

18. Cumulative Effects Assessment

18.1 Introduction

- 18.1.1 The requirement for Cumulative Effects Assessment (CEA) is set out in Article 4(3) and Article 5(1) of the *European Commission (EC) Directive 2014/52/EU*¹ and implemented into UK law through the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017*² (hereafter referred to as the 'EIA Regulations').
- 18.1.2 A range of public sector and industry led guidance is available on CEA, however, at present there is no single agreed industry standard method. Consequently, the approach to CEA varies between applications.
- 18.1.3 The approach to CEA that has been taken for this Environmental Statement (ES) chapter is to distinguish between inter-project effects and inter-related effects (refer to **Chapter 4: Approach to the Environmental Statement**) as follows:
- **Inter-project effects** - for each topic considered in this ES, an assessment is undertaken of how the environmental effects resulting from the Proposed Development could combine with the same topic-related effects generated by other proposed or committed developments to affect a common receptor. For example, noise generated by the construction of the Proposed Development and that generated from another construction site nearby could affect the same residential property receptor; and
 - **Inter-related effects** - this involves assessing whether any of the individual environmental topic effects resulting from the Proposed Development, which are not significant in their own right, could combine to create effects that are significant. For example, noise generated by the operation of the Proposed Development and views of it from nearby residential properties may individually not result in significant effects, though combined, they could result in a significant effect on residential amenity.
- 18.1.4 This approach is in accordance with the EIA Regulations² and consistent with the advice contained within the Planning Inspectorate (PINS) Advice Note 17³. Whilst this advice note relates to DCO applications, it is considered applicable and robust for use here.

18.2 Limitations of this assessment

- 18.2.1 No limitations to this CEA have been identified, though the following assumptions have been made:
- As for the Proposed Development, other proposed or committed developments with overlapping construction programmes will implement mitigation measures during construction (such as through a Construction Environmental Management Plan (CEMP)) to minimise adverse

¹ European Commission (2014). Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, [online]. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32014L0052> [Checked 30/10/2018].

² The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571), [online]. Available at: <http://www.legislation.gov.uk/uk/si/2017/571/contents/made> [Checked 16/03/2018].

³ Planning Inspectorate (2015). Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, [online]. Available at: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwiKh5rR4a3eAhXTQ8AKHcgoDHYQFjAAegQICBAC&url=https%3A%2F%2Finfrastructure.planninginspectorate.gov.uk%2Fwp-content%2Fuploads%2F2015%2F12%2FAdvice-note-17V4.pdf&usq=AOvVaw1Eh27vKuy4maGAcjd6nVCK> [Checked 30/10/2018].

effects, hence reducing the likelihood of significant cumulative effects. This also applies to mitigation measures during operation where relevant; and

- The assessment has been completed based on information relating to other proposed and committed developments which is available in the public domain.

18.3 Assessment methodology: inter-project effects

- 18.3.1 The assessment of inter-project effects has been undertaken in accordance with PINS Advice Note 17³. The starting point for this is to determine the Zones of Influence (ZoIs) from the Proposed Development for each receptor that could be significantly affected under each environmental topic, noting that the availability of information necessary to conduct the CEA partly depends on the prevailing status of other relevant developments.

Stage 1: NSIP ZoI and long list of 'other developments'

- 18.3.2 The search for the long list of 'other developments' was completed using a 15km ZoI as this generally encompassed each topics' specific ZoI. In the case of socio-economics, a much larger search within North Somerset, Bristol, Mendip, Sedgemoor, Bath and North East Somerset and South Gloucestershire was undertaken. However, for this wider search, only 'other developments' that were likely to have a material effect upon the economy or employment was considered for inclusion (defined as those that would provide 1000+ jobs or 1000+ dwellings).
- 18.3.3 The ZoI used as the basis of the standalone assessment for each technical discipline is described within **Section 4** (the 'study area') of each chapter of the ES, though where a cumulative effect specific ZoI was used for the CEA, this is shown in **Table 18.1**.

Table 18.1 Environmental topics CEA Zone of Influence

Environmental Topic	Potential Cumulative Effect	Spatial Zone of Influence
Traffic and Transport	Construction vehicle effects	As noted within the technical chapter
	Increases in vehicles during operational phase	As noted within the technical chapter
Noise	Noise from road traffic	As noted within the technical chapter
	Noise from construction activities	The immediate vicinity of the construction sites
	Noise from aircraft during operation	Approximately 20km to the east, 25km to the west, 4km to the north and 4km to the south of the Bristol Airport runway. This includes the area covered in both the summer daytime and summer night-time contours
Air Quality	Effect of emissions from road traffic	As noted within the technical chapter
	Effect of emissions on new sensitive receptors	Developments within 2km of the site boundary that introduce new receptors
	Construction and operational related air quality effects	Developments likely to have significant emissions within 10km of the site boundary
Landscape and Visual	Effects on landscape and visual receptors to the north	Developments within 5km of the northern extent of the site boundary
	Effects on landscape and visual receptors to	Developments within 10km of the southern extent of the site

Environmental Topic	Potential Cumulative Effect	Spatial Zone of Influence
	the south	boundary
Land Quality	Effects on controlled waters	Developments within 250m of the site boundary
Biodiversity	Effect of noise and air emissions	Developments within 5km of the site boundary
	Effect of potential discharges to groundwater fed watercourses	Developments within 5km of the site boundary
	Changes in land use	Developments within 10km of the site boundary
Surface Water and Flood Risk	Effects on surface water quality	Extent of the following WFD River Waterbody Catchments: <ul style="list-style-type: none"> • Kenn Moor SSSI; • Kenn – source to Kenn Moor SSSI; and • Winford Brook – source to Confluence River Chew.
Groundwater	Effects to groundwater within the Principal Aquifer, groundwater abstractions and surface water fed by groundwater baseflow	Extent of the Principal Aquifer – i.e. developments within 4km of the site boundary
Historic Environment	Effects on designated monuments	Developments within 2km of the site boundary
Socio-Economics	Economic effects in terms of GVA and jobs	Developments likely to have a material effect on the economy within: City of Bristol; North Somerset; Mendip; Sedgemoor; South Gloucestershire; and Bath and North East Somerset)
Human Health	Effects on particular health sensitive receptors including people with existing poor health	Developments with particularly sensitive receptors within 10km
Greenhouse Gases	N/A	N/A

18.3.4

PINS Advice Note 17³ states that in order to ensure that the CEA is proportionate, it may be appropriate for applicants to apply threshold criteria to assist in deciding whether to include or exclude 'other development' that falls within the Proposed Development's ZoI from further assessment. Whilst this advice note is for DCO applications, it is considered applicable and a robust approach for use here. However, as the Proposed Development is proceeding under the *Town and Country Planning Act 1990*⁴, in some cases the approach has been adapted to be more relevant for this application. For the purposes of this CEA for the Proposed Development, 'other development' has been defined as 'major development' as defined in the *Town and Country Planning (Development Management Procedure) (England) Order 2015*⁵ Part 1, Article 2(1) – that is:

- “(a) the winning and working of minerals or the use of land for mineral-working deposits;
 (b) waste development;
 (c) the provision of dwellinghouses where —
 (i) the number of dwellinghouses to be provided is 10 or more; or

⁴ The Town and Country Planning Act 1990, [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> (checked 06/12/2018).

⁵ The Town and Country Planning (Development Management Procedure) (England) Order 2015, [online]. Available at <http://www.legislation.gov.uk/uksi/2015/595/contents/made> [Checked August 2018].

- (ii) *the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);*
- (d) *the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or*
- (e) *development carried out on a site having an area of 1 hectare or more. "*

18.3.5

PINS guidance³ separates the search for 'other developments' in Stage 1 into three tiers reflecting the likely degree of certainty attached to each development, with Tier 1 being the most certain and Tier 3 the least certain. Developments under each of the three tiers, and if the tier has been adapted for this assessment are as follows:

- Tier 1:
 - ▶ Under construction (though in the case of the 10 mppa developments only those where construction was not started as of November 2018 to align with the methodology in **Chapter 4**);
 - ▶ Permitted application(s), whether under the *Planning Act 2008*⁶ or other regimes, but not yet implemented;
 - ▶ Submitted applications(s) whether under the PA2008 or other regimes but not yet determined;
- Tier 2:
 - ▶ Projects on the Planning Inspectorate's Programme of Projects (including the planning portals of local authorities within the ZoI for this assessment) where a scoping report has been submitted;
- Tier 3:
 - ▶ Projects on the Planning Inspectorate's Programme of Projects (including the planning portals of local authorities within the ZoI for this assessment) where a scoping report has not been submitted;
 - ▶ Plans and projects identified in the relevant Development Plan (and emerging Development Plans – with increasing weight being given to these as they move closer to adoption) recognising that much information on any relevant proposals will be limited; and
 - ▶ Plans and projects identified in other plans and programmes (as appropriate) which set the framework for future development consents or approvals, where such development is reasonably likely to come forward.

18.3.6

The long list of 'other developments' identified from Stage 1 of the assessment process is provided in **Appendix 18A**.

Stage 2: short list of 'other developments'

18.3.7

The long list of 'other developments' (**Appendix 18A**) was refined into a shortlist (refer to **Appendix 18B**) using the following method:

- Including all developments within 5km of the Proposed Development;
- For the 'other developments' beyond 5km from the Proposed Development, a further exclusion criteria of 'the number of dwelling houses to be provided is 50 or more' has been applied; and

⁶ The Planning Act 2008, [online]. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents> [Checked 27/11/2018].

- For environmental topics that have a ZoI which exceeds 5km, professional judgement is used to determine whether there is likely to be a significant cumulative effect and subsequently if developments beyond this distance should be included. Where necessary, appropriate justification is provided to explain inclusion or exclusion from the assessment.

- 18.3.8 Developments within 5km and those exceeding 5km that at least one topic has judged may have a cumulative effect with the Proposed Development form the shortlist of 'other developments'. CEA was then assessed for the relevant topics where the 'other development' is within the ZoI for that topic (refer to **Table 18.1**).
- 18.3.9 North Somerset Council (NSC) were consulted on this shortlist in September 2018. In accordance with advice from NSC following this consultation, five relevant strategic development sites in the emerging *West of England Joint Spatial Plan*⁷ were added to the shortlist.
- 18.3.10 In addition to the shortlist of 'other developments', a number of developments under the granted planning permission for the expansion of Bristol Airport to accommodate 10 mppa needed to be considered. This is because some of the components would not be constructed by the time construction of the Proposed Development would start. The components of the 10 mppa development that have been considered in the inter-project assessment where appropriate are listed in **Table 18.2** as those 'Not started (as at Nov 2018)'. Those listed as 'Under Construction (as at Nov 2018)' are not included within this CEA as they are considered under the 'future baseline' (refer to **Chapter 4: Approach to Preparing the Environmental Statement**).

Table 18.2 Split of 10 mppa developments that are considered in the inter-project cumulative assessment

10 mppa project component– general description	Individual elements	Completed	Under construction (as at Nov 2018)	Not started (as at Nov 2018)	No longer being implemented
East and west extensions to terminal building	East extension phase 1	✓			
	East extension phase 2 (<i>south extension being taken forward as part of the Proposed Development</i>) *				✓
	West extension phase 1			✓	
	West extension phase 2 (<i>now being taken forward as part of the Proposed Development with a revised design</i>)				
Erection of two-storey walkway providing access and associated facilities to two-storey pier serving aircraft stands	<i>Now being taken forward as part of the Proposed Development with a revised design.</i>				
Expansion to aircraft parking areas providing 9 new stands giving 33 stands in total	Nine aircraft stands (partially complete). East apron to also include drainage on land to east.		✓		
Erection of two multi-	Multi-storey car park (now Phase 2) and			✓	

⁷ West of England Joint Spatial Plan (2017). Available at: <https://www.jointplanningwofe.org.uk/consult/ti/JSPPublication/viewContent?contentid=346611> [Checked 30/10/2018].

10 mppa project component– general description	Individual elements	Completed	Under construction (as at Nov 2018)	Not started (as at Nov 2018)	No longer being implemented
storey car-parks (including transport interchange)	interchange Multi-storey car park (now Phase 1a) Multi-storey car park (now Phase 1b)	✓	✓		
A covered pedestrian link bridge				✓	
Erection of three-storey administration building north-west of terminal with associated parking following demolition of existing administration building	Administration building (to be located to the south of the airport) Demolition of existing administration building		✓		
Construction of replacement underground aviation-fuel storage depot and chiller compound comprising 3no 1,200m³ tanks	Fuel storage depot Chiller compound	✓		✓	
Security control-post				✓	
Alterations to runways and taxiways	Phase 1 to be completed in Q4 2018. Phase 2 to be completed post 2021.			✓ ✓	
Re-configure internal access roads and widen access at A38 junction	Internal access roads (partially complete) Access at A38 Junction	✓		✓	
Upgrade north side surface car-park				✓	
Extend Silver Zone car-park to 12,000 car capacity to include staff-parking within an extension outside the airport boundary to south including replacement reception building	Silver Zone Car Park extension (final phase to be completed comprising a small area of parking west of the southern apron) Replacement reception building	✓		✓	
Additional car-parking area to south to include relocation of car-hire, valet service and associated reception building (car rental consolidation centre (CRCC) – revised	Additional car-parking for rental Relocated car-hire Relocated valet service Relocated reception building		✓ ✓ ✓ ✓		

10 mppa project component– general description	Individual elements	Completed	Under construction (as at Nov 2018)	Not started (as at Nov 2018)	No longer being implemented
design being progressed)					
Replace buildings to south of airfield for flying-club and snow-clearing	Replacement flying club building Replacement snow clearing building	✓ ✓			
Erection of 5m high noise-reduction wall (a revised design is being taken forward)			✓		
3m high acoustic fence around extended Western Apron		✓			
12no. 5m high wind-turbines				✓	
Landscaping		✓			

18.3.11

Table 18.3 lists expected, short-term proposals that will be progressed under BAL's permitted development rights (GPDO) and indicates those that are expected to be either completed or under construction at November 2018. Those projects not yet started are also considered as necessary within the CEA. As mentioned in paragraph 18.3.10, this is to align with the methodology in **Chapter 4: Approach to Preparing the Environmental Statement.**

Table 18.3 Proposals to be progressed under BAL's permitted development rights (those 'Not Started' are included in the inter-project assessment)

Proposal	Status (at Nov 2018)
New airline office building and main gate extension	Not started
Reconfiguration of access road (southern area)	Under construction
New administration building with visitor and staff car parking (relocation)	Under construction
First phase of eastern walkway with integrated coaching gates	Not started
Stone Farm car parking (130 spaces) and new bus access	Not started
New perimeter road (central area)	Not started
Radar site car parking	Not started
Strategic sequential radar (SSR) monopole tower	Not started
West walkway coaching gates and associated new bussing pick up road (existing substation to be repositioned).	Not started

18.3.12 The location of the 'other developments' are shown on **Figure 18.1**.

Stage 3: information gathering

- 18.3.13 Following agreement with NSC on the shortlist of 'other developments', a desk study for further information relating to each development was completed. Information collected included, but was not limited to:
- Proposed design and location information; and
 - Environmental assessments that set out baseline data and effects arising from 'other development'.
- 18.3.14 Relevant data was sourced from publicly available information accessible via NSC, Bath and North East Somerset Council (BaNES), Bristol City Council (BCC), South Gloucestershire Council (SGC) and PINS planning websites.
- 18.3.15 In line with PINS Advice Note 17³, the CEA is a proportionate assessment, identifying the likely significant cumulative effects. The criteria for assessing the likely cumulative effects take cognisance of:
- The duration of the effect;
 - The extent of the effect;
 - The type of effect;
 - The frequency of effect;
 - The value and resilience of the receptor affected; and
 - The likely success of incorporated mitigation.

18.4 Assessment of inter-project effects

- 18.4.1 This section provides a CEA for the Proposed Development and the 'other developments' outlined in **Appendix 18B** that are relevant to each particular technical topic and has been undertaken in accordance with the agreed approach outlined in **Section 18.3**.

Traffic and transport

- 18.4.1 The methodology used to determine future traffic flows has been agreed with NSC through the Transport Assessment scoping process and the assessment includes the Proposed Development in combination with relevant committed developments. The traffic and transport assessment outline in **Chapter 6: Traffic and Transport** is based on the methodology and traffic flows presented in the Transport Assessment and in this regard inherently considers cumulative effects. As such there are **no additional cumulative effects** over and above those reported in **Chapter 6: Traffic and Transport**.

Noise and Vibration

- 18.4.2 Consideration has been given as to whether any of the receptors that have been taken forward for assessment in **Chapter 7: Noise and Vibration** are likely to be subject to cumulative effects resulting from noise and vibration generated by 'other developments'.

- 18.4.3 Other than a new passenger train service, the shortlisted 'other developments', are non-industrial and consist of residential, offices or small-scale retail use.
- 18.4.4 The passenger train service is between Portishead and Bristol Temple Meads and would be, at its closest, 9km north-east from Bristol Airport. This is considered outside the ZoI for noise and vibration cumulative effects in combination with the Proposed Development.
- 18.4.5 Noise and vibration effects from the 'other developments' which might result in a cumulative effect would result from their construction and an increase in road traffic noise. The closest of these 'other developments' is 3.1km east of Bristol Airport (#2: 28 dwellings in Cox's Green BS40 5QE) and at this distance, **no significant cumulative construction noise and vibration** is expected (and this is well outside the ZoI for noise and vibration).
- 18.4.6 In terms of the potential increase in road traffic noise as a result of 'other developments', as noted in the section above this is inherently part of the modelled traffic figures and as such is considered within the road traffic noise section of **Chapter 7: Noise and Vibration** and as such no additional cumulative effects are expected here.
- 18.4.7 In summary, the cumulative noise and vibration effects of 'other developments' in combination with the Proposed Development are considered to be **negligible and not significant**.

Air quality

- 18.4.1 Many of the 'other developments' will generate additional road traffic during both construction and operation, which may cause cumulative effects in combination with the Proposed Development. The additional traffic growth from 'other developments' has been accounted for in the modelling of traffic (**Chapter 6: Traffic and Transport**), and thereby considered in the main air quality assessment. No additional cumulative effects are expected.
- 18.4.2 Developments may potentially introduce new receptors, for example new residential properties. However, no new receptors have been identified where the effects of the Proposed Development are likely to be significant in isolation, or where the Proposed Development is likely to contribute materially to a significant cumulative effect.

Landscape and visual

Inter-project cumulative landscape effects upon Mendip Hills AONB

- 18.4.3 **Figure 18.1** shows selected 'other developments' that have the most potential to contribute to cumulative landscape effects upon the Mendip Hills AONB due to their proximity to its boundary. These developments are:
- #73: Outline planning application for a residential development of up to 85 dwellings and associated infrastructure, with all matters reserved for subsequent approval except for access, Land To The South Side Of Greenhill Lane Greenhill Road Sandford; #78: Submission of Reserved matters of (appearance, landscaping, layout and scale) for the erection of up to 118 no. dwellings including 35 no. affordable housing units (30%), along with the provision of informal public open space, car parking, sports pitch, vehicular access from the A368 and associated works pursuant to Outline Planning Permission 15/P/0583/O. All other details to be reserved for subsequent approval), Land To The North-West Of Sandford Primary Off Greenhill Road Winscombe BS25 5QB J43; and
 - #SD4: Strategic Development Site - New Garden Village - 2675 homes & community facilities, Churchill, BS40 5EE.

- 18.4.4 All the components of the 10 million passengers per annum (mppa) planning permission and those progressed under GDPO listed in **Table 18.2** and **Table 18.3** that are listed as not started by November 2018 are considered in the landscape inter-project assessment.
- 18.4.1 The location of the three residential developments (references #73, #78 and #SD4) close to a section of the northern boundary of Mendip Hills AONB results in the potential for these developments to have effects upon the Mendip Hills AONB's 12 special qualities as listed in paragraph 9.5.38. Any such effects would be sustained principally via a visual effects pathway i.e. one or more of the three residential developments could be visible from a small number of locations within the AONB, principally the closest parts around Sandford Hill, Lyncombe Hill and Dolebury Warren. Site visits demonstrate that these locations are well wooded reducing the availability of views towards these three residential development sites as well as the more distant Proposed Development.
- 18.4.2 The landscape assessment of the effects of the Proposed Development upon the 12 special qualities is set out in **Table 9F.1** in **Appendix 9F**. The landscape assessment concluded that the Proposed Development has the potential to have small-scale and incremental adverse effects upon three of the 12 special qualities which will result in landscape effects that will be **minor and not significant**.
- 18.4.3 A review has been undertaken of these three special qualities: outward views; dark skies and tranquillity; and landscape enjoyment by large numbers of people that benefit from tranquillity. This review concludes that there is no potential for interaction of any adverse effects from these three residential developments to result in significant adverse cumulative effects upon one or more of the AONB's special qualities over and above those that may be generated by one or more of the three residential developments in the absence of the Proposed Development. This conclusion is due to separation distance between the three residential developments and Bristol Airport. Consequently, it is assessed that it is highly unlikely that there will be any locations in the AONB where the presence of one or more of the three proposed residential developments and the Proposed Development will be simultaneously discernible. Review of the baseline photograph from Dolebury Warren (refer to **Figure 9.20**) and photomontages from Burrington Ham and Beacon Batch (refer to **Figures 9.32** and **9.33**) demonstrate that at the most elevated, open and well-visited locations in the part of the AONB in the LVIA study area, the combination of the plateau and scarp topography and the intervening tree cover will prevent the presence of the three proposed residential developments being discernible. The absence of an available visual effects pathway allied with the negligible landscape and visual role of the Proposed Development in the AONB will minimise any potential for cumulative landscape effects upon the special qualities of the AONB.

Inter-project cumulative landscape effects upon the LCAs

- 18.4.4 The inter-project landscape effects that could be generated by the Proposed Development together with the components of the 10 mppa and GPDO development that have not been started by November 2018 will not result in any potential significant cumulative effects upon any of the LCAs scoped into the landscape assessment (refer to **Figure 9.38** for their distribution). This is because, apart from the host LCA (Broadfield Down Settled Limestone Plateau), the landscape assessment concluded that the Proposed Development will result in minor levels of effect that will be not significant. In this context there is no potential for the inter-project cumulative landscape effects arising from the components of the 10 mppa development that are scheduled to be constructed and become operational after November 2018 to increase the level of effect so that inter-project cumulative effects will be significant. Most of the components are relatively small-scale and/or possess attributes that will ensure that their construction and operation will not result in the generation of any effects pathways that could result in significantly adverse cumulative effects upon any of the key characteristics of these LCAs.

- 18.4.5 Separate consideration has been given to the host LCA: Broadfield Down Settled Limestone Plateau because it is the only LCA assessed to sustain a low (as opposed to a negligible) magnitude of landscape change due to the operation of the Proposed Development. There is consequently increased potential for inter-project cumulative landscape effects with the post November 2018 components of the 10 mppa and GDPO development to result in medium or high magnitudes of landscape change that may be significant.
- 18.4.6 'Other developments' as shown in **Figure 18.1** would not give rise to significant cumulative landscape effects upon LCA Broadfield Down Settled Limestone Plateau as a consequence of their separation distance from this host LCA.
- 18.4.7 It is assessed that the construction and operation of the components of the 10 mppa and GPDO development will not have any potential to result in inter-project cumulative landscape effects in the host LCA increasing above the low magnitude of landscape change assessed for the Proposed Development. This is because these components will only result in a slight intensification of built development in some limited areas across Bristol Airport and are primarily extensions of types of development that are already present under the baseline and/or the Proposed Development. The presence of Bristol Airport is a key characteristic of the host LCA and the type and scale of the inter-project cumulative landscape effects will only result in small-scale reinforcement of the existing role of Bristol Airport with the host LCA. There will not be a significant cumulative landscape effect because the landscape role of the post November 2018 10 mppa components combined with the Proposed Development will not result in an increase in landscape changes that will be sufficient to result in a significant cumulative effect upon the host LCA.

Inter-project cumulative visual effects upon recreational receptors using selected long-distance trails and national cycle network routes

- 18.4.8 Selected 'other developments' shown in **Figure 18.1** have the most potential to contribute to cumulative visual effects upon recreational visual receptors using some of the long-distance trails and national cycle network routes as shown on **Figure 9.35** due to their relatively close proximity to these. These developments are:
- #3: 143 dwelling, Cox's Green, BS40 5QR;
 - #12: 170 dwellings, land south of the Uplands, Nailsea BS48 4RS;
 - #13: 50 dwellings, land south of the Uplands, Nailsea BS48 4RS; and
 - #SD2: Strategic Development Site - Extension to Backwell village - 700 homes & community facilities, Backwell, BS48 3LF.
- 18.4.9 All the components of the 10 mppa and GPDO planning permission listed in **Table 18.2** and **Table 18.3** that are listed as not started by November 2018 are also relevant to this assessment.
- 18.4.10 Relatively elevated, short sections of Monarch's Way and the Community Forest Path long distance trails are routed close to the residential development at Barrow Hospital. There is therefore potential for recreational visual receptors using the short sections of these two long distance trails to have simultaneous or sequential views of the Proposed Development and the residential development. As set out in **Tables 9G.21** and **9G.24** in **Appendix 9G**, the construction and operation of the Proposed Development is assessed as generating negligible changes for recreational receptors using these two long distance trails, with any potential views being restricted to a small number of locations such as at field entrances. Any views of the residential development will be similarly restricted and minimal. In these circumstances it is assessed that there will **be no potential for the Proposed Development to contribute to any significant simultaneous or sequential inter-project cumulative visual effects.**

- 18.4.11 Regional Cycle Route (RCR) 410 is routed close to residential developments on the southern side of Nailsea and at Backwell and there is potential for one or more of these developments to be viewed by visual receptors cycling along one or more sections of it. The construction and operation of the Proposed Development is assessed as generating a negligible change for recreational receptors using RCR 410, with effects being sustained on a section close to the Proposed Development as opposed to close to the three residential developments (refer to **Table 9G.25** in **Appendix 9.G**). The separation distance of the sections of RCR 410 where recreational visual receptors could potentially sustain any visual changes due to these developments is a minimum of 3km from the section where there will be some views of the Proposed Development. In these circumstances it is assessed that there will be **no potential for the Proposed Development to contribute to any significant sequential inter-project cumulative visual effects**.
- 18.4.12 National Cycle Route (NCR) 334 is routed close to the residential development at Barrow Hospital and there is potential for this development to be viewed while cycling along a section of this route. As the construction and operation of the Proposed Development is assessed as generating no change for recreational visual receptors using NCR 334 (refer to **Table 9G.26** in **Appendix 9G**), regardless of the visual effects generated by the residential development, there will be **no potential for the Proposed Development to contribute to inter-project cumulative visual effects**.

Inter-project cumulative visual effects upon residential and recreational visual receptors at selected locations to the north and east of the Proposed Development

- 18.4.13 There is potential for simultaneous or successive inter-project cumulative visual impacts to be sustained by some of the residential and recreational visual receptors located to the north and the east of the Proposed Development. These cumulative visual impacts will be sustained if visual receptors are able to see components of the Proposed Development and one or more components of the 10 mppa and GPDO development that are scheduled to be introduced after November 2018. Potential inter-project cumulative views could be simultaneous i.e. components from both developments will be visible in the same 90° field of view, or successive i.e. components from both developments will be visible in a wider field of view that requires the visual receptors to move their head. The latter is less likely given that components from both the 10 mppa and GPDO development and the Proposed Development are confined to locations within the boundary of Bristol Airport.
- 18.4.14 A review of the visual assessments contained in **Tables 9G.1 – 9G.20** and **9G.35 – 9G.46** in **Appendix 9G** against the information set out in **Table 18.2** identifies the nine residential and recreational visual receptors that possess the most potential for sustaining significant inter-project cumulative visual effects from components located within Bristol Airport. This is due to their location close to some of the components of the 10 mppa and GPDO development that will not be commenced until after November 2018 and/or due to the visual assessment for the Proposed Development concluding a low magnitude of visual change and a moderate level of visual effect. Whilst for all the receptors listed below (other than residents at Melody Cottage in the Downside east of Cook's Bridle Path group of visual receptors), it was concluded that visual effects would be not significant, these possess the greatest potential for the magnitude of visual change to increase such that inter-project cumulative visual effects could become significant:
- Residential visual receptors in Lulsgate Bottom;
 - Residential visual receptors in Hyatt Wood/Oatfield;
 - Residential visual receptors in Downside east of Cook's Bridle Path;
 - Residential visual receptors at Cook's Farm;

- Residential visual receptors at Downside Farm;
- Residential visual receptors at properties on Long Lane;
- Recreational visual receptors using Public Rights of Way (PRoW) in Network F – Felton Common and environs;
- Recreational visual receptors using PRoWs in Network K – Lulsgate Bottom; and
- Recreational visual receptors using PRoWs in Network L – North of Downside network.

Residential visual receptors in Lulsgate Bottom

- 18.4.15 The components of the 10 mppa development that have the most potential to contribute to any inter-project cumulative visual effects will be the multi-storey car park (MSCP) Phase 1, the Stone Farm car parking; and new airline office building and main gate extension. These components will be sited in the northern area and will be relatively close to residents in properties at the western end of Lulsgate Bottom, such as Lulsgate Farm. Residents at Lulsgate Farm will have direct southern views towards MSCP Phase 1 but any views of this that are available to other residential visual receptors in this group will be oblique. All residents' views will be screened, or at least heavily filtered in winter months, by the existing vegetation screening along the northern boundary bund of Bristol Airport. This vegetation will also screen any potential oblique views of the Stone Farm car parking. In combination with MSCP Phase 2 and other built development in the northern area, the northern boundary vegetation will also screen the new airline office building and main gate extension.
- 18.4.16 The visual assessment for the Proposed Development contained in **Table 9G.1** in **Appendix 9G** concluded that residential visual receptors in Lulsgate Bottom will sustain a negligible magnitude of visual change. The partial presence of the MSCP Phase 1 has the potential to also generate a negligible magnitude of visual change for a small proportion of this group of residential receptors. Hence there is potential for this small proportion of residential visual receptors to sustain a low magnitude of cumulative visual change in simultaneous southern views which would result in a moderate level of effect. Nevertheless, in the overall visual context of existing development at Bristol Airport and the Proposed Development, it is assessed that inter-project cumulative visual effects will be not significant. Most residential visual receptors in this group will sustain no changes to their views due to the construction or operation of any of the components of the 10 mppa and GDPO development to be completed post November 2018. Consequently, an assessment of inter-project cumulative visual effects for the residential visual receptors in Lulsgate Bottom as a single receptor group concludes that inter-project cumulative visual effects will be **minor and not significant**.

Residential visual receptors in Hyatt Wood/Oatfield

- 18.4.17 The components of the 10 mppa and GPDO development that have the most potential to contribute to any inter-project cumulative visual effects will be of the MSCP Phase 1, the Stone Farm car parking; and new airline office building and main gate extension. Any potential inter-project cumulative visual impacts will only arise with the MSCP Phase 1. The Stone Farm car parking will be screened by the existing vegetation screening along the northern boundary bund of Bristol Airport. If residential visual receptors have any views of the new airline office building, it will be seen in the context of other extensive built development in this part of the northern area of Bristol Airport and will therefore be difficult to distinguish. Only the upper part of MSCP Phase 1 of the MSCP will be potentially visible to some of these visual receptors who possess open southern views. If it is visible, the upper part of MSCP Phase 1 will be viewed against the backdrop of similar scale, existing built development at higher ground level within the northern part of Bristol Airport.

- 18.4.18 The visual assessment for the Proposed Development contained in **Table 9G.2** in **Appendix 9G** concluded that residential visual receptors in Hyatt Wood/Oatfield will sustain a negligible magnitude of visual change. It is assessed that the partial presence of the MSCP Phase 1 has the potential to also generate a negligible magnitude of visual change, albeit for only a small proportion of this group of residential visual receptors. The presence of MSCP Phases 2 and 3 as well as other built development in the northern area will ensure that the inter-project cumulative visual effects for the residential visual receptors in Hyatt Wood/Oatfield will be **minor and not significant**.

Residential visual receptors in Downside east of Cook's Bridle Path and at Cook's Farm

- 18.4.19 The components of the 10 mppa and GPDO development that have the most potential to contribute to any inter-project cumulative visual effects will be the MSCP Phase 1, the covered pedestrian link bridge, the Stone Farm car parking; and new airline office building and main gate extension. The Stone Farm car parking will be screened by the existing vegetation on the northern boundary bund and the tall hedgerow along the western boundary of the northern area. The existing vegetation opposite Melody Cottage and along the western boundary will be reinforced by the planting proposed as part of the integrated/embedded mitigation masterplan which is shown in **Appendix 11K**. The new airline office building may be partly visible to some of the residents at individual properties depending upon the alignment of intervening hedgerow trees and buildings at Cook's Farm. Nevertheless, if visible it will be seen in the visual context of and against a backdrop formed of existing built development such as the terminal building, western walkway and hotel. MSCP Phase 1 is unlikely to be visible as it will be sited to the west i.e. behind MSCP Phases 2 and 3 as shown in the photomontage from Viewpoint 1 in **Figure 9.26**. The covered pedestrian link bridge is likely to be screened by a combination of the hotel, and MSCP Phases 2 and 3.
- 18.4.20 The visual assessment for the Proposed Development contained in **Tables 9G.3** and **9G.10** in **Appendix 9G** concluded that residential visual receptors at properties in Downside east of Cook's Bridle Path and at Cook's Farm will sustain a low magnitude of visual change and effects will be not significant; with the single exception of residents at Melody Cottage. It is assessed that the limited presence of the new airline office building and main gate extension in the views available to some residential visual receptors in these groups will be a minor incremental change that will not increase the magnitude of visual change. Inter-project cumulative visual effects for residential visual receptors in Downside east of Cook's Bridle Path and Cook's Farm will be moderate but not significant. It is assessed that the magnitude of visual change sustained by residential visual receptors at Melody Cottage will not vary in comparison with assessments made for the Operation Phase Year 1 and Year 15 in **Chapter 9: Landscape and Visual**. There is potential for the not started GPDO Stone Farm car parking (130 places) as listed in **Table 18.3** to be visible in this receptor's view as it is to be sited in the north-western corner of Bristol Airport and will be closer than the MSCP Phase 3. However, review of the baseline situation in which the site of the Stone Farm car parking is already used for informal car parking and contains three moderate sized buildings, including a former stone outbuilding associated with the Farm, shows that these facilities are well-screened from the vicinity of Melody Cottage. Screening is provided by a combination of bunds, fencing and established vegetation. It is assessed that this screening will be equally effective for the not started GPDO Stone Farm car parking, hence it will not combine with the MSCP Phase 3 to generate cumulative visual effects for the residents at Melody Cottage. Residents will still sustain a low magnitude of visual change and a **moderate level of visual effect** at Operation Phase Years 1 and Year 15 as assessed in **Chapter 9: Landscape and Visual** and **Table 9G.3** in **Appendix 9G**.

Residential visual receptors at Downside Farm and recreational visual receptors using PRoWs in Network K – Lulsgate Bottom

- 18.4.21 As with the other visual receptor groups located to the north of Bristol Airport, the components of the 10 mppa and GPDO development to be introduced after November 2018 that have the potential to contribute to inter-project cumulative effects are the MSCP Phase 1, the Stone Farm car parking; and new airline office building and main gate extension. As the Stone Farm car parking will be at ground level, it will be screened by intervening vegetation and vegetation on the northern boundary bund. The upper part of new airline office building may be visible above the intervening vegetation, the hotel and MSCP Phase 2. If visible, it will be a minor incremental element in the visual context of the extensive built development in this part of the northern area. The upper floors of the MSCP Phase 1 may be visible, especially in winter months when the screening role of the intervening vegetation will be reduced. If partly visible, MSCP Phase 1 will be seen in the visual context of the adjacent MSCP Phase 2 and the nearby MSCP Phase 3 and against the backdrop of extensive other built development. MSCP Phase 1 will consequently make a small-scale, incremental visual contribution to the overall visual role of Bristol Airport in these receptors' southern and south-western views.
- 18.4.22 The visual assessment for the Proposed Development contained in **Tables 9G.20 and 9G.45 in Appendix 9G** concluded that residential visual receptors at Downside Farm and recreational visual receptors using the Lulsgate Bottom PRoW will sustain a low magnitude of visual change that will not result in significant effects. It is assessed that the potential views of a small proportion of MSCP Phase 1 and the new airline office building in the overall context of the existing built development at Bristol Airport and the Proposed Development will only represent minor, incremental visual changes that will not increase the magnitude of visual change above low. Inter-project cumulative visual effects for residential visual receptors at Downside Farm and recreational visual receptors using the Lulsgate Bottom PRoW will be **moderate but not significant**.

Residential visual receptors at properties on Long Lane and recreational visual receptors using PRoWs in Network F – Felton Common and environs

- 18.4.23 These two groups of visual receptors are sited close to the eastern boundary of Bristol Airport. Consequently, the closest components of the 10 mppa and GPDO development that will not have commenced by November 2018 are some of the Phase 1 and 2 alterations to runways and taxiways and the strategic sequential radar (SSR) monopole tower. The SSR monopole tower will be 27m high and sited to the north of the southern A38 entrance. The similarity in the elevations of the runways and taxiways and the elevation of much of the closest, western part of the PRoW network and properties on Long Lane has the consequence that visual receptors will have no views of the altered runways and taxiways. This is shown in the baseline photograph from Viewpoint 5 in **Figure 9.11** which is sited in the south-eastern part of the PRoW network. The SSR monopole tower will be visible to recreational visual receptors using most of the PRoW network and in western views from the two northern-most properties on Long Lane: Hill House and Windmill House. Vegetation close to the two southern-most properties is likely to substantially screen the residents' views of the SSR as it currently substantially screens components of the existing development at Bristol Airport and will screen components of the Proposed Development.
- 18.4.24 The visual assessment for the Proposed Development contained in **Tables 9G.14 and 9G.40 in Appendix 9G** concluded that residential visual receptors in Hill House and Windmill House will sustain low magnitudes of visual change and a moderate level of effect; although this will be not significant. Residential visual receptors in the southern properties and recreational visual receptors using the PRoW network will sustain negligible magnitudes of visual change and minor levels of effects that will be not significant. It is assessed that the introduction of the SSR monopole into many western views available to recreational visual receptors using the western part of the PRoW network will not result in the magnitude of visual change increasing from negligible to low. Inter-

project cumulative visual effects will therefore be minor and not significant. This is because, as with the potentially visible components of the Proposed Development, the SSR monopole mast will be visually low key; sited away from any potentially visible component of the Proposed Development; and will be seen within the visual context of other existing components at Bristol Airport as well as the movement of aircraft on the Taxiways Juliet, Bravo and Alpha and Runway 27. A similar conclusion applies to residential visual receptors at Hill House and Windmill House. It is therefore assessed that for these residential visual receptors, the inter-project cumulative magnitude of visual change will be low and that the resultant level of **effect will be moderate but not significant**.

Recreational visual receptors using PRoWs in Network L – North of Downside network

- 18.4.25 As shown in **Figure 9.36**, the PRoWs in the eastern part of Network L are sited within 400m of some components of the 10 mppa and GPDO development that will not be commenced until after November 2018. As noted in the inter-project cumulative visual assessments for other visual receptors sited to the north of Bristol Airport, the Stone Farm car parking will be screened. However recreational visual receptors on some of the closest and/or the most elevated sections of PRoWs could have partial views of the upper section of MSCP Phase 1 above the intervening and northern boundary vegetation, particularly in winter months. They may also have partial views of the new airline building and main gate extension in the visual context of the hotel and against the backdrop of the western walkway and Air Traffic Control (ATC) tower.
- 18.4.26 The visual assessment for the Proposed Development contained in **Table 9G.46** in **Appendix 9G** concluded that recreational visual receptors using this PRoW network will sustain negligible magnitudes of visual change and that from some parts of the PRoW network, no views of the Proposed Development will be available. In any views that may be available to recreational visual receptors in which they possess partial views of the relevant 10 mppa and GPDO development components and components associated with the Proposed Development, the small-scale, incremental role of both components in the visual context of the more extensive existing built components at Bristol Airport will ensure that there is no increase in the negligible magnitude of visual change. It is assessed that for recreational visual receptors using PRoWs in Network L, **inter-project cumulative visual effects will be negligible and not significant**.

Land quality

Relevant 'other developments'

- 18.4.27 The nearest of the 46 'other developments' considered in this CEA is located approximately 3.1km from the Proposed Development. All shortlisted developments have been scoped out of the inter-project CEA for land quality based on their distance from the Proposed Development as it is unlikely that there would be any credible pollutant linkage and potential effects that could combine (i.e. the development is not within the land quality ZoI or it is sufficient distance away to prevent cumulative effects).

Bristol Airport expansion to 10 mppa

- 18.4.28 For the Proposed Development together with the 10 mppa and GPDO elements yet to be constructed as of November 2018, a range of environmental measures will be incorporated to manage the potential for land quality effects for the duration of the construction phase. The assessment has judged that these measures will be fully effective, and it is considered that there will be **no significant inter-project cumulative effects during the construction phase**. All the identified measures are incorporated in the CEMP, and adherence to them will be a requirement of any planning conditions associated with the Proposed Development.

18.4.29

Likewise, a range of environmental measures have been incorporated into the design of the 10 mppa elements yet to be constructed as of November 2018 and the Proposed Development to manage the potential for land quality effects for the operational phase. The assessment has judged that these measures will be fully effective, and it is considered that there will be **no significant inter-project cumulative effect in the operational phase.**

Biodiversity

18.4.30

'Other developments' that have been considered as part of this CEA during construction and operation are as follows:

- #2: Cox's Green, BS40 5QR: 28 dwellings;
- #3: Barrow Hospital, BS48 3SH: Reserved Matters Application for 43;
- #6: Bridgewater to Seabank including substations at Portishead, Churchill and Sandford: a new 400kV connection 4.5km north west of Bristol;
- #7: Cobthorny Way, Congresbury, BS49 5BJ: 38;
- #8: Wrington Lane, Congresbury, BS49 5BJ: 50 dwellings, new;
- #9: Trendlewood Way, Nailsea, BS48 8TA: new allocation for 30;
- #10: Venus Street, Congresbury, BS49 4EZ: 14;
- #11: Cadbury Garden Centre, Congresbury, BS49 5AA: 21;
- #12/#13: Land south of the Uplands, Nailsea, BS48 4RS: 170 / 50 new;
- #17: Engine Lane, Nailsea, BS48 4RH: 183;
- #23: Former UTAS Site Claverham Works Bishops Road Claverham Yatton: 77;
- #24: Causeway View, Nailsea: 450;
- #26: Moor Road, Yatton, BS49 4AX: 60;
- #28: North End, Yatton, BS49 4RQ: 170;
- #31: Land Off Pudding Pie Lane and Stock Lane Langford Churchill: 141;
- #33: Redwood Lodge, Fairfield: 124;
- #37: Arnold's Way, Yatton, BS49 4QN: 200 dwellings;
- #59: Land at Arnolds Way Yatton: Reserved Matters relating to landscaping, appearance, scale and layout;
- #62: Davis Lane, Cleavdon, BS21 6TH: 2.1ha B use class;
- #73: Land to The South Side Of Greenhill Lane Greenhill Road Sandford: 85 dwellings;
- #78: Land to The North-West Of Sandford Primary Off Greenhill Road Winscombe BS25 5QB: 118 dwellings;
- #79: Portishead town centre to Parson Street, Junction, Bristol: New passenger train service between Portishead, Pill and Bristol Temple Meads;
- #SD1: 2500 homes, retail, healthcare, community facilities and schools, Whitchurch, BS14 0PP;
- #SD2: 700 homes & community facilities, Backwell, BS48 3LF;

- #SD3: 1900 homes & community facilities, Banwell, BS29 6JA;
- #SD4: 2675 homes & community facilities, Churchhill, BS40 5EE; and
- #SD5: 2575 homes & community facilities, Nailsea, BS48 4RH.

18.4.31

The 'other developments' listed above are all either of a small enough scale (applicable for 'other developments' #2 and #6), at a sufficient distance from the application site (applicable for all 'other developments' listed above excluding than #2 and #3) and are subject to the requirement to follow the North Somerset and Mendips Bat Special Area of Conservation (SAC) Supplementary Planning Document (SPD) (applicable for all 'other developments' other than #3 and #6) that inter-project effects with the proposed Development are unlikely.

18.4.32

The assessment presented in **Chapter 11: Biodiversity** concluded that there will only be a 'very low' or 'low' magnitude of change following compliant application of the North Somerset and Mendip Bat SAC SPD set out in **Section 11.17** (which most of the 'other developments' listed above are also required to follow). As a result of this, and the reasons listed in paragraph 18.4.31, **no significant inter-project effects** are predicted during construction or operation.

Surface water and flood risk

18.4.33

Developments that have been considered as part of this CEA during construction and operation are as follows:

- #2: 28 dwellings, Cox's Green, BS40 5QR;
- #3: 143 dwellings, Barrow Hospital BS48 3SH;
- #4: Approval of reserved matters application following outline planning permission for demolition of existing buildings and erection of 11 No. residential units, access road and coach pick up, 10 High Street Winford, BS40 8EH;
- #5: 65 dwellings, Moor Lane, Backwell BS48, 8LL;
- #6: A new 400kV connection, between Bridgwater in Somerset and Seabank substation, north of Avonmouth. Including substations at Portishead, Churchill and Sandford;
- #7: 38 dwellings, Cobthorny Way, Congresbury, BS49 5BJ;
- #8: 50 dwellings, Wrington Lane, Congresbury, BS49 5BJ;
- #9: 30 dwellings, Trendlewood Way, Nailsea, BS48 8TA;
- #10: 14 dwellings, Venus Street, Congresbury BS49 4EZ;
- #11: 21 dwellings, Cadbury Garden Centre, Congresbury, BS49 5AA;
- #12: 170 dwellings, land south of the Uplands, Nailsea, BS48 4RS;
- #13: 50 dwellings, land south of the Uplands, Nailsea, BS48 4RS;
- #17: 183 dwellings, Engine Lane, Nailsea, BS48 4RH;
- #23: The demolition of former factory buildings and development of 77no. dwellings (to include retention, change of use and improvement of existing listed buildings), with improved access from Bishops Road, internal estate roads, landscaping, ecological enhancements and open space, Former UTAS Site Claverham Works Bishops Road Claverham Yatton;
- #24: 450 dwellings, Causeway View, Nailsea; and
- #26: 60 dwellings, Moor Road, Yatton, BS49 4AX.

- 18.4.34 All 'other developments' have been scoped out due to their distance from Bristol Airport as they lack hydrological connectivity (i.e. they are not within the ZoI) with the Proposed Development.
- 18.4.35 There are also several developments on the airport included under Bristol Airport's expansion to 10 mppa and GPDO developments where construction has not started as of November 2018. The cumulative effect of the construction and operation of the following developments is also considered:
- Erection of two MSCPs (including transport interchange);
 - A covered pedestrian link bridge;
 - Erection of three-storey administration building north-west of terminal with associated parking following demolition of existing administration building;
 - Construction of replacement underground aviation-fuel storage depot and chiller compound comprising 3no 1,200m³ tanks;
 - Security control-post;
 - Alterations to runways and taxiways;
 - Re-configure internal access roads and widen access at A38 junction;
 - Upgrade north side surface car-park;
 - Extend Silver Zone car-park to 12,000 car capacity to include staff-parking within an extension outside the airport; and
 - 12no. 5m high wind-turbines.

Construction phase

- 18.4.36 For the Proposed Development a range of environmental measures will be incorporated (refer to **Table 12.9, Section 12.10**) to manage the potential for aquatic environment, water resources and flood risk effects for the duration of the construction phase. The assessment has concluded that these measures will be fully effective. All the identified measures are incorporated in the CEMP, and adherence to them will be a requirement of any planning conditions associated with the development.
- 18.4.37 All of the components listed as being part of Bristol Airport's expansion to 10 mppa and GPDO, but not yet constructed will be built utilising similar best practice methods as those detailed in the Proposed Development CEMP (**Appendix 2B**). This will manage potential aquatic environment, water resources and flood risk effects for the duration of the construction phase. For GPDO development significant effects would be unlikely to arise due to the small-scale nature of the developments and the existing airport infrastructure and controls in place. Additionally, any potentially significant effects would trigger a requirement for EIA, something which is a requirement for GPDO rights to be utilised.
- 18.4.38 All identified measures are incorporated in the relevant CEMP, and adherence to them forms a requirement of the planning conditions associated with the Proposed Development. The measures identified in the CEMP cover the Proposed Development and 10 mppa and this could be expected to be fully effective in managing the potential surface water and flood risk effects, there will be no significant cumulative effects as a result of these developments.
- 18.4.39 All of the relevant 'other developments' identified above will likely be required to utilise similar best practice methods as for the Proposed Development, 10 mppa and GPDO airport development (but commensurate with the scale of the identified relevant development). This will ensure that

potential aquatic environment, water resources and flood risk effects are managed for the duration of the construction phase. Typically, the required measures would be incorporated in a CEMP, and adherence to them would form a requirement of the planning conditions associated with each of the relevant developments. Therefore, these measures are judged as being fully effective. As the Proposed Development, 10 mppa and identified relevant 'other development' measures are expected to be fully effective in managing the potential surface water and flood risk effects, it is **unlikely that there would be significant cumulative effects**.

Operational phase

- 18.4.40 The Flood Risk Assessment (FRA) (**Appendix 12.A**) for the Proposed Development contains drainage strategies for both the Bristol Airport and A38 parts of the application site (a summary of the drainage strategies is presented in **Table 4.1** of the FRA). These have been designed to adhere to NPPF⁸ requirements and, as such, will ensure that the volumes and peak flow rates of surface water leaving the developed sites are no greater than prior to development. The drainage systems have also been designed to incorporate suitable water quality measures as detailed in *CIRIA C753*⁹ (The SuDS Manual, Section 26.8 therein). With the drainage systems being designed to meet these standards, the Proposed Development will be fully effective in managing the potential for aquatic environment, water resources and flood risk effects during operation. Continued operation of the drainage systems to these standards will be a requirement of any planning conditions associated with development. Any future developments at Bristol Airport will be designed to meet future surface water runoff volume and quality requirements.
- 18.4.41 The components of Bristol Airport's expansion to 10 mppa and GPDO developments that are not yet operational will be designed with drainage systems that adhere to the same NPPF⁸ requirements and incorporate suitable water quality elements. This will ensure that they are fully effective in managing the potential for aquatic environment, water resources and flood risk effects during operation. In the instance where GPDO is granted, even in the absence of best practice measures all effects would not be considered significant given the small-scale nature of the development. As both the Proposed Development, 10 mppa and GPDO development elements will be fully effective in managing the potential surface water and flood risk effects, there will be no significant cumulative effects.
- 18.4.42 All of the relevant 'other developments' identified will also have to incorporate drainage systems that comply with NPPF⁸ requirements. It is likely that the relevant planning authorities will also include conditions on managing water quality. With drainage systems that manage rate, volume and quality of runoff designed to operate for the lifetime of the developments, it can be judged that these measures will be fully effective. As the Proposed Development, 10 mppa, GPDO and 'other development' environmental measures are expected to be fully effective in managing the potential surface water and flood risk effects, there will be **no significant cumulative effects** as a result of these developments.

Groundwater

- 18.4.43 Developments for which applications for planning permission have been submitted to NSC and Strategic Developments identified by NSC have been considered as part of this CEA.
- 18.4.44 No inter-project cumulative effects have been identified as:

⁸ Ministry of Housing, Communities and Local Government (2018). National Planning Policy Framework, [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/733637/National_Planning_Policy_Framework_web_accessible_version.pdf [Checked 01/08/2018].

⁹ CIRIA (2015). C753: The SuDS Manual, [online]. Available at: https://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx [Checked 28/08/18].

- None of the developments identified are within the source protection zone for Chelvey Well and therefore will not result in a reduction in recharge to the well; and
- None of the developments identified lie over the aquifers that make up the Bristol Airport groundwater body and therefore will not affect overall recharge to the aquifer.

18.4.45 There are also a number of developments on the airport included under Bristol Airport's expansion to 10 mppa planning permission and GPDO developments where construction has not started as of November 2018 and these are also considered as they lie over the Bristol Airport groundwater body.

18.4.46 It is anticipated that construction of elements of the 10 mppa development and also GPDO not yet constructed will overlap with construction of elements of the Proposed Development. However, the 10 mppa development incorporates similar mitigation to the Proposed Development construction phase mitigation and it is therefore concluded that there will not be a significant cumulative effect. For GPDO development significant effects would be unlikely to arise due to the small-scale nature of the developments and the existing airport infrastructure and controls in place. Additionally, any potentially significant effects would trigger a requirement for EIA, something which is a [requirement for GPDO rights to be utilised](#). This, in tandem with such development being so small scale is likely not to result in any significant cumulative effects arising.

18.4.47 The mitigation measures incorporated into the 10 mppa development are the same as for the Proposed Development and these are designed to ensure that there is no loss of groundwater resources and the protection of groundwater quality. It is therefore concluded that there will **not be a significant cumulative effect**.

Historic environment

18.4.48 Inter-project effects, arising from a combination of the Proposed Development alongside 'other developments' could arise through:

- Direct Effects – cumulative inter-project effects could arise as a result of construction of 'other developments' resulting in direct disturbance to a heritage asset or group of assets which will also be affected by construction of the Proposed Development. Any such effects would arise during the construction phase only; and
- Effects on Setting - cumulative effects could arise as a result of heritage assets being affected by changes to their settings as a result of the presence of the Proposed Development in combination with the presence of other new developments.

Bristol Airport expansion to 10 mppa

18.4.49 There are a number of developments included under Bristol Airport's expansion to 10 mppa planning permission and GPDO development where construction has not started as of November 2018. The cumulative effect of the construction and operation of the Proposed Development along with the following not yet constructed elements of the 10 mppa are considered:

- Erection of two MSCPs (including transport interchange);
- A covered pedestrian link bridge;
- Erection of three-storey administration building north-west of terminal with associated parking following demolition of existing administration building;
- Construction of replacement underground aviation-fuel storage depot and chiller compound comprising 3no 1,200m³ tanks;

- Security control-post;
- Alterations to runways and taxiways;
- Re-configure internal access roads and widen access at A38 junction;
- Upgrade north side surface car-park;
- Extend Silver Zone car-park to 12,000 car capacity to include staff-parking within an extension outside the airport; and
- 12no. 5m high wind-turbines.

Direct Effects

- 18.4.50 Taking account of the mitigation measures incorporated into the 10 mppa and Proposed Development, including avoidance of known archaeological remains and provision for archaeological recording, there will be **no cumulative direct effects** as a result of these developments.

Effects on Setting

- 18.4.51 The ES for the 10 mppa development identified low or negligible effects on the following designated heritage assets:
- Grade II listed Windmill House (LB1158202);
 - Long barrow 350m southwest of Cornerpool Farm (SM1008291); and
 - Scheduled round barrows on Felton Common and in the Redhill group (Redhill round barrow cemetery).
- 18.4.52 This has been considered in the assessment of the Proposed Development, with a further, incremental effect resulting. This is seen in the further extension of car parking to the north of SM1008291 with the development of the Silver Zone Car Park Extension (Phase 2). However, with the incorporation of mitigation measures, including perimeter bunds and planting, this **will not result in a significant cumulative effect** on the setting of any of the receptors considered.

'Other Developments'

Direct Effects

- 18.4.53 All 'other developments' listed in **Appendix 18B** are at a sufficient distance that none will have a potential to result in direct disturbance to any of the assets which would be disturbed by the Proposed Development. **No inter-project cumulative effects** will therefore occur.

Effects on Setting

- 18.4.54 None of the 'other developments' are of a scale and location that would result in any effects on the settings of those heritage assets which were identified as being potentially affected by the Proposed Development. **No inter-project cumulative effects** in respect of the settings of any heritage assets have been identified. The nearest of the 'other developments' to the assets included in the settings assessment is the approved proposal for 11 residential units at Winford (17/P/1146/RM). This is at a minimum distance of approximately 2.3km from the scheduled barrows on Felton and at this distance will not have any effect on their settings.

18.4.55 Due to a combination of a greater distance and their locations, none of the larger 'other developments' included in **Appendix 18B** will affect any of the assets included in the settings assessment.

Socio-economics

Relevant 'other developments'

18.4.56 'Other developments' that have been considered as part of this CEA, both during construction and operational phases are:

- #71: Mixed use including 1,000 dwellings, Rowacres, Bristol BS14 0AP;
- #79: New passenger train service between Portishead, Pill and Bristol Temple Meads;
- #100: Construction of 12,000 capacity indoor arena, Bristol Arena Former Diesel Depot, Bath Road, Brislington, Bristol BS4 3DT;
- #101: Up to 19,000sqm of mixed use development on Arena Island, Former Diesel Depot, Bath Road, Brislington, Bristol BS4 3DT;
- #103: Development of B1 (office) and flexible uses (A1/A2/A3/A4/A5/B1/D1/D2), associated car parking, public realm, pontoon harbour walkway and landscape works (Major application). Former Temple Way House Temple Way Bristol;
- #105: Major strategic mixed-use allocation (3,350 homes and approximately 5,000 jobs), Locking Parklands, Locking Moor Road, Locking, Weston-Super-Mare BS24 7AE;
- #106: Erection of 700 dwellings (15.07ha of residential land); 14,500 sq.m of office floorspace (1.73ha of employment land B1 Use); retail unit; 420 place 2-form primary school and associated playing fields; landscaping, allotments, open space and necessary infrastructure works, Land to the South of Locking Head Drove Locking;
- #107: Major strategic mixed-use allocation (2,400 homes and commercial park 3,600 jobs), Haywood Village Weston Park, Weston-Super-Mare;
- #110: Mixed use development across 100.76 hectares of land comprising up to 2,450 new dwellings (Use Class C3), extra care housing (Use Class C2), 4.63 hectares of employment land (Use Class B1, B2) provision of a local centre, two primary schools, together with the supporting infrastructure and facilities including, Land North Of Brimsham Park Yate Bristol South Gloucestershire;
- #SD1: Strategic Development Site - 2,500 homes, retail, healthcare, community facilities and schools, Whitchurch, BS14 0PP;
- #SD2: Strategic Development Site - Extension to Backwell village - 700 homes & community facilities, Backwell, BS48 3LF;
- #SD3: Strategic Development Site - New Garden Village - 1,900 homes & community facilities, Banwell, BS29 6JA;
- #SD4: Strategic Development Site - New Garden Village - 2,675 homes & community facilities, Churchill, BS40 5EE; and
- #SD5: Strategic Development Site - Extension to Nailsea - 2,575 homes & community facilities, Nailsea, BS48 4RH.

18.4.57 Available data from the application documents on expected job generation and expected housing, population growth have been compared in **Table 18.4**.

Table 18.4 Assessing cumulative effects on employment demand

'Other development' ref no.	Housing Units	Approx. Implied additional population [1]	Approx. Implied additional economically active population [2]	Available information on estimated jobs created (where relevant)
#71	1,000	2,400	2,000	<ul style="list-style-type: none"> Scheme description notes the allocation is for "mixed use including 1000 dwellings". Job creation likely but number unknown at present.
#79	N/A	N/A	N/A	<ul style="list-style-type: none"> Application to be submitted to the Planning Inspectorate Q1 2019. No job estimates yet available; The PINS scoping opinion notes that the applicants examine job creation and modal shift of commuter population; and Any employment demand will be temporary and likely be specialist in nature.
#91	1,500	3,600	2,900	<ul style="list-style-type: none"> The proposed development is estimated to generate 263 full time net jobs per annum over the 10-year construction period, 234 of which are expected to be taken up by those within the south west region; and The proposed employment, retail, community and educational floor space is estimated to generate 292 jobs on site within the completed development.
#100	<80	<200	<200.	<ul style="list-style-type: none"> The application's report to committee notes several job estimates. The arena is estimated to bring 274 permanent jobs to Bristol. Including the new arena and the surrounding restaurants, bars and hotels, total jobs are estimated at 1,000 jobs. A further assessment indicates the arena will be an 'iconic piece of cultural infrastructure' and influence the creation of over 5,400 gross additional jobs in the sub-region directly and indirectly. Numbers are not disaggregated between construction and operational stages.
#103	N/A	N/A	N/A.	<ul style="list-style-type: none"> Up to 3,000 jobs are expected to be created. Numbers are not disaggregated between construction and operational stages.
#105	3,350	8,000	6,6	<ul style="list-style-type: none"> The scheme description notes this as a major strategic mixed-use allocation with 3,350 homes and approximately 5000 jobs. Numbers are not disaggregated between construction and operational stages.

'Other development' ref no.	Housing Units	Approx. Implied additional population [1]	Approx. Implied additional economically active population [2]	Available information on estimated jobs created (where relevant)
#106	700	1,700	1,400	<ul style="list-style-type: none"> The EIA Non-Technical Summary submitted as part of the application estimates the creation of 1,067 Jobs. Numbers are not disaggregated between construction and operational stages.
#107	2,400	5,700	4,600	<ul style="list-style-type: none"> The scheme description notes this as a major strategic mixed-use allocation with 2,400 homes and commercial park with c.3,600 jobs. Numbers are not disaggregated between construction and operational stages.
#110	2,450	5,900	4,800	<ul style="list-style-type: none"> Application documents note that the construction stage is expected to generate 3,200-person years over 13 years with 2,400 Gross FTE jobs at operational stage.
#SD1, #SD2, #SD3, #SD4, #SD5	10,350 (Combined)	24,800 (Combined)	20,300 (Combined)	<ul style="list-style-type: none"> Note these are strategic allocations to facilitate regional housing need and timescales for development are unclear. Community facilities, health/retail alongside housing are expected to create some jobs (not quantified).
Totals (approximate and where data available)	20,880	52,300	42,700	<ul style="list-style-type: none"> 16,360 at operational stage; At construction stage likely to demand well upwards of 500 jobs (c. 263 FTE, 246-person years from data above); and Note data are not available on a consistent basis and are approximate only.

Notes:

[1]: Based on the average person per dwelling in North Somerset, Bristol, Bath and NE Somerset and South Gloucestershire. This has been derived by dividing population (2017, NOMIS (2017 ONS Population Estimates) with dwelling numbers NOMIS (2011 Census) from the socio-economic baseline. This results in a range of 2.3 to 2.5 person per dwelling. The overall average used in the calculations is 2.4. Note numbers have been rounded.

[2]: Based on the average economic activity rate in North Somerset, Bristol, Bath and NE Somerset and South Gloucestershire (2017 ONS annual population survey) from the socio-economic baseline. This results in a range of c.78% (Bath and NE Somerset) to 83% South Gloucestershire. The overall average used in the calculations is 81.7%. Note numbers have been rounded.

- 18.4.58 All of the 'other developments' are expected to generate employment opportunities at the construction stage and several are large scale. Compared to employment at operational stages, the application documents contain comparatively little data on the number of these temporary jobs expected.
- 18.4.59 The creation of these jobs will support further economic activity and employment indirectly along supply chains, from the business to business purchases as well as the spending of employees. This is a positive effect. In terms of labour supply, employment in construction sectors stood at 31,500 as of 2017¹⁰ across the Bristol City region. Across the wider South West and Wales it stood at just over 206,000 jobs. Additionally, latest data (June 2018) indicates some 10,800 unemployed persons in Bristol City Region, with just under 2,000 in North Somerset itself. Overall, it is highly unlikely that a quantitative shortage of labour would arise in the sub-region. Moreover, several large-scale housing developments are planned across the sub-region over the next two decades to alleviate existing housing need, as well as facilitating a growing workforce and growing (and ageing) population. Whilst numbers are indicative, these major housing developments are likely to accommodate potentially tens of thousands of additional economically active residents. The cumulative effect on employment generation is positive, while the potential for negative effects caused by labour shortages are considered **neutral and not significant**.
- 18.4.60 As shown in **Table 18.4**, the 'other developments' are expected to generate substantial numbers of jobs directly and indirectly across the Bristol City Region during their operation. Again, direct jobs will support further economic activity and employment indirectly along supply chains, from the business to business purchases as well as the spending of employees. This is a **positive effect**.
- 18.4.61 In terms of labour supply, total employment as of 2016 across the Bristol City Region was 587,000¹⁰. The increase in jobs (of c. 16,360) noted in **Table 18.4** for the operational stage constitutes 2.8% of this number. Economic activity rates in the Bristol City Region are generally high at present but indicate potential for further people to be brought into the labour market, subject to appropriate training and demand. Moreover, the latest (June 2018) claimant unemployment data indicates some 10,800 unemployed persons who again could potentially be brought into the labour market subject to training and demand. These numbers are expected to be supplemented by several tens of thousands of new economically active residents over the next two decades. The cumulative effect on employment generation is positive, while the potential for adverse effects caused by labour shortages are considered **neutral and not significant**.

Human health

- 18.4.62 An assessment has been undertaken to evaluate the potential for the Proposed Development to interact with 'other development' and thereby have inter-project cumulative health effects.
- 18.4.63 The assessment for the inter-project cumulative effect estimates the overall combined population health effect from changes to multiple determinants of health. A high-level summary 'score' gives a useful indication of change but it should also be treated with caution as it does not take account of other factors that are important to health, but which are beyond the described developments (e.g. macro-economic effects, investment decisions, new policy implementations or future health promotion activities).
- 18.4.64 The assessment of inter-project cumulative effects shows a range of beneficial and adverse scores. The overall effect for population health is considered to be beneficial. This takes account of differing effects across vulnerable groups and geographic levels, of the Proposed Development and all relevant other projects with which it might interact. This encompasses **minor to moderate beneficial effects** (at the site-specific, local and regional geographic levels) and **minor to**

¹⁰ See **Section 15.5** of **Chapter 15: Socio-Economics**

moderate adverse effects (for the site-specific and local level, as well as internationally in relation to climate change). The majority of adverse effects relate to incremental changes to noise and air quality that are existing baseline issues. The majority of beneficial effects start at and continue through the operation stage and relate to improved infrastructure, employment and investment.

- 18.4.65 The following paragraphs consider 'other developments' that have been identified in relation to specific issues relevant to the scope of the health chapter. Note that only effects during the operational phase are considered because **significant inter-project cumulative effects are not expected during construction** of any of these projects.

#32: 17/P/5592/FUL: New two storey medical centre building with ancillary pharmacy

- 18.4.66 This health centre is part of the NHS's objective to provide increased health facilities to patients in the area. The health centre will have 20 consulting rooms, 85 car parking spaces, plus six disabled bays and one ambulance bay.
- 18.4.67 During operation this medical centre development may increase the availability of local healthcare services for the local population. This 'other development' is relevant to the health inter-project assessment as it would facilitate meeting any potential increases in demand for primary care as a result of increased air travellers arising from the Proposed Development.
- 18.4.68 Based on the distance between the medical centre development and the Proposed Development (approximately 5 km) it is considered likely that this health centre could contribute to addressing any capacity issues relating to primary care demand for people at (or travelling to or from) Bristol Airport. The effect has been assessed as **minor beneficial and not significant**.

All 'other developments'

- 18.4.69 Air pollution and disturbance effects tend to decrease rapidly with distance from the source (see **Chapter 8: Air Quality**) so the combined effects from the Proposed Development and other projects is unlikely to be significant.
- 18.4.70 The 'other developments' would contribute to lasting visual change to the landscape of North Somerset, which may affect local identity. Although few views are likely to take in multiple projects, collectively the projects may contribute to the perception of a more developed landscape, particularly where located in previously undeveloped areas.
- 18.4.71 The combined vehicle movements of the projects were assessed in **Chapter 6: Traffic and Transport**.
- 18.4.72 The collective employment and investment of the Proposed Development as well as other projects in North Somerset (and the wider regions of South West England and South East Wales) would be expected to be significant (beneficial) for population health if the local community take advantage of the opportunities and the quality of local employment is improved into the long-term (see **Section 16.11 of Chapter 16: Human Health**).
- 18.4.73 With the exception of the noted collective health benefits from inter-project cumulative employment and investment, which are moderate beneficial and significant in EIA terms, all other inter-project cumulative health effects have been assessed as, **at most, minor adverse and not significant** in EIA terms.

Carbon and other greenhouse gases

- 18.4.74 Whilst all 'other developments' identified in **Appendix 18B** will contribute to climate change through GHG emissions, this is arbitrary as the receptor is global in nature and thus is affected by

existing and Proposed Developments across the world. The assessment of significance is based on emissions from the UK aviation sector, so given that there are no other aviation-related developments in **Appendix 18B** there are **no cumulative effects** to consider.

18.5 Assessment methodology: inter-related effects

Overview

- 18.5.1 The following sections consider whether any of the individual environmental topic effects resulting from the Proposed Development could combine to create effects that are significant. National policy guidance requires that all relevant effects should be considered objectively. However, existing policy guidance presently fails to provide advice on how such an objective assessment should be carried out. In the absence of any guidance, the cumulative assessment of effects draws upon the conclusions of the appropriate individual assessments of this ES and against each of the identified common receptors evaluates the extent to which the sum of any predicted effects may give rise to significant environmental effects.
- 18.5.2 There are two types of inter-related effects: combined effects and interactive effects. Combined effects occur when different activities associated with a project act upon the same environmental receptor. For example, physical disturbance and habitat loss together with lighting, could combine to affect bats. However, the assessment of the resulting effects for a particular receptor is considered within the environmental topic ES Chapters as part of the standard approach to EIA.
- 18.5.3 Interactive effects resulting from a specific receptor being affected by aspects of the Proposed Development considered separately by different technical topics, but which are not usually assessed in any one technical chapter are considered within this CEA chapter. This may for example be relevant in the case of residential amenity which may be influenced by air quality, noise and visual effects, but which is not usually considered cumulatively in any one of these assessments.

Scope of the assessment

- 18.5.4 The first step for the inter-related CEA is to identify the environmental topics that have common receptors and then consider whether the changes as a result of the Proposed Development are likely to combine to affect these receptors.
- 18.5.5 The purpose of EIA is to identify and assess any likely significant effects that are material to the decision-making process. In order to maintain proportionality, and in line with the EIA Regulations, this assessment therefore concentrates on where significant cumulative effects are likely to arise between topics considered in this ES. As such, the second step is to identify receptors that are close to or over the threshold of experiencing significant effects as a result of an individual topic assessment as it would be reasonably conceivable that these could be pushed over the threshold of significant when an effect occurs in combination with the effect of another topic. For example, if a receptor were close to being significantly affected as a result of visual intrusion and were also to be close to being significantly affected by a change in the noise environment, in combination this may be considered to be significant.
- 18.5.6 For the Proposed Development, the most likely types of receptors where topic effects are likely to combine are those relating to the amenity of the relevant human population. For example, the occupants of a residential property in close proximity to the Proposed Development might be subject to adverse effects in terms of noise or air quality, as well as with regard to pollution from contaminated land, or any combination thereof, each of which, when assessed individually, may not be significant in EIA terms. However, when assessed in combination, the cumulative effects may be judged to be significant.

- 18.5.7 Considering the common receptors between each technical chapter, and the potential for significant inter-project effects, the main receptor considered in this assessment was the surrounding properties, including those at Downside and Lulsgate Bottom. Humans on site (including construction workers and airport users) and the adjacent road network were also considered. Specifically, of these receptors, those that were close to or over the threshold of experiencing a significant effect were:
- Melody Cottage (in Downside) – a moderate significant visual effect; and
 - Seven properties close to the A38 (in Lulsgate Bottom) – moderate significant effect from annual mean nitrogen dioxide.
- 18.5.8 These receptors had the potential for significant inter-related effects as a result of the combination of air quality, noise and vibration, visual, traffic and transport, land quality and flood risk effects on human health and residential amenity. Because this combined assessment involves different environmental topic assessments that cannot robustly be combined, the outcome of this CEA is reliant on the application of professional judgement.
- 18.5.9 A number of common receptors were excluded from the scope of the inter-related assessment due to significant inter-related effects being unlikely. A number of designated sites were a common receptor for both biodiversity and air quality, though these were not included in the inter-related assessment as the effects of air quality on these sites are reported in **Chapter 11: Biodiversity**. This is also the case for standing water/ponds, which was a common receptor for surface water and biodiversity, though only reported in **Chapter 11: Biodiversity**.

18.6 Assessment of inter-related effects

- 18.6.1 There is the potential for increases in noise and air emissions at the properties nearby the application site and users of the site due to traffic, construction activities and operational activities. Reported air quality effects are generally not significant, with the exception of annual mean NO₂. It is anticipated that during operation, seven properties close to the A38 north of the airport, in the vicinity of the A38/Downside Road junction will experience moderate adverse effects. However, all concentrations of NO₂ remain comfortably below the 40ugm⁻³ limit value, and it is predicted that breaches of the 60ugm⁻³ one-hour AQAL are very unlikely. In addition to this, the surrounding properties may experience views of the Proposed Development. Individually, these effects have been assessed as not significant, with the exception of Melody Cottage (in Downside) which would experience a moderately significant visual effect during the first year of operation. However, there is the potential for an interactive effect on the health and residential amenity of the population at the surrounding properties due to these changes.
- 18.6.2 **Chapter 16: Health and Wellbeing** assesses the individual effects of air quality and noise to have a **negligible effect** on the health of the general population and up to **minor adverse** on the health of vulnerable groups, during both construction and operation. This is due to the fact that neither the annual mean or hourly Air Quality Objective will be breached and all levels are comfortably within legal limits, demonstrating that an acceptable level of health protection is in place. During construction of the Proposed Development the works will be phased, meaning that emissions to air and noise will not be continuous at all points of the application site at all times.
- 18.6.3 Residents of some properties surrounding the application site, the adjacent road network and humans on site are potentially at risk from a further interaction from the combined effects resulting from changes in air quality, noise and vibration, visual changes, land quality, surface water quality and flood risk during construction and operation. The combined effect of these changes could be a reduction in residential amenity and health. The effect of flood risk at the closest residential receptors were assessed in **Chapter 12: Surface Water and Flood Risk** as **minor (not significant)**

during both construction and operation, while **no significant effects** were reported in **Chapter 10: Land Quality**.

18.6.4

As generally **no significant effects** were reported for noise, air quality, flood risk, land quality and visual changes, the inter-related effect for the majority of the surrounding properties, adjacent road network and humans on site is anticipated to be **minor, and not significant**. The exception to this is the properties off the A38 (around Lulsgate Bottom) where effects of **moderate significance** are anticipated from annual mean nitrogen dioxide (see **Chapter 8: Air Quality**) which could result in an inter-related effect that is **moderate** (i.e. no change from the air quality effect). Additionally, Melody Cottage (at Downside) would experience a **moderately significant** visual effect during the first year of operation (see **Chapter 9: Landscape and Visual**), which could result in an inter-related effect that is **moderate** (i.e. no change from the visual effect). This would reduce to **not significant** by the fifteenth year of operation as visual screening will mitigate the effects.

18.7 Conclusion

18.7.1

No significant adverse inter-project effects are anticipated from the Proposed Development together with the 'other developments' presented in **Appendix 18B** and the 10 mppa and GPDO development at Bristol Airport. There is **one beneficial inter-project effect of moderate significance** on the collective health benefits from employment and investment from the 'other developments' in addition with the Proposed Development. This is reported further in **Section 16.11 of Chapter 16: Human Health**.

18.7.2

Generally, there are no significant inter-related effects anticipated. The exception to this is Melody Cottage (at operation Year 1 only) and seven properties around the A38 which were assessed as **moderate significance** due to the effects of visual changes and annual mean NO₂ respectively (which is no worse than the assessment of the effects alone). For Melody Cottage, this will not be increased as a result of other effects acting and by year 15 the visual effect would be **not significant** due to the effects of screening.