitigation. We can only infer that no additional or site-specific mitigation measures would be available in the Phase 1a area.

3.529 The executive summary of Volume 3 of the FRA asserts that the residual impact for the Foyle river system remains "moderate adverse" at Lifford Road and Lifford due to the number of properties on the flood plain and the difficulty in mitigating for transborder impacts. It says it is proposed to liaise with landowners and residents to give them access to flood resilience measures to manage the increased risk of flooding. Flood resilience measures could include property level protection, access to timely flood warnings and access to insurance and compensation. The approach would be bespoke for each stakeholder and progressed through liaison to determine their current exposure to flood risk and vulnerability to flood risk once flooding exceeds current flood depths.

3.530 Elsewhere in the FRA it is stated that the property assessment for the Foyle river system used nationally available mapping and datasets. Assumptions were made relating to threshold and property type but an individual property survey was not undertaken. That goes some way towards explaining why the references to resilience measures in the FRA are so imprecise. The extent of DfI's commitment is defined in Appendix 18-1 to the ESA as "liaison with relevant property owners and businesses to ensure that they have access to support and information on how to improve property protection and resilience to flooding". It seems to us that this studiously vague language does not commit DfI to spending any serious money. We therefore asked some questions at the inquiry to try to establish what was intended by the references to flood resilience.

3.531 The Project Sponsor told us that DfI is committed to conducting surveys. There is no specific budget and any expenditure would be treated as land compensation. A threshold for determining which properties would qualify for assistance had not yet been established. He suggested that properties that have flooded in the past would be excluded. Other DfI witnesses indicated that the 16 (mainly commercial) properties at Lifford Road, Strabane would be considered for reliance measures. DfI Rivers has a lot of advice to give to landowners across the scheme area. When we asked whether it would be lawful for DfI to spend UK taxpayers' money on the 271 affected properties located in County Donegal, we were told that DfI would work with colleagues in the South to ensure equal treatment. The meaning of this is unclear.

3.532 We referred DfI's team to Paragraph E8 of PPS 15, which advises that flood resilience involves designing or adapting a property so that, although flood water is able to enter

the building, very little or no permanent damage is caused through the use of water resistant and replaceable sacrificial materials. Structural integrity is also maintained and normal service can resume fairly rapidly after the flood has receded and clean up has taken place. This method is not usually that suitable for new property. Paragraph E8 provides detailed advice on pipes and services; fabrics and appliances; fixtures and fittings; valuables and memorabilia.

3.533 We asked whether the property level protection referred to in the FRA would include flood resilience measures such as these. We were told that the consultants employed to do the surveys would look at openings and accesses, pumps, plant and equipment and consult with the property owners. Some of the flood resilience measures mentioned in PPS 15 may not be cost-effective. Property level protection would be restricted to a small number of properties in Northern Ireland. It is unclear to us from this evidence which measures would be offered, what percentage of the cost would be paid by DfI and how any disputes over eligibility would be resolved.

3.534 Volume 3 of the FRA, Paragraph 3.9.42 states some properties on Lifford Road, Strabane are at existing flood risk as evidenced by a photograph showing them substantially submerged during the December 2015 flood event (Storm Desmond). The proposed resilience measures would put properties and businesses in a better position to recover from a flood for a range of return periods up to and including the 1 in 100 year return period. In return periods higher than this, such measures would likely be ineffective due to baseline depths being in excess of 1 metre surrounding the buildings.

FRA, Figure 3-7 – Storm Desmond caused flooding at Lifford Road, Strabane

3.535 In a consultation submission, DfI Rivers stated that, while not being responsible for the preparation of the FRA, it accepted its logic and had no reason to disagree with its

technical findings relating to flood estimation and modelling. At the inquiry, the DfI Rivers witness said that while DfI's consultants had carried out intensive investigations and he was happy with their methodology, the mitigating measures were not adequate. While policy allows for exceptions, the scheme does not come within those exceptions and does not comply with the policy.

3.536 Using bold text, Paragraph E11 of PPS 15 says this:

"Notwithstanding the various flood proofing measures that may be available to manage and mitigate flood risk, it is stressed that the practice of flood avoidance, by locating new buildings and infrastructure outside the flood risk area, is the most effective means of managing the flood risk. Alternative sites should always be considered."

3.537 It seems to us that the offer of resilience measures is little more than a token gesture. It is a wholly inadequate response to the large impacts on flood risk that the scheme would bring about. Flood resilience is not a means of reducing flood risk. It is defined in the glossary to Volume 3 of the FRA as the ability of a property or business to recover rapidly after a flood. We do not accept that such measures can justify authorising a scheme that would increase the risk of flooding to hundreds of properties, contrary to the SPPS and the primary aim of PPS 15.

3.538 We come to the view, therefore, that Section 1 of the scheme does not comply with the flood management provisions of the SPPS or with PPS 15. Counsel for the EiE campaign reminded us of Paragraph 6.0 of PPS 15, which says that the provisions of its policies will prevail unless there are other overriding policy or material considerations that outweigh them and justify a contrary decision. We appreciate that policy does not have the force of law and that a decision maker need not adhere slavishly to policy. We acknowledge the benefits of the scheme, not least in regard to road safety. But, given the likelihood that other solutions can be found that would realise the same benefits, we do not consider that the provisions of PPS 15 can be outweighed in the manner suggested.

3.539 DfI was warned in a memorandum from its consultants dated March 2021 that, in regard to Section 1 of the scheme in the vicinity of Strabane, any increase in the climate change allowance would potentially put properties at risk. The FRA reveals the scale of the risk which the scheme poses to people and property. We find it surprising that, having seen the findings of the FRA, DfI did not take the opportunity to re-think its plans for Section 1 before presenting them for public consultation.

3.540 We consider that it would be both reckless and short-sighted to proceed with those plans unaltered. It would be reckless because it would knowingly expose numerous people, homes and businesses to increased flood risk and danger. It would be short-sighted because it would undermine the operation of the flood risk policies for which DfI has responsibility as regional planning authority and regional rivers authority. Strabane has a long history of flooding and if the scheme were to go ahead in its present form, DfI would be held directly responsible by public opinion, fairly or unfairly, for every future flooding event in the town and the surrounding area.

3.541 We conclude that Section 1 of the scheme would have an unacceptable effect on human beings and material assets due to increased flood risk in the Foyle river system.

3.542 It is evident that the Foyle catchment is a single river system which straddles two jurisdictions. The futile attempt to devise mitigation measures on only one side of the

river suggests the need for a holistic approach to a common problem. The Irish Government has a big stake in the A5 scheme and the OPW has expressed willingness to continue in dialogue with DfI. It seems to us that the challenge is to identify a single technical solution that would alleviate existing flooding in Lifford and adjoining parts of County Donegal and at the same time mitigate the effects of the proposed A5 scheme to such an extent as to eliminate any increase in associated flood risk. The proposed Finn Crossing and the Riverine project would also have to be taken into account.

3.543 We do not know whether such a solution can be found but we see merit in preparing a joint feasibility study and, if the prospects seem favourable, a new FRA for the Foyle river system only. Any such FRA would represent further environmental information and require fresh public consultation.

3.544 We cannot exclude the possibility that no cross-border technical solution can be found that would enable Section 1 of the A5 scheme (including Phase 1a) to proceed as proposed without increasing the risk of flooding to flood plain properties. It seems to us that in such circumstances DfI would have to face the prospect of identifying another route, notwithstanding the challenges that may bring. We suggest that instead of waiting to discover whether a joint approach to the flooding problem is successful, DfI should start investigating options as soon as possible. Any alternative route would require a new ES to be prepared for Section 1 only.

Recommendation 18

We recommend the Department not to proceed with any part of Section 1 of the scheme as presented in the updated environmental statement and flood risk assessment, but:

(a) to investigate whether it is possible, in consultation with relevant authorities in the Republic of Ireland, to identify additional measures that would ensure that a road scheme could be constructed on the route currently proposed without causing increased flood risk to properties anywhere in the Foyle flood plain; and also

(b) to investigate alternative routes which do not pass close to the confluence of the Mourne River and the River Finn.

Interactions and Cumulative Effects

3.545 The requirement to consider interactions and cumulative effects stems from Annex IV to Directive 97/11/EC, which is incorporated by reference into Article 67(4) of the Roads Order. It lists nine aspects of the environment likely to be significantly affected by projects and refers to the inter-relationship between them. In our view, inter-relationships and interactions are broadly synonymous. Annex IV states in a footnote that the description of the likely significant effects of a project should cover its cumulative effects, which we take to mean its effects in combination with those of other projects, and also its indirect effects.

Interactions

3.546 It seems to us that the requirement to consider inter-relationships (or interactions) derives from a recognition that an effect on one factor can lead to an effect on another. Changes in air quality, for example, can affect flora and fauna. But it must also be

recognised that some projects may have no effects on certain interactions, in which case such effects cannot be described or assessed. It follows that there is an onus on anyone who criticises the way in which effects on interactions are covered in an ES to pinpoint effects which have been missed.

3.547 Chapter 17 of the 2016 ES "Interactions and Cumulative Effects" did not consider interactions between topics covered in preceding chapters. The 2019 ESA largely avoided the term "interactions". Instead, placing reliance on guidance in the DMRB, it preferred the concept of cumulative impacts from a single project, the combined action of different environmental topic-specific impacts upon a single resource/receptor.

3.548 The 2019 ESA presented a matrix consisting of five potential impacts of the scheme, namely noise/vibration, air quality, visual intrusion and land take; and four receptors/ resources, namely human, ecological, built heritage and water. It stated that the cumulative effects of the five potential impacts on ecology, built heritage features (including scheduled monuments) and water resources were reported in the respective chapters of the ES. The ESA did not give further coverage to such effects. At the inquiry, DfI's team was able to point by way of example to places in Chapter 11 of the ES where the cumulative effects of the scheme on ecology and water resources were considered.

3.549 The AA5A drew attention to the fact that the matrix used in the ESA did not mention several of the factors which the Directive requires to be considered, including soil and climate. It asserted that there was no interaction between the cultural heritage chapter of the ES and any other chapter. It pointed out that there was no assessment of the interaction between noise and landscape even though tranquillity is a recognised attribute in landscape character assessments that were being prepared for LDPs.

3.550 The ES did in fact consider matters which straddle cultural heritage and other topics. Chapter 9 contains an assessment of impacts on historic landscapes. There were references to the sound (or noise) environment in the descriptions of the scheduled monuments, Harry Avery's Castle and Errigal Keerogue, which appeared in Appendix 9E.

3.551 Tranquillity is a notable feature of landscape character in remote or wild terrain such as the High Sperrins. However, although there are tranquil places within the scheme corridor, remoteness, wildness and tranquillity are not among the salient characteristics of the landscapes through which the proposed road would pass. In its Interim Report of September 2020, the Commission stated that it was not persuaded that the scheme would affect the interaction between noise and landscape. It judged, therefore, that it was unnecessary for the ES to identify, describe or assess such an effect.

3.552 The Commission expressed the view that the ES might have been more legible had it been structured round the factors (or receptors) specified in the Directive. Alternatively, it might have been structured round predicted effects on those factors – noise, pollution and so on. In the event, a more complex structure was adopted. Most chapters focused on receptors, some focused on effects, while others covered both receptors and effects. A different structure would have made it easier to work out whether, when the ES and its appendices were read together with the 2019 ESA, any effects of the scheme on interactions between the specified receptors had been left out.

3.553 The matrix used in the 2019 ESA did not include climate, landscape, material assets or soil. However, the ES treated climate as a subset of air quality; visual intrusion affects

the landscape; and land take affects material assets. It was arguable, therefore, only one specified receptor, soil, was unaccounted for. It could be inferred that the authors of the ES did not expect the scheme to have effects on interactions involving soil. No one pinpointed any such effects that were missed. The Commission accepted DfI's submission that it was not obliged to articulate outcomes that did not arise. On the available evidence, it did not find the AA5A's objections concerning interactions to be sustained.

3.554 The 2019 ESA acknowledged that cumulative effects on human receptors were not assessed in the ES. It detailed cumulative effects of the scheme on 39 groups of people. It found that 23 groups "had the potential" to experience minor adverse cumulative effects from two or more of the selected sources at construction and/or operational stage while seven groups "could" experience moderate adverse cumulative effects. The groups were identified by general location and chainage only. It was stated at the inquiry in 2020 that the 23 groups comprised 80 dwellings and the seven groups comprised 350.

3.555 In studying Appendix D1 to the 2019 ESA, it is difficult to follow the thought process that led to the conclusion that people in Ballymagorry, in Strabane and adjacent parts of Donegal, and in Sion Mills and Newtownsaville would suffer only moderate adverse cumulative effects. In Ballymagorry, for example, the following residual environmental effects were predicted:

> Noise/Vibration. *Likely to experience major adverse impacts in traffic-related noise following completion of the scheme.*
>
> Visual. *Likely to experience significant adverse construction impact (and) minor, moderate and major adverse visual impacts during operation.*
>
> Land take. *Receptors within the (vesting) boundary will experience adverse impacts.*

3.556 It is usually to be expected that the combined effect of several impacts on a single receptor would be greater, not less, than the sum of the impacts. In its Interim Report, the Commission expressed the opinion that people whose land is taken, and then have their outlook impaired during a construction period lasting several years, and then find views they had enjoyed are permanently marred and they are subject to constant noise from a new road, would consider that each successive impact had multiplied rather than reduced their initial loss. The Commission was satisfied that the combined effect of all the impacts identified for the Ballymagorry group could not be less than large adverse. That same conclusion applied to the other groups of people mentioned in the ESA.

3.557 In its Interim Statement of March 2021, DfI stated that it was content to review its existing assessment of these effects and to include any updated assessment within what became the 2022 ESA.

3.558 It is acknowledged in Table 2-1 of the 2022 ESA that some environmental topics interact, for example, changes in air quality, road traffic noise, and visual impact. Several effects on a receptor or resource shared by these environmental topics "hypothetically" could interact to produce a combined effect of overall greater significance than each individual effect on its own. The cumulative effects upon a single receptor/resource are not less than but either the same or of greater significance than

the component effects. This approach to the interaction between environmental topics is not followed through into Chapter 17 of the ESA.

3.559 The 2022 ESA, instead of reviewing the assessment of the cumulative effects of the scheme on the 39 groups of people identified in the 2019 ESA, studies 28 receptors, of which only two are residential – properties in proximity to the existing A5 and properties (which would be) in proximity to the scheme. The description of residual impacts on the receptors consists of a series of terse unconnected bullet points, each referring to an earlier chapter of the ESA. There is no attempt to discuss interactions between topics. The potential cumulative impact for both residential receptors is stated in a single word, "Significant". No additional mitigation measures are proposed.

3.560 In our view, it is unreasonable to treat residents whose homes are spread out along a corridor of over 50 miles in length as constituting a single "receptor". There is no way of telling from the 2022 ESA how the various impacts of the scheme would interact on the residents of particular localities in the scheme area. Large adverse impacts that were identifiable in the 2019 ESA have been smoothed out and smothered by the use of meaningless averages. As the 2022 ESA contributes nothing to our understanding of the impact of the scheme on recognisable communities, we can only restate the conclusion of the Interim Report.

3.561 We conclude that the scheme would have large adverse effects on people living in the vicinity of Ballymagorry, Strabane and adjacent parts of Donegal, Sion Mills and Newtownsaville.

Cumulative effects

3.562 Chapter 17 of the ES focused on possible cumulative effects of the A5 scheme with other projects. It found that only two might have cumulative effects, namely the proposed Three Rivers retail, leisure and employment development at Lifford Road, Strabane and the proposed N14/N15 to A5 road link. The Three Rivers development is not mentioned in Chapter 17 of the 2022 ESA. The planning permission granted in 2014 seems to have lapsed and the site is now earmarked for the Riverine project, which is described earlier in this chapter. The ESA states that the Riverine project might cause the depth and/or frequency of flooding to increase significantly. Surprisingly, it goes on to say that no measures are required to mitigate for this.

3.563 The A5 to N14/N15 river crossing and dual carriageway link is described in Chapter 2 of this report. The 2022 ESA identifies potential significant in-combination effects of the link and the A5 scheme relating to landscape, ecology, noise and vibration and agricultural land.

3.564 The 2022 ESA finds that, in addition to the Riverine development and the A5 to N14/N15 link, the following approved non-residential projects covering more than 1 hectare would have potential significant cumulative effects in combination with the A5 scheme:

- a 78-kilometre underground gas pipeline from Portadown to Fivemiletown;
- a service station near Ballygawley;
- an extension to a quarry at Urbalreagh Road, Victoria Bridge – the implications of this development are discussed in more detail later in this chapter;
- a factory building in Omagh;
- an anaerobic digester in Strabane;

- a new school in Strabane;
- a golf driving range near Omagh; and
- a hydro-electric scheme in Sion Mills.

3.565 The ESA also finds that approved residential developments of more than 10 units at Newbuildings, Magheramason, Strabane, Newtownstewart, Mountjoy, Omagh, Newtownsaville, Ballygawley and Aughnacloy would have potential significant cumulative effects in combination with the A5 scheme.

3.566 The significant cumulative impacts arising from these residential and non-residential developments vary from project to project but comprise the following:

- an increase in the significance of effects on visual receptors during construction, should the construction phases overlap;
- an increase in the significance of effects on ecological receptors, including those associated with the River Foyle and Tributaries SAC;
- an increase in the significance of noise and vibration effects on nearby receptors during construction, should the construction phases overlap, and of noise effects during the operational phase; and
- an increase in the significance of effects on agricultural land.

3.567 The ESA indicates that, provided mitigation measures similar to those proposed for the A5 scheme are adopted for the developments that it identifies, no additional mitigation would be required. The delivery of mitigation measures associated with other projects is beyond the control of DfI. Chapter 17 therefore ends with the assessment, with which we agree, that all the residual effects are potentially significant.

3.568 In a representation to the inquiry in 2020, an objector queried why the list of projects whose cumulative impact was considered did not include a future A5/A6 link or a third road bridge across the Foyle. In its rebuttal evidence, DfI stated that neither project was currently in any roads programme, although both are recognised as important in the longer term. It said these potential projects were reflected in the A5 scheme in that the dual carriageway was proposed to stop at Junction 2 south of Newbuildings. In the absence of firm proposals for these projects, it was not possible to assess their cumulative effects with the A5 scheme.

3.569 At the inquiry in 2020, the objector drew attention to Derry City and Strabane District Council's unadopted LDP draft Plan Strategy. It refers at Paragraph 11.21 to seeking to "investigate the potential" for orbital roads/links around Derry – A5 to A6, A6 to A2, A2 upgrade and A5 to A2, including a third road bridge over the Foyle near Newbuildings. Maps on Pages 69 and 150 show potential routes in diagrammatic form only.

3.570 Arrows indicating a possible link to the west and a possible A5/A6 link, both emanating from the proposed Junction 2, are marked on the scheme map. The inquiry documents include a report on improved roads round Londonderry and an initial feasibility study into an A5/A6 link, both prepared for the Department in 2009. The ideas presented then do not seem to have progressed further and remain aspirational. We agree with DfI that as there are no formal lines on a map and as delivery is not reasonably foreseeable, it would not be feasible to assess cumulative effects. This is not an instance of project splitting, as the objector suggested.

Indirect effects

3.571 At the inquiry in 2020, the An Taisce representative queried why certain indirect effects of the scheme were not considered in the ES. He argued that the proposed road would encourage more car journeys. He asked where the electricity for the electric cars that would use the new road would come from and whether more wind farm capacity would be required. DfI's witness said this was a high-level issue beyond the scope of the A5 scheme. We agree that the ES could not reasonably have been expected to cover this matter.

3.572 The An Taisce representative also asked about the sources of road-building materials, including sand and gravel. He wanted to know why the locations of the quarries from which such materials would come and the haul routes were not specified in the ES. He asked how much carbon would be released into the atmosphere, what obligations would be placed on contractors to buy only from sites fully compliant with planning requirements and whether construction compounds would be included in the land take for the scheme.

3.573 DfI's witness referred to Chapter 6 of the ES which provided an initial assessment that there would be a requirement to import about 3.25 million cubic metres of material. According to Paragraph 5.6.11 of the 2022 ESA, the figure is now 1.1 million cubic metres. Where import or export of materials was required, haulage routes would be subject to agreement (between the contractor and DfI Roads) under a traffic management plan. Specific consideration would be given to the sensitivity of communities located along potential routes.

3.574 DfI's witness said it was not yet known what road base material would be used. One possibility was a product known as cement-bound macadam. It was not yet known from where the road-building materials would come. That would depend on market forces. By the time the scheme reached construction stage, specifications would be greener and contractors would be required to reduce their carbon footprint. He confirmed that material would be purchased only from authorised sites. He said that although the locations of construction compounds had been identified, the necessary land would not be vested and planning permission would be required.

3.575 As the *Blewitt* case law indicates, it is unrealistic to expect that an ES will always contain the full information about the environmental impact of a project. Inevitably some details relating to indirect effects of the scheme were unknown when the ES was compiled and remained unknown at the time of the inquiry. We do not consider any of the information gaps highlighted by An Taisce to represent a fundamental deficiency in the updated ES.

Quarrying in the Townland of Urbalreagh

3.576 In 2003 planning permission was granted for a sand and gravel quarry at Urbalreagh, about 2½ miles to the north west of Newtownstewart. The site is located to the north of Derg Road and to the west of Old Bridge Road and the existing A5. The 2019 ESA stated that although the quarry was active prior to the development of the scheme, it had increased in area since 2016 due to unauthorised operations which excavated materials from under the footprint of the proposed road.

3.577 In October 2018, DfI in its capacity as regional planning authority issued an enforcement notice alleging the winning and working of materials, the change in the use of the land from agriculture to processing of materials and the construction of settlement ponds, being developments carried out without the grant of planning permission required. The notice specified 20 steps which DfI required to be taken. They included reinstating the void to a level equal to that shown on an attached map within five years and eight months of the date of the notice taking effect.

3.578 A recipient of the enforcement notice appealed to the Planning Appeals Commission. The notice is of no effect pending the determination of the appeal. DfI served a stop notice in February 2019 prohibiting the extraction of minerals from the area covered by the enforcement notice. There was no sign of quarrying activity when we visited the site in both 2020 and 2023.

3.579 The 2019 ESA stated that if the original ground level were reinstated the road would be constructed as intended and the various assessments of impacts would be as reported in the 2016 ES. However, it was possible that reinstatement might not have commenced or might be only partially completed when funding was provided for this phase of the scheme. An assessment had been carried out to identify potential impacts if the quarrying works were not remediated. The ESA said the exact environmental effects of constructing the proposed road through this area could be fully evaluated only prior to work commencing but that any reinstatement measures carried out should reduce those effects.

3.580 A description of the scheme in the vicinity of the quarry was provided in a standalone report incorporated by reference into the 2019 ESA. The proposed road would follow a relatively straight horizontal alignment on approach to Derg Road from the north. The mainline would be primarily in cutting between Chainages 33050 and 33850, with a shorter length on embankment between Chainages 33850 and 34000. Derg Road would be realigned northwards by about 20.4 metres and a bridge constructed over the new road with the required headroom. The maximum height of embankment, measured against the original ground level, would be 6.8 metres. Access tracks from Derg Road were proposed, to the east and west of the mainline, to facilitate access to severed lands owned by different individuals. The River Derg would be about 420 metres to the south of the realigned Derg Road.

3.581 The Urbalreagh report stated that a site visit in 2017 had identified that excavation works had continued to within about 5 metres of the Derg Road boundary fence. Using quarry levels for April 2015 provided by Derry City and Strabane District Council, the depth of excavation appeared to be about 27.8 metres above Ordnance datum, coinciding with the ground water table.

3.582 The report said that, following inspection of the quarry and surrounding area from Derg Road in September 2018, it was apparent that excavation had continued to the west into an adjoining field. The level of the quarry base in the recently extended area was unknown but, as there was potential for this area to be excavated to a level similar to that of the adjacent areas, 27.8 metres was assumed. It was acknowledged that it was unlikely that the quarry base was at this level at present, but it might be achieved by the time construction of this section of the proposed road commences. Adopting this position ensured a robust, albeit worst-case, assessment, the report said.

3.583 The report set out changes to highways design to take account of the quarrying and these were illustrated by drawings. No changes to the mainline horizontal and vertical alignments were proposed. However, it was stated, the reduction in ground level within the quarry boundaries meant that between Chainages 33720 and 33920 on the northbound carriageway, where the mainline was to have been in a cutting with a maximum depth of 4.9 metres, a significant embankment was now proposed. The height of the embankment required was over 12.3 metres at Chainage 33750.

3.584 The report acknowledged that, due to the reversal in earthworks profile from cutting to embankment, the proposed road would be less well screened from properties on Derg Road to the west. A false cutting or environmental bund would be created to mitigate that loss.

3.585 The report stated that the extension of the quarry within the footprint of the proposed realigned Derg Road would result in a significant increase in the height of the proposed embankments to the west of the mainline. At one point, the proposed height of an embankment would increase from about 2.6 metres to about 14.1 metres above existing ground level.

3.586 The report indicated that the vertical profile of the access track to the west of the mainline would be altered significantly because the tie-in point would be lower by about 17.3 metres. The amended vertical profile would follow a gradient of 12% over the majority of its length. The realigned access track would be located on high embankments. The embankment for the access track would require a reinforced or retained slope to stay within the Vesting Order boundary. A small area of land, which was initially included for temporary use, would be required on a permanent basis. The access track arrangements would however be discussed with the landowners and if a more mutually beneficial layout for all parties could be agreed, the boundary of the scheme would be revised with any additional areas purchased by agreement.

3.587 The report said that earthworks required for the assumed quarry level would reduce the volume of existing material to be removed from this area but would also reduce the amount of material available to be reused as structural fill or for landscaping. It would increase the volume of material required from elsewhere. That would require increased construction traffic on the local road network in the short term as well as more construction works. The report estimated that the cut volume would decrease by 22,610 cubic metres and the fill volume would increase by 136,233 cubic metres.

3.588 On the basis of the current landform created by the quarrying operations, the Urbalreagh report examined the impact of those operations on the previous assessments and identified potential mitigation. This was done for ecology, landscape, geology and soils, construction traffic and vehicle movements, noise and vibration, road drainage and the water environment, cultural heritage, effects on all travellers, and community and private assets.

3.589 The following findings emerge from the reassessments:

- The proposed road would be more exposed locally but there would be no significant departure from the landscape character baseline described in the 2016 ES. Consideration would need to be given to providing additional blocks of linear and woodland planting on open embankments.

- Five residential receptors would potentially be more exposed to open views of the proposed road. With landscape mitigation in place, visual effects were likely to range between moderate and slight adverse in the opening year, reducing to slight or neutral by the design year.
- The construction activities required to fill the quarried area would result in noise impacts over a longer period than anticipated in the 2016 ES but there would be no long-term impacts on receptors.
- There would be potential for the additional construction works to generate fugitive dust emissions, which could have an adverse impact on nearby sensitive properties if mitigation measures were not applied.
- The loss of the natural ground profile would worsen noise impacts associated with the operation of the proposed road on properties to the west. Long-term noise mitigation would need to be reviewed.

3.590 The overall conclusion of the Urbalreagh report was that the changes at the quarrying site considered in relation to the 2016 ES would not constitute a material change. The ESA interpreted this as a finding that those changes would not constitute a "main" effect. (It will be recalled that Article 67(6) of the Roads Order states that the information to be provided in an ES shall include the data required to identify and assess the "main effects" which the project is likely to have on the environment.)

3.591 The Urbalreagh report ended by saying that following cessation of all quarrying activities and the completion of developer-led remedial works:

- a detailed site survey should be undertaken to establish ground levels, the extents of quarried material and any re-establishment of previous quarried areas – these data would enable an accurate update to the specimen design and land-take requirements to be produced;
- environmental surveys to monitor the resultant ecological baseline in this location should be undertaken;
- a site visit by the landscape team should be undertaken; and
- pre-construction environmental surveys should be undertaken once a date for construction of this phase of the scheme has been confirmed.

3.592 The AA5A said that the Urbalreagh report asked the wrong question. The question was not whether the changes brought about by quarrying would constitute a material change but whether they could have an adverse impact on the environment when considered in the context of the A5 scheme as a whole. The environmental impacts of the quarrying were separated into this report and screened out of the main assessment. The report's findings were not adequately integrated into an overall assessment of environmental harm.

3.593 The AA5A gave as an example the Urbalreagh report's conclusion about increased construction traffic on the local road network in the short term as a result of an increase in imported material for embankment construction. It argued that instead of this conclusion being integrated into the 2019 ESA's assessment of air quality, it had been overlooked. The AA5A also noted that although the noise assessment was updated in the ESA, the Urbalreagh report appeared to rely on noise data from the 2016 ES.

3.594 The AA5A referred to the statement in the 2019 ESA that the exact environmental effects of constructing the proposed road through this area could be fully evaluated

only prior to construction commencing. That being the case, the AA5A contended, DfI cannot lawfully determine the environmental impact at this stage. It should wait until enforcement proceedings have concluded and the quarrying has stopped, as it will then have a clearer picture of the environmental impacts which the scheme is likely to have on this area.

3.595 In its rebuttal evidence, DfI pointed out that the volume of material excavated or deposited across the quarry in order to implement the revised highways design presented in the Urbalreagh report would be less than 1% of the total earthwork volumes for the scheme as a whole indicated in Section 16.6 of the 2016 ES. It argued that emissions associated with the change from cutting to embankment over the length of the quarry would not significantly change the assessment of environmental effects.

3.596 DfI submitted that subject to the outcome of the appeal, the onus remained on the landowner and operator to comply with the enforcement notice and reinstate the land prior to the proposed road being constructed. They are required to reinstate the land only to the level of the proposed road and not to the original ground level. If the reinstatement is carried out, the construction emissions associated with the scheme would be less, as the cutting previously planned would not need to be excavated.

3.597 At the inquiry in 2020, an objector stated that the quarry site used to be a field but now contained a big lake and gorse was beginning to grow. It was gradually becoming a wildlife area. That led to a discussion on whether the environmental surveys contemplated in the Urbalreagh report would be published for consultation. DfI did not expect that it would.

3.598 A full hearing to consider the enforcement notice appeal is scheduled for January 2024. The appeal is to be conjoined with two other appeals relating to land in the same general area and environmental information is to be considered. Regardless of the outcome of the appeal against DfI's notice, should retrospective planning permission be granted for any development on the appeal site, the notice, so far as inconsistent with that permission, would cease to have effect.

3.599 It is important to distinguish the environmental effects of the alleged unauthorised quarrying from those of the road scheme. Some impacts discussed in the Urbalreagh report, for example the greater exposure and visual impact of the new dual carriageway, would be direct consequences of the quarrying. The impacts of the quarrying and the remedial steps sought by DfI will be considered through the appeal process, to which there is a wide range of possible outcomes.

3.600 The Urbalreagh report foresaw no change to the three-dimensional position of the proposed new road and realigned Derg Road as a result of the quarrying but it envisaged embankments being introduced or significantly increased in height. Such changes would have visual impacts and result in increased construction traffic, more dust, and greater noise. These environmental effects, though indirectly caused by the quarrying, would be directly related to the changed physical works incorporated in the road scheme.

3.601 The exact environmental effects of the proposed road in this area will become clear only when the appeal process has been completed. It may be possible to revert to the original layout. If that is not possible, then the proposed layout would have to be revised, hence the need for further surveys. The level of the quarry base in the recently

extended area is unknown. The drawings in the Urbalreagh report are described as "specimens" and are not final proposals.

3.602 Earlier in this chapter we set out the process which DfI must follow if it decides to proceed with the scheme and then wishes to make changes to it. DfI accepted an earlier recommendation by the Commission that should it wish to make changes to the scheme as a result of quarrying at Urbalreagh, it would make an EIA determination. We restate that recommendation here in more precise language.

Habitats assessment

3.603 The Urbalreagh report also considered the impact of quarrying operations on the River Foyle and Tributaries SAC. It found no effect on the proposed works adjoining the banks of the River Derg, during and after construction. It concluded that the scheme, including if necessary an embankment through the area, would have no "significant" adverse effect on the integrity of the SAC.

3.604 In Chapter 4 below, we set out in detail the requirements of the Habitats Regulations as they apply to European sites of nature conservation importance. It may be that what the authors of the Urbalreagh report intended to say was that any changes to the A5 scheme are unlikely to have a significant effect on the SAC. If significant effects are likely, then the test to be applied is whether it can be ascertained that such changes would not have an adverse impact on the integrity of the SAC. But the implications of the changes for the SAC cannot be properly assessed until their scope is known.

Recommendation 19

We recommend the Department:

(a) that if, having announced a decision to proceed with Section 2 of the scheme, it then wishes to alter the scheme in the vicinity of Urbalreagh in any manner which is likely to result in more than a trivial change to the environmental effects predicted in the 2016 environmental statement, it will publish a determination as to whether the proposed alteration will be subject to fresh environmental impact assessment; and

(b) unless it can be excluded on the basis of objective information that the proposed alteration would have a significant effect on the River Foyle and Tributaries Special Area of Conservation, individually or in combination with other plans or projects, to prepare an appropriate assessment of the implications of the alterations for the Special Area of Conservation in view of its conservation objectives; and not to proceed with the alteration unless no reasonable scientific doubt remains that they would not adversely affect the integrity of the Special Area of Conservation.

4.0 THE HABITATS REPORTS

4.1 The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 were introduced to implement Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora. The Directive mandated the setting up of a European ecological network of Special Areas of Conservation (SACs). It was to be composed of sites hosting specified natural habitat types and habitats of specified species and was also to include Special Protection Areas (SPAs). These sites are referred to in the Habitats Regulations as "European sites". The Regulations were subsequently amended in 2004, 2007, 2012 and 2019.

4.2 Regulation 43 of the Habitats Regulations requires a competent authority, such as DfI, before deciding to undertake or give any authorisation for a plan or project which is likely to have a significant effect on a European site in Northern Ireland (either alone or in combination with other plans or projects) and which is not directly connected with or necessary to the management of the site, to make an appropriate assessment (AA) of the implications for the site in view of its conservation objectives. Regulation 62 puts it beyond doubt that the assessment provisions apply to any plan or project by the Department to construct a new road.

4.3 Regulation 43 states that the competent authority shall, if it considers it appropriate, take such steps as it considers necessary to obtain the opinion of the general public. It goes on to say that in the light of the conclusions of the AA and subject to Regulation 44, the competent authority shall agree to a plan or project only after having ascertained that it will not adversely affect the integrity of the site. It requires the authority, in considering whether a plan or project will adversely affect the integrity of the site, to have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which it is proposed that the authorisation should be given. This we understand to be a reference to mitigating measures.

4.4 Regulation 44 states that if it is satisfied that, there being no alternative solutions, the plan or project must be carried out for imperative reasons of overriding public interest the competent authority may agree to the plan or project notwithstanding a negative assessment of the implications for the site concerned.

4.5 It was discussed at the inquiry whether, following Brexit, the requirement for AAs still applies to European sites outside Northern Ireland, notwithstanding the words used in Regulation 43. We were referred to Section 4(2)(b) of the European Union (Withdrawal) Act 2018 which provides a saving for rights, powers, liabilities, obligations, restrictions, remedies or procedures of a kind recognised by the European Court of Justice (ECJ) or any court or tribunal in the UK in a case decided before 31st December 2020.

4.6 Our attention was drawn to *Harris and Harris v Environment Agency and Natural England* [2022] EWHC 2264 (Admin). In Paragraph [90] it was noted that the ECJ had held in *Landelijke Vereniging tot Behoud van de Waddenzee and Another v Staatssecretaris van Landbouw, Natuurbeheer en Visserij* (C-127/02) that the provisions of the Habitats Directive relating to AA have direct effect in the sense that individuals may rely on them in national courts. We were also directed to Paragraph [9] in *The Queen (on the application of Ronald Wyatt) v Fareham Borough Council and Others* [2022] EWCA Civ 983, where a wealth of case law deriving from those provisions of the

Directive is set out. The judgments mentioned were from both the ECJ and the domestic courts and nearly all were decided before the end of 2020.

4.7 The consensus of the lawyers present at the inquiry was that the provisions of the Directive relating to AA still prevail and that DfI was required to prepare AAs in relation to SACs and SPAs in the Republic of Ireland. We proceed on that basis.

4.8 The judgment of the ECJ in *Waddenzee* is authority for the following propositions which taken together chart a decision-making path for projects that have implications for protected habitats:

- A plan or project must be subject to AA if it cannot be excluded, on the basis of objective information, that it will have a significant effect on a site, individually or in combination with other plans or projects.
- An AA implies that, prior to its approval, all aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field.
- The competent national authorities, taking account of the AA, are to authorise the activity only if they have made certain that it will not adversely affect the integrity of the site. That is the case where no reasonable scientific doubt remains as to the absence of such effects.

4.9 The AA5A drew attention to the following principles which also emerge from case law:

- In order to determine whether it is necessary to carry out, subsequently, an AA, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on the site – *People Over Wind v Coillte Teoranta* (C-323/17).
- A plan or project will adversely affect the integrity of a site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site. The precautionary principle should be applied for the purposes of that appraisal – *Sweetman v An Bord Pleanála* (C-258/11).
- An AA may not take into account conservation, preventative or autonomous measures whose expected benefits are not certain at the time of the assessment – *Coöperatie Mobilisation for the Environment v College van Gedeputeerde Staten van Limburg* (C-293/17). (This is often referred to as the "Dutch Nitrogen" case.)
- The competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site – *Holohan v An Bord Pleanála* (C-461/17).
- Measures contained in a plan or project providing, prior to the occurrence of adverse effects on a natural habitat present thereon, for the future creation of an area of that type, the completion of which would take place subsequent to the AA, may not be taken into consideration in the AA – *Orleans v Vlaams Gewest* (C-387/15).

4.10 The A5AA placed particular reliance on *Grace and Sweetman v An Bord Pleanála* (C-164/17) concerning a proposed wind farm in a SPA classified because it hosted the natural habitat for hen harrier. The development could result in the permanent or temporary loss of foraging habitat. A management plan was proposed, which was designed to ensure that, at any given time, the amount of the site suitable as foraging habitat for the hen harrier was not reduced and might be enhanced. The Irish Supreme Court asked the ECJ to rule on whether such measures could properly be regarded as mitigatory. The ECJ examined the implications of the development and the management plan and decided that the proposed measures were compensatory.

4.11 DfI drew attention to the Court of Appeal judgment on *Chris Murphy's Application* [2017] NICA 51. This was a challenge to a decision by the Minister for Infrastructure to proceed with a dualling scheme for the A6 road from Toome to Castledawson adjacent to the SPA at Lough Neagh.

4.12 The Court of Appeal adopted the analysis of the ECJ in *Briels v Minister van Infrastructuur* (C-521/12), which held that a mitigation measure lessens the negative effects of a plan or project with the aim of ensuring that the integrity of the site is not adversely affected, whereas a compensatory measure does not achieve that goal within the narrower framework of the plan or project but seeks to counterbalance the failure to do so through different, positive effects in order to avoid a net negative effect. The court stated that the ECJ's analysis required it to identify the selection feature at risk. It found that the foraging lands were not a protected feature of the Lough Neagh SPA and proposed field amalgamation measures, being aimed at avoiding or reducing any significant adverse effects on the protected feature, whooper swan, were plainly mitigating measures.

4.13 The Ramsar Convention is an international treaty for the conservation and sustainable use of wetlands and especially wildfowl habitat. It is named after the city in Iran where the Convention was signed in 1971. It requires signatories to designate wetlands of international importance as Ramsar sites and to promote the wise use of all wetlands within their territory. As a matter of policy rather than of law, the UK Government has chosen to apply procedures derived from the Habitats Directive to Ramsar sites.

4.14 Revised reports to inform an appropriate assessment (RIAAs) relating to the following designated sites were published in March 2022:

- River Foyle and Tributaries SAC
- Owenkillew River SAC
- River Finn SAC
- Tully Bog SAC
- Lough Foyle SPA (Northern Ireland)
- Lough Foyle SPA (Republic of Ireland)
- Lough Swilly SPA
- Lough Neagh and Lough Beg SPA
- Lough Foyle Ramsar Site
- Lough Neagh and Lough Beg Ramsar Site

4.15 DfI is the competent national authority which will have to decide whether to proceed with the A5 scheme. It will be its responsibility, prior to giving any such authorisation,

to carry out an AA of the implications of the project for any European site on which it is likely to have a significant effect.

4.16 The RIAAs are not final documents. They are drafts, shadow assessments, prepared and updated by DfI's consultants. They have been presented to obtain the opinion of the general public as contemplated by Regulation 43. The inquiry is a further step in the public consultation process. Although the RIAAs have been through several iterations, it would still be open to DfI, when producing its AAs and taking a decision on the scheme, to make further amendments in response to the inquiry report.

4.17 The RIAAs comprise two stages. The first stage, screening, considers whether the scheme could cause a likely significant effect on the qualifying features of the European site. The second stage considers the potential impacts on the site's structure, function and conservation objectives.

4.18 The RIAAs quote the following definition of integrity in the context of designated sites, which was used in circulars issued by UK government departments in 2005: *"the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or levels of populations of the species for which it was classified"*. This definition must be applied with care in light of the *Sweetman* case law (C-258/11). The permanent loss of a natural resource which once destroyed cannot be replaced constitutes a loss of site integrity if the presence of that natural resource was a reason why the site was originally designated.

Watercourses Special Areas of Conservation

4.19 In its Interim Statement, DfI accepted the Commission's recommendation to prepare a separate AA for each of the watercourse-based SACs, namely the River Foyle and Tributaries SAC, the River Finn SAC and the Owenkillew River SAC; and to consider the effect of the scheme on each individual selection feature of each SAC and on the integrity of each SAC as a whole.

The River Foyle and Tributaries SAC

4.20 The River Foyle and Tributaries SAC, which covers an area of 770 hectares and has a total length of 120 kilometres, extends from Magheramason to Newtownstewart. It follows the Rivers Foyle, Mourne and Strule; the River Finn from its confluence with the Mourne to Clady; and the River Derg from its confluence with the Strule to its headwaters. The SAC includes only those parts of the Foyle and Finn that are within Northern Ireland.

4.21 The River Foyle and Tributaries SAC was designated for watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (submerged and floating-leaved plants including crowfoots); for Atlantic salmon; and also for otter. The conservation objectives for the site are to maintain and if possible expand the salmon population; to maintain and if possible enhance the extent and quality of salmon habitat; to maintain and if possible enhance the extent and composition of the aquatic vegetation community; to maintain and if possible increase the otter population; and to maintain the extent and quality of suitable otter habitat. There is no management plan in place for the SAC.

4.22 To the north west of Magheramason, a 500-metre section of the proposed dual carriageway would come within 50 metres of the SAC. From Magheramason to

Strabane the road would run for up to 2 kilometres to the east of the SAC, crossing the tributaries of Burn Dennet and the Glenmornan River and several small watercourses and drainage channels. The proposed road would then cross the SAC close to the existing bridge over the Mourne River and traverse the western margin of Strabane. From there it would follow a south-easterly alignment away from the SAC.

4.23 On approaching and passing to the west of Victoria Bridge, the proposed road would cross a small tributary of the Mourne River some 700 metres to the west of the SAC. Approximately midway between Victoria Bridge and Newtownstewart, it would cross the River Derg, which is in the SAC. Further to the south, the road would cross a tributary of the Derg before passing to the west of Newtownstewart. At this point it would be about 900 metres to the west of the southernmost limit of the SAC. It is anticipated that each phase of the scheme would take two to three years to construct.

4.24 The 2022 RIAA includes a screening matrix which describes any likely direct, indirect or secondary impacts of the scheme (either alone or in combination with other plans or projects) on the SAC. It considers the potential effects of atmospheric pollution. It says that effects from airborne emissions are most likely to occur within 200 metres of road developments. Airborne emissions of nitrogen deposited into watercourses are expected to be rapidly dispersed and diluted and are thus not possible to quantify. Nitrogen deposition is not considered to have significant ecological impacts in agriculturally dominated lowland catchments such as that of the River Foyle. This is because nitrogen inputs, especially through the long-term and widespread application of inorganic fertilisers, are likely to be much more significant than atmospheric contributions and would not be anticipated to appreciably alter the nitrogen content of the watercourses. Hence, atmospheric pollution is not considered to pose a significant impact on the River Foyle and Tributaries SAC and its designation interest features.

4.25 In a consultation submission, the Department of Agriculture, Environment and Rural Affairs (DAERA), Natural Environment Division commented that while nitrous oxide emissions were likely to be at levels which do not cause an impact to the designated features of the SAC, this was as yet not a certainty. It requested DfI to address this with *in situ* monitoring or by undertaking an air quality impact assessment.

4.26 In its response to this representation, DfI stated that given that the perennial flowing water of the river prevents the accumulation of deposited nutrient nitrogen within the SAC, there was no requirement to model pollutant concentrations or deposition within the SAC's riverine environment. Air quality model results for Strabane indicated that the nitrous oxide concentration would be lower with the scheme than without it. At the inquiry, the DAERA witness agreed that runoff would exceed any deposits and that nitrogen deposition should be screened out. We accept his opinion.

Impacts on aquatic vegetation

4.27 The RIAA states that bankside vegetation would be removed to enable protection to be introduced at the base of the abutment walls required to support the clear-span bridges over the Rivers Mourne and Derg. This would involve the permanent loss of some 0.04 hectares of vegetation in the context of a total of 773 hectares of aquatic, marginal and bankside habitats which constitute the SAC. *Ranunculion*-type vegetation would not be removed.

4.28 At the inquiry in 2020, the AA5A queried the absence of any reference in the 2019 RIAA to mitigating measures in respect of the bankside vegetation that would be lost due to bridge construction. We agree with DfI that not every adverse effect is by definition an adverse effect on the integrity of the SAC. The vegetation that would be lost is not a selection feature and the removal of a small quantity thereof would not adversely affect the integrity of the SAC.

4.29 The RIAA considers whether there would be potential for loss of primary habitat within the SAC as a result of release of sediments or other pollutants into watercourses during construction. In four locations working areas would be within 50 metres of the SAC. At two of these, the sites of the proposed Mourne and Derg crossings, surveys had identified the presence of *Ranunculion*-type vegetation. It appeared that the vegetation at the Mourne had colonised and established from further upstream. It was found that this location was notable for its unstable substrate, which would preclude successful establishment of viable areas of the habitat type.

4.30 The RIAA states that mitigation measures for the avoidance and control of sediments and other construction related pollutants would be formalised by way of contract-specific construction environmental management plans (CEMPs) and silt management plans (SMPs) which would be finalised to the satisfaction of the Loughs Agency and the Northern Ireland Environment Agency (NIEA). Outlines of the plans are reproduced in Appendices 5 and 6 to the RIAA.

4.31 Provided the relevant safeguarding measures set out in the outline CEMP and the outline silt management plan are faithfully and unambiguously replicated and rigorously implemented in accordance with Recommendation 7 of this report and their effectiveness is carefully monitored over the construction period, we accept that the risk of sediments or pollutants arising from construction works having a detrimental effect on primary habitat would be negligible.

4.32 The RIAA also assesses the potential for loss of primary or qualifying habitats within the SAC as a result of the release of sediments or other pollutants associated with discharge of road-related runoff into watercourses once the scheme is open to use. Five discharge points would issue directly into watercourses within the SAC and a further 65 would discharge into tributaries/headwaters in the wider River Foyle catchment. The drainage strategy for the scheme provides for a range of sustainable drainage systems features focused on the interception and reduction in concentrations of sediments and other potentially harmful substances. Additional measures include the use of grassed surface water channels, attenuation ponds and wetlands. Discharges would be subject to the approval of DfI Rivers in relation to flow volumes prior to construction.

4.33 The RIAA goes on to say that design and mitigation measures are proposed at various outfalls and the detailed design would comply with the recommended water velocities for salmonids. The outfalls have been subject to an assessment which demonstrated that the discharges would be acceptable relative to the ecological sensitivity of the watercourses. The proposed scheme would have modern water quality treatment installed on all discharge locations, which would be a clear improvement on the mechanisms on the existing A5. In Chapter 3 of this report, we conclude that the scheme is unlikely to have a significant effect on the quality of surface water and that includes the watercourses that comprise the SAC.

4.34 The RIAA acknowledges that there would be a risk of accidental spillage of contaminants which could be harmful to habitats and species in watercourses associated with the SAC. Assessments demonstrated that the worst-case annual probability of a serious pollution incident from an individual outfall before mitigation was 1 in 1100 and with mitigation, the risk would be no more than a 1 in 1121 for cumulative spillage associated with occurrences on more than one drainage catchment at any one time. Measures such as spillage control penstocks would be installed at the termination chamber of mainline drainage runs and in advance of discharges to ponds, wetlands or watercourses to facilitate the isolation of accidental spillages. They would be located in verges and be easily accessible and visible from the main carriageway. Pollution control valve signage would be provided. Site compounds, particularly those with onsite production facilities such as concrete or asphalt batching plants, would be sited at least 50 metres away from watercourses to minimise the risk of pollution.

4.35 The RIAA concedes that there is potential for loss of primary habitat where the proposed bridges over the Mourne and Derg would shade *Ranunculion*-type vegetation beneath the structures. It argues that as the structures would be open-span, the risk of a detrimental impact in these locations is low and that should deterioration occur in these small areas, the effect would be minimal. We do not consider that, even in a worst-case scenario, the shading effect of the bridges would prevent the lasting preservation of the vegetation, affect the extent and composition of the aquatic vegetation community or adversely affect the integrity of the SAC.

Impacts on Atlantic salmon

4.36 The RIAA identifies six potential impacts on Atlantic salmon associated with the construction of the scheme and the future presence of its associated traffic:

- disturbance or harm associated with construction-related noise, vibration and lighting;
- disturbance or harm associated with construction activity where working areas, including site compounds, would be within 50 metres of watercourses;
- loss of habitat relied on by the species;
- fragmentation as a result of obstruction or prevention of passage for the species along watercourses once the road is open to use;
- harm to the population of the species as a result of increased concentrations of harmful substances in watercourses associated with discharges from drainage outfalls; and
- disturbance as a result of road related lighting.

4.37 The RIAA refers to research which found that Atlantic salmon were capable of detecting sound and that levels of anthropogenic noise and vibration might exceed their hearing threshold. The resulting potential impacts could be hearing impairment or death, either directly from the noise generation or indirectly as a result of hearing impairment. Construction activities associated with the scheme likely to pose such a risk were blasting or piling.

4.38 The RIAA states that the scheme does not require blasting or piling within watercourses. The establishment of abutment foundations at the proposed River Mourne and River Derg crossings would, however, involve piling close to the top of the bankside slopes at both watercourses. Table 5.1-17 of the outline CEMP identifies a working window of May to September for watercourses at, or probably at, significant risk. According to

Table 5.1-16, the River Mourne and River Derg are probably at significant risk but further information is needed to make sure this view is correct.

4.39 The RIAA goes on to say that a working window of May to September has been agreed with Loughs Agency for the Derg Crossing, which is outside the normal salmonid spawning and incubation periods. However, as downstream smolt run could occur from April to the end of May, the final working dates would be agreed following up-to-date monitoring of the watercourses.

4.40 The RIAA goes on to say that all piles would be rotary-bored piles which did not produce significant vibration. All piling within 50 metres of a watercourse would include a soft-start methodology involving a gradual increase in force and intensity of percussive piling or drilling over a 30-minute period to allow salmon to move outside of the area of influence. The methodology would be required each time the machinery was started following a 30-minute rest period. Once the piling is in full operation, associated noise and vibration from the machinery would keep fish outside of the area of influence. This process would need to be repeated at the start of each day as overnight working was not proposed in close proximity to watercourses.

4.41 The RIAA says that artificial lighting at night has potential to disorientate fish. Its main impacts on Atlantic salmon are disruption to migration behaviour and increased mortality rates due to increased efficiency of predators. Night working in the vicinity of watercourses identified as being of salmonid interest would not generally be allowed. However, should circumstances arise which required emergency works outside of daylight hours, lighting would be positioned or cowled to minimise light spill on to the watercourse and the duration would be kept to a minimum.

4.42 In Chapter 3 of this report, we recommend that to safeguard residential amenity, no construction work takes place outside specified hours without the prior written agreement of the relevant district council. In view of the acknowledged harm which night working could cause to the life and wellbeing of Atlantic salmon, a selection feature of the SAC, we consider it necessary to introduce an additional safeguard which would enable the Loughs Agency to veto any night working which it considers potentially detrimental to salmon. We emphasise that this recommendation is supplementary to, and not an alternative to, Recommendation 11.

Recommendation 20

We recommend the Department to give a public undertaking that no site works or construction activities will take place after dusk and before dawn in the vicinity of any watercourse identified as being of salmonid interest within the River Foyle and Tributaries Special Area of Conservation or the wider River Foyle catchment, without the prior written agreement of the Loughs Agency.

4.43 The Loughs Agency is an agency of the cross-border Foyle, Carlingford and Irish Lights Commission, among whose statutory responsibilities are the management, conservation and protection of the inland fisheries of the Foyle area. We are confident that the involvement of the Loughs Agency would ensure that Atlantic salmon would not be subjected to undue disturbance by reason of night working.

4.44 The RIAA notes that the release of sediments and other construction-related pollutants into watercourses could result in the loss of spawning and nursery habitat used by Atlantic salmon and in direct harm to the species due to the presence of concentrations of such material in the water. This risk would occur where localised in-stream and bankside works were required for the construction of temporary and permanent bridges, culverts, watercourse diversions and headwalls for drainage outfalls.

4.45 The 2019 RIAA suggested the installation of rip-rap to protect bridge abutments and the placing of rock-filled gabion mattresses on the profiled and consolidated banks at the base of the bridge abutments. In commenting on an earlier draft of the RIAA in 2017, NIEA expressed concern about the use of rip-rap constructed from gabion mattresses in high-energy rivers. It saw a risk that structures could become damaged, leading to loss of contents and the formation of fish traps with adverse effects on species including Atlantic salmon. NIEA went on to say that alternatives should be investigated and clear-span bridges should not require protective measures such as gabion baskets.

4.46 In its Interim Report, the Commission recommended DfI to ascertain, through discussion with NIEA and the Loughs Agency, whether any use of rip-rap constructed from gabion mattresses would be liable to prevent the lasting preservation of Atlantic salmon in any SAC. In its Interim Statement, DfI accepted this recommendation and undertook that liaison would continue with NIEA, the Loughs Agency and DfI Rivers and that the results of consultation with statutory bodies would be incorporated in the updated RIAA.

4.47 No such results are incorporated in the 2022 RIAA. Instead, it simply says that the design of the erosion protection measures would be agreed in consultation with the Loughs Agency on a case-by-case basis at the detailed design stage and would take into consideration the water quality and the speed or energy of the watercourse. The Loughs Agency witness at the inquiry was content with this approach.

4.48 The RIAA says that the temporary bridges over Burn Dennet and the Glenmornan and Derg Rivers, and over Fairy Water (in the wider Foyle catchment though not in the SAC), would be clear span structures to allow passage underneath. Culverts on diverted sections of watercourse would be completed prior to abandonment of the existing channel and temporary diversions would be provided where culverts were being constructed on an existing watercourse.

4.49 The RIAA says headwalls would generally be of concrete construction. The areas subject to disturbance and the volumes of soils excavated would be small. Excavated soils would be temporarily set aside a minimum of 10 metres from the top of the bankside and any not required removed from site once works were complete. Activity would be of short duration. Where outfalls were required on smaller tributaries and headwaters with relatively low volumes of flow, the works would be programmed for times of lowest flow between May and September.

4.50 The RIAA refers to a general requirement for suspended solid levels to be kept below 25 milligrams per litre for fish species to thrive. It states that the Loughs Agency has stipulated a more stringent standard of 10 milligrams per litre for construction in parts of the watercourses where there is spawning and nursery habitat. It says both standards would be achieved through mandatory, contract-specific SMPs.

4.51 The RIAA acknowledges that the proposed open-span bridges would cause permanent loss of bankside vegetation but said the loss would be negligible. To minimise in-stream

vegetation loss, pre-planted coir rolls of suitable native emergent and marginal vegetation would be inserted into the abutment protection measures during construction. Suitable bankside planting would be undertaken where possible. However, where open-span bridges were installed at major watercourse crossings, shade cast on in-stream habitats could reduce their ability to thrive.

4.52 The RIAA says that the proposed culverts beneath the proposed dual carriageway and its supporting earthworks would involve the permanent loss of supporting habitats. The culverts would vary in length from 25 to 110 metres but most would not exceed 60 metres. Up to 6.8 kilometres of marginal and bankside habitat could be lost in the context of in excess of 300 kilometres of equivalent marginal and bankside habitat within the wider River Foyle catchment where salmonid presence/potential has been established. This would be mitigated by replacement bankside planting. Initial loss of in-stream habitat would be largely mitigated by embedding culvert bases and introducing gravels and boulders upstream and downstream of the structures.

4.53 The RIAA acknowledges that diversion of 48 watercourses with salmonid interest would involve the permanent loss of some 10 kilometres of supporting habitat in the overall Foyle catchment but says that the lost habitat would be re-established when the new sections are constructed. The bed and channel characteristics of the watercourses would be replicated. The new sections would be prior to the closure and abandonment of the old. The de-watering of the abandoned sections would be carried out so as to ensure the safe removal of fish which might be present, including salmon.

4.54 The RIAA acknowledges that the introduction of bridges and culverts along watercourses used by Atlantic salmon could potentially obstruct or discourage passage of the fish seeking to return to spawning areas and migrate to sea. It recognises that during periods of low flow many of the smaller watercourses have little depth of water. It says that oversized box culverts would be provided along watercourses identified as being of importance to salmonids. The culvert base would be embedded 350 millimetres below existing ground level. Boulders and clean gravels, screened to ensure there were no invasive species, would be imported. They would be substantially filled to the embedded depth to re-create suitable habitat and allow the generation of a narrower channel during periods of lower flow. The channel would not be completely filled to allow for natural recruitment of riverbed material.

4.55 The RIAA states that all new road-related lighting would involve the use of cut-off luminaires to contain the extent of spill within the dual carriageway footprint. Luminaires on and in the vicinity of the existing Mourne River bridge would be replaced, resulting in a slight improvement in the passage of salmon at this location.

4.56 No one sought to argue that the proposed mitigation measures would be insufficient to protect Atlantic salmon. We have no good reason to believe that the species would be adversely affected by the scheme provided these measures are properly implemented.

Impacts on otter

4.57 Otter is one of only three European protected species whose natural range includes Northern Ireland. The provisions of Regulation 34(1) of the Habitats Regulations in respect of such species are set out in full in Chapter 3 of this report. It is an offence deliberately to disturb an otter while it is occupying a structure or place which it uses for shelter or protection or in such a way as to be likely to affect the local distribution or

abundance of the species; impair its ability to survive, breed or reproduce, or rear or care for its young; or impair its ability to hibernate or migrate.

4.58 Regulation 39 states that Regulation 34 does not apply to anything done for any of a number of specified purposes and in accordance with the terms of a licence granted by DAERA. These provisions are additional to those concerning SACs. As a competent authority, DfI is under a statutory obligation to have regard to these requirements.

4.59 The RIAA identified the following potential impacts on otter associated with the construction of the scheme and the future presence of its associated traffic:

- disturbance and harm as a result of construction;
- deterioration in water quality resulting in harm to the species and consequent impacts on supporting habitat;
- loss of habitat and reduction in available food resources; and
- fragmentation associated with obstruction of existing access along watercourses, resulting in potential mortality or harm where otters seek to cross carriageways.

4.60 The RIAA acknowledges that night working could result in otters being discouraged from using their natural range with consequent impact on the health of the animals through increased stress and reduced feeding efficiency and separation of breeding males and females which could lead to a reduction in the density and distribution of the species. It then states that night working would "generally" not be permitted adjacent to watercourses where the presence of otter is confirmed by way of further surveys. However, it says, circumstances may arise which require emergency works outside daylight hours; in these cases lighting would be positioned/cowled to minimise light spill on to the watercourse and the duration would be kept to a minimum.

4.61 It seems to us that DfI cannot simply exempt itself from the provisions of the Habitats Regulations which are designed to safeguard otter, a European protected species and a selection feature of the SAC. It must be presumed that the natural range of otter is the whole of the SAC unless surveys demonstrate the absence of the species in particular locations; the RIAA appears to reverse the presumption. As the RIAA does not define the circumstances that might be regarded as giving rise to an emergency, something as mundane as falling behind in a work schedule could be taken to warrant night working. The RIAA provides no evidence to indicate the extent to which the positioning or cowling of lighting might be expected to reduce the disturbance to otters.

4.62 In Chapter 3 of this report, we recommend that in order to safeguard residential amenity, no construction work takes place outside specified hours without the prior written agreement of the relevant district council. In view of the acknowledged harm that night working could cause to the health, feeding efficiency, density and distribution of otters, we consider it necessary to introduce an additional safeguard. A fully documented process is required whereby the statutory nature conservation body can determine, on a case-by-case basis, the extent of the threat to otter posed by night working, whether any proposed mitigating measures would be adequate, whether a licence is required and if so, whether it should be granted. We emphasise that this recommendation is supplementary to, and not an alternative to, Recommendation 11.

Recommendation 21

We recommend the Department to give a public undertaking that no site works or construction activities will take place after dusk and before dawn adjacent to any watercourse where otters may be present, without the prior written agreement of the Department of Agriculture, Environment and Rural Affairs and, if statutorily required, a licence under Regulation 39 of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995.

4.63 The RIAA sets out a series of measures to mitigate impacts on otter at construction stage – locating compounds and storage of materials away from watercourses, fencing off riparian habitat that is to be retained to prevent inadvertent access, excluding otters from works areas near watercourses, fencing or covering excavations in excess of 2 metres in depth overnight in the vicinity of watercourses, providing a suitable ramp within all uncovered excavations during non-working hours, and providing temporary means of continued passage along watercourses during construction.

4.64 The RIAA says that, in common with Atlantic salmon, sediments and other construction related pollutants can result in harm to otters and their supporting habitat. Mitigation and control measures proposed to control potentially polluting materials, such as fuels, oils and cement, as specified in the outline CEMP and the outline SMP, would serve to avoid such impacts or limit them such that the effect would be negligible relative to the species and its supporting habitat.

4.65 The RIAA states that a detailed review was undertaken of the otter survey data presented in the 2010 and 2016 environmental statements along with data collected during update surveys conducted in 2020 and 2022. The findings are set out below.

4.66 The update surveys identified a new holt along Burn Dennet. This resting site is approximately 70 metres outside the vesting area and on the opposite side of the river from where a drainage outfall is proposed to be located.

4.67 A holt was discovered immediately adjacent to the proposed crossing of the River Mourne during surveys in 2022. This resting site is expected to be lost to the scheme and would need to be mitigated for through the provision of an artificial holt in the same vicinity once works are completed. In the meantime, it is expected that there would be numerous other holts along the Mourne which otters may be able to use.

4.68 The scheme would involve damage and loss of approximately 1 hectare of identified breeding habitat at Strabane Nature Reserve. Supplementary planting would be undertaken adjacent to the site, with approximately 1 hectare of native broadleaved woodland on land adjacent to the northbound carriageway. This planting would be suitable otter breeding habitat and would ensure that the habitat remains a viable breeding area for otters.

4.69 A single otter holt, located in or immediately adjacent to the proposed footprint of the River Derg crossing, was identified in 2009/10 and considered likely to be lost to the scheme. Follow-up surveys in 2013 and 2020/21 were unable to re-confirm the existence of this resting site. However, three additional holts were discovered within 250 metres of the proposed crossing. Two are located over 80 metres outside the vesting area and would not be directly affected by the scheme. The third is about 30

metres outside the vesting area where a drainage outfall is proposed. DfI's ecologist told us he did not anticipate this outfall having any adverse effects on otter, subject to detailed design. Another DfI witness pointed out that road drainage would be much improved compared to the existing provision. An artificial holt would be created in the vicinity of the proposed river crossing. The presence of nearby holts means that otters would have access to alternative resting sites during construction.

4.70 The currently proposed scheme would not involve damage to and destruction of the previously identified potential otter habitat at Beltany Lodge.

4.71 The previous assessments identified a holt on Fairy Water which was expected to be lost to the scheme. Follow-up up surveys in 2013 and 2020/21 failed to find this resting site, although access to Fairy Water was restricted in both years. The holt location is approximately 35 metres from the development footprint and just within the vesting area but no works are proposed at or immediately adjacent to it.

4.72 A previous assessment also identified a holt on Routing Burn which was expected to be lost to the scheme. However, survey work in 2012 confirmed that otters were not using the site for resting or breeding. Follow-up up surveys in 2013 and 2020/21 failed to find this resting site. While the holt location is just within the vesting area, no works are proposed at or immediately adjacent to it. It is approximately 75 metres from the development footprint but about 25 metres from a proposed soil deposition area. DfI's ecologist told us that his did not anticipate this deposition area having any effect on otters as they are very adaptable creatures.

4.73 The RIAA states that the surveys undertaken between 2009 and 2022 also identified a number of confirmed couches as well as several suspected or potential holts and couches within or in proximity to the scheme area.

4.74 The RIAA acknowledges that the scheme would also involve the loss of small localised areas of marginal and bankside habitat along watercourses within the wider catchment where use by otter had been confirmed. It argued that the loss of riparian habitat was unlikely to be significant, as otter home ranges can extend over tens of kilometres and the loss would be spread out in a wide geographical area. It concluded that these losses would not constitute a material risk to the species. Otter prey species were unlikely to be significantly affected by the scheme as the salmonid population would be safeguarded by design and in-built mitigation.

4.75 The RIAA states that woodland would be monitored for evidence of breeding or nurturing of young otter. If any such evidence were found, works would be delayed until the cubs left the den, at which point the mother would move them to a holt closer to the water.

4.76 The RIAA also says that update surveys would be carried out prior to and during construction to maintain the validity of otter data. Should any active holts be discovered, NIEA would be contacted. A licence would likely be required before any mitigation or works could be undertaken.

4.77 At the inquiry in 2020, the AA5A argued, by reference to the *Grace* case law, that the creation of an artificial holt would not be a mitigatory measure but a measure aimed at compensating for the negative effects of the scheme. Compensatory measures cannot be taken into account in the assessment of the implications of the scheme for the SAC.

4.78 Having carefully studied the *Grace* judgment, we are of the opinion that it was highly fact-sensitive. The selection feature of the SPA concerned was natural habitat for hen harrier. During the development stage of the project, substantial areas of hen harrier habitat would be lost. The dynamic nature of the proposed management regime meant that hen harrier habitat would vary geographically over time.

4.79 It seems to us that in deciding whether a proposed measure is mitigatory or compensatory, the *Murphy* and *Briel* judgments provide more generally applicable guidance. The correct approach is to identify the selection feature at risk. In this case the relevant selection feature is otter. An otter holt is not a protected feature. The provision of replacement holts, being aimed at maintaining the extent and quality of suitable otter habitat in furtherance of a conservation objective for the SAC, is in principle capable of being a mitigating measure.

4.80 The RIAA goes on to say that fragmentation of habitats is a common threat to otter, but of greater concern where associated with roads. Road death is thought to be the predominant cause of non-natural mortality in the species. The scheme incorporates tunnels or ledges for otter passage adjacent to culverts across the Foyle catchment and it is proposed that all major watercourses in the catchment would have clear-span structures which would provide safe passage without forcing otter to cross the road.

In-combination effects

4.81 The RIAA considers the potential for likely significant effects and adverse impacts on site integrity in combination with those associated with 13 other plans or projects. One project has been dropped and is therefore no longer relevant. Another has been completed and is said to include high-quality mitigation measures. On analysis, the RIAA does not anticipate that the remaining 11 projects would give rise to in-combination effects.

Conclusion on the River Foyle and Tributaries RIAA

4.82 In our opinion, the RIAA has comprehensively considered the implications of the scheme for the River Foyle and Tributaries SAC. It has identified numerous mitigation measures to address potential impacts. We are satisfied that the RIAA has demonstrated beyond reasonable scientific doubt that the scheme would not have an adverse impact on the integrity of the SAC. This conclusion is however contingent on the mitigation measures being properly implemented and our related recommendations being accepted.

The River Finn SAC

4.83 The River Finn SAC, which covers an area of 5,500 hectares, extends south-westwards from near Carrigans to Cloghfin in County Donegal and thereafter westwards past Castlefinn, Stranorlar and Ballybofey. It follows those parts of the Rivers Foyle and Finn which lie within the Republic of Ireland and includes several islands within the Foyle.

4.84 The River Finn SAC was designated primarily for upland blanket bog; and also for lowland oligotrophic lakes, wet heath, transitional mires, Atlantic salmon and otter. The conservation objectives for the site are to maintain or restore the favourable conservation conditions of these habitats and species for which the SAC was selected. According to the standard data form, a conservation plan for the management of the SAC is to be prepared.

4.85 The proposed dual carriageway would not cross the River Finn SAC and no works would take place in the river channel. However, in several places on the route from

Magheramason southwards and along the western margin of Strabane the road would be close to the designated site, coming within 50 metres at its nearest point.

4.86 The RIAA screening assessment states that there is no potential for the scheme to affect the habitats for which the River Finn SAC received its designation as these were all present upstream in the catchment and distanced from the scheme. No one has challenged this conclusion.

4.87 The screening assessment acknowledges that by virtue of proximity and hydrological connectivity, the likelihood of the proposed scheme having a significant effect on the River Finn SAC and specifically on the Atlantic salmon and otter, cannot be excluded on the basis of objective information. The analysis presented in respect of these potential impacts is the same as that which appears in the RIAA for the River Foyle and Tributaries SAC and our comments are also the same.

The Owenkillew River SAC

4.88 The Owenkillew River SAC, which covers an area of 214 hectares, extends eastwards from its confluence with the River Strule, to the east of Newtownstewart, to the edge of Davagh Forest, near its source. The SAC was designated for watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation; for old sessile oak woods; for freshwater pearl mussel; and also for bog woodland, Atlantic salmon and otter. There is no management plan in place for the SAC.

4.89 In relation to *Ranunculion*-type vegetation, the conservation objectives for the Owenkillew River SAC include maintaining and if possible enhancing the extent and composition of the community; and maintaining and if possible enhancing the river morphology. There is also a conservation objective to maintain and expand the extent of existing oak woodland.

4.90 In relation to freshwater pearl mussel, the conservation objectives for the Owenkillew River SAC are:

- to maintain and if feasible enhance population numbers through natural recruitment;
- to improve the age structure of the population;
- to improve water quality;
- to improve channel substrate quality by reducing siltation;
- to ensure the host fish population is adequate for recruitment; and
- to increase the amount of shading through marginal tree cover along those sections of river currently supporting this species.

4.91 The proposed works would be about 1.8 kilometres from the Owenkillew River SAC but the proposed dual carriageway would cross or come in close proximity to watercourses downstream of the SAC.

4.92 The RIAA screening assessment states there is no potential for the scheme to affect the habitats for which the Owenkillew River SAC was designated, as they are located several kilometres upstream. No one has challenged this conclusion.

4.93 The screening assessment acknowledges that that by virtue of proximity and hydrological and/or ecological connectivity, the likelihood of the proposed scheme having a significant effect on the Owenkillew River SAC, and specifically Atlantic salmon, freshwater pearl mussel and otter, cannot be excluded on the basis of objective

information. The analysis presented in respect of the potential impacts on Atlantic salmon and otter is the same as that which appears in the RIAAs for the River Foyle and Tributaries SAC and the River Finn SAC and our comments are also the same.

Impacts on freshwater pearl mussel

4.94 The RIAA states that freshwater pearl mussel is currently confined to a 4-kilometre stretch of undisturbed channel in the upper reaches of the river. The SAC hosts the largest population of the species known to be surviving in Northern Ireland. The sensitivity of that population is highlighted by surveys (carried out in 2005) which found a relative absence of freshwater pearl mussels below 10 years in age and by data (from 1998) which suggested that most individuals were over 50 years old.

4.95 The RIAA maintains that the scheme would not have a direct impact on the freshwater pearl mussel population of the Owenkillew River SAC, which is located some 20 kilometres upstream and to the east of the proposed alignment. It goes on to say that any impacts that result in a decrease in Atlantic salmon and sea trout populations could, however, have a significant impact upon the viability of the freshwater pearl mussel population within the SAC. The lifecycle of freshwater pearl mussel is reliant upon the development of glochidia (microscopic larvae) which attach to the gills of host fish. Therefore, a decline in the salmonid population within the Owenkillew River, as a result of construction and operational disturbance to migration, could have an impact upon the future viability and population size of freshwater pearl mussel.

4.96 The RIAA notes that Atlantic salmon are dependent on the River Foyle, River Mourne and River Strule in order to access the Owenkillew River. The assessment demonstrates that the scheme would not have a significant effect on the passage of the fish on which freshwater pearl mussels are dependant or on the habitats that support the fish. The conclusions in relation to Atlantic salmon also apply to brown trout, which may also host glochidia. Consequently, no adverse impacts on freshwater pearl mussels from the scheme are predicted. No one has disputed this conclusion and we are content with it.

4.97 Provided all the mitigation measures in the RIAAs, as modified by Recommendations 20 and 21, are properly implemented, and provided those recommendations are followed, we are satisfied beyond reasonable scientific doubt that the scheme would not adversely affect the integrity of any of the watercourse-based SACs.

Tully Bog Special Area of Conservation

4.98 Tully Bog SAC, which covers an area of 36 hectares, is located about 4 kilometres (2½ miles) to the north west of Omagh. It was designated for active raised bog and degraded raised bog still capable of natural regeneration. The site is also an Area of Special Scientific Interest (ASSI), selected for lowland raised bog. Condition assessments undertaken by NIEA in 2008 and 2014 suggest that the active raised bog is in unfavourable, declining condition due to increased drying out. No management plan is in place for the SAC.

4.99 At its closest point, the proposed dual carriageway would be located about 230 metres to the east of the SAC. It would be elevated on a shallow embankment and then pass through cuttings as it extended northwards. There would also be a working corridor about 25 metres in width beyond the road footprint, which would reduce the separation distance between the road and the SAC to about 205 metres. A link road to be

constructed between the proposed grade-separated Junction 11 and the existing Drumlegagh Road South would come within about 125 metres of the SAC. Flood compensatory storage areas would be created between the road and the SAC. Construction of this phase of the scheme would last for about three years.

4.100 The screening process set out in Section 3 of the 2022 RIAA led to the conclusion that the scheme was likely to give rise to the following potential impacts on Tully Bog SAC:

- Airborne pollutants in the form of dust, particulate matter and nitrogen compounds could lead to deterioration of the raised bog habitat.
- Alteration to local hydrology through excavations or surcharging could reduce the availability of water to the site, leading to a degradation of the raised bog habitat.

Dust and particulate matter

4.101 As Tully Bog is not located within 50 metres of the proposed construction zone, guidance from the Institute of Air Quality Management indicates that construction dust would not be an issue. The RIAA drew attention to standard good practice measures included in Table 5.1-11 of the outline CEMP, covering matters such as regular site inspections, regular damping down of dust, dust deposition monitoring, screens or barriers round dusty activities and covering, seeding or fencing stockpiles to prevent wind whipping. We accept that provided these measures are fully implemented, dust and particulate matter arising from construction of the scheme would not adversely impact on the integrity of the SAC.

Hydrology

4.102 The RIAA explains that in its natural state a bog is 95 to 98 percent water. Drainage removes water and increases the dry content of the peat, causing shrinkage, subsidence and cracking. The upper layer of the bog which contains living sphagnum mosses is destroyed and it loses its peat-forming capacity. Decomposition changes its structure, making it difficult to re-wet and unsuitable for re-colonisation.

4.103 It is stated at Paragraph 6.5.1 of the RIAA that, as with the majority of active raised bogs, the depth of the peat isolates Tully Bog from the influence of groundwater; the raised dome of peat is therefore irrigated "solely" by precipitation. It is stated at Paragraph 7.2.1 that the hydrological regime of Tully Bog SAC and of raised bogs in general, as mires dependent on atmospheric moisture for water and nutrients, consists of input "primarily" through precipitation with output through streams around their periphery. Paragraph 7.2.7 states that the M18 plant community (sphagnum) which dominates the bog is "primarily" noted as a surface water/rainfall fed community and not dependant on the groundwater regime.

4.104 We asked at the inquiry whether Tully Bog is irrigated solely or just primarily by precipitation and whether any of the species that characterise the bog, other than M18, are dependent on the groundwater regime. DfI's ecology witness told us that scientific understanding of bog hydrology is developing and more recent research indicates that there can be some input from groundwater. He said that no species that inhabits Tully Bog is dependent on groundwater.

4.105 The RIAA identifies two main discharge points from the bog, at its north-western edge and its south-eastern tip. It states that net discharge is likely to be quite low due to the absorption effect of the woodland buffer that forms the perimeter of the bog. The centre of the bog drains in an easterly direction via a network of channels. There is a

significant area of water storage at the north-western corner where a pond has developed.

4.106 In considering whether construction of the road could cause an increase in drainage at or beneath the bog surface, the RIAA notes that the bog occupies the lowest point in the local terrain. It argues that as the proposed cuttings would not extend below the level of the bog, they would not depress the local groundwater level.

4.107 The RIAA goes on to say that there are areas of soft ground about 100 metres or more from the SAC boundary which would need to be removed and replaced with sound material. However, that excavation is expected to be no more than 2 metres deep and therefore not significantly below the level of the bog. The embankments would result in a surcharging of the ground round the proposed Junction 11, which would cause a minor reduction in the permeability of the clay soils in that area. That might result in a minor and local increase in the groundwater level up-gradient of that location. However, given the temporary nature of those works and the distance from the SAC, the impact on its groundwater regime is expected to be negligible.

4.108 Based on the foregoing analysis, the RIAA states that the construction of the scheme is not expected to affect the hydrological regime either by decreasing the input or increasing the output of water. No drainage features of the bog would be affected as a result of the scheme. We take that to be a reference to surface water as well as groundwater. DfI's ecologist spoke of topographical separateness and hydrological segregation. No one disputed this evidence and we therefore accept that hydrological changes, should they occur, would not adversely impact on the integrity of the SAC.

Nitrogen compounds

4.109 The RIAA stated that Tully Bog has been identified as being potentially sensitive to nitrogen deposition (nitrogen saturation of sphagnum) which could have an effect on the species composition of the bog habitat. It explained that nitrogen is an element which in excessive quantities promotes increase in vascular plant growth, altered growth and species composition of bryophytes. Increased nitrogen in peat and peat water can alter the habitat composition of a bog in a manner which reduces the biodiversity value of the site.

4.110 In an earlier version of the RIAA produced in 2019, it was stated that Tully Bog supports a range of bryophytes, organisms known to be sensitive to the effects of atmospheric deposition. They are susceptible to direct toxicity from deposited nitrogen, particularly dry deposition of ammonia and to eutrophication of habitats leading to their being out-competed by species that can make more use of bio-available nitrogen. It was asserted that there was no evidence of significant toxicity of bryophytes present at Tully Bog.

4.111 The 2019 RIAA noted that the State was taking no action to remedy the unfavourable conservation status of the SAC. However, while the A5 scheme would have a *de minimis* (trivial) effect on nitrogen deposition, DfI had committed to re-wetting the bog to mitigate the potential effects of this increase. It proposed to block drains and stop drainage from the bog.

4.112 In response to the 2019 RIAA, Ulster Wildlife submitted a written objection to major infrastructure being proposed in such proximity to Tully Bog. It disagreed with the statement about toxicity of bryophytes. It had observed dead and drying sphagnum hummocks on the bog, a change in the colour of the sensitive reindeer lichen species

cladonia, and black slime on tree trunks, all of which were indicative of high levels of nitrogen deposition across the site. It stated that any increase in that deposition threatened the plants that were the building blocks of the habitat.

4.113 Paragraph 6.5.6 of the 2022 RIAA quotes the following summary of conservation works carried out by Ulster Wildlife in the SAC provided by its staff:

"Ulster Wildlife began work on Tully Bog SAC with the installation of dip wells to monitor water table on the site in 12 different locations in mid-2019. Data from these has been collected monthly since in order to demonstrate the success of any restoration works. In Autumn 2019 Ulster Wildlife oversaw the removal of significant areas of invasive rhododendron in key areas of the site to prevent further spread. This has been built upon with subsequent follow up treatment each year until 2021 and with the exception of one small remaining area of minor growth been highly successful at reducing the prevalence of this species across the site. In early 2020 works began blocking drains at key locations highlighted as a high priority by restoration plans developed for the site. Since installation many of the peat dams installed have had the desired impact of raising the water table. This has been clearly visible at some of our dip well locations and will in time shift the raised bog habitat of Tully Bog toward a more favourable condition. Further drain blocking works have been identified as part of the development of the conservation action plan and can be actioned as soon as more funding is available. Finally, Ulster Wildlife has used money from NIEA's challenge fund to remove a significant area of invasive scrub which was drying out the bog and negatively impacting the raised bog habitat. These works began in early Nov 2021 and are due to be completed before Feb 2022. Since 2019 the works that Ulster Wildlife have undertaken have addressed many of the major pressures to the habitats on Tully Bog and although follow up work is still required to eliminate threats entirely the site is now well on its way to favourable condition status."

4.114 We were told at the inquiry that DfI's commitment to re-wetting the bog has been superseded by the work carried out by Ulster Wildlife. We asked what guarantee there is that the further drain blocking works identified in its conservation action plan will be completed and that the required follow-up work will eliminate threats entirely and deliver enduring favourable condition status. The NIEA witness told us that discussions were underway with Ulster Wildlife. There was a need to find funding and secure landowner engagement. The Tully Bog habitat is similar to that of Ballynahone Bog SAC, near Maghera, where Ulster Wildlife has also carried out work. On-site management improves the resilience of the habitat but does not address off-site pressures.

4.115 It is stated in Table 2-1 of the 2022 ESA that DfI is not relying on Ulster Wildlife works or the conservation action plan in the mitigation of potential effects arising from the proposed scheme. However, in responding to a representation which stated that the road would adversely affect Tully Bog, DfI said it was engaging with Ulster Wildlife, which was actively working to implement a conservation action plan for the site. When asked for clarification of this apparent contradiction, DfI's ecologist said that the mitigation works proposed in the RIAA would complement but not overlap with Ulster Wildlife's activities. He agreed with Counsel for the AA5A that DfI was not entitled to rely on measures that were unsecured.

4.116 In a further objection submitted in late 2022, Ulster Wildlife stated that the A5 scheme would undoubtedly increase existing pressure on Tully Bog in the form of ammonia and

nitrogen deposition. Without the scheme, the site already exceeds the critical threshold for both. While the works delivered by Ulster Wildlife would mitigate against the ammonia and nitrogen deposition, it was challenging to assess by exactly how much they would do so. In its rebuttal evidence, DfI acknowledged that re-wetting of bog habitats can have mitigatory effects in relation to nitrogen deposition. However, in an academic review undertaken in 2016 the conclusion reached was that recovery of bogs through hydrological management can be slow and/or incomplete and that some charismatic bog species show negative relationships with nitrogen. Therefore while re-wetting can improve habitat suitability for bog species, the end point is likely to differ from that in more pristine regions.

4.117 In Chapter 3 of this report, when discussing the McKean's Moss ASSIs, we outlined DfI's responsibilities under the Environment Order and the Wildlife and Natural Environment Act. Because Tully Bog is an ASSI as well as a SAC, DfI has a statutory duty not only to mitigate or remediate adverse effects but also to restore or enhance the site. By making a commitment to pay all it possibly can to take forward the draft conservation management plan for McKean's Moss, DfI has reaffirmed its acceptance of this principle. It needs to make at least as big a commitment to enhance and restore Tully Bog.

4.118 While the blocking of drains and the removal of invasive species would not guarantee that the scheme would not adversely impact on the integrity of Tully Bog SAC, they would contribute to the restoration and enhancement of the site. There would also need to be provision for the longer-term maintenance of the hydrological works and the continued suppression of invasive species over at least a 15-year period. These measures should be taken into account, to the extent possible, in the AA.

4.119 DfI's consultants carried out an update survey of the SAC in August 2020. The survey confirmed the presence of raised bog, birch woodland and marshy grassland. The main vegetation communities were identified, classified and mapped. Plate 6.1 of the RIAA shows the central part of the SAC dominated by raised bog and wet modified (raised) bog. Semi-natural broadleaved woodland occupies almost the entire periphery of the site and there is an area of semi-natural conifer (scots pine) woodland on a raised area in part of the southern interior of the site. The RIAA contains detailed descriptions of the vegetation types present but information on their condition, and the extent to which they may have been affected by nitrogen compounds, is lacking.

4.120 Relevant information about the August 2020 survey omitted from the RIAA was included in Chapter 9 of the ESA. Of the two main mire communities, the condition of one was assessed as moderately favourable while that of the other was found to be unfavourable. Two woodland communities were said to be in generally favourable condition, while the woodland on the periphery of the site was said to be in unfavourable condition.

4.121 The ESA states that the survey results were broadly similar to those obtained in 2014, with minor variations likely being caused by the continued gradual drying of parts of the bog through drainage ditches and the encroachment of tree/shrub vegetation. Despite the positive management by Ulster Wildlife, there had been no significant change to the overall condition of the bog habitat within the SAC since 2014, with the exception of the removal of trees and scrub from the central part of the bog as well as a possible increase in trees and shrubs in the southern and central parts of the bog platform. The ESA comments that it will take several years for the bog habitat to respond to the

management measures before any substantial improvements are detectable. It is noticeable that there is again no mention in the discussion of survey results of the effects on vegetation communities of ammonia and nitrogen deposition.

4.122 At the inquiry, DfI's ecologist described bryophytes as lower plants. The entire site is of bryophyte interest but the entire site was not surveyed. At present the wooded edges are being left intact. Woodland is significantly less sensitive to nitrogen deposition and ammonia than other parts of the site. It is hard to demonstrate how different factors have impacted on the function of the bog. There are changes over time. In 2020 some improvement was seen due to the hydrological work and no bleaching was detected.

4.123 The NIEA witness told us that dead and drying sphagnum hummocks, a change in the colour of cladonia and black slime on tree trunks are all symptoms of nitrogen found in other bogs. It is not certain that they are indicators of air pollution. He understood that the latest survey in Summer 2022 found Tully Bog to be in unfavourable condition. That was not solely due to nitrogen but nitrogen was certainly a contributory factor.

4.124 On Page 68 of DAERA's January 2023 draft ammonia strategy, to which the NIEA witness alerted us during a discussion on McKean's Moss, there is a report on a case study into the health and condition of Moninea Bog SAC in County Fermanagh where excessive growth of algae on the trunks of birch trees and visible injury to lichen species and bog mosses were found to be associated with exceedingly high concentrations of ammonia.

4.125 It seems to us that in order to determine how best to deal with the problem of ammonia and nitrogen deposition at Tully Bog, it is essential to gain the fullest possible understanding of how these forms of air pollution are currently affecting the SAC. We are surprised that work critical to establishing the environmental baseline does not appear to have been done. No data have been reported, for example, on soil chemistry and plant nitrogen accumulation across the site. A meticulous examination of algae growth on tree trunks and the condition of cladonia and other lichen species does not appear to have been undertaken to determine the extent of damage. In our opinion, these deficiencies must be remedied before the AA is produced.

4.126 The RIAA is heavily reliant on air quality modelling. It acknowledges that all model studies have associated uncertainties. The existence of uncertainty does not necessarily mean that the absence of adverse effects on the SAC cannot be ascertained beyond reasonable doubt, as the *Waddensee* case law requires. The judgment in *R (Wyatt) v Fareham Borough Council* [2021] EWHC 1434 (Admin) is authority for the proposition that uncertainty can be addressed by applying precautionary rates to variables.

4.127 Counsel for the AA5A accepted that it is not possible to have absolute certainty. What is required is reasonable scientific certainty based on the best information. He accepted that uncertainty should not be equated with unlawfulness. Counsel for DfI drew attention to the ECJ judgment in the Dutch Nitrogen case which says it is necessary to carry out a thorough and in-depth examination of the scientific soundness of the AA to ensure the statutory requirements are fulfilled. That is what we have set out to do.

4.128 DfI's air quality expert said that when addressing impacts where professional judgment is required, she took account of uncertainties by maximising impacts and minimising mitigation and thereby avoiding over-optimism. We accept that this approach is consistent with the precautionary principle.

4.129 The RIAA recounts that in February 2020, a company known as Air Quality Consultants published a paper evidencing the contribution of ammonia (NH_3) emissions from road traffic and considering their potential contribution to nitrogen deposition (N-dep) near the roadside. Published guidance, such as that provided by the Design manual for Roads and Bridges (DMRB) and Natural England, does not require the inclusion of traffic-related NH_3 emissions in air quality assessments but focuses on the contributions to N-dep from emissions of nitrogen oxides (NO_x) only. It was considered, however, that the inclusion of NH_3 emissions in the air quality assessment would be in line with the precautionary principle.

4.130 The RIAA took the current levels of NO_x, NH_3 and N-dep at Tully Bog from the Air Pollution Information System (APIS). The APIS website provides definitions of critical levels and critical loads. Critical levels are concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge. The critical load is a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge. Critical loads are given as ranges to reflect variations in ecosystem responses across Europe.

4.131 The APIS data are mapped on a 5 kilometre by 5 kilometre basis. They are expressed as micrograms per cubic metre ($\mu g/m^3$) and kilograms of nitrogen per hectare per year (kg/N/ha/y). The data currently available on the system are for 2017 to 2019. The results are as follows:

Pollutant	Critical level (CLe) / lower critical load (LCL)	Average level/load	% of CLe/LCL
NO_x	30 $\mu g/m^3$	4.2 to 4.9 $\mu g/m^3$	14.0% to 16.3%
NH_3	1 $\mu g/m^3$	3.1 to 3.9 $\mu g/m^3$	310.0% to 390.0%
N-dep	5 kg/N/ha/y	21.0 to 24.6 kgN/ha/y	420.0% to 492.0%

4.132 We asked whether reliance on figures relating to a 25 square kilometre area is consistent with the requirement of the *Waddensee* case law to use the best scientific knowledge in the field. DfI's air quality expert assured us that the data are the best available. The NIEA witness agreed and said that DAERA had been criticised for the limited number of air quality monitoring stations in Northern Ireland.

4.133 The RIAA states that the main sources of N-dep at Tully Bog are assumed to be from long term historic agriculture and intensive livestock agricultural land uses, including transboundary depositions, with only minor contributions from existing roads. It refers to forecasts produced by the Joint Nature Conservation Council which include multiple scenarios for future emissions, from which it can be inferred that background N-dep will decrease by 1.04 to 1.61 percent per year on a straight line basis to 2030, depending on assumptions about policy measures. However, the assessment of total N-dep and total NH_3 concentrations at Tully Bog was based on no assumed improvement in background deposition levels over time. It argued that this is likely to be a conservative assumption.

4.134 The RIAA is not part of the updated ES but a standalone document produced in a different statutory context. In our opinion, all data and analysis relevant to the

assessment of potential impacts on the SAC should be in the RIAA. Instead, in order to understand how conclusions about air quality impacts were reached, it is necessary to piece together information from the ESA (Chapter 6 and Appendices 6-3 and 6-4), from the RIAA itself, as well as from the document "Development of Mitigation Options at Tully Bog Special Area of Conservation", which DfI published in November 2022.

4.135 Potential road contributions to air pollution at Tully Bog were calculated in the following manner:

- Traffic data for the scheme were put into a computer model which was used to predict the dispersion of NO_x and NH_3 emissions from the road network and pollutant concentrations at the SAC. The model was run for 2019 and also for 2028, with and without the scheme.
- Four monitoring points were chosen on or close to the existing A5. Modelled road NO_x concentrations were compared with the corresponding monitored road NO_x concentrations in each verification zone and it was found that the monitored concentrations were 1.09 to 9.33 times higher. The average model uncertainty value of 6.1603 was applied to derive adjusted modelled road NO_x figures.
- The modelled road NO_X concentrations were converted to road nitrogen dioxide (NO_2) concentrations using a calculator provided by the Department for Environment, Food and Rural Affairs. Background annual mean NO_2 concentrations were added to the modelled concentrations, thus enabling total annual mean NO_2 concentrations to be derived at each receptor.
- NH_3 emissions were accounted for using a calculator produced by Air Quality Consultants. The emissions factors were derived by remote sensing of specified vehicle emissions, published real-world fuel consumption data and ambient measurements reported in a research paper.
- The deposition of nitrogen from NO_2 and NH_3 was modelled using a velocity approach, where the surface flux of pollutants is calculated by multiplying the modelled ground level annual mean concentration by a pollutant-specific deposition velocity. The dry deposition velocities used in the assessment are based on values recommended by the Environment Agency – 1.5 millimetres per second for NO_2 and 20 millimetres per second for NH_3.
- Ambient NH_3 levels were monitored using passive samplers at 15 sites on or near Tully Bog between February and May 2021. The focus of the model verification exercise was on two transects comprising 10 sites adjacent to the existing A5. The two- and three-month average NH_3 concentrations derived from the survey were compared to the unadjusted modelled road NH_3 equivalent concentrations and adjustment factors were derived. Two-month averages were considered because there were potentially anomalous results in the third month of the survey at two sites. The adjustment factors obtained varied from 0.2205 to 0.5871, with an average of 0.4030. The highest adjustment factor, 0.5871, derived from two-month monitoring, was applied to all base and future year modelled values. This resulted in a 41.3% reduction in the estimated road contribution to NH_3 pollution.

4.136 The RIAA states that main residual risks associated with the modelling of the impact of road traffic centre on the assumed rate of improvement in vehicle emissions. Emissions of NO_2 are predicted to decline over time. Overall, emissions of NH_3 are also expected to decline, with emissions from the newest vehicles in the fleet being lower than older vehicles. However, historically, the trend in ambient air measurements has lagged

behind the expected reduction in vehicle emissions, indicating that emissions have not reduced as quickly as expected in the national forecasts. The decrease in economic activities during Covid restrictions is likely to have delayed the natural rate of fleet technology improvement and to have exacerbated the under-prediction of impacts in the short term. To counter this uncertainty, the NH_3 emissions factor tool has inbuilt conservatism in its prediction of future emissions.

4.137 DfI's air quality witness confirmed that data from the central traffic forecast had been used in the dispersion model. Counsel for the AA5A asked why the higher traffic growth scenario had not been used. This was a somewhat opportunistic intervention in our view as the AA5A had previously argued that the central growth forecast was too high. DfI's air quality witness claimed that the additional emissions generated by 10% more traffic would be covered by the 40% reduction in the estimated road contribution to NH_3 pollution. It seems to us that this submission is at odds with the witness's stated intent to maximise impacts and minimise mitigation. We consider that it would be consistent with the precautionary principle to apply a higher growth forecast as a sensitivity test.

4.138 The RIAA sets out the following predictions of unmitigated road contributions to air pollution at Tully Bog SAC in the proposed opening year of the scheme:

Pollutant	CLe/LCL	2019 Baseline	2028 Without Scheme	2028 With Scheme
NO_x	30 µg/m^3	4.78 to 9.98 15.9% to 33.3%	3.4 to 3.6 11.4% to 12.1%	5.4 to 5.6 18.2% to 18.6%
NH_3	1 µg/m^3	3.89 to 3.93 389.3% to 392.8%	3.89 to 3.94 389.3% to 393.5%	3.90 to 3.93 389.5% to 393.4%
N-dep	5 kg/N/ha/y	24.65 to 25.24 493.0% to 504.9%	24.61 to 24.99 492.1% to 499.8%	24.63 to 24.99 492.6% to 499.7%

4.139 As the RIAA points out, the results of the modelling indicate that the scheme would not result in any exceedances of the annual mean NO_x level with the maximum predicted total concentration in the with-scheme scenario remaining well below the critical level. Therefore, NO_x would have no significant impact on the nitrogen-sensitive habitat.

4.140 The RIAA goes on to say that the critical level for annual mean NH_3 concentrations would be exceeded across the entire SAC with and without the scheme due to existing background levels. The maximum predicted total NH_3 concentration in the with-scheme scenario would remain well in excess of the critical level. Therefore, in the absence of mitigation, NH_3 could have a direct toxic impact on sensitive plant species, particularly lower plants, and indirectly as deposited nitrogen (N-dep).

4.141 The RIAA says that for N-dep, the relevant critical load is similarly exceeded across the entire SAC with-scheme owing to background levels. The area of exceedance is focused on the east and southeast area of Tully Bog, in relative proximity to the scheme alignment. As a result, in the absence of mitigation, potentially significant adverse effects on the sensitive raised bog feature are likely to be caused by the scheme.

4.142 To reduce the quantities of NH_3 and N-dep experienced by the bog, the RIAA proposes two elements of mitigation – planting of woodland blocks as shelter belts; and removal of NH_3-contributing agricultural practices from land surrounding the bog in perpetuity.

4.143 It is proposed to increase tree planting within landscape parcels in the scheme footprint. It is also proposed that a parcel of land to the south east of Tully Bog would be planted with a mix of broadleaf and conifer species which would absorb a proportion of the NH_3 emitted by vehicles travelling along the new road. The RIAA acknowledges that such tree planting would take time to mature to a canopy height and density where maximum mitigation would be achieved, with this period likely to be in excess of 10 years. It therefore puts forward the additional measure of creating a buffer zone where no commercial agricultural practice which emits NH_3, such as slurry spreading and application of fertilisers, would be permitted. These proposals are shown on Plate 7-1.

RIAA Plate 7-1 – Mitigation Vesting for Tully Bog SAC

Key: Green = Land vested to remove agricultural nitrogen inputs, Orange = Area to be planted with additional shelter belt trees, Brown = Area modelled to contain stock displaced from within green area, Blue = Land within red line boundary of Proposed Scheme where stock will be displaced, Grey = Area modelled to contain stock displaced from within red line boundary of Proposed Scheme.

4.144 In a written representation, Ulster Wildlife asked how the proposed buffer zone would be managed. It wished to see the local landowners managing those lands in a less intensive way and being rewarded for such management. In its response, DfI said it was consulting with landowners to seek the most appropriate long-term management for

the mitigation land but that would not involve commercial-scale livestock in the short to medium term. We consider this matter further in Chapter 5 of this report.

4.145 Ulster Wildlife expressed the hope that the conifer species to be planted would include scots pine rather than non-native species such as sitka spruce or lodgepole pine. The biodiversity value of non-native coniferous forest is poor with little light penetrating the canopy. There is minimal space for field layer vegetation to develop which has negative impacts on invertebrates and bird species. DfI's non-committal response was that it would continue to work with NIEA during the detailed design of the scheme and would seek the best solution for biodiversity, including but not limited to Tully Bog SAC. DfI's ecologist told us at the inquiry that sitka spruce and lodgepole pine would be excluded.

4.146 Among the papers released in response to AA5A's information request was a note of a meeting that took place with NIEA on 3rd August 2021 at which its representative raised concerns about the use of scots pine. He said these trees tend not to have branches near the ground where emissions are higher.

4.147 The August 2020 vegetation survey confirmed that scots pine is already present in Tully Bog and it might appear logical to plant more. However, it seems to us that in deciding which trees to plant, the most important consideration is whether they would be effective in mitigating against atmospheric pollution. We hope that whatever species mix is chosen would also be of good biodiversity value.

4.148 Ulster Wildlife pointed out that the areas highlighted for tree planting and some of the buffer zones are separated from the SAC by major drainage channels which currently impact significantly on the site's hydrological regime. It queried whether these drainage features would be maintained to aid tree establishment and whether they would be maintained in the long term. It asked would there be any scope for blocking these channels to improve the hydrology of the bog and make the habitats more resilient to any impacts of the scheme and to future changes in rainfall patterns. It wanted to know whether there would be a management plan for felling or whether the area would simply be left to develop into a mature woodland ecosystem.

4.149 In its response, DfI confirmed that a management plan would be developed for the planted land. It would seek to retain a good canopy layer and develop a woodland with the best ecological benefit possible within the constraint of the mitigation provision. At the inquiry, we were told that DfI has no plans to do anything to the streams and that it intends to keep the planted area as a mature ecosystem, which would require an element of active management.

4.150 The RIAA states that a detailed study of farm practices and agricultural emission rates at farm level was not possible. The impacts of existing emissions from the areas identified for the removal of agriculture, amounting to approximately 85.2 hectares, were modelled using 1 kilometre by 1 kilometre mapped emissions data. For the cells in the immediate vicinity of Tully Bog, the range of NH_3 emissions from agriculture is 3.13 to 3.87 tonnes per square kilometre per year. To ensure a conservative assessment, the removal of agriculture was modelled using the minimum area average emission rate and no adjustment was made to account for the proportion of land currently under agriculture use within each grid square (which is less than 100%).

4.151 The RIAA notes that Tully Bog is surrounded by land largely used for cattle grazing. It says the mapped emissions data were sense-checked against potential emissions from

cattle. Average stocking rates around Tully Bog, as reported by DAERA, exceed 1.8 units per hectare. Emissions factors in the National Atmospheric Emissions Inventory indicate that emissions from this density of stocking would amount to 36.0 tonnes per square kilometre per year if all cattle are dairy cattle and slurry is applied to soils; or 31.7 tonnes per square kilometre per year if there is a 70/30 mix of dairy cattle and other cattle. The RIAA argues, therefore, that the modelled emission rate (which measures the benefits of displacing agriculture from the area), 3.13 tonnes per square kilometre per year, is robust and conservative.

4.152 To ensure the modelling is appropriately precautionary, the RIAA assumes that displaced agricultural practices would be moved to the closest available land, which is further from Tully Bog than the buffer zone. The displacement area amounts to 111.7 hectares.

4.153 Appendix 13-3 to the 2022 ESA comprises farm data sheets relating to additional lands which it is proposed to vest, including the lands adjacent to Tully Bog. The information presented includes size and quality of farm, type of enterprise and husbandry, and stocking levels. We are surprised that available site-specific information of this kind is not mentioned in the RIAA and does not seem to have been taken into account.

4.154 We asked why local farm practices were not studied in order to obtain site-specific emissions data. We were told that practices vary from year to year and management changes. The RIAA had therefore used annual average figures. Peaks in emission rates tend to be much greater than peaks in traffic.

4.155 In its response to the November 2022 documentation, the AA5A referred to recent research from NIEA that emphasised the importance of not relying solely on annual average figures because seasonal peaks and concentration gradients can cause acute habitat damage. The AA5A's concern was that annual average figures could overstate the contribution of farming to air pollution at non-peak periods and thereby overstate the mitigation offered by removing that contribution.

4.156 Counsel for the AA5A referred us to Paragraph [119] of the ECJ judgement in the Dutch Nitrogen case which says that an average value is not, in principle, capable of ensuring that there are no significant effects on any single protected site as a result of fertilising or grazing. The judgment considered the compatibility with the Habitats Directive of national legislation which exempts from permit requirements projects causing nitrogen deposition which do not exceed a threshold value or a limit value.

4.157 DfI's Counsel countered the AA5A's arguments by reference to *R (Wyatt) v Fareham Borough Council* [2022] EWCA Civ 983, in which it was held that there was no objection in principle to the use of average land use figures to calculate the baseline level of nitrate deposition from the site of a proposed development. The court drew a distinction between "programmatic legislation", the subject of the Dutch Nitrogen case, and the individual assessment of the particular effects of a specific project.

4.158 The *Wyatt* judgment went on to say this at Paragraph [72]:

"Nothing said in Dutch Nitrogen implies that in this situation the use of averages is inherently objectionable. It is true that the use of average figures will necessarily involve the exercise of judgment on their validity in the particular context. But this does not mean that using them is, in principle, contrary to the requirement for the necessary degree of certainty, as amplified in Waddenzee*. The use of average figures may*

sometimes be conducive to sufficient certainty, sometimes not. Whether that is so in a particular case will be a matter of judgment for the competent authority."

4.159 To our knowledge, there are significant seasonal fluctuations in ammonia emissions from livestock farms in Northern Ireland. They are at their lowest in winter and at their highest in spring and autumn, coinciding with periods of slurry and manure spreading. In our judgment, the impacts of displacing agriculture from the proposed buffer zone should be presented as a range, taking account of seasonal peaks and troughs.

4.160 In its statement of case, the AA5A said it did not accept that the displacement of agricultural activities from additional land to be vested would amount to mitigation. It is a compensatory measure applying the principles set out in the case law, as recently summarised in *Bristol Airport Action Network Co-Ordinating Committee v Secretary of State for Levelling Up, Housing and Communities* [2023] EWHC 171 (Admin), at Paragraphs [246] to [251]. Vesting the lands and taking them out of agricultural use would do nothing to mitigate the increased nitrogen deposition which would arise as a result of the scheme. It would simply offset the increased nitrogen deposition.

4.161 We are not convinced that the *Bristol Airport* judgment supports the AA5A's contention. At Paragraph [249] it distinguishes between preventative safeguarding measures that eliminate or reduce harmful effects so that they either never arise or never arise to a significant degree; and measures which would not prevent the harm from occurring but which would (once harm had occurred) provide some form of offsetting compensation.

4.162 It seems to us that the displacement of agriculture within the proposed buffer zone is intended to ensure that the SAC is not subjected to the harmful effects of increased ammonia and nitrogen deposition. In proposing this measure, DfI is not accepting that harm to the SAC would occur and offering to offset that harm somewhere else. We conclude that the proposed buffer zone is a mitigatory measure. That conclusion is consistent with the *Briels* and *Murphy* case law mentioned earlier in this chapter.

4.163 The RIAA explains that a pragmatic modelling approach known as computational fluid dynamics was used to help parameterise the impact of shelter belt planting on NH_3 concentrations. The modelling was based on typical meteorological conditions and variable wind direction. It was assumed that the shelter belt would have no effect on emissions of NO_x. This was a conservative assumption. NO_X is less reactive than NH_3 and does not deposit to vegetation surfaces as readily. Nevertheless, there would be a small effect on deposition of NO_x that was not taken into account in the modelling.

4.164 The RIAA acknowledges that the computational fluid dynamics model itself could not be verified. However, the resulting uncertainty was reduced by using the model to calculate a shelter belt reduction factor rather than the concentration of pollutants in air. It was stated that the beneficial impact of shelter belt planting on reactive pollutants such as NH_3 is widely accepted. Additional modelling at the detailed design stage would ensure that the assessed efficacy of the shelter belt was achieved.

4.165 It seems to us that only limited reliance can be placed on potential benefits of shelter belt planting which cannot be verified. There is no guarantee that additional modelling at detailed design stage would ensure that the assessed efficiency of the planting would be achieved. We appreciate, however, that DfI is not relying on the proposed planting alone to provide mitigation.

4.166 The "Development of Mitigation Options" document was released with redactions in response to an Environmental Information Regulations request from the AA5A. It consists of four memoranda dated between June and November 2021 and a summary of the rationale for vesting additional lands for environmental mitigation.

4.167 The memoranda contain a total of 12 tables and 14 figures or diagrams that show potential mitigation scenarios and their predicted consequences. Scenarios include no mitigation; removal/displacement of agriculture alone; planting alone; and combinations of removal/displacement of agriculture and planting. Variables include the amount and location of land to be taken out of agriculture and the maturity of the shelter belt planting.

4.168 We find it surprising that Tables 7.4 and 7.5 of the RIAA, which set out the predicted NH_3 concentrations and N-dep levels in 2028 with the chosen mitigations in place, do not match any of the mitigation scenarios set out in the "Development of Mitigation Options" document. More changes to parameters must have occurred after the last of the memoranda was written in November 2021 but these changes and the reasons for them have not been documented. We accept that the fact that multiple changes have been made to the model does not, in itself, undermine the model.

4.169 Table 7.4 of the RIAA presents the following scenarios for NH_3 concentrations in 2028:

Scenario	Change due to Scheme in µg/m^3 and % of CLe			Impact in Hectares		
	Minimum	Maximum	Average	Adverse by >1% of CLe	Adverse	Beneficial
No mitigation	-0.002 -0.2%	0.010 1.0%	0.003 0.3%	0.1	35.8	0.2
Buffer zone, no planting	-0.121 -12.1%	-0.004 -0.4%	-0.015 -1.5%	0.0	0.0	36.0
Buffer zone and planting	-0.122 -12.2%	-0.005 -0.5%	-0.017 -1.7%	0.0	0.0	36.0

4.170 Table 7.5 presents the following scenarios for N-dep levels in 2028:

Scenario	Change due to Scheme in kg/N/ha/y and % of LCL			Impact in Hectares		
	Minimum	Maximum	Average	Adverse by >1% of LCL	Adverse	Beneficial
No mitigation	-0.015 -0.3%	0.131 2.6%	0.050 1.0%	14.4	35.9	0.1
Buffer zone, no planting	-0.610 -12.2%	0.015 0.3%	-0.048 -1.0%	0.0	7.9	28.1
Buffer zone and planting	-0.612 -12.2%	0.007 0.1%	-0.055 -1.1%	0.0	4.1	31.9

4.171 The RIAA concludes that with mitigation in place all 36 hectares of the bog would experience a reduction in NH_3 pollution. The reduction in N-dep prior to shelter belt maturation would benefit the whole SAC; 28.1 hectares would experience a reduction and 7.9 hectares would experience a maximum increase of 0.015 kgN/ha/y. With both forms of mitigation in place, 31.9 hectares would experience a reduction in N-dep and 4.1 hectares would experience a maximum increase of 0.007 kgN/ha/y, which is 0.1% of the lower critical load. The change in N-dep would be *de minimis* (trivial) and no adverse effect on the integrity of the SAC would arise from the scheme alone.

4.172 With reference to the bottom row of Tables 7.4 and 7.5 of the RIAA, we asked how many years would be likely to elapse between the proposed opening of Section 2 of the scheme in 2028 and the coming to maturity of the proposed shelter belt of trees. We were told that planting would be carried out in parallel with construction. We were referred to Paragraph 6.5.46 of the ESA which states that the tree specimens planted would be 1.5 to 2.0 metres in height at a spacing of 2 to 3 metres. It says there would, therefore, be some benefits from the planting from (the date of) the scheme opening, albeit reduced in comparison to a mature tree canopy. DfI's air quality expert conceded that in the early years the outcome would be closer to the no-planting scenario.

4.173 Table 7.5 of the RIAA indicates that in the no-planting scenario, 7.9 of the 36 hectares in the SAC would suffer a slight increase in nitrogen deposition. The spatial extent of the adversely affected area is shown on the bottom left diagram in Plate 7.3 of the RIAA. Comparison of Plate 7.3 with Plate 6.1 reveals that a substantial part of the central area of the bog where selection features of the SAC are located would be adversely affected by the scheme. The other 28.1 hectares, including peripheral woodlands, would benefit.

4.174 It is necessary at this point to review the whole process by which impacts on air quality were calculated. The figures have a spurious appearance of precision. They are in reality the product of numerous assumptions layered upon each other, including reliance on the central traffic forecast; use of modelled data; large adjustments to those data by means of sophisticated statistical techniques; adoption of standard values and rates; disregard of seasonal variations in ammonia emissions; and application of unverified hypotheses about the benefits of planting. While DfI's consultants have paid heed to the precautionary principle at many stages in the process, the sheer number of variables and the scope for error at each stage are such that it is impossible to view the final numbers in the mitigation scenarios as anything other than guesstimates.

4.175 Paragraph 6.3.86 of the ESA refers to guidance from Natural England and others which indicates that where a change in concentration/deposition exceeds 1% of the relevant critical level and/or critical load, the potential for significant effects on the sensitive features (of a protected habitat) cannot be ruled out. Below the 1% screening threshold, the impacts can be treated as imperceptible, resulting in no significant effects. Paragraph 6.3.87 says that if the assessment results predict that the 1% significance screening criterion is exceeded at any sensitive feature as a result of the operation of the scheme, the results must be analysed by a suitably qualified ecologist to determine whether the predicted change would constitute a significant effect.

4.176 In its written representations, the AA5A queried the use of a 1% screening significance threshold. As Tully Bog is already exceeding its critical level for ammonia, it said, any addition of ammonia, howsoever small, is capable of representing an adverse effect.

4.177 In rebutting the AA5A's representations, DfI stated that while the screening threshold of 1% is used as a contextual value within the assessment, it is not used as the basis for the conclusion on the presence of adverse effects. The assessment does not rely on a 1% threshold as a "cut off" for effects and merely uses it as an indicator of potential adverse impacts. The opinion within the reports is founded upon original assessment, scientific principles and professional judgment. Pollutant levels across the majority of the bog would be reduced to a point at which the scheme (including mitigation measures) would have an overall beneficial effect on its condition. The small area of Tully Bog predicted to receive a possible increase would receive (at worst) less than 0.1% of the lower critical load, which, even if it does materialise, is considered to be insignificant and does not amount to an adverse effect upon the integrity of the SAC.

4.178 DfI acknowledged in its rebuttal evidence that ammonia concentrations exceed their critical level over Tully Bog. It said this does not mean, however, that any addition of ammonia would result in adverse effects on the integrity of the site. The magnitude of the mitigated impacts, their distribution over the site, baseline ammonia concentrations and the site habitats and condition had all been considered by the project ecologists in concluding that there would, in this case, be no adverse effects on integrity.

4.179 On re-reading the relevant parts of the RIAA and the ESA from which we have quoted, we find it impossible to accept that the 1% threshold is not used as the basis for the conclusion on the presence of adverse effects. It is plain from the "Development of Mitigation Options" document that from mid 2021 onwards there was a sharp focus on identifying solutions that would minimise the amount of land where the 1% threshold would be breached. DfI's rebuttal evidence insinuates that the predicted increase in nitrogen deposition in a small area of the SAC might not materialise. By the same token, it could be speculated that the increase might be larger and more extensive.

4.180 DfI indicated in its rebuttal evidence that the conclusion that no adverse effect on the integrity of the SAC would arise from the scheme was founded on professional judgment by the project ecologists. This is not apparent to us from the RIAA. The RIAA moves directly from a mathematical assessment featuring the 1% threshold to an assertion that the change in nitrogen deposition with mitigation in place would be trivial. There is no ecological assessment of the effects of the predicted increase on the selection features of the SAC. We have searched the RIAA in vain for an analysis, supported perhaps by research findings and case studies relating to similar habitats, as to how the bog and its plant communities are likely to react to potential changes in air quality. That to our minds is a crucial missing link in the chain of logic presented in the RIAA. DfI's ecology witness told us that further ecological analysis could be provided in the final AA, even though in his opinion it is not needed.

4.181 It will be recalled that there are two stages of habitats assessment – first screening and then consideration of effects on site integrity. In our experience, the use of thresholds at screening (or trigger) stage is common practice. DfI indicated in its evidence rebutting the AA5A's representations that it had been advised by NIEA that 1% is used as a screening threshold only. The *People Over Wind* judgment establishes that it is not appropriate at screening stage to take mitigation measures into account. It would not have been lawful, therefore, to screen out the need for an AA for the A5 scheme by the use of the 1% threshold and DfI has not done so. It follows, in our opinion, that DfI is not entitled to introduce the threshold at the second stage of habitats assessment.

4.182 We are reinforced in this opinion by Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations, which is set out in the guidance document referred to in Paragraph 6.3.86 of the ESA. It recommends that at AA stage the 1% threshold "is ***not*** used as a means of determining whether there is an adverse effect on site integrity from a road traffic project".

4.183 A document bearing the title "Tully Bog SAC Conservation Objectives" is appended to the RIAA. The stated conservation objective for the SAC is to maintain (or restore where appropriate) the active raised bog to favourable condition. As the site is not currently in favourable condition, the objective must be interpreted as restoration. There are five component objectives and nine associated actions. One of the associated actions is to seek to maintain or where necessary restore concentrations and deposition of air pollutants to at or below the site-relevant critical load. In its statement of case, the AA5A argued that any increase in nitrogen deposition in circumstances where the critical levels are being breached contravenes the conservation objectives of the SAC.

4.184 At the inquiry, Counsel for the AA5A referred to the Advocate General's opinion in the Dutch Nitrogen case in which she considered the total amount of permitted nitrogen deposition. She said that where a plan or project is likely to undermine a protected site's conservation objectives, it must be considered likely to have a significant effect on that site. If protected assets are not in a favourable conservation status, the conservation obligation applies at least to the available potential for establishing such conservation status in future as only such conservation status can ensure the long-term maintenance of the habitat types and species in question. A load level which prevents a favourable conservation status from being achieved in the long term creates the risk that that presence will be lost. It would therefore be likely adversely to affect the integrity of the site. That nitrogen deposition is declining overall is thus to be welcomed but is inevitably insufficient in itself. It seems difficult, if not impossible, to accept values that are higher than the critical loads, she said.

4.185 The Advocate General's opinion does not entirely rule out the possibility that an inconsequential increase in nitrogen deposition could be accepted even though the critical load is already exceeded. It seems that, for her, the key question is whether such an increase in the load level would prevent favourable conservation status from being achieved in the long term. In her opinion on the *Sweetman* case (C-258/11), she indicated that a plan or project involving some strictly temporary loss of amenity which is capable of being fully undone would not be an adverse effect on integrity.

4.186 The RIAA says nothing of significance about the long-term conservation status of the SAC. Table 7.7 purports to provide an assessment of impacts on the integrity of the SAC in respect of its "conservation objectives". In actual fact, the table benchmarks the scheme against component objectives (which are sub-objectives). It provides no commentary on the impact of the scheme on the SAC's single conservation objective, which is to restore the active raised bog to favourable condition.

4.187 The RIAA does not consider whether there is a reasonable prospect of the conservation objective being achieved and if so, how it would be achieved and how long it would take to achieve. An integrity of site checklist at Table A4.1 asks whether the project has potential to (i) cause delays in progress towards achieving the conservation objective[s] of the site; (ii) interrupt progress towards achieving the conservation objective[s] of the site; (iii) disrupt those factors which help maintain the favourable conditions of the site;

or (iv) interfere with the balance, distribution and density of key species that are indicators of favourable conditions of the site. A full ecological analysis should have been provided in response to these questions to enable an assessment to be made as to whether any adverse impact of the operation of the scheme can properly be regarded as temporary and reversible. Instead, the answer given to each question is a bare "No". No reasons are furnished to support these answers.

4.188 The NIEA witness said he had no concerns about the robustness of the information in the RIAA. He made the important point, however, that with the current level of agricultural emissions it is impossible to achieve favourable conservation status at Tully Bog. We note that in DAERA's draft ammonia strategy there is a proposal to prohibit the spreading of manures within 50 metres of internationally designated sites such as Tully Bog SAC by January 2025. If this proposal were implemented, it would mean that at least some of the farm-related measures proposed in the RIAA would cease to be mitigatory and become part of the environmental baseline. As a result, the computed net impact of the scheme on air pollution at the SAC would become larger.

4.189 In the final analysis, while we are satisfied that the air quality calculations were carried out thoroughly and conscientiously, we have come to the view that the RIAA has placed far too much reliance on them. The misapplication of the 1% screening threshold at the second stage of habitats assessment is an example of category confusion. Two elements are signally lacking – an ecological assessment of the implications of the predicted small increase in nitrogen deposition on part of the designated site; and an indication as to how the scheme would affect the prospects of the conservation objective to restore the active raised bog to favourable condition being achieved in the long term.

4.190 We are not persuaded that the RIAA demonstrates beyond reasonable scientific doubt that the scheme would not adversely affect the integrity of Tully Bog SAC.

4.191 The 2022 RIAA is not necessarily the last iteration of the habitats assessment for Tully Bog SAC. DfI is entitled to make further amendments for incorporation in the AA. We set out in Recommendation 23 below the matters which in our opinion the AA should address. It would be for DfI to decide whether any further public consultation should take place and what form any such consultation should take.

4.192 The papers DfI released in response to the AA5A's information request disclose a great deal of anxiety about Tully Bog. There are numerous references to the SAC in notes of meetings, with substantial redactions. The following passage appears in a report from the project team which was provided to the then Minister on 1st December 2020:

"These Options are presented upon the assumption that the risk of adverse effects from the road upon Tully Bog SAC can be eliminated following appropriate assessment… In the event that this is not possible, realignment of the road at that location may be necessary and the Options reviewed again."

4.193 It is apparent from the Stage 2 Scheme Assessment Report (SAR 2) that when the preferred route for the scheme was under consideration in 2009, a refinement was introduced in the Mountjoy area to avoid having to acquire two properties. What became the chosen route was closer to Tully Bog SAC but, as a DfI witness ruefully told us, the level of concern about air quality that has now emerged was not envisaged then. Reversion to the previously favoured route to the east of Mountjoy is but one of a number of options that DfI might have to consider if it proves impossible to

demonstrate with the requisite degree of certainty that the currently proposed route would not have an adverse impact on the SAC.

Recommendation 22

We recommend the Department, should it decide to proceed with Section 2 of the scheme, to commit sufficient funds:

- **to ensure that all necessary works to block drains and remove invasive species from the Tully Bog Special Area of Conservation are completed before any construction activities begin; and**
- **to provide for the longer-term maintenance of the hydrological works and the continued suppression of invasive species over at least a 15-year period.**

Recommendation 23

We recommend the Department when finalising the appropriate assessment:

(a) to provide a detailed description of how the bryophytes and vegetation communities present at the designated site, and the active and degraded raised bog features for which it was designated as a Special Area of Conservation, are affected by current ammonia and nitrogen deposition levels and existing hydrological conditions and how those effects are likely to evolve over the period to 2028 if the scheme does not proceed;

(b) to adjust its air quality calculations using data already gathered by:

- **abandoning reliance on keeping exceedance of the critical level or load to less than 1%;**
- **abandoning reliance on any proposed mitigation planting whose impacts cannot be verified or which will not be effective by 2028;**
- **presenting the predicted air quality impacts of displacing agriculture as a range, taking account of seasonal fluctuations; and**
- **preparing a sensitivity test using a higher traffic growth scenario defined in accordance with the most up-to-date Department for Transport guidance.**

(c) to provide a detailed description of how, in the realistic worst-case scenario emerging from the amended calculations, the bryophytes and vegetation communities present at the designated site, and the active and degraded raised bog features for which it was designated as a Special Area of Conservation, would or could be affected were the road to open in 2028;

(d) to provide an ecological assessment as to how the scheme would affect the prospects of the conservation objective to restore the active raised bog to favourable condition being achieved in the longer term; and

(e) to ensure that all data and analyses relevant to the assessment of impacts on the Special Area of Conservation are contained in the appropriate assessment, avoiding cross-referencing to other scheme documents.

Recommendation 24

We recommend the Department not to proceed with the relevant part of Section 2 of the scheme unless no reasonable scientific doubt remains that the integrity of Tully Bog Special Area of Conservation would not be adversely affected, but instead to investigate alternative routes further from the designated site.

Special Protection Areas

4.194 The Lough Foyle (Northern Ireland) SPA comprises the eastern shore of the lough from Magilligan to Greysteel and is about 2,204 hectares in size. It supports internationally important numbers of whooper swan; light-bellied Brent goose and bar-tailed godwit. It also supports migratory waterfowl, including greylag geese which are important in an all-Ireland context. The conservation objective is to maintain each feature in favourable condition. The 2022 RIAA states that at its closest, the proposed road would be about 10.3 kilometres to the south of the SPA.

4.195 The Lough Foyle (Republic of Ireland) SPA comprises the western shore of the lough from Muff to Vances Point in County Donegal. It is about 588 hectares in size. The assemblage of birds that use the SPA includes internationally important populations of whooper swan, light-bellied Brent goose and bar-tailed godwit; and nationally important populations of a further 20 species, including greylag goose. The conservation objectives may be summarised as maintaining all selection features in a favourable condition. The RIAA states that at its closest, the proposed road would be about 13.3 kilometres to the south of the SPA.

4.196 Lough Swilly SPA comprises the inner part of the lough from Rathmullan to Letterkenny to Buncrana, and includes Inch Island. It is about 8,560 hectares in size. It supports internationally important numbers of whooper swan, Greenland white-fronted goose and greylag goose. It is a conservation objective to maintain the favourable condition of these water bird species. The RIAA states that at its closest, the proposed road would be about 12.3 kilometres to the south east of the SPA.

4.197 Lough Neagh and Lough Beg SPA also includes Portmore Lough and is about 41,188 hectares in size. It regularly supports whooper swan and a variety of species of waterfowl in winter, including greylag goose. The conservation objective is to maintain each feature in favourable condition. According to the RIAA, the proposed road would be about 26 kilometres to the south west of the SPA.

4.198 At screening stage, all four RIAAs conclude that surface water runoff from construction and operation of the scheme and vehicle emissions to air are not likely to interact with the SPAs based on the separation distances and limited connectivity. An objector argued that the sediments and pollutants in water could harm geese and swans roosting and drinking at the River Foyle. At the inquiry, DfI's ecological witness pointed out that water would be more effectively treated with the scheme in place than it is at present. We accept that it can be excluded, on the basis of objective information, that water pollution caused by the scheme would have a significant effect on the SPAs.

4.199 The RIAAs found the scheme could possibly have a significant effect on the whooper swan and greylag goose selection features of the SPAs through loss of feeding and

foraging habitat on functionally linked land, and disturbance and displacement. These matters were therefore considered in detail at the second stage of assessment.

Potential loss of feeding and foraging habitat for whooper swan and greylag goose

4.200 The RIAAs state that the core foraging areas of whooper swans directly associated with the Lough Foyle SPAs are recognised to cover a large area of low lying, intensively managed agricultural land stretching around the southern and eastern fringes of Lough Foyle between the mouth of the River Faughan at Strathfoyle/Maydown and the River Roe between Ballykelly and Myroe. The core foraging areas of whooper swans associated with Lough Swilly SPA are along the eastern fringes of the lough. The core foraging areas of whooper swans associated with Lough Neagh and Lough Beg SPA stretch round the fringes of, and within 2 kilometres of, both loughs.

4.201 The RIAAs say that the Royal Society for the Protection of Birds (RSPB) and the Irish Whooper Swan Study Group have identified that the River Foyle floodplain between Magheramason and Burn Dennett, which is partially encompassed within the scheme corridor, is known to be used by whooper swans associated with the SPAs during the winter months. They forage there regularly over the winter or during migration to and from the SPAs.

4.202 The RIAAs go on to say that greylag geese can range up to 20 kilometres from their roosting sites in search of foraging grounds and so it is possible that birds recorded within the River Foyle floodplain are associated with the SPAs. There is about 2,100 hectares of suitable foraging habitat in the wider River Foyle flood plain, including lands on the opposite side of the river in the Republic of Ireland. Most of this habitat is located well away from the alignment of the scheme.

4.203 Surveys were undertaken over the winter periods (between October and March/April) in 2009/10, 2013/14, 2017/18, 2018/19, 2019/20 and 2020/21 to identify the typical distribution and abundance of whooper swan and greylag geese within the River Foyle flood plain. The study area was divided into counting zones, which included lands at Grange Foyle Road and to the north of Dunnalong Road in County Tyrone and nearby lands on the other side of the river in County Donegal. The highest figures recorded in each survey period for which data are available were averaged and compared with older data for the total number of each species in the Lough Foyle SPAs and Lough Swilly SPA.

4.204 It is stated in Appendix 9-6 to the 2022 ESA that the earlier surveys were undertaken using a methodology informed by McElwaine and Spouncer (2006) and that surveys undertaken between 2017/18 and 2020/21 followed a similar but slightly more simplified approach. Surveys started just before dawn from the vantage point to identify the location of incoming birds or flocks already present within the survey area. A first count (approximate due to the distance) was recorded. Once flocks of birds had settled within the survey fields, surveyors drove closer to the fields where the birds had been observed. From there, a second more accurate count was made. The mean between the two counts was then recorded. The roads to the west of the existing A5 between Magheramason and Burn Dennet were also driven to check no swans or geese were obscured and undetected from the vantage point.

4.205 In its consultation submission, the RSPB complained about a lack of detail about the methodology of any of the bird surveys. It expected details of the dates, times, duration and the weather of the surveys as well as the names of the surveyors and their

qualifications. A breakdown of results by survey date and locations would also be useful to determine usage of the site over the survey period. With its response to this representation, DfI enclosed the annual summary reports, which included full details of the results, dates, times, duration and weather of the individual surveys. The RSPB made no further comments on the RIAAs and made no appearances at the inquiry.

4.206 At the inquiry we were told that the methodology described was standard practice devised by an internationally recognised expert. The slightly more simplified approach in more recent years was to use one vantage point instead of two. From Gortmonly (or Sollus) Hill above Bready, birds were surveyed at a distance of up to 3 kilometres.

4.207 The bird data relied upon in the relevant RIAAs may be summarised as follows:

Area	Period	Swans	Geese
Lough Foyle SPAs	2007 to 2012	1,291	3,599 (2008)
Lough Swilly SPA	2004 to 2009	1,850	
Grangefoyle	2009 to 2021	551	615
Grangefoyle as % of Lough Foyle SPAs		42.7%	17.1%
Grangefoyle as % of Lough Swilly SPA		29.8%	
Dunnalong	2009 to 2021	122	95
Dunnalong as % of Lough Foyle SPAs		9.5%	2.6%
Dunnalong as % of Lough Swilly SPA		6.6%	
Nearby Donegal	2009 to 2021	317	118
Nearby Donegal as % of Lough Foyle SPAs		24.6%	3.3%
Nearby Donegal as % of Lough Swilly SPA		17.1%	

4.208 The River Foyle flood plain is located over 60 kilometres from the Lough Neagh and Lough Beg SPA. The RIAA indicates that it is not possible to make a reasonable estimate of what proportion of the whooper swans and greylag geese which use the flood plain are passing through on migration during the spring and autumn to and from Lough Neagh and Lough Beg. This is because those birds which overwinter at that SPA arrive there via other routes and staging grounds, including places in Scotland. Only a proportion of the birds recorded at the River Foyle flood plain ultimately end up at Lough Neagh and Lough Beg and that proportion is unknown.

4.209 At the inquiry in 2020, an objector pointed out that the Foyle is the seventh most important site for whooper swan in Britain and Ireland. She took issue with the survey results and appeared to believe that the numbers of swans and geese were understated. However, we have no good reason to suppose that the data have not been diligently and honestly compiled. In any case, the purpose of the RIAAs is not to establish the precise number of birds that forage in the flood plain. It is to identify the implications of the road scheme for the SPAs.

4.210 Figures appended to the 2019 RIAAs showed fields where swans and geese were recorded and the relationship of those fields to the proposed road line. Disputing their

accuracy, the objector told the inquiry that her brother had recorded the presence of swans and geese on his land at Meenaghill, Bready in March 2018 and that the birds were there again in 2020. Meenaghill lies closer to the proposed road than the foraging grounds identified in the earlier surveys and within about 200 metres of the land take.

4.211 Additional figures were appended to the 2022 RIAAs. The figures relating to the 2018/19, 2019/20 and 2020/21 surveys confirm the presence of swans and geese at or near Meenaghill. The RIAAs estimate that 1.9% of potential foraging habitat in the area (about 40 hectares) would be lost to the scheme. They point out that only a single field which is intersected by the footprint of the scheme has ever been recorded holding either whooper swans or greylag geese over the six survey periods between 2009 and 2021. A flock of 11 whooper swans was recorded near Meenaghill in March 2020. This field is about 9.1 hectares in size but only 2 hectares of that falls within the vesting area.

4.212 The RSPB expressed concern that there were significant discrepancies between the results given for the wintering swan and goose surveys and the accompanying figures, resulting in an underrepresentation of the numbers. DfI explained that peak counts per survey sector and individual field peaks displayed on the figures should be viewed in isolation of each other as they are not supposed to correlate. For example, whooper swan peak counts from 2009/10 are 597, 397 and 600 for the three sectors, but this does not mean that the total peak count for the whole survey area is 1,594 – simply that those represent the highest counts in each of those sectors at one time over the course of the winter's surveys. We accept this explanation.

4.213 The RIAAs state that the two main whooper swan or greylag goose foraging areas are centred round the Grangefoyle area in Northern Ireland and the Carrickmore / Swilly Burn area in the Republic. While whooper swans and greylag geese also forage elsewhere within the study area, the surveys demonstrate that they typically do so less intensively and in lower abundance. The nearest Grangefoyle foraging area is about 250 metres from the scheme footprint and over 550 metres from the proposed mainline. Consequently, the extent of foraging habitat lost from within the Foyle flood plain as a result of the scheme would be negligible.

4.214 The RSPB's views on wildfowl distribution and movement are set out in Appendix 11O to the ES. It highlighted that the Bready/Grange flood plain area was just one part of the Foyle/Swilly complex. The objector made the point that fields do not comprise the entire habitat of swans and geese; they also use riverbanks. Whooper swans congregate at discrete, generally protected roosting areas during the night and disperse over a wide area to forage during the day. The birds use geographically separate feeding, roosting and staging areas across an international expanse of territory as the winter and spring progress. She submitted photographic evidence demonstrating the recent presence of swans and geese in the wider area between Newbuildings and Burn Dennet, including on reed beds and mud flats beside the river.

4.215 The RIAAs acknowledge that outwith the River Foyle flood plain study area, whooper swans and greylag geese associated with the Lough Foyle / Lough Swilly / River Foyle complex have in the region of 18,000 to 20,000 hectares of suitable alternative and traditionally used foraging habitat located in surrounding areas of County Derry, County Tyrone and County Donegal. They conclude that the minimal loss of functionally linked land would have no effect on the availability of foraging habitat for whooper swans within the flood plain and by extension any of the SPAs.

4.216 At the inquiry in 2020, another objector commented that if the identified foraging grounds were flooded due to the road scheme, the birds would be displaced. The impact of increases in flood water levels on whooper swan and greylag goose was not mentioned in the 2019 RIAAs. The Commission's Interim Report recommended that consideration be given to this matter and DfI accepted this recommendation.

4.217 The 2022 RIAAs acknowledge that construction of the scheme within the River Foyle flood plain has potential to increase surface water runoff resulting in localised flooding. It refers to revised modelling which has found that increased flood water levels within the flood plain as a result of the scheme would be +/-10 millimetres compared to the baseline conditions which corresponds to a "negligible" impact in the DMRB flood risk magnitude criteria. The RIAA asserts that this essentially means that the land in the flood plain has an almost equal risk of flooding regardless of whether the scheme is built or not. It says it can be concluded that construction of the scheme would not result in significantly greater temporary loss of foraging areas within the River Foyle catchment through flooding than that which is predicted to occur naturally. At the inquiry, a DfI ecologist told us that swans can feed in water up to a depth of 3 feet.

4.218 We are satisfied, on the evidence provided, that the proposed scheme would not have an adverse effect on any of the SPAs by reason for loss of feeding and foraging habitat for whopper swan and greylag goose.

Potential disturbance and displacement of whooper swan and greylag goose

4.219 Referring to relevant research, the RIAAs say that most waterfowl populations are limited by availability of food during the winter months. The factors controlling the populations are thought to be density dependent and lead to the population tending towards the "carrying capacity", that is the number of birds an individual site can support. When numbers are low, mortality will decrease until they reach the carrying capacity of an area. In the case of waterfowl, density dependence is thought to act through two factors – the availability of prey/food during the winter months and the levels of fat birds can lay down prior to spring migration back to their breeding grounds. The breeding success of many species is directly related to the availability of reserves on arrival in the breeding grounds.

4.220 The RIAAs refer to a study reported in 2000 into the impact of shell fishing at low tide on oystercatchers on the Exe Estuary, which examined the role of disturbance in reducing access to feeding areas. The model took into account energy expended flying away from, and feeding time lost as a result of, disturbance. The study showed that disturbance from many small sources was more significant than from fewer large-scale sources, which involved less commuting energy, and that disturbance could be more significant than habitat loss. It found that preventing disturbance during late winter, when feeding conditions were worse, practically eliminated its predicted population consequences. The model demonstrated that disturbance produced very little impact if restricted to daylight hours and if occurring before 1st December.

4.221 The RIAAs then refer to a 2005 study which used a similar behaviour-based model to predict the impact of an extension to the port at Le Havre on wading birds using the Seine Estuary in France. It found that Introduction of a 150-metre buffer zone effectively removed the effect of disturbance on feeding shorebirds.

4.222 The RIAAs also refer to Scottish Government guidance produced in 2011 on the potential for adverse effects on bird features of European and Ramsar sites, from which it quotes the following findings:-

- Studies generally show that birds are disturbed by a sudden large noise but have the ability to habituate to regular noises. Although piling has the potential to create most noise during construction, it often consists of rhythmic "bangs", to which, after a short period, birds are likely to become accustomed.
- Winter bird monitoring showed that there was no large-scale disturbance due to construction work. Although some localised disturbance was recorded in response to two sudden events, this was not considered to have a major effect on surrounding bird populations and was found to be no greater than the effect arising from third party disturbance, including walkers and stopped cyclists, which were unrelated to the construction work.
- Over 12 separate visits, disturbance by construction activities (which involved piling and reclamation of part of the foreshore) was observed on three occasions and in each case birds were disturbed over a small area and then rapidly resettled within the zone of disturbance; they did not leave the area. Surveys also indicated that such disturbance events are limited and are often attributable to activities such as the presence of peregrine falcons or walkers on the mudflat.
- An approximate zone within which birds may be affected by disturbance from construction works (piling and dredging) was estimated to be typically about 200 metres. A sudden noise in the region of 80 decibels (dB) appears to elicit a flight response in waders up to 250 metres from the source, with levels of approximately 70 dB causing flight or anxiety behaviour in some species.

4.223 The objector drew attention to the number of structures proposed on a 7.5-kilometre stretch of the scheme corridor adjacent to the identified foraging areas. There would be two bridges over the existing A5, two bridges over side roads, three accommodation works overbridges, six side road realignments and eight attenuation ponds. There would also be demolition works in Magheramason; a cutting 750 metres long and up to 21 metres deep at Sollus Hill, Bready; and two deposition areas.

4.224 The RIAAs acknowledge that construction of this section would involve the use of large excavators, dump trucks for transporting excavated materials to areas of fill within the working areas, bulldozers, graders, and compaction plant including rollers and soil stabilisation plant.

4.225 The RIAAs identify two locations where construction would involve noise levels above those associated with the general movement and activity of plant and vehicles – the deep cutting at Bready would involve the breaking out of rock at Sollus Hill, and piling would be required for the bridge abutments at Burn Dennet. The Bready cutting would be about 350 metres from the closest recorded whooper swan foraging ground and over 700 metres from the closest recorded greylag goose foraging ground. The Burn Dennet crossing would be over 500 metres and over 1.2 kilometres from the areas known to be used by whooper swan and greylag goose respectively.

4.226 The RIAAs state that following discussion with the geotechnical and contractor advisers for the scheme it has been confirmed that blasting would not be required. Should further information come to light as the design of the scheme is finalised which demonstrates a need for blasting, a limitation would be placed on the timing of the

activity to exclude the period between October and March (inclusive) when whooper swans and greylag geese are present. We consider that imposition of this restriction is essential to eliminate the potential for adverse effects from this disturbance source.

4.227 The RIAAs state that should the contractors intend to undertake breaking out of rock at Bready and piling at the Burn Dennet between October and March (inclusive), trial breaking out and piling must be undertaken with monitoring by an appropriately qualified and experienced ornithological clerk of works (OCoW). The trials would involve short periods of breaking out and piling at prescribed intervals to establish if the activities result in disturbance which could prove detrimental, should the more prolonged periods of the activities required to complete the cutting and bridge abutments be progressed. If the trials indicated this would likely be the case, the activities would be suspended while whooper swans and/or greylag geese were within 300 metres of the noise source. This is said to be a precautionary distance, when compared with the 200- to 250-metre range referred to in the Scottish guidance.

4.228 The RIAAs state that the following factors would be considered to be probative of detrimental disturbance – physical displacement of birds (flight from source) with non-return within 5 minutes; and reduction in foraging activity due to increase in scanning times. Should either or both of these responses be noted, works would be suspended until the birds have moved beyond 300 metres from the noise source. DfI would place contractual obligations on contractors and employ an OCoW throughout the relevant phase of the construction programme to ensure these mitigation measures are appropriately implemented and are effective.

4.229 The RSPB drew attention to Table 6G.6 in Appendix 6G to the 2016 ES, headed "Protected Species Work Timing Restrictions". In the first row there are references to winter birds, to Chainages 5000 to 6000 and 8500 to 10500 and to the Habitats Regulations, followed by this text: *"No heavy works October - March. No piling, large scale earth movement etc."*. The RSPB expressed disappointment that this mitigation measure is absent from the outline CEMP in Appendix 5-1 to the 2022 ESA due to the inclusion of a buffer. It did not support the reduced mitigation measure. The RSPB acknowledged that the outline CEMP includes provision for a suitably qualified ornithologist to be on site during the period when whooper swans and greylag geese are present with the power to halt works should disturbance be observed.

4.230 In its response, DfI acknowledged that the scheme would potentially cause disruption to some whooper swans and greylag geese during the construction period. All effort would be made to minimise potential stress or disturbance experienced by these species. The inclusion of an OCoW to monitor construction in the sensitive area between October and March each year would ensure this minimisation of disturbance.

4.231 We find the tenor of this response quite concerning. We are obliged to repeat that DfI cannot authorise this construction project unless it has first ascertained that it will not have an adverse effect on the integrity of the SPAs, of which whooper swan and greylag goose are selection features. DfI's response fails to recognise that carrying on with heavy construction work when the birds are present in the area while seeking to minimise disturbance to them may not be sufficient to avoid such adverse effects.

4.232 The idea of trial breaking out and piling is not new. It appeared in the 2014 version of the RIAA and in Chapter 11 of the 2016 ES, which is therefore at variance with Table

6G.6 of the same ES. There has, however, been a subtle change of wording. It was stated in the ES that should the trials indicate that disturbance which could prove detrimental be likely, the activities would be suspended until the birds left the "area" (undefined). The proposal in the 2022 RIAAs to suspend works until the birds have moved beyond 300 metres from the noise source would do nothing to protect any birds already located more than 300 metres away who might be disturbed by the noise and whose foraging activity might be disrupted in consequence.

4.233 One of the findings quoted in the Scottish guidance was that at a distance of 200 to 250 metres birds may be made anxious or put to flight by sudden noises of 70 to 80 dB. We recall, however, that the ES states that the sound power level associated with site preparation and earthworks is 121 db and with bridge construction it is 125 dB. The findings indicate that different bird species react to noise differently and we have not been given evidence about the extent to which birds' experience of noise is attenuated by distance. We are therefore unable to exclude the possibility that whopper swans and greylag geese occupying fields beyond the proposed 300-metre zone might be adversely affected by noise from heavy construction work associated with the scheme.

4.234 The RSPB has not explained why it believes a ban on heavy work from October to March in the area frequented by whooper swans and greylag geese is necessary. It seems to us that supervision by a suitable OCoW is capable of being an effective safeguard against disturbance caused by noise from heavy works, provided the OCoW has the necessary independence and authority. We return to these provisos below.

4.235 The outline CEMP states that four main construction compounds, approximately 10 acres in size, are currently thought necessary for the scheme. The main site compounds would typically contain the main site offices, site laboratory, canteen, welfare facilities, materials storage areas, car parking, waste management area, vehicle washing facilities and a batching plant. One anticipated location is between Chainages 7000 to 9000. It seems likely that the compound would be placed on the far side of the existing A5 between its junctions with Dunnalong Road and Grangefoyle Road. The objector suggested that the compound would generate 1000 vehicles per day.

4.236 The RIAAs say it is not known at this stage whether any on-site production facilities, such as concrete or asphalt batching plants, would be required in the stretch between Magheramason and Burn Dennet. They say there is a possibility that such facilities may be considered in this stretch and that should such facilities be located in the vicinity of the core whooper swan and greylag goose foraging areas within the River Foyle flood plain, the associated disturbance might dissuade birds from these areas. In order to avoid this risk, any proposed on-site batching plants would be located outside of the stretch between Chainages 4500 and 10500. Later in the RIAAs it is clarified that any on-site production facilities would be located outside this stretch.

4.237 We are perplexed by the convoluted language used in the discussion of this topic but recognise the unequivocal nature of the eventual commitment. We consider it essential that on-site production facilities of all kinds are excluded from the relevant part of the scheme corridor in order to avoid the acknowledged risk to the SPAs.

4.238 The RIAAs state that whooper swans foraging on land at some distance from water must make daily commuting flights from roosting areas. Three factors may safely be assumed to be implicated in the timing and duration of these flights – day length, temperature

and safety. During midwinter, birds naturally endure long periods of darkness, often combined with low temperatures, and it is probable that they have lower morning energy stores than at other times of the year. The impact of low temperatures and prolonged darkness is that less time is available for foraging as whooper swans are visual feeders. On the assumption that the time swans spend at their foraging grounds is positively correlated with energy requirements, in midwinter birds should arrive earlier at, and depart later from, their foraging areas, subject to available daylight. In addition, time spent feeding during the day should increase relative to day length. These conditions may induce an energetic bottleneck during December and January.

4.239 The RIAAs refer to studies reported in 2005 which noted that pedestrian presence disturbed whooper swans when within 250 to 400 metres and that construction vehicles disturbed whooper swans when within 250 metres. In contrast, tractors (which regularly traverse the River Foyle flood plain) caused disturbance when within 150 metres, while other farm vehicles caused disturbance when within 250 metres.

4.240 The RIAAs state that the scheme would generally involve construction significantly more than 250 metres away from those parts of the study area which are most regularly and intensively used by whooper swans and greylag geese. However, discounting fields less than 25% of whose area fall within this distance, the scheme would come to within 250 metres of six fields where whooper swans have been recorded. Only one of these fields is intersected by the footprint of the scheme; the others are 50 to 120 metres away. In total, 66 whooper swans have been recorded in these fields since 2009.

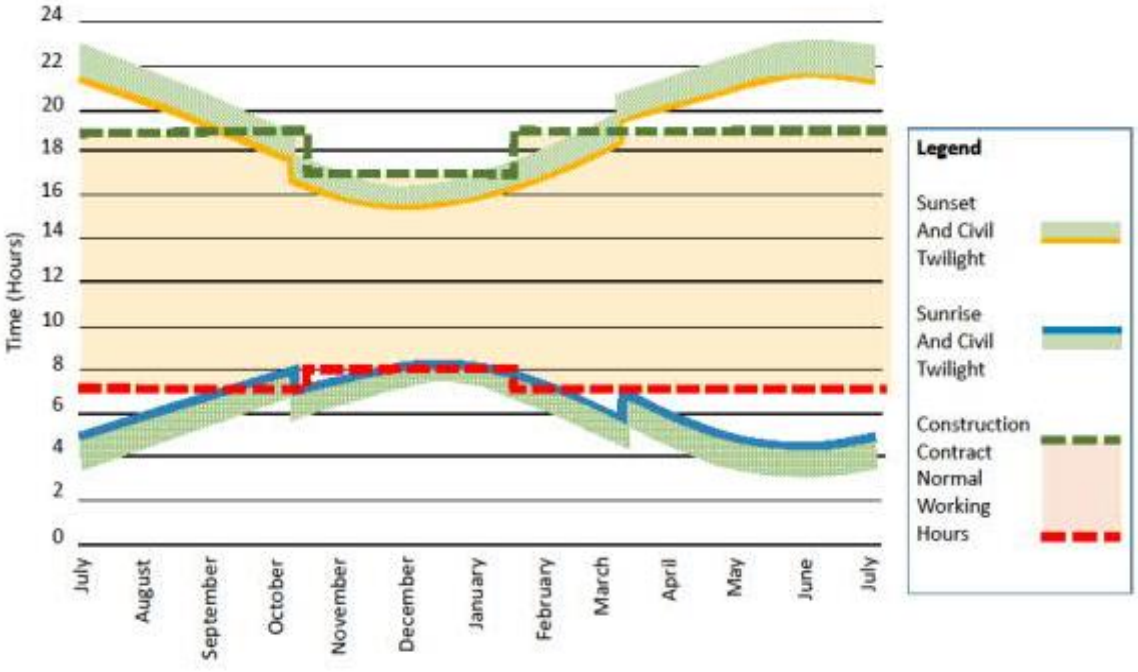
4.241 The RIAAs emphasise that all the fields noted above have been observed to be occupied by whooper swans only on one or two occasions and to hold only very small numbers of birds over the course of the 2009/10 to 2020/21 survey programme. No greylag geese have been observed within 250 metres of the scheme footprint.

4.242 The RIAAs go on to say that when considering opportunities for the swans and geese to forage for food, it is appropriate to consider available natural light. The period known as “civil twilight” is the time when the sun is less than 6 degrees below the horizon and during which it is considered light enough to work outside without the need for artificial light. During winter months, civil twilight lasts approximately 30 to 35 minutes during sunrise and sunset. Most visual foragers (including swans and geese) would be able to forage effectively during this time and it is likely foraging duration would extend beyond this time, particularly on clear nights and during full moons.

4.243 The RIAAs state that normal working hours specified in the construction contract in relation to noise and vibration would be 7am to 7pm from 1st February to 31st October and 8am to 5pm from 1st November to 31st January. The working hours are particularly relevant to visual foragers as they are less likely to feed at night and daylight hours may affect the levels to which they can accrue resources. This could be of particular significance during energetically demanding times such as pre-migration fat deposition and prolonged cold spells.

4.244 The RIAAs assert, by reference to the graph below, that during the winter months, there would be sufficient light available for foraging swans and geese during non-working periods in early October, particularly around sunrise and again between late October to late November, as clocks go back and it becomes light at an earlier time. There would be a further period light enough for foraging outside working hours from early February

onward. There would also be short periods of undisturbed daylight feeding time available in the mornings throughout December and January.



4.245 The RIAAs propose that during the winter and migration period (October to March inclusive), all construction works between Chainages 4500 and 10500 would be conducted under the advice of the OCoW who would be responsible for monitoring the daily distribution of the birds. No construction works would be conducted within 250 metres of areas occupied by whooper swans and greylag geese without the approval of the OCoW who would consider factors such as the nature, intensity and duration of the required works, natural/topographical screening and emergency circumstances such as health and safety and environmental protection. Working hours in that part of the scheme corridor would be limited to 8am to 5pm between 1st October and 31st March. This would represent an extension to the period over which these reduced winter working hours would be applied for the rest of the scheme.

4.246 The RIAAs claim that adherence to the construction time periods in accordance with OCoW instructions would eliminate any potential for a reduction in available foraging opportunities as a result of construction within the River Foyle flood plain where whooper swans and greylag geese are known to forage regularly. The disturbance associated with the scheme would not be continuous. The RIAAs say that in view of the close proximity of other feeding areas in the flood plain, it is likely that birds would respond to periods of minimal or no disturbance by returning to feed in areas in closer proximity to the scheme footprint, at least while foraging resources were available.

4.247 The RIAAs say that the OCoW would monitor whooper swan and greylag goose distribution and behaviour when potentially disturbing activities (such as noisy work and high numbers of personnel outside vehicles) were taking place. The watching brief would commence the day before planned activities and cease the following day. Should the OCoW determine that whooper swans and greylag geese were showing signs of detrimental disturbance, works would cease until foraging activity resumed.

4.248 The RIAAs go on to say that while the effectiveness of the proposed mitigation cannot be guaranteed to avoid all disturbance of whooper swans and greylag geese, there is a high level of confidence that the measures would reduce the risk of disturbance to significant numbers of birds using the River Foyle flood plain, which might otherwise pose the risk of an adverse effect on the integrity of the SPA, to a negligible level. This is because there would be a separation distance of more than 550 metres between the core foraging area and the greater part of the proposed scheme footprint.

4.249 The RSPB did not believe the proposed winter working hours were a valid or sufficient mitigation measure as they would leave little to no daytime for whooper swans and greylag geese to forage without disturbance for the majority of the winter months. In the mornings throughout December and January, periods of undisturbed daylight feeding time could amount to only about 30 minutes to 1 hour. There would essentially be no opportunity for daylight feeding once works ceased in the evenings from around the beginning of November to mid-January. Weather conditions are variable and the frequency and duration of clear nights, either alone or in combination with a full moon, cannot be relied upon or guaranteed to offset any disturbed feeding during the day.

4.250 Having re-read the RIAAs several times, we are left with the indelible impression that DfI is more interested in protecting the scheme from the birds than in protecting the birds from the scheme. The statement that disturbance would not be continuous concedes that there would be disturbance, while the reference to birds returning to feed in areas closer to the scheme footprint in periods of minimal or no disturbance concedes that some birds would be deterred from feeding in such areas when there was disturbance.

4.251 The research referred to in the RIAAs highlights the importance of preventing disturbance during late winter, especially after 1st December, as it can have adverse consequences for population levels. The RIAAs acknowledge that whooper swans and greylag geese are less likely to feed at night and working hours may affect their ability to accrue resources during energetically demanding times. It is impossible, in our opinion, to reconcile these findings with the proposals illustrated by the graph.

4.252 In December and January, dawn arrives in the Strabane area between about 7.45am and about 8.10am, while sunrise occurs between about 8.25am and about 8.55am. Sunset occurs between about 4.05pm and 5.05pm, while dusk ends between about 4.50pm and 5.45pm. If work were to start at 8am and finish at 5pm as proposed, the swans and geese would be deprived of all or nearly all undisturbed feeding time both in the morning and in the evening. We find this unacceptable. If those were to be the working hours, it would be impossible in our view to demonstrate beyond reasonable scientific doubt that construction activity would not have an adverse impact on whooper swan and greylag goose and hence on the integrity of the SPAs.

4.253 We consider that in the relevant part of the scheme corridor the working day must be curtailed by at least half an hour morning and evening in December and January on Mondays to Fridays compared with what is proposed in the RIAAs. When account is taken of the Christmas / New Year holidays, the net effect would be to reduce the working year by about 40 hours in that specific area.

Recommendation 25

We recommend the Department, should it decide to proceed with Section 1 of the scheme, to ensure that no site works or construction activities take place between Chainages 4500 and 10500:

- **outside the hours of 7am to 7pm on Mondays to Fridays and 7am to 4.30pm on Saturdays, between 1st April and 30th September;**
- **outside the hours of 8am to 5pm on Mondays to Fridays and 8am to 4.30pm on Saturdays, between 1st October and 30th November and between 1st February and 31st March;**
- **outside the hours of 8.30am to 4.30pm on Mondays to Saturdays between 1st December and 31st January; or**
- **at any time on Sundays or bank holidays.**

4.254 The principal safeguard proposed in the RIAAs against disturbance and displacement of whooper swans and greylag geese in the River Foyle flood plain is the role of the OCoW. DfI's consultants told the inquiry that the OCoW would be a member of a professional institute and operate under a code of ethics. They said there is a suitable person in their company. An objector maintained, based on his experience of the A4 scheme, that once contractors are on site, they do whatever they please.

4.255 It is of vital importance, in our view, that the OCoW is free to act objectively. He or she must give priority to the wellbeing of the birds and must be able to withstand any pressure to compromise professional standards in order to facilitate speedier construction. We are not convinced that the appointment of an OCoW who was beholden to anyone involved in promoting or constructing the scheme would provide the necessary assurance that the integrity of the SPAs would be preserved.

4.256 If the OCoW were employed by DfI or its consultants or contractors, there would always be a perception that his or her judgments might be subconsciously influenced by that relationship. To put it more bluntly, the OCoW might be seen as a stooge. We consider it essential, to engender confidence that construction would be properly supervised, that the OCoW is appointed and employed by a body independent of DfI. In our view NIEA would be an ideal employing body. Alternatively, a voluntary organisation with relevant expertise could employ the OCoW. Responsibility for reimbursing the expenses incurred by the employer would fall on DfI as scheme promoter.

Recommendation 26

We recommend the Department, should it decide to proceed with Section 1, to ensure that an ornithological clerk of works, appointed, paid and managed by a body independent of the Department, its consultants and its contractors, is in post from October to March inclusive each year throughout the period when site works and/or construction activities are taking place between Chainages 4500 and 10500.

4.257 The RIAAs assign several important responsibilities to the OCoW – overseeing trial breaking out and piling; monitoring the daily distribution and behaviour of whooper

swans and greylag geese; and determining whether the swans and geese are showing signs of detrimental disturbance, in which case works would be suspended.

4.258 In our opinion, the OCoW must not be fettered in any way when carrying out these duties. To be meaningful, the watching brief would have to extend over the entire bird season. The OCoW, as well as being called in to observe any heavy work, would need to be facilitated to conduct unannounced inspections at any time. The OCoW must be free to determine at his or her own discretion how to go about the work and in particular:

- when and from which vantage points to view construction activities of all kinds and assess their consequences for the swans and geese;
- how to monitor the daily distribution and behaviour of swans and geese and in which places within the River Foyle flood plain the monitoring should take place;
- what constitutes detrimental disturbance to whooper swan or greylag goose as a species; and
- whether construction works should be suspended, and if so which activities should be required to cease and for what duration, be it temporary or for the remainder of the bird season.

4.259 The outline CEMP requires the contractors to maintain an environmental risk register, having regard to legal requirements, environmental commitments and the potential for aspects of works to cause significant environmental impact. It also provides for a multi-agency body to address issues and incidents that arise during construction. Membership would include NIEA, the Loughs Agency, DfI Rivers and the OCoW. Quarterly meetings would be organised to discuss significant issues, including the findings of audits, reports, inspections and responses.

4.260 We consider that it would be necessary for all important communications between the OCoW and the contractors to be conducted in a formal, fully documented manner and for adverse monitoring results and suspension-of-work decisions to be entered in the risk register and reported to the multi-agency body. It seems to us that the quarterly meetings could be a forum for discussion of disagreements between the contractors and the OCoW, should any arise.

Recommendation 27

We recommend the Department, should it decide to proceed with Section 1, to ensure that:

(a) the ornithological clerk of works will receive the full co-operation of its officials and contractors in the exercise of his or her duties;

(b) the ornithological clerk of works will have unfettered authority to require any site works or construction activities being carried on between Chainages 4500 and 10500 to cease immediately and for whatever duration he or she may determine, if in his or her opinion they are likely to cause disturbance to whooper swan or greylag goose as selection features of the Special Protection Areas; and

(c) all reports, alerts and instructions received from the ornithological clerk of works are entered in the environmental risk register maintained by the contractors and are drawn to the attention of the multi-agency body.

In-combination effects

4.261 The RIAAs consider the potential for likely significant effects and adverse impacts on site integrity in combination with those associated with three proposals for medium-scale residential development at Magheramason. On analysis, the RIAAs do not anticipate that any of these projects would give rise to in-combination effects.

Conclusion on the RIAAs

4.262 Provided all the mitigation measures in the RIAAs, as modified by Recommendations 25 to 27, are properly implemented, and provided those recommendations are followed, we are satisfied beyond reasonable scientific doubt that the scheme would not adversely affect the integrity of any of the SPAs.

Ramsar Sites

Lough Foyle

4.263 The Lough Foyle Ramsar Site comprises the eastern shore of the lough from Magilligan to Greysteel. It is co-terminous with the Lough Foyle (Northern Ireland) SPA and is about 2,204 hectares in size. According to the RIAA for the Ramsar Site, the proposed road would be about 10 kilometres to the south of the site.

4.264 According to the RIAA, Lough Foyle qualifies as a Ramsar site because it is a particularly good representative example of a wetland complex. It supports an appreciable assemblage of rare, vulnerable or endangered species. Notable fish species have been recorded in the estuary and the lower reaches of some of its tributary rivers. Important populations of Atlantic salmon migrate through the system to and from their spawning grounds. It supports a diverse assemblage of wintering waterfowl. It hosts birds of international importance, including greylag geese and whooper swans.

4.265 At the screening stage, the RIAA finds that the scheme could possibly have a significant effect on overwintering whooper swans and greylag geese through loss of feeding and foraging habitat on functionally linked land, and through disturbance and displacement; and on anadromous migratory fish through loss, damage and/or deterioration of supporting freshwater habitat, including through fragmentation and pollution and reduction in water quality, and through disturbance.

4.266 These matters are considered in detail at the second stage of assessment. The reasoning presented in respect of whooper swan and greylag goose is almost identical to that presented in the RIAA for the Lough Foyle (Northern Ireland) SPA. The reasoning presented in respect of anadromous migratory fish (a category which includes Atlantic salmon) appears, with some re-ordering of paragraphs and minor changes of wording, in the RIAA for the River Foyle and Tributaries SAC. The RIAA concludes that with the application of appropriate mitigation measures in which there is a high degree of confidence, the scheme would not have an adverse effect on the integrity of the Lough Foyle Ramsar Site either alone or in combination with other plans or projects.

4.267 No representations were made about this RIAA and it was not discussed at the inquiry. The conclusions we set out above in respect of Atlantic salmon, whooper swan and greylag goose apply. Provided all the mitigation measures in the RIAA, as modified by Recommendations 20 and 25 to 27, are properly implemented, and provided those recommendations are followed, we are satisfied beyond reasonable scientific doubt that the scheme would not adversely affect the integrity of the Lough Foyle Ramsar Site.

Lough Neagh and Lough Beg

4.268 The Lough Neagh and Lough Beg Ramsar Site includes Portmore Lough and lands adjoining the loughs. It is about 50,166 hectares in size. According to the RIAA, the proposed road would be about 26 kilometres to the south west of the Ramsar Site and the River Foyle flood plain is located over 60 kilometres from the site.

4.269 According to the RIAA, the site qualifies as a Ramsar site because it is a particularly good representative example of natural or near-natural wetlands. Among other things, it hosts birds of international importance, including whooper swan.

4.270 At the screening stage, the RIAA finds that the scheme could possibly have a significant effect on overwintering whooper swans and greylag geese through loss of feeding and foraging habitat on functionally linked land, and disturbance and displacement (even though greylag geese are not mentioned as a selection feature of the site).

4.271 These matters are considered in detail at the second stage of assessment. The reasoning presented in respect of whooper swan and greylag goose is almost identical to that presented in the RIAA for the Lough Neagh and Lough Beg SPA. The RIAA concludes that with the application of appropriate mitigation measures in which there is a high degree of confidence, the scheme would not have an adverse effect on the integrity of the Lough Neagh and Lough Beg Ramsar Site either alone or in combination with other plans or projects.

4.272 No representations were made about this RIAA and it was not discussed at the inquiry. The conclusions we set out above in respect of whooper swan and greylag goose apply. Provided all the mitigation measures in the RIAA, as modified by Recommendations 25 to 27, are properly implemented, and provided those recommendations are followed, we are satisfied beyond reasonable scientific doubt that the scheme would not adversely affect the integrity of the Lough Neagh and Lough Beg Ramsar Site.

5.0 PROPOSED SUPPLEMENTARY VESTING ORDER

5.1 The proposed supplementary Vesting Order gives notice of DfI's intention to acquire by compulsion 33 extra parcels of land – 16 for additional flood compensation areas and 17 for mitigation of nitrogen pollution at Tully Bog Special Area of Conservation (SAC). Eighteen landowners would be affected by the additional vesting.

5.2 In assessing the objections to the supplementary Vesting Order, we do not revisit the question, considered elsewhere in this report, of whether the scheme and associated mitigation measures are justified. The test to be applied is whether, in the event the scheme proceeds, there is a compelling case in the public interest justifying compulsory acquisition of the lands in question – see *Alternative A5 Alliance's Application* [2013] NIQB 30, Paragraphs [181] and [183].

5.3 In its Human Rights Act impact assessment (HRAIA), DfI propounded a more precise and onerous test – that the land proposed to be acquired is limited to that essential to facilitate the most economical engineering solution for construction of the new road and the mitigation of its adverse effects. Its Counsel explained that irrespective of how the test is formulated, vesting is an interference with property rights, so it has to be proportionate.

5.4 We are of the view that the compelling case test is well established in law. The most economical engineering test, put forward in the HRAIA, is stricter because there could still be a compelling case for a scheme that was not the most economical but had features designed, for example, to provide a better environmental outcome.

Objections to the vesting of lands for flood compensation areas

5.5 The Ulster Farmers' Union (UFU) made representations to the inquiry on behalf of members who would lose land to the scheme. While the UFU opposed the vesting of additional land for flood compensation, DfI noted that they did not suggest any alternative. A DfI witness stated that only vesting the land would give the level of certainty required for efficient implementation of the scheme. Any alternative like the granting of easements to DfI to allow it to carry out works would not work, as one person who failed to agree could prevent the delivery of the whole project. DfI did indicate that it could return the land back to the original owners after it had completed the engineering works if it was not needed by DfI in the future.

5.6 Works on land vested for flood compensation would usually involve re-profiling the land downwards so that it could act as compensatory storage during flood events to replace areas of the floodplain through which the road is built. In some cases, existing river channels would be widened into adjoining fields along the riparian boundary. A DfI witness stated that these works could be done quickly and there would be no reason to hang onto the land afterwards, so it could be transferred back to the original owners. He could not put an estimated timescale on this as negotiation would be required.

5.7 We asked what legal burdens or restrictions might be imposed on any buy-back purchase or lease arrangement. The witness stated that conditions could include prohibiting the raising of the land again or the planting of trees. These conditions appear reasonable to ensure that the flood storage function of the land is not impaired and would allow the resumption of agricultural use of the land with the proviso that it may be at higher risk of flooding than before.

5.8 One objector alleged that the vesting of Plot 7.03SV would hamper the agricultural use of the rest of the field by machinery due to the loss of a flatter area at the bottom for turning. DfI contended that it would not harm the use of the rest of the field. The area of this field to be vested in order to widen the watercourse is small. We have inspected this field and note that it rises gently from the entrance on Moylagh Road and then falls towards the south east before flattening adjacent to the watercourse. The field is not particularly steep and the steepest section is in the middle of it. There would remain a broad flat area at the bottom of the slope if the vesting order was made. We do not accept the objector's assertion that the loss of a sliver of land along the south-eastern edge of the field would severely hamper his ability to farm the remainder of the field or prevent the use of machinery on the majority of the field. This objection cannot be sustained.

5.9 Where DfI proposes to vest land under Article 113 of the Roads Order, it must do so in accordance with Schedule 6 to the Local Government Act (Northern Ireland) 1972. This requires that notice is served on every person appearing to have an estate in the land. The Loughs Agency, in its consultation response, referred to fishing rights in the River Derg and Fairy Water which could be affected by vesting. The waters and riverbed are owned by various landowners and leased to various angling clubs. We asked whether the proposed vesting order would affect fishing rights and the ownership of the riverbed at these locations. We were told that the order would encompass all ownership rights and DfI stated that to the best of its knowledge it had notified everyone with an estate in the land about the draft vesting order, including those who hold fishing rights.

5.10 We asked whether there was a compelling case in the public interest to acquire these riverine areas by compulsion. A witness explained that they are part of the landowner's folio and if not included, would leave small slivers effectively landlocked. We are satisfied with this explanation for including riverine areas in the vesting order. It would bring these sections of the riverbed into the ownership of DfI which would then have to decide on future fishing rights. A relatively small area of the River Derg would be affected. As the boundary of the proposed supplementary vesting area at Tully Bog runs for some distance along Fairy Water, there is potentially a greater impact on fishing rights at this location. DfI should ensure that all such rights are identified and taken account of before the order is confirmed.

5.11 The UFU further argued that equality impact assessments (EQIAs) for each farm should be completed. DfI considered that EQIA was not appropriate at individual farm level. Counsel for DfI told the inquiry that EQIA is undertaken to assess potential adverse effects on protected classes of people set out in Section 75 of the Northern Ireland Act 1998. The A5 project is a single action of the DfI and was assessed for EQIA and screened out in 2016. In the absence of evidence that the project would have a disproportionate effect on one of the protected classes identified in Section 75, we do not think further EQIA is required. As EQIA is for government policies or programmes, it would not be an appropriate tool for assessing the impact on individual farms.

5.12 In the event that DfI decides to proceed with the scheme, in whole or in part, we are satisfied that there is a compelling case in the public interest justifying the proposed compulsory acquisition of lands for flood compensation areas, in so far as those areas are related to parts of the scheme being authorised.

Recommendation 28

We recommend the Department to use its best endeavours to return lands vested for flood compensation to their current owners at the earliest opportunity once all works necessary to create flood compensation areas have been completed.

Objections to the vesting of lands adjacent to Tully Bog

5.13 The largest area of supplementary vesting would be adjacent to Tully Bog. As set out in Chapter 4 of this report, a key element of the mitigation proposed to reduce the quantities of ammonia (NH_3) and nitrogen deposition experienced by the bog is the removal of NH_3-contributing agricultural practices from land surrounding the bog in perpetuity. A ring of land surrounding the whole bog would be vested to create a buffer zone where no agricultural practice which emits NH_3, such as slurry spreading and application of fertilisers, would be permitted.

5.14 The UFU specifically opposed the vesting of additional lands for environmental mitigation. Agricultural land is finite and has a pivotal role in food production. The forced removal or restriction of agricultural activity on farmland to mitigate against infrastructure projects and the environmental footprint of wider society is not a burden Northern Ireland farm families should have to bear on their own. The UFU said it is difficult for landowners to come to terms with land being vested that would not become part of the road. DfI acknowledged that some of the mitigation measures would take agricultural land, but they are essential to reduce the effects of the proposed scheme. No land would be taken over and above that required to mitigate these effects.

5.15 In a written representation, Ulster Wildlife asked how the proposed buffer zone would be managed. It wished to see the local landowners managing those lands in a less intensive way and being rewarded for such management. It suggested that there are options to significantly reduce nitrogen emissions while maintaining agricultural practices and local livelihoods. These could include reductions or cessation of fertiliser use, movement towards permanent pasture with no inputs in the form of supplementary nutrients or slurry and extensive low-density grazing. In its response, DfI said it was consulting with landowners to seek the most appropriate long-term management for the mitigation land but that would not involve commercial-scale livestock in the short to medium term.

5.16 We asked whether covenant agreements with landowners restricting the use of the land would enable vesting to be avoided. A DfI submission to the Minister dated March 2022, obtained by the AA5A, indicated that such agreements may be possible as an alternative to vesting, subject to legal approval.

5.17 At the inquiry, DfI's representatives expressed some openness to considering alternatives, but stated that these must be as efficient as vesting so that one landowner who failed to agree could not prevent the delivery of the project. They noted that there are a range of management options after vesting including leasing the land back to the original landowners with conditions preventing nitrogen inputs. If agreements could be reached with all relevant landowners, it may be possible to avoid vesting. Officials have already met with the main landowner who would be affected and he is keen to have some input to future management of the land. They viewed this as a good thing provided DfI retains control in order to prevent nitrogen enrichment of the bog.

5.18 We consider that farmers have managed the land for many generations and consistently demonstrate ability to adapt to changes in agricultural practices and environmental requirements. This appears to be recognised by the Ulster Wildlife representation which is significant coming as it does from an environmental group. Post-Brexit, the UK Government's approach to farm support is moving away from direct subsidy payments to paying farmers for providing public goods such as environmental improvements or reductions in pollution. Although farm support in Northern Ireland through the Basic Payment Scheme currently remains area based, the former chair of Stormont's Agriculture, Environment and Rural Affairs Committee told the inquiry that a new programme of farm support from 2024 is being developed by DAERA and that it will include payments for reducing emissions and other public goods. It therefore appears likely that Northern Ireland will follow the new model being rolled out by the UK Government.

5.19 If the landowners around Tully Bog could enter into agreements to deliver the mitigation measures to limit nitrogen inputs and be rewarded for doing so through the new subsidy schemes being developed, it is possible that vesting of their land could be avoided. We believe local farmers would be best placed to deliver the long-term management of the land to help improve the bog's condition. DfI should investigate whether such arrangements can be made before confirming the Vesting Order. However, we accept that if agreements cannot be reached with all landowners, vesting may be necessary.

5.20 We are recommending DfI to give further consideration to the AA for Tully Bog SAC. This would entail a review of the need for, and adequacy of, the mitigation measures that have been proposed. In the event that DfI decides to proceed with Section 2 of the scheme following the route in the vicinity of Tully Bog SAC which is presented in the updated ES, and the AA demonstrates a need to remove NH_3-contributing agricultural practices from lands adjacent to the bog, and management agreements cannot be reached with the relevant landowners, then we would accept that there is a compelling case in the public interest justifying the compulsory acquisition of such lands.

Recommendation 29

We recommend the Department:

(a) to vest the lands adjacent to Tully Bog if, and only to the extent that, its appropriate assessment for the Special Area of Conservation confirms the need to remove agricultural practices that contribute to ammonia and nitrogen deposition from land surrounding the bog;

(b) before confirming the Vesting Order to investigate whether management agreements can be reached with all the landowners as an alternative to vesting; and

(c) if vesting is ultimately required for any of these lands, to lease them back to their current owners, or to other local farmers, with conditions to prevent an increase in ammonia or nitrogen deposition.

Objection to the absence of proposals to vest land for park-and-ride facilities

5.21 Translink was consulted on the ESA and recorded disappointment that the exercise to vest additional land did not take the opportunity to make provision for future park-and-ride sites along the route. In their experience, where park-and-ride provision has been progressed in isolation to a strategic road improvement scheme rather than during the design of the road and acquisition of the land, it has led to sub-optimal site selection and inefficient access arrangements. They considered that potential park and ride sites should be vested along with the land for the road to future proof the scheme.

5.22 DfI replied that it has had extensive consultations with Translink over the years in relation to the proposed A5 scheme and priority locations for new park-and-ride sites have been identified along the proposed route. These will be considered further going forward in line with the phased construction of the scheme. The junction arrangements at these locations are such that efficient access provision should not be an issue.

5.23 We consider that the supplementary vesting order arises primarily from environmental mitigations necessary as a result of updates to the environmental statement and the habitats reports. We are not persuaded that the future delivery of suitable park-and-ride facilities would be compromised by the failure to include the land required for them in the supplementary vesting order. We agree with DfI that this matter can be considered as and when the scheme is constructed.

6.0 CONCLUSIONS

6.1 We are painfully aware that the A5 scheme has been trapped for more than a decade in a cycle of information gathering, public consultation and abortive decision making. The repeated delays were due primarily to a series of unforced errors by the Department – the failure to carry out habitats assessment; the purported exercise by civil servants of powers they did not at the time possess; and the conscious disregard of the Department's own technical guidance on flood risk. Our report and recommendations are intended to help the Department to avoid further pitfalls.

6.2 In our opinion, the Alternative A5 Alliance was entitled to seek judicial review of the Department's actions. Judicial review is an important restraint in a democratic society on unlawful behaviour by public authorities. The AA5A was also entitled to object to the scheme on environmental grounds and in defence of property rights. We have given careful consideration to its representations alongside the conflicting views also expressed, and have sought to reach fair and balanced conclusions.

6.3 We were aware through reading the representations in advance of the re-opening of the inquiry that there were strongly held opinions for and against the scheme. We wanted debate to take place in a calm and respectful atmosphere. We therefore asked everyone to focus on presenting a positive message and to avoid extravagant language and personal criticism of other participants. Our request was for the most part heeded. However, unfortunately, a small minority of the numerous supporters of the scheme persisted in demanding, often angrily, that members of the AA5A be identified. Intentionally or otherwise, this may have created apprehension and it was noticeable that far fewer objectors spoke at the inquiry in 2023 compared with 2020.

6.4 The Enough is Enough campaign group provided a perspective on the scheme that was not available in 2020. Its evidence corroborated that of the Department and in many respects strengthened it. Understandably some people were frustrated by the detailed examination of environmental issues (which our terms of reference required us to conduct), when to their minds the issue of overwhelming importance was road safety. It would be all too easy to treat the task of adjudicating on a major infrastructural project as a purely technical exercise. However, the contributions made by supporters of the scheme, and by objectors too, served to emphasise that such projects, or the absence thereof, have real human consequences.

6.5 We have concluded that Section 1 of the scheme (Newbuildings to south of Strabane) as currently designed would have an unacceptable effect on flood risk in the Foyle river system. Hundreds of properties in Lifford and adjacent parts of County Donegal would be among those adversely affected. We have noted that Phase 3 (Ballygawley to south of Aughnacloy) is incomplete and premature pending publication of a detailed design for the proposed new N2 Clontibret to the Border road in County Monaghan and agreement on a tie-in point. It seems to us that solutions to both these problems may be found through closer engagement with authorities in the Republic of Ireland.

6.6 We have found that all parts of the scheme other than Phase 3 would have large beneficial effects on road safety, journey times and economic competitiveness, and significant beneficial effects on the balancing of regional infrastructure provision. By facilitating a new crossing at the Tyrone/Donegal border, the scheme would have a significant beneficial effect on North/South links.

6.7 We have also found that the scheme would have large adverse effects on the landscape, on climate and on certain local communities; and significant adverse effects on the cultural heritage, on flora and fauna, on human beings by reason of noise and vibration, and on residential property, agricultural land and farm holdings. Impacts on climate are of particular importance as there is a statutory requirement to meet emissions targets.

6.8 We have advised the Department to review the methodology it used when assessing the implications of the scheme for Tully Bog Special Area of Conservation, to the north of Omagh, and, unless it can ascertain that there would be no adverse effect on the integrity of that protected site, to investigate alternative routes further away.

6.9 The scheme is dependent upon large-scale compulsory acquisition of land and property. It would involve interferences with and limitations on rights and freedoms guaranteed under the European Convention on Human Rights, namely the right to respect for private and family life and the right to the peaceful enjoyment of possessions. These are, however, qualified rights and interferences and limitations may be justifiable provided it is shown that there is a compelling case in the public interest.

6.10 Alternatives to the proposed scheme were thoroughly examined at the inquiry and anyone who so desired had an opportunity to put forward ideas. We have concluded that neither of the alternatives studied by the Department would provide an adequate response to the needs of the Western Transport Corridor. We have found that options involving town bypasses and selected improvements to the existing A5, the alternative favoured by the AA5A, would unacceptably compromise the scheme objectives.

6.11 For the specific reasons we have given, we are of the opinion that the current proposals for Section 1 and Section 3, Phase 3 should not be proceeded with. In regard to the remainder of the scheme – Section 2 and Section 3, Phase 1b – we have weighed the substantial benefits offered by the proposed off-line dual carriageway against the adverse environmental effects and the interferences with and limitations on human rights. We are satisfied that the balance is decisively in favour of proceeding with those parts of the scheme, amounting to nearly two thirds of its length. There are, however, two caveats. The first is that the Department must show that the scheme, if proceeded with, will not prevent the mandatory greenhouse gas emissions targets being met. The second is that a route adjustment may be needed in the vicinity of Tully Bog, depending on the outcome of the review of the habitats assessment.

Recommendation 30

We recommend the Department, provided the statutory greenhouse gas emissions targets can still be met:

(a) to proceed with Section 3, Phase 1b between the proposed Junction 15 near Ballygawley and the proposed Junction 13 to the south of Omagh (including the proposed westward extension of the existing A4 dual carriageway); and

(b) to proceed with Section 2 between the proposed Junction 13 to the south of Omagh and the proposed Junction 8 to the south of Strabane, so long as it is satisfied beyond reasonable scientific doubt that the integrity of Tully Bog Special Area of Conservation would not be adversely affected.

APPEARANCES IN 2020

For the Department for Infrastructure
Mr P McLaughlin QC, instructed by Departmental Solicitor's Office
Mr S Keenan, Project Sponsor, DfI Roads
Mr M McCrisken, DfI Strategic Planning
Mr J McGrath, DfI Deputy Secretary
Mr T Reid, DfI Public Transport
Mr P Edwards, Project Director, WSP, consultants
Mr S Bone, WSP
Mr S Bringloe, WSP
Ms O Fitzpatrick, WSP
Mr G Gopalakrishnan, WSP
Mr A Hackett, WSP
Ms S Hale, WSP
Mr S Ireland, WSP
Mr C Middleton, WSP
Mr W Neale, WSP
Mr P Nicholson, WSP
Mr D Pawson, WSP
Mr J Peet, WSP
Mr J Powlson, WSP

For the Alternative A5 Alliance
Mr C Fegan, Barrister, Francis Taylor Building, instructed by C & J Black, Solicitors

For An Taisce –The National Trust for Ireland
Mr I Lumley, Advocacy Officer

Individual Participants
Mr A Armstrong
Mrs M Armstrong
Ms Ó Begley MP
Mr R Bruce
Mr D Brush
Mr V Brush
Mrs A Clarke
Mr D Clarke
Mrs J Coote
Mr W Coote
Ms K Christie
Mr D Donnell
Mr J Dunbar
Mr W Hutchinson, Portadown and Armagh Railway Society
Mr M Lake
Mrs B Lowry
Mr P Lusby
Mr J McBride
Mr P McCarron

Mr C McClean
Mr A McCrory
Mr D McCrossan MLA
Mrs F McKean
Mr R McKean
Mr J Mitchell
Mrs K Mitchell
Ms C Porter
Mr J Smyth
Mrs L Smyth

APPEARANCES IN 2023

For the Department for Infrastructure
Mr P McLaughlin KC, instructed by Departmental Solicitor's Office
Mr M Neeson BL
Mr S Keenan, DfI Roads, Project Sponsor
Mr H Gallagher, DfI Roads, Network Development Manager
Mr C Hutchinson, DfI Director of Network Development and Planning
Mr J Redmond, DfI Head of Transport Planning and Modelling
Ms J Robinson, DfI Director of Public Transport Policy Division
Mr C Woods, DfI Deputy Secretary
Mr E Daly, DfI Rivers
Mr N Jenkinson, DfI Rivers
Mr G Breen, WSP
Mr S Bone, WSP
Dr R Bullman, WSP
Mr D Clee, WSP
Mr M Devenney, WSP
Mr P Edwards, WSP, technical adviser
Mr F Geraghty, WSP
Mr G Gopalakrishnan, WSP
Mr S Ireland, WSP
Mr T Jolley, WSP
Mr R Lyng, WSP
Mr P Nicholson, WSP
Ms A Nicolaou, WSP
Mr K Paton, WSP
Mr J Peet, WSP
Mr J Powlson, WSP
Mr A Saunders, WSP
Dr B Tuckett-Jones, WSP
Mr G Cooke, Burnhead Rural Services
Mr E Scullion, Chandler KBS

For the Alternative A5 Alliance
Mr C Fegan BL, instructed by Crawford Lockhart Black Solicitors
Mr P Lulham, DHA Planning

For the Enough is Enough Campaign
Mr P Nugent BL, instructed by Conor Sally Solicitors
Mr C Sally, Solicitor
Mr N McKenna, Chairman
Mr D Harvey
Mr B Hurl

For the Department of Agriculture, Environment and Rural Affairs

Mr J Early, Climate Change & Green Growth Policy Division
Ms S Clarke, Northern Ireland Environment Agency
Ms C Ellison, Northern Ireland Environment Agency
Mr K Finegan, Northern Ireland Environment Agency
Mr A McIntosh, Northern Ireland Environment Agency
Ms H McKeown, Northern Ireland Environment Agency
Ms A O'Reilly, Northern Ireland Environment Agency
Mr R Weyl, Northern Ireland Environment Agency

For the Department for Communities
Mr A Gault, Historic Environment Division

For the Loughs Agency
Mr S Cullinan
Ms R McLaughlin
Dr S McLean

For Derry City and Strabane District Council
Mr K O'Connor, Head of Business

For Fermanagh and Omagh District Council
Councillor B McElduff, Chairman
Ms S Curry, Planning Officer

For Donegal County Council
Mr J McLaughlin, Chief Executive
Mr G Martin, Director of Economic Development
Ms A McHugh, National Roads Office

For Monaghan County Council
Ms P Monahan, Chief Executive
Mr G McMahon, Roads Department

Individual Participants
Ms Ó Begley MP
Mr S Bell
Mr C Broderick, Omagh Chamber of Commerce
Mr R Bruce
Mr D Brush
Ms K Christie
Mr L Christie
Mrs K Corrigan
Mr W Crumley
Mr C Cunningham, Strathroy Dairy
Mr M Dickson, Terex Corporation
Mr W Diver, BAM Contractors

Mr P Doherty
Mr D Donnell
Ms T Finlay
Mr C French
Mr C Gildernew MLA
Mr I Hamilton
Mr J Hunter
Mr S Kee
Mr M Kerr
Mrs B Lowry
Mr S Marlow
Mr F Martin
Mr D McAleer MLA
Ms S McAnespy, Terex Corporation, Fianna Fáil and Engineers Ireland
Mr G McCaffrey, Eskra Community Association
Mr P McCarron
Ms C McCartan, South West Regional College
Mr A McCrory, Adman Group
Mr D McCrossan MLA
Mr N McCullough, Manfreight Limited
Mr F McDonnell, Barrack Hill Quarries and Dungannon Plant Sales
Mr E McGrath
Ms McKane
Mrs F McKean
Mr R McKean
Mr K McLaughan
Ms D Mullan, Life After
Mr C Murphy MLA
Ms N Murray
Ms M O'Brien
Mr A O'Neill
Ms A O'Neill
Ms G O'Neill
Mr F Rafferty
Mr G Roberts, Retail NI
Mr A Scullin, LCC Group
Mr E Thompson
Ms B Ward
Mr F Ward

Planning Appeals Commission
4th Floor
92 Ann Street
BELFAST
BT1 1HH

Telephone: (028) 9024 4710
Website: www.pacni.gov.uk
E-mail: info@pacni.gov.uk

Planning Appeals Commission