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Submission

Long Term Airport Option

Airports Commission Stage 1

Long Term Hub Option

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Davies Commission

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This proposal recommends a new capable two runway international interlining hub airport located in the Severn Estuary. The proposal is one part in a suggested national strategy to manage and then gradually reduce overall aviation carbon emissions. The existing systems are inefficient and expanding them will expand inefficiency. The purpose of this proposal is to advocate long term capability that maximises economic benefit within the UKs current and future carbon limits.

Severn24s capability is described as enabling 2050 carbon targets to be achievable. This new aviation capability is unencumbered by slot restrictions & capable of access to & from destinations of choice over new routes and time zones – and in future, to airports at destinations that may incur future night-time restrictions or curfews. Maintaining the UKs Global Hub Status centres on meeting rising night-flight demand from long haul destinations. An affordable, 24hour capable airport to serve UK Global markets *is required*.

The overarching strategy is to reduce overall surface access to UK Airports reducing pollution and carbon. The strategy recommends focused long term capability to the West, the Midlands and the North. The balancing of capable aviation across the nation reduces surface access, and provides new secure access to world markets.

This proposal is estimated to cost 5 Billion GBP. The proposal is free of certain assumptions particularly that new London ATC may have an economically soluble outlook or aligned timelines to any London options implementation. Airspace expansion detailed interaction between SE airports remains to be addressed as are their ATC cost allocation, similar to allocations of total surface access costs. This proposal offers the Commission solutions free from the now developed and highly complex SE airport debates. This proposal does not require major new road and rail access, or major urbanisation, or require taxpayer funds.

Assessments

Runway **capacity** in the UK is calculated by the DfT using ATMs. **Capability** by runway length is acknowledged but not prioritised, particularly for the regions. UK runways less than 3000m are marginalised for international air freight and becoming more so for passengers via optimal load heavy wide-bodies.

A cornerstone of SERAS is that individual airport's bear surface access and associated environmental costs. Despite White Paper support, at Stansted, a business case could not develop without major taxpayer funding that did not materialise from the Treasury and at costs that budget airlines could not contemplate.

Current emissions are measured on an annualised basis. Future EU or NAQD movement towards seasonal, daily or peak measurement over time will require dispersal of emission sources or limit peak runway ATMs.

Current pressures on night and early morning incursions driven by incentives are increasing with capacity constraints. Frankfurt has recently lost its night time capability and with that precedent established there are real medium / long term risks that valuable early morning traffic will be further curtailed or complete curfews imposed at other EU airports.

The Commissions stated aims that;-

The sift criteria reflect an integrated approach which account full spectrum of relevant issues. This will include looking at the wider urban and regional impacts of new infrastructure, for instance on quality of life, alongside both more direct economic benefits for the aviation sector and its users, the sift criteria will enable balance to the different and potentially competing interests and objectives which will need to be borne in mind as we review the options.

As understood – these aims should be applicable at high level in the Commission's stage 1 sifting criteria and assessments – and that should include **allocated costs** for surface access, urbanisation, airspace and environmental major financial inputs, including carbon, and including taxpayer input to be factored into stage 1 assessments. This should produce meaningful options recommendations that can be carried forward in later stages with confidence. This is essential to move UK aviation forward avoiding a repeat of 2003.

Davies Commission

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Long Term Sift Criteria

This proposal submission is aligned to the sift criteria in this initial stage 1 for long term options. The development and assessments of submissions for sift / screenings are to be broadly in line with the DfT's WebTAG3 approach. We respectfully draw the Commissions attention to DfT WebTAG – "Aviation Appraisal".

Within this and other DfT publications or supporting documents are little or no guidance for a potential second UK interlining hub, 24 hour operations, airfreight, night flights, or any new airport – in fact comprising the substance of this proposal. As a new airport there is simply not the substantive hinterland of data compared to existing airports. As such this proposal is tabled in the expectation that a new airport or airport strategy can be allowed to be assessed beyond stage1 - where a rounded assessment of all DEFRA criteria is undertaken.

Past approach methodology appraisal

Our concerns remain that DfT `regional` methodologies, in traffic allocations as applied in practice, to non SE UK long term options presented in a long term strategy, would not support similar EU airport models that have operated for decades with supporting urban populations of between 1 and 1.5 million people.

Regional Geography Demographics and Economies

The Commission is now investigating airports, airlines and airline alliances operational models. When compared to interlining `Hub` airports and systems within European / EU comparable markets and regional demographic catchments, we find, [as examples];-

- The Netherlands can support Schiphol with a population of 17m people
- Frankfurt is supported by the population of Hesse with 6m people
- Munich is supported by Bavaria with a population of 17m people

London and the South East have a population of circa 17m people.

Greater London has an estimated GDP[GVA] of 250Bn [SE-195] [Scotland-140] [E Midlands & NW-200]. The SW, Wales and West Midlands have a population of circa 13m people. The `West`, combining the SW, Wales and West Midlands have an aggregated GDP [GVA] of circa 270Bn - in excess of Greater London and without the benefits of three South East major airports economic contribution.

Whilst a broad comparison, the principle indicates the structural fault in `predict and provide` demand models as sole arbiter of future major UK airport development. International airline carriers in interlining alliances, - Who generate `hubs`, have historically exploited capable 4000m runways *throughout* Europe and continue to develop. It should be no different in the UK. Ideally, major UK carriers, could expand their business to the benefit of the economy utilising Severn24. This long-term option is within a balanced national strategy that addresses future carbon limits on UK aviation that will condition the most efficient use of airport resources.

Synopsis

It is trusted this proposal, unsupported in 2003, will receive an objective examination a decade later based on the complex reality surrounding London airports once predicted that has now become plainly evident. In 2005, France announced plans for a new Gateway airport with dual 4000m runways at Nantes at a strategic location once considered in the 60's for supersonic North and South Atlantic, ME and Africa routes.

Heathrow's dual 4000m runways are unique in the UK, but standard worldwide at major airports in countries with whom the UK wishes to trade competitively in the coming century.

This long term proposal directly addresses long term carbon limits, advocating a new airport as a solution to enable carbon targets to be met efficiently as part of a national strategy including existing major UK regional airports. This will reduce overall surface access, rebalance the economy, and provide intercontinental capability and connectivity, at affordable cost, to the west of the M4 corridor and across the UK.

Introduction

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Consensus to stimulate the economy by viable means is evident. The proposal outlines identified major economic benefits recommended for further exploration. This outline describes a balanced UK regional response to world dynamic aviation long moved on from centralising policies of the 40's & 50's to date.

Global forecasts predict aviation will double by 2030 and double again by 2050. The realistic forecast demand for world air travel adopted by responsible authorities and aircraft manufacturers is to **2030**. Carbon limits and mature markets predict the UK and EU will not follow that rate. UK Aviation growth is presently limited to 60% above 2005 levels, based on prudent assumptions, to meet carbon commitments. To meet that target will require optimum efficiency. In reality, hard choices will require to be addressed. Carbon targets require real reductions to succeed. This must include UK surface access reduction to centralised airport concentrations.

Much of the present `internal demand` for aviation traffic contributes to a real net UK tourist deficit, and via foreign carriers, serving their respective foreign hubs. UK Airport's employment levels are reducing as are net benefits to the UK economy from `internal demand`. However `external demand` to the UK via strategic air routes and EU nexus could increase towards 50% by 2020 and possibly near double by 2030, but certainly at higher rates from the non EU countries airline carriers and their expanded or multiple new airports built and building over the last decade. This suggests a long term gradual trade-off between the deficit internal demand and attracting new long haul traffic of value to meet carbon targets or their probable reductions.

International traffic revenues, and benefit to the economy, particularly for airfreight is and will pass by the UK without capable infrastructure delivered quickly and economically. Modern efficient capable runways, framed within a coherent national plan balanced across the regions is the best means of efficiently meeting carbon targets, or future reductions in carbon targets. By this means expanded global traffic of value can be handled without breaching carbon limits or, regional & localised emissions breaches by concentrated expansion.

Strategy

This outline proposal does not present `more of the same`. This stage 1 report addresses UK aviation capacity not centric to South East airports. UK aviation hub status development can be achieved with a second `regional` interlining UK `hub` as evidenced abroad in several pragmatic instances. Germany's Dusseldorf, Munich and Frankfurt handle circa 120mppa in a national multi hub system. There is no Berlin concentration.

European countries have long understood the value of 4000m runway capability – a large part of Heathrow's core success. The solution proposed is a `National Backbone` of runway capable UK regional airports. These are Severn24, Birmingham, East Midlands, Manchester and Glasgow. There is then present a National Aviation framework to cope with international demand to maximise economic benefit and drive **efficiently** towards carbon targets by more point to point travel by ground, and air. Maintaining as much international traffic demand from the regions, in the regions, will allow SE regional demand traffic to grow allowing the SE economy to grow. This makes best use of existing capacity, can be at no cost to the taxpayer, and aviation carbon targets could be attained. It should be noted that the overall UK target reductions in carbon remain.

The alternative

The `predict and provide` approach by the DfT has developed unforeseen consequences - the primary consequence being the concentration of airports in the SE creates a self-propelling forecast demand and trajectory - that albeit it accurate in simple analysis, actually distorts the UK demand profiles - as it allocates forecast traffic to existing airports via a capacity model when that capacity model projects new capacity to sustain - as evidenced by SE options under consideration. This will require major surface access increases by train, car or coach - or by HS - to the SE, greatly diminishing opportunity to reduce carbon.

If the full `capacity demand` model for some or all existing SE airports cannot be delivered quickly or at all, it should be self-evident to explore other national strategy possibilities to deliver an effective carbon solution.

Summary

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No long term option can be considered in isolation. UK airports and options have been validity tested. This long term proposal has been developed within a holistic national, international and EU framework. For the UK the **long term** runway options considered to maintain the UKs aviation competitive trade from 2022-5 are:

- Second Runway at Birmingham
- 4000m Code F runway at Glasgow
- Severn24 Dual 4000m ICAO Code F/G runways

The Midlands population and industry is greater than several EU countries with better runway provision. A second runway at Birmingham would allow maximum use of the extended 3000m main runway. Surface access at Birmingham and Manchester is good with capacity. Over time, options for increasing Birmingham's main runway to 3500m or 4000m should be safeguarded. Similarly for Manchester's runway, now Code F. Manchester, E. Midlands and Birmingham are valuable 2015 UK aviation resources.

A new Code F/G 4000m runway at Glasgow is suggested employing the existing runway as an outer taxiway with reserve as emergency runway. This should be economic in lieu of runway extension in cost and time, under normal costing indices. Existing taxiway could be employed for Code F stands development particularly for airfreight. Glasgow's location under existing transatlantic air corridors and as regional hub to Scandinavia, Iceland and the USA makes Glasgow a potential long term strategic location for future National runway capability. A railway and motorway would require graded and tunnelled for several hundred metres but feasible and suggested for **long term** 24hr runway Atlantic capability serving all northern geography.

These airports are not the responsibility of this report, but provide an outline UK framework in the absence of 30 years planning to frame a credible and meaningful realistic long term carbon approach to consider.

The Severn24 Airport proposal runways capabilities serving the west are described within this report.

EU methodology approach

To indicate the importance of the Stage 1 sifting process - had the Severn proposal identified in 2003 been supported by the DfT and the Government, the benefits to the present day economy of those regions, and the UK would have been profound. In 2005, the French authorities revealed a new airport project to develop a once considered location for Concorde in the 60's at Nantes. Ostensibly, - for 4-9 million passengers this airport is to be commissioned in 2017 with two 4000m runways taking advantage of Atlantic air routes and unrestricted night flying.

This airport is reportedly to cost 586m Euros, with a total budget including surface access estimated to be in the order of **2 Billion Euros** by connecting to rail and motorway routes in that region – and those costs reflect a difficult terrain. However, Nantes new airport is proceeding against very deep and very real environmental concerns and signal the high-level importance that Nation gives to such a national capability with future economic air trade through this century.

However, with northern Europe airport capacity and particularly 24 hour optimum capacity decreasing through 2020 - 2030, the French have predicted and provided a long term strategy, timeously and capable to meet 2017 demand regionally, and with Gateway potential for Air France and other international carriers.

The environmental approach for this proposal differs.

Environment

This proposal advocates low noise within 48-50dBA or better affecting people, recovery of damaged areas, no wholesale or major demolitions if at all, nor ruining countryside. The new airport should be self-sufficient in energy and water treatments. It can be a state of the art facility employing the latest energy harnessing technology. The proposal will be subject to a full environmental appraisal to examine all factual data.

Strategic Fit

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What are the nature, scale and timing of the aviation capacity and connectivity delivered by the proposal? How will the proposal support or enhance the UK's status as Europe's most important aviation hub? In order to inform our appraisal of whether proposals are consistent with our assessment of need, scheme developers should set out the level of additional capacity and connectivity that could be delivered, and how and when this would be provided.

The proposal can be viewed within the suggested national strategy for regional airports in a strategic national fit or as standalone. Severn24 runway scale timing capacity connectivity and delivery in summary tabulation:

ICAO Code G 4000m	Planning Design Construction	Maximum Capacity	Connectivity	Delivered [from 2015]	Cost
Phase 1 Runway	7 years [5 in construction]	30 mppa	Global Interlining	2022	3 Bn GBP
Phase 2 Runway	3 years if consecutive	60 mppa	Global Interlining	2025	2 Bn GBP

The proposal can provide – **by 2022-5** – interlining `hub` intercontinental air services accessibility to western regions that currently have a low propensity to fly – some the lowest in the UK. This reserve of `immature demand` if mobilised can propel economic development and inward investment to the western regions. The proposal provides a **new** platform for UK carriers to develop plus airline alliances and new operators who seek a new UK base to expand their operations to address new international demand from 2022.

To validate, it is necessary to review the current DfT Aviation forecasts – and extrapolate key data;

DfT 2013 UK Demand Forecasts: - including 2015, 2020 and 2025 extrapolated forecasts to aid deliberation:

	Pax mppa	Pax Increase	Airfreight	Movement	Notes
2010	211			0.4% pa increase	
2015	238	+ 27			Extrapolated
2020	264	+ 53			Extrapolated
2025	292	+ 81			Extrapolated
2030	320	+ 109		60,000 ATMs	Carbon Limit
2050	480	+ 269			Discounted

2050 forecasts are discounted for review in this proposal as unattainable on carbon targets and, undesirable.

These forecasts [down 40% from 2002] reflect the 60% increase assessed to maintain the UKs 2050 carbon targets resolved by the Committee for Climate Change. International aviation forecasts, including aircraft manufacturers that predict a `step change` 50% increase of international air traffic by 2020 and doubling by 2030. In reality `unconstrained external demand` could reach the UKs carbon limit well before 2030 probably by 2020 and certainly by 2025. `Predict and provide` for the SE is not describing the potential available to UK aviation, trade and the economy that could develop well before the DfT portrayal.

The UK should examine all options that can deliver realistic capacity demand efficiently through 2015, to 2025 to which the Davies Commission is addressing in short and medium terms options from existing airports.

Long Term National Capability Fit

To build on regional short and medium term options, this outline proposal builds on existing regional runway capable airports those being Manchester [now Code F], East Midlands, and Birmingham with a second runway available 2015-2020. This leaves a capability long term gap to the north, suggested addressed at Glasgow with a 4000m Code F runway that could be available by 2020 and a strategic capability gap to serve the West, SW and Wales that can be addressed by Severn 24 by 2022-25. If so required, the combined capacity of these five installations can meet forecast demand projected to 2025. – *if* deemed new capacity be regionally provided.

There is thus national reserve by 2020-25 to meet projected demand in the national interest should the alternative options proposed not materialise or be available before 2030. Manchester, Birmingham and East Midlands are investing in new facilities, all supplementing runway capability.

Strategic Fit

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SE Alternatives

To examine the SEs potential requires to acknowledge that there are existing airspace interactions between Gatwick / Heathrow and Stansted / Luton. Major expansion at one location may impact another or restrict growth until ATC advanced management systems are introduced. To increase Heathrow's or Gatwick's ATMs by 220,000 or a combination to circa 440,000 ATMs increase is not a simple or short/ medium task. Similarly with Stansted and Luton there is a history of airspace interaction with some relief in the early 90's with the restrictions from military corridors being re-aligned. This allowed the fledgling RyanAir to consolidate and EasyJet to start up - availability of air corridors is *not abstract*. Thames options complicate matters further in a complex matrix to what as yet no public solution addressed or found nor have ATC real allocation of costs.

Further, building extra runways at any SE location is one aspect, the others being provision of supporting new infrastructure including urbanisation, water, supporting new surface access and its business case, or HM Treasury funding to enable whole packages. In reality, no known SE options, could be available by 2020 and probably not in any reality by 2025, or 2030 with airspace and surface access capacity aligned. In short, if major SE options are singularly pursued the UK will lose economic international aviation trade and benefit for at *least* a decade and probably at the expense of the UK Taxpayer. No less a concern is ultimately high UK option costs being passed to passengers and airfreight that would hinder UKs competitiveness and global hub status. The major costs of major SE options may be self-defeating to UK hub status.

In order to inform our appraisal of whether proposals are consistent with our assessment of need, scheme developers should set out the level of additional capacity and connectivity that could be delivered, and how and when this would be provided. This may include information on, for example, the number and type of additional flights supported and the scope for the proposal to facilitate the development of new routes.

There are multiple new airports and major expansion at existing airports occurring around the world. Some countries such as Nigeria and China & Brazil have initiated major upgrades to their entire national system.

With any option presently tabled for additional runways the allocation of slots to airlines is a complex process differing across different airports, with operators subject to regulatory control / EU competition. As a general rule circa 50% of new slots are allotted to incumbent airlines and the rest distributed in end effect as auction.

Irrespective of routes or destinations operators need to acquire slots – and for many destination countries the expense of attaining slots – combined with landing charges make the UK unreachable to several destination countries. As example, carriers from Nigeria and South Africa have either withdrawn or scaled back flight services due to existing UK airport costs and availability of slots and the cost of slots. Rising charges will further disadvantage developing and new economies and consequently UK trade opportunities.

Severn24 could deliver full unencumbered slots that would interest not solely developing countries but existing UK operators and airline alliance's long term.

Primary US and Far East traffic related to optimal time zones demand prefers UK early arrivals and late morning / early afternoon departures generating peak demand. There is further growing pressure for increasing London night flights. Such peaks and night traffic would naturally be supported by the proposals new long haul airport capability – leading in turn to medium and short haul connectivity.

The proposal is intercontinental capable that could accommodate any new routes particularly to long range developing nations and particularly to the new world economies who will never the less require an economic UK airport platform to develop routes or to base given exchange rates. In other words, international connectivity is best served by an economic base competitively priced to attract new global air traffic.

There are myriad other possibilities. Transatlantic flights using the west could save a round trip 60 minute's fuel burn plus stacking delivering passenger's to the west of the M4. There are multiple opportunities not explored or within this outline proposal that could be discovered by new and future operators.

Strategic Fit

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Proposals should also explain how the impact of the proposal on UK airports relative to key European and international comparators. In doing so, those making submissions may wish to set out their assumptions about the future development of the national and international aviation sector, including any potential future scenarios they have considered, and how these have influenced their proposals.

Night flight restrictions are increasing at EU airports. Several EU airports night flight quotas are full and others nearing capacity. Frankfurt has lost its night time slots, Schiphol is under pressure. Future scenarios as examples;-

For both the EU and particularly the UK, assumptions that present overseas airports can continue to operate 24 hour operation may be misplaced as communities and societal citizenship rights grow. Far East and other time zones will, over time, develop night flight restriction resulting in no direct long haul connectivity from certain important trade centres without expensive stopovers. A new UK capable long haul 24 hour airport is essential to meet that demand as a strategic fit – and provides *secure* connectivity trade over future decades.

As the Commission process progresses, we will be assessing proposals against our emerging assessment of need, informed by the evidence presented in the Commission's discussion papers (including on potential future developments) and on submissions made in response to these.

In May 2013 the London Assembly Transport Committee produced its report 'Airport capacity in London'. The report was derived from balanced perspectives presented by many industry representatives – It states:

"At the centre of the economic debate about changing airport capacity should be local demand. Each airport in London, including Heathrow, serves a geographically distinct local market and it is this market which is a major influence on where airlines fly to. In 2010, 127 million people used London's airports and 85 million of these passengers had surface origins or destinations in the South East or east of England. Of these 85 million passengers, around 47 million (over half) had origins or destinations in London boroughs."

As stated, the London Assembly drew on specially commissioned research to establish this data as CAA sample data questionnaires collated represents small percentages in passenger numbers with high degree of margin. Estimates of interlining transfer passengers numbers vary at Heathrow and Gatwick from available data. However it is clear that the London airports handle millions of passengers from West and from the Midlands.

If London and South East economies wish to grow but minimise environmental impacts from aviation or expanded aviation it would be logical if the regional demand, remained in UK regions, by provision of new airport capability attractive to international carriers - allowing that regional demand to the SE to be replaced by expanding business opportunities in the SE exploited for the London economy. Hence the proposal submitted that can address all regional demand and attract valued growing global demand – that would in essence – maintain the UK's Global Aviation Hub Status.

Does the proposal support the Government's wider objectives and legal requirements (for example, support of national and regional economic growth, re-balancing of the economy or alignment with national climate change commitments and global targets)? Where proposals are considered to support wider Government objectives, such as, for example, promoting regional or national economic growth or supporting re-balancing of the economy, this should be explained by scheme promoters in their submissions.

The proposal as standalone or within a co-ordinated national strategy will meet multiple wider Government objectives including climate change, regional promotion growth, creation of opportunity, jobs and stimulus. In principal the proposal seeks to make best use of capacity in all respects of the term capacity. The support of national growth is addressed in this proposal as there will be substantial increase in valuable international trade in passengers and airfreight in the very near future as global traffic predicted to double by 2030.

The UK will not be able to accept all global traffic at the forecast increases but should maintain a capability to handle the substantial long haul passenger and airfreight demand that would be of best beneficial value to UK trade within carbon targets.

Strategic Fit

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We invite those developing proposals for enhanced capacity to also set out their assessments of how the growth in aviation enabled by their proposals can be accommodated within the national and international frameworks for reducing greenhouse gas emissions. This might also include setting out how they consider long-term reductions in carbon emissions can be delivered over time.

Present Carbon Policy Framework

In 2008 UK long term carbon reductions were set out in legally binding targets to reduce overall UK emissions by at least 80% below 1990 levels by 2050. In 2009 a decision was made to adopt a target that gross CO₂ emissions from UK aviation in 2050 should equate to 2005 levels. Analysis undertaken by the Committee on Climate Change suggested that aviation demand growth of around 60% between 2005 and 2050 was compatible with the 2050 target, given prudent assumptions. However those assumptions include the rest of the UK to reduce to 85% below 1990 carbon level which if not attainable will impact UK aviation's 60% limit.

Assumptions to increase aviation capacity can only be contemplated within an efficient aviation approach.

Strategic Efficient Carbon Reductions

Formulated steered presentations in favour of concentrated geographical options lose sight of core values that is to **reduce** overall aviation related greenhouse emissions generated in the UK. There is significant carbon production generated by capacity constraints and congested airspace. The Commission has noted that, *"in 2030, total 'leakage' exceeds the apparent carbon saving, implying that at this point capacity constraints are actually acting to increase global emissions. This is due to the differential impact of capacity constraints across UK airports."* Ergo: Balancing capacity across UK to reduce carbon is better than increasing the differential.

A new modern efficient airport delivered by 2022-2025 would have a positive impact to reduce leakage. - By 2020-25, within this framework, major aviation milestones would be delivered as quickly as possible across the UK assisting the effort of meeting aviation carbon targets or target reductions in the remaining 25 years to 2050.

ATMs carbon generation per passenger are reduced by NGLA [A380s]. Fully capable long range runways can increase carbon efficiency. Further, a new efficiently laid out airport as proposed unencumbered by `grandfather slots` will provide multiple opportunities to use larger aircraft, reduce taxiing fuel burn, and efficiently use existing airspace – assisting to make carbon target reductions feasible to achieve by **2022**.

Potential National Strategy

As suggested for consideration, a national co-ordinated national strategy for national efficient capable runway dispersal across the UK could deliver major carbon benefits, or;

Alternatively, the concentrated SE approach will generate inefficiencies that will increase greenhouse gases emissions disproportionately. This concentrated approach is driven by contemporary economic models. These do not constitute a long term strategy to reduce emissions. Efficiency – that is efficiency targeting of all UK combined systems and sources will deliver greenhouse gas reductions. There is poor efficiency in geographical concentration. There is poor efficiency in providing major new surface access in already concentrated zones and especially when underutilised resources are available to the West, Midlands and elsewhere in the UK.

In principle, balancing UK airport provision will in turn balance and reduce the principal sources of greenhouse gas. Surface carbon saving would additionally include point to point long haul airfreight presently handled in dedicated European cargo hubs operating 24 hours and trucked to the UK channel ports for onward distribution across the UK, with return journeys.

This suggested strategic fit constitutes long term aviation reductions in carbon emissions. This compliments existing systems such as the UK Irish FAB delivering measureable carbon saving in a co-ordinated strategy. Addressing carbon genuinely can produce results and can increase trade potential in the shortest timeframe.

Economy

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What are the potential national economic impacts of the proposal?

The proposal supports policy and strategy to re-balance the UK economy. It would provide UK strategic resilient balance in several spheres particularly trade and industry propelled by new inward investment from the UK and overseas. It is core infrastructure that will provide multiple opportunities to the regions that will be exploited nationally and internationally in an industry known to be dynamic and evolving.

The proposal would provide immediate and significant stimulus to the construction industry for 7-10 years.

As guide, Heathrow and environs contributes circa 1% of UK GDP developed over time. If Severn24 built out to full capacity we could assume as guide a fraction of GDP uplift in general comparison but the GDP uplift to the regional economies of the West of the UK and particularly Wales would be measureable in full percentage points. For an investment of 3-5Bn inflation adjusted this presents a very positive cost / benefit ratio particularly if the proposal was privately / part privately funded. Measured potential from an outline proposal would require more detailed collation but there is no doubt that the economic benefits would be profound.

The Commission is reviewing the evidence on the links between connectivity and the economy as part of its work programme assessing of the scale and timing of any need for additional aviation capacity in the UK. We invite those developing proposals to set out their assessments of how the additional aviation capacity and connectivity enabled by their proposals impacts upon the nation's economy as a whole – including supporting growth across the UK's regions. This could include impacts on trade, foreign direct investment and tourism, as well as how it enhances access to international aviation services for both passenger and freight users throughout the country.

Undoubtedly inward investment will benefit the western regions with economic long haul connectivity. This intercontinental connectivity can be delivered in advance of 2025. Albeit part of a national regional airport development strategy promoting growth this proposal is specific to economic connectivity to the western regions of England and Wales although there are benefits to the economy as a whole through new efficient national and international connectivity opportunities.

The western regions have as example rail and road – excellent embedded connectivity infrastructure - that would with airport stimulus propel higher service frequencies that would provide multiple economic opportunities for growth benefit to all spheres served by inter regional surface access. Employment generated in other economic spheres from the airports operation in tourism, service industries, logistics, transportation should be described in separate reports. Tourism in particular to Wales to the South West and West Midlands wider regions will require separate major studies to assess business strengthening and opportunity benefits.

The key is to optimally employ new UK airport capability directed to those regions with established industry with most scope for growth and better ability to **absorb** new economic growth to ordered equitable benefit.

What are the likely impacts of the proposal on the regional/local economies surrounding a) the proposed site for new or enhanced capacity. Scheme promoters should set out their assessment of these effects in their submissions including details of how their assessments have been made.

Planning and Construction

A 3Bn spend over 7 years or 5Bn spend over 9 years [with 40% on-costs built-in] gives as experienced guide r.o.t in project logistics generates 5-6000 full-time jobs equivalent over the period. This would include professional services in all sectors with multiplier effects in service industries primarily in the western regions.

The majority of spend would be in the regions. In addition, off site fabrication or pre-fabrication generally supports and strengthens existing businesses although new employment will be generated from business start up with new opportunities presented. The economic `impact` would effectively reflect immediate and major stimulus to the regional & UK economies - and to maximum end-effect productivity.

Economic benefits from multiplier effects require separate collation and investigation from a major stimulus.

Economy

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Employment - Airport Operation

The scale of the proposal requires more explanatory description of the potential employment opportunity. In airport design calculations for potential staff numbers it is required to be as accurate as possible in facilities and financial planning. Base benchmarks of staff nos. / per mppa can be employed in preliminary design based on the type of airport and the nature of the operation. The numbers are refined to the specific operational requirements.

Statistics on potential airport expansion are distinctive in the UK in that they tend to be lower than the EU and lowering in both direct and indirect employment. It is easy to over exaggerate direct and indirect UK potential airport employment. Mid 1990s to mid-2000 design employment numbers per mppa decreased despite a 30-40% increase in traffic. Indices on a base of 9-1000+ per mppa employed in 2000 for a generic medium sized UK `regional airport` have reduced to 6-700 per mppa by 2010.

Regional airport employment ratios of 6-700 staff per mppa are further conditioned that several UK airport operators employ less than 300 people on a full time career basis with complimentary outsource employment for operations to the levels of circa 5-10000 people per airport dependent on the scale of operation. As noticeable are the indices show that some regional airports expansion are not reflecting in rising employment and at some the employee head count has reduced following expansion and mechanical investment.

It should be noted that foreign airlines are a major factor in the UK aviation airport sector. There is evidence to support that much current regional traffic is supporting foreign hubs and supporting evidence that a significant element of leisure traffic is generating a tourist deficit from budget operations not explicitly acknowledged in assessing the economic benefits of many smaller regional airports to the UK Economy.

However at this option proposal the employment factors differ in several respects. A 24hr operation generates three shifts for passenger's and airfreight. Ratio numbers also differ on, maintenance and obviously numbers of Airlines with operational bases strategically located for future traffic potential. Airfreight generates particular employment ratios not including distribution and logistics employment outside the airport and environs confines. Airfreight data shows direct attributable on-site 50,000 job estimates supported with UK air cargo but with high percentages of self-employed, temporary staff and shared operations that make specific calculations difficult to portray in outline proposal and for the purposes of this report are not reported due to range of accuracies and time to establish – but are expected to confidently add to guide numbers.

The general employment indices employed in this outline proposal for design calculations is taken as on site direct employment only. With three shift potential or two full shifts the benchmark taken as a simple 900 people per mppa for ease of presentation. It is improbable that this overall rate will decrease and deemed highly conservative: As guide - a generic 2022-25 on site direct jobs figure:

mppa	10	15	20	25	30	35	40	45	50
jobs	9000	13500	18000	22500	27000	31500	36000	40500	45000

This overall guidance figure of on-site direct employed in overall facilities planning is specific to the UK for a new airport. At EU and many world airports the ratios are higher – sometimes considerably.

Similarly indirect airport employment should be carefully scrutinised for a new airport particularly in the UK and again it is easy to over exaggerate indirect employment if based on world averages.

The conditioning factors are an international facility, rather than contemporary UK regional models, in that it will require a larger range of product and services to operate long haul services. The numbers for off-site direct employment are not calculated on the same base required for direct on-site but a conservative r.o.t is that they could add 50%.

Economy

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What are the likely impacts of the proposal on the regional/local economies surrounding b) other [regional] airports affected by the proposal? This is also an opportunity for those proposals which include changing or closing operations at another site to explain how those changes will affect upon the local/regional economy/s of the other affected site/s, and how they would propose to mitigate and manage those impacts.

This airport is set to FAA VI capability with a high proportion of long haul traffic requiring quality state of facilities. It is unlikely to attract the budget carriers. It should not specifically cater for charter. It is unlikely to attract air services to ferry people to EU hubs to connect to international air services. It is possible that airmail may centre to a new logistics centre with embedded surface access but not investigated at this time.

No airports in the region would be affected as the Code F capability would attract new traffic from developing markets in expanded world aviation that these airports have not and cannot meet. However national airfreight capability would be greatly enhanced.

There are no plans to scale back Cardiff or close Bristol. Negative portrayal of `mitigation` belies that a world class airport facility at this location would provide a major boon to the established aerospace industries at Bristol, Filton, Broughton Airbus UK & Wales. This proposal is precisely the infrastructure required to cement Bristol's aerospace lead at the forefront of technology over the longer term & now Filton airport is closed.

What is the likely impact of the proposal on the UK aviation industry? How will other airports be affected by the proposals and what will the impacts of this be for air passengers and other users, airlines and the wider economy?

There is no doubt that long term choices will require to be made on airport capacity provision with respect to carbon limits but that reliant on future policies.

The aviation sector is in itself a significant contributor to the UK economy. The Commission will be interested in examining the implications of proposals for the health and long term viability of this sector. This will include making an assessment of the implications for the airline industry, as well as for the ability of the UK's airports to be competitive upon the international stage and how this environment will benefit air passengers and freight operators.

UK airports with runways less than 3000m are already being marginalised on a process that will question their long term viability as it has done for airfreight for many years and their contribution to the UK economy. There may be consolidations over time in favour of more runway capable airports.

Long term viability may develop from a broader approach than in the past. The Commission is commended for investigating operational models that can explain [as example] of why Metropolitan Atlanta with a population of 6 million people in The State of Georgia with 10m can support the world's largest airport.

Whilst a broad comparison this indicates that `catchments` as currently used in defined sectors within UK regional forecast assessments may develop a broader definition. This could create new opportunities.

The Commission will also be interested in the benefits to passengers, other users and the national economy as a result of any changes in the level and nature of competition between airports and/or airports within the UK as well as internationally.

Competition in terms of operational revenues and costs passed to passengers is understood. The current competition between airports is option development costs with degrees of difficulty in excess of normal due to degrees of scale, and major degrees of cost.

Without all true costs factored in and knowledge of allocations of costs factored in, it is difficult to define an objective response as to the benefit of passengers or the economy that could accrue.

Surface Access

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What estimate has been made of the surface access requirements of the proposal for both existing and/or new infrastructure?

The proposal intends to use the existing M4 and GWR NR main and suburban railway existing surface access.

Assumptions

Severn Bridges - there are no plans forwarded or suggested on tolls as this entirely a Welsh political matter.

Severn Barrage - There are no planned assumptions on any roadway connection between Wales and the SW.

CONTEXT

There is no detailed update plan from the 2003 proposal due to new planned use for the steelworks site. Very recently, since receipt of the Commissions intent to submit, the proposed M4 Relief project has been re-tabled after several years. The M4 Relief is undergoing funding studies, but it is not presently clear when this 1 Billion project may start. The M4 Relief addresses congestion on the M4 generated both sides of an undersized tunnel relatively near, west to the former steelworks site towards Newport, Cardiff and Swansea.

The M4 in this area is dual lane from the Severn Bridges and has suffered frequent, often serious, traffic congestion in this particular area for many years. It remains unclear what the position would be in 2015 and no public information when the M4 Relief would be available.

In contrast, since 2003, there has been a significant improvement to the GWR HST to Wales and electrification is planned to the HST to Cardiff and ideally Swansea in the coming years. London is now within a 2 hour timeframe to Newport with frequency and daily duration improving since 2003. There are on-going improvements to the GWR planned including potential electrification to Cardiff and Swansea. The main work of this GWR upgrade is publicised to be complete by 2022.

There are extensive public transport systems in the regions, particularly the Welsh Valleys making new potential surface access networks infrastructure unrequired but it is likely that frequency of service will require operators upgrade to serve the airports customers and staff. Potential airport traffic of all modes is anticipated 75/80% from/to the east from the M4 /M5 and all rail routes. Staff routes can balance with a 50/50 split from Newport/ Cardiff areas to the west and, Bristol to the East, SW, West Midlands and further afield.

There are outline plans for HS3 to reach Cardiff but not finalised in route, scope or funding. For HS3 – there are mooted plans, HS3 between the SE, potentially Heathrow and Wales. As a long term option the potential for a second Severn rail crossing via bridge between Bristol, Newport and Cardiff has been safeguard in airport planning for rail not requiring a suspension structure. The economics of reaching Cardiff via new rail would benefit from the proposal. This is not taken as certainty but as a long term option under consideration a route / bridge zone has been conservatively safeguarded that would not compromise aerodrome standards. This safeguard includes spatial zoning to protect long term rail access route direct to the airport.

In principal, the scale of the project requires that two surfaces access phase are described within this proposal;

- **Planning and Construction - 2015 to 2022/5**
- **Passenger Start-Up Operation - from 2022**

These dates have been provisionally set from 2015 when a decision is publically expected on Airports Policy.

Surface Access

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Planning and Construction - 2015 to 2022/5

Assuming a 2015 start - the construction phase is estimated to be 5 years or 8 years for two runways preceded by 2 years planning. Planning and enabling works can overlap by 1 year. Enabling includes a substantial site planning and construction compound anticipated for design co-ordination, contractors and staff facilities that are expected to handle 4-5000 people on-site at peak. This should require a developed co-ordinated plan.

A new temporary halt station is proposed on the 4 track rail paths that will be sized to target a modal split of 60% rail to handle in peak the region of 5000 workers daily for the proposals construction. Existing local and suburban rail networks are extensive and considered very good in all directions. It requires operator services frequencies to be improved and with such traffic the economic case should be assured – also bringing benefit to the wider community that will be sustained by the airports operation.

The construction staff station requires an attendant coach and coaching station to the island that is expected to handle a modal target 20% of construction staff traffic by scheduled bus or coach. Access to the island construction area will most probably be via two temporary access roads. Technique's to screen these for dust noise and such are proven well established as would the landscape re-establishment.

The intention is to either build a freight halt or re-use existing sidings to provide a rail head for construction materials and particularly heavy equipment. This rail head facility could be adapted post construction to provide rail access to the airport again particularly for heavy equipment or on-going construction deliveries. Bulk materials and plant required for the reclamation of the polluted areas and the airport platform construction will require access from the Severn via a dedicated pier / roadway with material loading dock that can be later utilised for aviation fuel supply supplied by river tankers from Milford Haven [TBC] to the airport island to subsurface storage.

During the 7 year period a new airport rail station can be provided at the same locality as the temporary staff halt also servicing mainline and suburban rail.

Passenger Start-Up Operation - from 2022

Exploiting the construction phase leaves in situ ideally 80% public transport access for airport staff from the first day of start-up operations. This can surprisingly represent more of a benefit from first sight when one is aware that thousands of staff switching at shift change over through the day routine mostly exceeds passenger numbers at peak flows – and their substantial joint peak demands on surface access provision.

Similarly inherited facilities planning from construction use via rail and bus allows public transport interchange to the proposed airport from day one of operation for passengers and visitors. Perhaps the inherited construction infrastructure from marine delivery of bulk material re-deployed to handle aviation fuel via water is the most significant legacy removing the need for tankers on the M4 / M5 / M50. It is worth noting that a major airport with such bulk delivery of aviation fuel as economically as possible is a major factor for airlines, particularly long haul carriers in selecting a base or hub for future operations.

For each proposal, the Commission will be interested in understanding how airport users (including passengers and freight users) and workforce will access the airport site.

Two new roads of dual carriageway standard plus emergency lanes and safeguarded lanes will connect to the M4 via existing secondary local circulation by roundabouts or managed junctions. One road will be dedicated to passengers via bus car and taxi, with the second road, also acting as a `back-door` contingency, will be dedicated to HGV, deliveries, airfreight staff and emergency services access. There is no detailed design due to the M4 Relief flux and steelworks site re-use, but the principal tested successfully.

Passengers via rail will be coached from the station to the airport island. The airport landside includes access roads, coach stations, taxis, parking car-hire airfreight deliveries and staff access will all be accommodated on the airport island to respective pick-up / loading points.

Surface Access

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Many of the likely proposals may require the delivery of additional surface transport infrastructure above and beyond existing networks. Where this is the case, the Commission will need to understand the likely scope and estimated cost of this new infrastructure, including how these estimates have been calculated and any assumptions underpinning them. Potential enhancements to existing infrastructure may also need to be considered, particularly where this infrastructure already suffers, or is forecast to suffer from capacity constraints.

The length of new dual carriageways to connect the airport island is approximately estimated at 15 - 20 km in total circulatory to which a provisional sum of 50m has been allocated and included in the overall cost plan. The cost plan separately includes enabling works also requiring road connections so some costs could be shared but until the uncertainty regarding the M4 Relief final position is ascertained it is not possible to determine the length of new roadway required to provide a final figure.

Does the proposal provide effective surface access for passengers, businesses and relevant freight traffic? Will surface access plans provide the capacity needed for expected future demand? How does the proposal impact upon local traffic and congestion? What is the expected surface access split between public and private transport?

Specifically, the Commission is interested in how the airport will be accessible to leisure passengers, business users and freight and logistics companies who depend upon air freight networks. It will also consider the associated benefits of the proposal to wider transport users and the impact upon local traffic and congestion issues. Issues around mode share, (showing the percentage of passengers arriving by public and private transport) may be of particular relevance to the Commission's considerations of environmental factors such as air quality, emissions and noise, as well as to their implications for transport issues such as congestion.

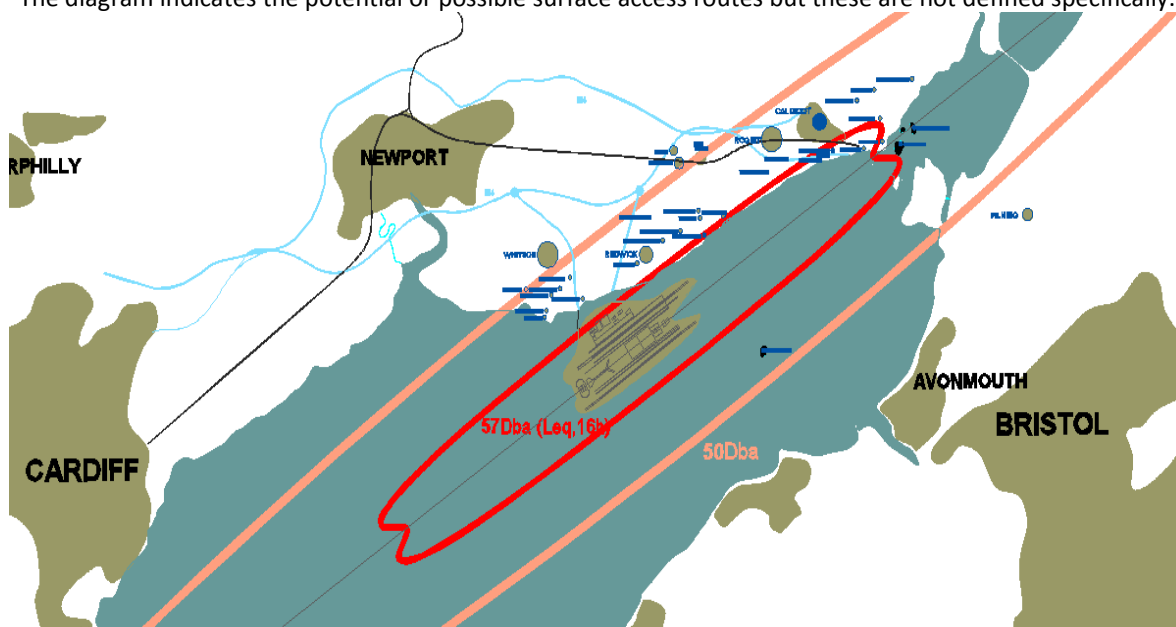
The most successful airports have robust resilient surface access by all means suiting all economic means. Rail and car are important and figure prominently in outline assessments. The airports with most popularity by road include coaches on a national, regional and local network. Taxis and hire cars are within range of Bristol, Newport and Cardiff. The airport is accessible to all different user groups and to the benefit of wider groups in the regions. Impact to local traffic would be considered as severe if the M4 Relief is not completed by 2022. A co-ordinated plan is required but anticipated that with 7 years available and the economic stimulus provided by the airport will engender successful delivery.

Modal Split

Modal split can be contracted in the construction period for 80% by public transport.

Modal split for airport operation is expected to be 40-50% by public transport.

The diagram indicates the potential or possible surface access routes but these are not defined specifically.



Surface Access

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How will the proposal change journey times from major business and population centres for users of aviation services? Efficient journeys between airports and major population and business centres are of particular importance to many airport users. Accordingly, the Commission would be interested in understanding the likely end-to-end journey times between key business hubs, population centres and the airport site, and how these differ from the current and forecast situation without the proposed new infrastructure. This should not be restricted to access from important locations in London and the South East, as well as other business clusters such as in the Thames Valley and around Cambridge, but should also consider journey times to major conurbations and economic centres elsewhere in the UK. This might also include identifying changes to journey times resulting from impacts on other airports.

Existing Road Surface Access

With existing surface access either via rail or motorway end to end journey times by road should not change significantly from current from any major conurbations to this proposed location.

With the uncertainty currently over the M4 Relief Motorway it is not possible to define future improvement.

Existing Rail Surface Access

Existing train journey travel times from major conurbation examples:

	Journey Time [Mins]	To / From Newport
Newport / Severn24 Airport	14	
Bristol TM	38	38 minutes
Bath Spa	13	51 minutes
Southampton	90	141 minutes
Portsmouth	50	191 minutes
Newport / Severn24 Airport	14	14 minutes
Bristol PW	22	22 minutes
Swindon	26	48 minutes
Didcot	19	67 minutes
Reading	14	81 minutes
London Paddington	38	119 minutes
Newport / Severn24 Airport		
Bristol TM	40	40 minutes
Weston Super Mare	27	67 minutes
Taunton [v TM]	33	73 minutes
Exeter	28	101 minutes
Plymouth	62	163 minutes
Newport Severn24 Airport		
Birmingham NS	101	101 minutes
London Paddington	119	119 minutes

Both Birmingham and London are within 2 hours rail travel – frequencies and times should improve by 2022.

Environment

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Air Quality [AQ]

***Air quality:** The Commission is interested in understanding any air quality implications of proposals, including those associated with aircraft and airside operations and from local surface transport links. Are these consistent with the legal frameworks for air quality? What mitigation plans are proposed? Where any locations already identified as Air Quality Management Areas might be affected, either positively or negatively, this should be documented, and where any risk of exceeding air quality thresholds is identified, scheme developers should explain how they would mitigate these effects to comply with the legal frameworks governing this issue. As with other criteria, scheme promoters should consider effects both at the proposed site for new infrastructure, but also at any other sites that may be affected as a result.*

To evaluate AQ implications requires exploring theoretical upper limits of 60mppa capacity with consequential pollutant generation from aircraft operations and surface access. It is limited to exploration as no testing evaluation has been undertaken at new airport outline proposal status.

Benchmark evaluation indicates AQ risks at dense airport campuses with concentrated surface access operating at close to capacity on constrained footprints. Benchmark evaluation also indicated AQ risks when airports are surrounded by urban or semi-urban environments particularly under flight paths. AQ evaluation includes current and future mandatory EU legislation and potential enforcement by NAQD.

In mitigation, to avoid AQ risks and future risks and minimise pollutant concentrations the airport island concept has from the earliest design inception considered air quality as **fundamental** in design development.

The island platform avoids risk of future urban encroachments – a perennial problem for airports the world over. To understand the airport island potential economic development density it is generally sized using models such as Hong Kong for example to accommodate supportive landside functions that require proximity.

The estuarial location has not been assumed clear of any AQ threshold as the Severn accommodates multiple industries including power generation on both banks. However there are no plans to develop the green belt Gwent Levels with other than airport surface access and safeguard a potential HS3 / HST new heavy rail route via the islands terminal complex. It is assumed the GWR HST will be electrified in a decade and that a new M4 relief by-pass will be commissioned at some time in order to develop theoretical upper AQ assessments.

The potential M4 & relief M4 and any new surface access to the airport will be subject to mandatory EU limits for particular pollutants combined with airport traffic. Key pollutants for concern at and around airports are Nitrogen dioxide and particulates (PM10). The EU limits for Nitrogen Dioxide have been binding from 2010. Those for particulates have been binding from 2005 with mandatory further tightening from 2010. It is possible further tightening and enforcement of limits will occur over time. However the design layout and geographic dispersal offers the optimal solution in the UK with surface access connectivity in situ. In short;

There are no known air quality management areas in the locality. There are no identified risks to air quality either locally or regionally via the airport proposal **and** at the theoretical operating capacity. Operating areas are dispersed set in a non-urban environment with the majority of the level flight paths over water.

However in recent weeks proposals for a waste disposal facility near the Severn power station have come to light. This has potential to affect air quality but details are as yet unconfirmed. The waste disposal facility intends to incinerate waste product from the West London area. It is unclear what impact this very recent proposal will have on air quality in the locality or the proposal generally – or whether it will be permitted.

EU Mandatory Legal Frameworks - The proposal is expected to meet and excel AQ legal requirements.

DEFRA Sustainable Development Indicators

The proposal is anticipated to present optimal input for DEFRA in accord with central and regional Policies.

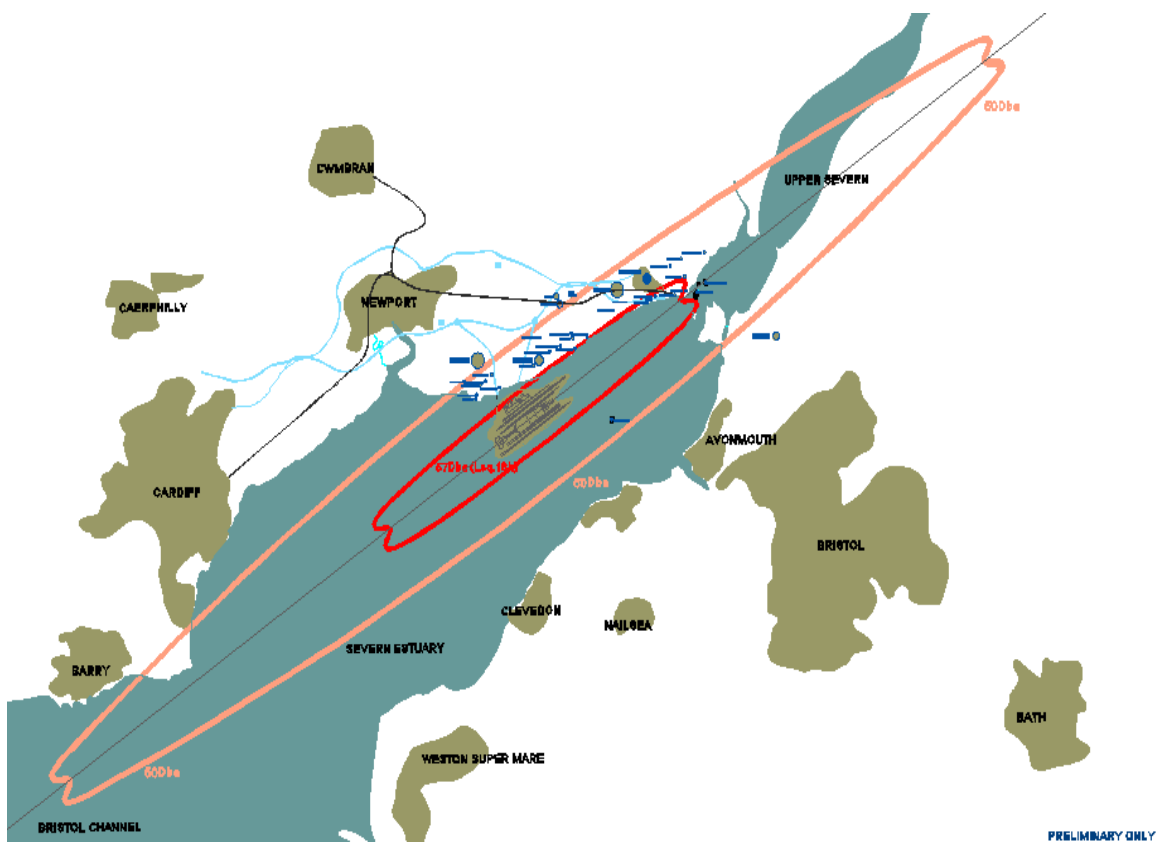
Environment

Noise

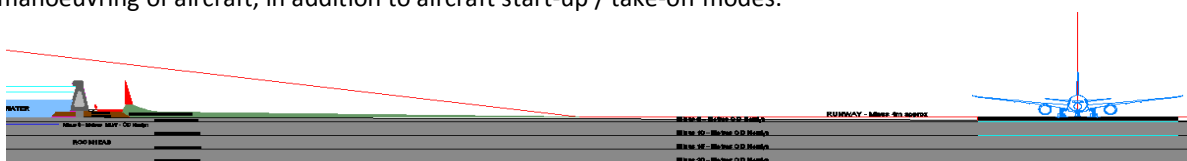
Noise: *What are the noise implications of the proposal? How will the proposal alter current and predicted patterns of noise in the surrounding area? What measures are envisaged to limit or reduce the number of people affected by noise? This should include information on both day and night noise impacts and on any measures the proposer intends to limit or reduce the number of people affected by noise.*

For this outline **long term** proposal regarding noise, we have returned to first principles. It is probable that over decades, regulations on noise and legal challenges will increasingly restrict UK airports.

This proposal presents the optimal UK proposal option location available within the 3 mile limit. A UK standard 57 dBA marked in red is the standard generally applied. A **50dBA** generic ground contour is illustrated to demonstrate the long term standard. The profile illustrated represents the outer two-directional 75km envelope at maximum theoretical capacity intensity derived from two offshore 4000m long haul runways operating at peak. We expect very few people to be affected by **airborne** noise by day or night. The profile will be adjusted after integration from NATS / CAA to maximise the opportunity by adjusting flight paths.



Aircraft Ground Noise propagation – that is noise transmittal over open water or land – is mitigated by the island tidal revetments, adding acoustic baffles to minimise transmitted aircraft noise through ground manoeuvring of aircraft, in addition to aircraft start-up / take-off modes.



Surface Access Noise Propagation – that is transmitted from busy road use, particularly at night, can be solved by use of proven screens or sound bunds. The principle adopted is earth bunds and landscaping.

Environment

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Noise

As a new Airport and major construction project – there are three phases to consider in noise assessments;

- 1 - On-site construction activities with potential for 3 shift 24 hour works over 5 to 7 years
- 2 - Assumption of mean operating level of 30-40mppa accepting 24hr passenger and airfreight
- 3 - Maximum theoretical 60mppa capacity operation

1. - Noise impacts primarily surface access or in out of hours is addressed by detailed project planning to mitigate. In detailed design the proposal will develop access strategies that have proved successful.

2. - The anticipated level of activity from 2030-2040.

3. - A theoretical upper operational capacity, that **may** be neared on a particular peak hour but not sustained.

The adoption of 50dBA noise standard at peak use is considered optimal in outline proposal status.

Noise: In setting out their proposals, scheme developers may wish to have reference to the Government's Noise Policy (NPSE), the Aviation Policy Framework and the National Planning Policy Framework.

For such an important topic one would have anticipated a consistent EU standard, methodology and application for airport noise impacts to have been developed since 1980. It is possible EU airport noise standard measurements and criteria will develop over time. A complex topic handled by different means reflecting the varying types of airports, their operation, national cultures and forbearance within the EU. In the UK, aircraft noise is a long standing Sisyphian task public consultation since the early 90's.

However, the UK does have a consultative process in contrast to some semi autocratic EU airport authorities that limit their citizens participation, particularly concerning night flights. CDG, Brussels, Schiphol are representative of authorities that operate 24 hours with limited or no night curfews. Frankfurt had night operations until recently, when a legal ruling imposed a night curfew despite powerful business lobbying.

With that legal precedent within an EU member state, it is recommended the UK progress a capable 24 hour airport for future European and world trade and, within the next decade.

The Government's noise policy (NPSE), the aviation policy framework and the national planning policy framework work within the guidelines of 54-57-60dBA. This pre-set level determines noise implications particularly penetrative in open space and in countryside locations with little ambient background noise. Support of those observations in that the inadequacy of this universal standard is self-evident by the disturbance impact of night flights over London.

The World Health Organisation [WHO] recommended 50dBA in 1980 as an acceptable future aircraft standard and given the Severn's optimal location it would seem practical to develop that level to optimise potential.

Noise: Proposed scheme developers should also consider any significant noise implications of surface access.

As developed to date there need be no significant noise implications of surface access in any contemplated phase. Noise potential from all sources will be examined in further study and simulations to identify and correct potential disturbance sources before materialising.

Environment

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Noise

Noise: What changes to noise profiles would be seen at other airports as a result of the proposal? Those affected by changes in airport capacity may not be restricted to the areas and communities in the vicinity of the proposal, but could also include communities close to other airports that may be affected by any proposal. For example, if a proposal assumes the closure or scaling back of an existing airport, or changes to arrival and/or departure routes, these assumptions would need to be documented and the noise implications for both locations considered in the submission.

Bristol, by virtue of its location has one of the UK airports lowest noise impacts in term of numbers of people affected. There are no changes envisaged to scale back or close Bristol's operation within this proposal. There are no plans or reasons to close Cardiff.

Noise: As well as setting out changes in noise impacts for local communities, scheme promoters should also consider whether their proposals would have other noise impacts that should be taken into account – for example, in relation to increases in noise over previously tranquil areas, including but not limited to National Parks and Areas of Outstanding Natural Beauty. Where there is potential for such impacts to occur, proposers should document this in their submissions, including the potential trade-offs between tranquillity and community noise impacts that might be made.

From previous studies there were no identified local residential areas impacted by the 57dBA ground contour. However outline guidance would require a detailed study. There are design variables depending on bedrock terrain, final runway levels and precise alignment of runways subject to NATS/CAA approval.

The proposal will require to undertake a full survey of the underlying bedrock and detailed surveys of all potential obstacles to complete fixity of the airfield reference point to confirm or otherwise if local residences would be affected by the 57dBA contour or the 54dBA contour.

There are residences and small village's preliminary identified within the 57-50dBA area and the proposal will require to conduct a detailed survey before modelling is undertaken to feed into key inputs in the development of the optimal solution. This survey will require to extend to all potential flights paths.

Noise: Proposers should explain in their submissions how their noise assessments have been derived, including setting out any methodologies used and the baseline scenario which they have adopted for comparison with their proposal. Any assumptions underpinning this baseline or the assessed impacts of the proposal, for instance in relation to expected changes in aerospace technology, should be documented in the proposal.

- No detailed noise contours studies or modelling have been undertaken for Severn24 as yet. A generic but generous envelope has been indicated as a form of worst case as scaled up 20%. However this is not definitive and detailed modelling will be required at planning stage and, for statutory consultation.
- The baseline scenarios developed will include both airborne and aircraft noise impacts, plus measurable mitigations by sound baffles.
- We have made no assumptions on future aircraft technology noise reductions addressing the problem on first principles.
- We have made no assumptions on projected flight paths as that is a CAA/ NATS/ FAB task.
- We have made no assumptions on steeper glide paths except to note that for some aircraft the noise impacts can be greater in certain conditions with a steeper approach.

Aircraft noise criteria adopted in this outline staged proposal = 50 dBA

In further development stages, we propose that the 48dBA and 45dBA noise contours are modelled to seek enhancement of the opportunity provided.

Environment

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Designated sites: Does the proposal affect any designated sites (for example Sites of Scientific Interest or Special Protection Areas) and if so how might any effects be managed? The Commission is keen to understand the impacts of proposals upon any designated environmental sites. These may include, for example Sites of Special Scientific Interest, Special Areas of Conservation or Ramsar sites amongst others. Where a proposal might have implications for any designated site, proposers should document this in their submission, and set out any measures they would put in place to mitigate these effects. It should be noted that effects may not be restricted to designated sites in the immediate vicinity of the proposed site for new capacity. Scheme proposers should consider where appropriate the relevant environmental regulations and directives governing this area. Proposers should clearly state the assumptions they have made and assess whether any residual impacts may remain following mitigation.

All UK many EU and some International Designated Site Classifications pertain to the airport proposal area and surrounding environs. In addition, there are regional and local nature conservation policies in operation. There are additional designations shared both sides of the estuary and some delineated. In addition there are the marine navigational authorities and separate water authorities. There are a plethora of further initiatives.

Principal Designations are Ramsar, SPA, SAC, SSSI, BAP, and Nature Reserves - but not exclusive.

Many of these designations overlap creating multiple layers of wildlife and nature conservation from the Upper Severn, Severn Estuary and Bristol Channel.

Previous environmental investigations of this proposals location consisted of research and site observations. Site observations could not confirm the quality of designations researched both onshore and off shore. Site observations and research did confirm residue from the steelworks best sourced from Hansard. In 2002/3 designated sites including twenty SSSIs were thoroughly investigated both land and offshore as were the surrounding areas. Current interrogation for qualifications identified gaps in supporting scientific data, low and lower grade evidence and inconsistencies that support dredging, retail parks and industrial development.

At that time there were several SSSIs grouped to the foreshore and inland localised in the vicinity of prior applications for developments. On investigation the majority were difficult to ascertain from industrial remnants. Since 2003 the number has reduced to six identified and there no plan to disturb these – save for environmental recovery of the general area.

Mitigations in the first instance would require an independent environmental assessment to identify, quantify and qualify the natural actuality objectively. This followed by a testing schedule for residue from the steelworks. In mitigation, this proposal as outlined requires to recover natural environmental habitats rather than destroy them. This proposal does not require to occupy the Caldicot / Gwent levels with runways or development. The areas subject to localised environmental recovery will remain as a green amenity and potentially an archaeological attraction. However the status of several bird habitats will be tested for evidence of birds in the varieties and quantities claimed.

In 2002, a bird sanctuary had recently opened as a mitigation measure for the Cardiff Bay development. At that time the distance between the bird sanctuary and the airport island was such that it made no impact whether successful or not in future after given time to establish. This sanctuary will form part of an EIA.

Since 2003 [in 2006] the designated Ramsar site for the Upper Severn has been extended to include the mud flats adjacent to the steelworks outfall sluices. As such the airport island proposal now sits centric to the extended Ramsar designated site and would not be permitted on a designated site preserved for wading birds.

The evidence to support this Ramsar extension has not been observed, but as previously noted and corroborated by sightings records from the RSPB, published in Natural England, there is no evidence of bird density in this area. Of concern are the pollutants present and their long term effect on any natural wildlife.

An Environmental Impact Assessment is required for a proposal of this scale and we expect the validity of the Ramsar Designation to be fully explored as will other designations. Of interest from 2002 and 2003 passive surveys was the thriving wildlife to the areas west of the former steel works with no designations.

Environment

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Climate change: *How might the proposal compare, in terms of its impact on greenhouse gas emissions, with alternative options for providing a similar amount of additional capacity? The Commission's consideration of climate change will primarily focus on the overall compatibility of any potential growth in UK aviation with national and international climate change frameworks. This is because the climate change impact of a given number of flights is not expected to vary greatly due to the geographic location of the airport from which they depart (e.g. the emissions from a given number of flights departing from Heathrow is likely to be broadly equivalent to the same number of flights departing from Gatwick). However, the Commission will consider whether any proposal made could generate significantly greater or fewer emissions relative to other potential options. This might potentially include, for example, carbon emissions resulting from construction, airport operations or surface access. Scheme developers may therefore consider in their submissions whether there are specific carbon implications of their proposals which may differentiate them from other potential options. They should also set out any plans or measures proposed to deliver reductions in carbon emissions over time.*

General – The proposal has set a target of self-sufficiency in energy production. This will have economic benefit. Aside from tidal power some EU countries have enabled building regulation that requires new buildings to produce a percentage of their own power requirements. In Italy it is set to a 5% minimum. With the airports large buildings and surface area there is potential for micro wind and photovoltaic systems.

Surface Access - The strategy for efficiently reducing surface access across the UK has been prior articulated. Severn24 particular proposal provides a location to minimise surface travel for millions of people in the west to access London's airports. We hope the strategy can be modelled to assess degrees of effective carbon saved.

Airspace – Efficient airspace enables minimal aircraft circulations sparing significant fuel burn. As stated and sourced earlier, some 70 to 80 per cent of movements to South East England airports are from westerly operations. It would therefore be prudent to intercept this traffic at a westerly location and thus reduce the need to fly into the London control area. This will achieve significant fuel savings by aircraft queuing to take-off, flight time over London and need for aircraft stacking awaiting a landing slot.

Hydro Power - Tidal Turbines - The proposed airport island within tidal flows offers opportunities to exploit the River Severn to produce hydroelectric energy. By forming reservoirs from breakwaters at both ends of the island, seawater could be retained to provide a regular supply of water to generators from the tidal action. This could provide the airport operation with a significant source of economic renewable energy.

Photo voltaic energy - The very large surface areas available on the airfield and associated buildings roofs enables the possibility of employing proven photovoltaic technology to assist energy demands of the airport. This includes airfield lightings systems where proven technology is now available. The capital costs are higher but offset against costs of copper cabling.

Other: *What other significant local environmental impacts should be taken into account. Where proposals may have other significant environmental impacts beyond those outlined above, these should be identified and documented. This might include, for example, impacts on landscape and/or townscape, water availability and flooding, bio-diversity or historical and archaeological sites. In considering potential environmental impacts, scheme developers may wish to have reference to the factors set out in DEFRA's Sustainable Development Indicators.*

The marked economic regeneration in all spheres for the W, SW and Wales will undoubtedly generate local and regional environmental impacts. The management of these should be addressed by the authorities' beginning with a revised UDP for the local area to understand the generator and the optimal management to exploit.

Revenue generation will have a positive environmental impact on townscapes and management upgrading of landscapes and public open spaces and amenity. There is evidence of interesting archaeological sites buried beneath the shore side mudflats which with this opportunity will be explored for content and quality. Medieval and Roman artefacts have been discovered in this area.

The primary impact will be the recovery of severely polluted areas off and on shore cleaning residual toxic deposits 800,000 gallons daily flushed untreated from the steel works and blast furnace for decades.

Environment

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WATER

Airports are large users of water. In capacity terms major airports represent the equivalent of the demand of a medium sized town. Any proposed airport location presented should recognise that sufficient availability of water and economic treatment is strategic in the choice of development options.

Water Supply

Severns24 airport terminal buildings, associated developments, and the airfield island can source the same water supply as supplied the largely decommissioned Llanwern steelworks. This source should prove more than adequate to service all foreseeable airport requirements – and supporting developments economically.

Water Treatment

The airfield island will require two wastewater treatment plants.

Ground Water

The second plant required to process airfield surface water runoff that will be intercepted in a separate system. This ensures that no contaminated water is released to the estuary. Positioning and building the airfield over sealed bedrock with a surrounding revetment will contain airfield runoff with no impact to water tables, aquifers or marine life.

Recycling

Self-contained – equipped for all materials.

Bio-diversity

Bio-diversity is expected but unplanned as airports due to lack of human interference and scale provide refuges for a number of species. Similar to bombing ranges but without destructive testing's, airports provide numerous examples of refuge for rare birds and wildlife as observed at RAFs Chivenor, Woodbridge, Scampton Lakenheath, Upper Heyford and more. Further, wild fauna develops as indeed mammals and insects within large secure areas left undisturbed.

The marine environment opens bio diversity potential with an outer secure cordon.

DEFRA Sustainable Development Indicators [Headlines]

Economic prosperity	Healthy life expectancy	Greenhouse gas emissions
Long term unemployment	Social capital	Natural resource use
Poverty	Social mobility in adulthood	Wildlife & biodiversity
Knowledge & skills	Housing provision	Water availability

Areas within the W SW and Wales regions would benefit greatly improving all Defra Indices by the proposal.

People

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How will the proposal impact upon the passenger experience (eg. choice, cost, accessibility, etc.) The Commission is keen to understand the impacts of proposals upon the end users of aviation. Accordingly, the Commission will consider issues such as the impacts of proposals on issues such as the range of choice of routes and carriers available to passengers and the cost of air travel. This may include consideration of the implications of proposals for the competitive markets which currently exist within the aviation industry, as well as the extent to which proposals could enhance or limit access to aviation service for customers from different geographical areas and social groupings.

The proposal supports rebalancing airport provision by providing a capable interlining alliance's hub to the west, making best use of capable capacity in the Midlands and providing long term capability in the North. Airline carriers make hubs. Should UK and overseas carriers discover that there is not endless capacity in the SE or it may not be delivered for 10-15 years if at all, they will examine alternatives that being locating abroad or in the UK. If long term UK runway capability were to be available, with free slots at Severn24, airline carriers will use that opportunity. Regional passenger accessibility and choice should increase significantly.

The South West and particularly Wales have a low propensity to fly, due to restricted opportunity. Airports in the regions offer charter and connecting flights to Ireland Scotland and Europe. Long and most medium haul currently require a 200-400 mile round trip to London airports increasing passenger cost. The proposal would deliver capability to the west freeing available SE capacity for London economic demand in a re-balance.

Are there other significant wider social impacts of the proposal which should be taken into account? What are the likely local social impacts of the proposal, including impacts around the proposed location for new capacity and around any other airports which would be affected, for example on: employment, housing and local communities, vulnerable groups, quality of life and health? The Commission believes that its decisions must take into account a broad range of social impacts and we are therefore interested in examining the implications, both positive and negative, of proposals for communities and urban areas in the vicinity of the proposed sites.

Social impacts are positive. Housing, hospitals, education, further education, social facilities, sports, religion are all in place – again making best use of existing `capacity` - but more important, bettering social cohesion.

Airports play a substantial role in the economic life of their neighbouring communities, both as direct employers but also indirectly through the businesses which support them, and scheme developers should consider the potential employment implications of their proposals, including for example the potential scale and nature of any job creation resulting from the proposal, and details of how any significant changes to the local workforce could be enabled and accommodated.

To answer these questions requires to describe that as a long / medium haul international facility with hub / stop-over and with 24 hour operations, the scope of employment will require three work shifts, and the employment scope is significantly more varied than regional airports as they are. This includes the high probability of UK and overseas airlines creating operating bases.

Submissions should also consider where appropriate the potential consequences of changes at other airports, and if necessary how any negative effects might be mitigated. They should also set out how any quantified employment effects have been calculated and the assumptions used.

The DfT contend that Cardiff and Bristol would close but examining the logic and testing it– it is unlikely that Bristol would close if Cardiff naturally developed to 20 - 30m passengers. Bristol should retain its established traffic with its level of service to a bespoke market and with competitive operating costs. Bristol is not foreseen to be impacted should it so choose as it addresses a particular market, most short haul. The proposal does not address the traffic market at Bristol although inevitably there will be some interaction. We expect Severn24 to operate successfully for international airfreight. Existing air cargo traffic is low at both airports.

At Cardiff existing passenger traffic is now less than 1mppa with the majority employed to handle the range of diverse aviation functions Cardiff currently supplies including heavy aircraft maintenance facilities. There is no foreseen reason for Cardiff to close. Cardiff could develop as potentially a Farnborough model due to its excellent airfield, weather and available land to develop a more sustainable future. Cardiff may not be located to attract mass passenger traffic but it has presently very good road access to support multiple aviation development. The aerospace industry is strong in these areas – the proposal should enhance opportunities.

People

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Other relevant social impacts could include impacts on regeneration, where proposals support broader plans to promote growth and development in deprived areas, or impacts on local housing and associated infrastructure – for example, where construction would require significant numbers of demolitions or where new housing, schools etc would be required to support the proposal and its workforce.

Existing regional underemployment deprivation is well documented as are that there are multiple households and communities that could absorb the thousands of career opportunities described as social impacts. No demolitions are planned. In the surrounding regions it is expected that any demand for new housing and schools or healthcare would be at a minimum in all likelihood determined by personal choice.

Where there is a risk that vulnerable groups or particular communities would be disproportionately affected, whether in the vicinity of the new capacity or any other site, this should be noted and any proposed mitigation explained. Effects on health, both positive and negative should also be given consideration. These assessments may be used to make an overall assessment of the impacts of proposals on local and regional quality of life. In doing so, scheme developers may also wish to set out whether and how their proposals might support any wider local or metropolitan strategies.

No vulnerable groups or particular communities would be disproportionately affected; rather positive wealth generation will positively impact all groups as a marked improvement in quality of life. From the proposal as described and environmentally conscious there are not expected to be any health risks rather the employment opportunities should improve all health indices. Wider local or metropolitan strategies are in place to encourage just such an opportunity to make a marked improvement on regional quality of life.

What other significant wider social impacts of the proposal should be taken into account. Where parties developing proposals have identified other significant social impacts beyond those outlined above which they believe may be relevant to the Commission's deliberations, these should be identified and documented.

The significant wider social impacts can be described as multiple opportunities in multiple spheres. Connectivity to Swansea, Cardiff, the Welsh Valleys, Bristol, West Midlands, South West and the M4 Corridor addresses opportunities for employment trade industry and service suppliers in a very wide area for positive social impacts. Opportunities presented reduce the need for economic migration better maintaining existing communities in a wide area. Indeed with high levels of employment and spend throughout construction and the hub operation, there is inevitably 7-10% annual turnover in direct and indirect employment creating thousands of annual fresh opportunities for the young to begin a career path, and have significantly increased range of job opportunities, many high skilled.

This range of opportunity extends further through trade generally but particularly tourism. Whilst the detailed impacts of tourism have not been researched in this outline proposal – this submission cannot offer a promise of a boon, but it could generally be accepted that the range of tourist destinations served by airport connectivity and particularly stimulated rail transport to the South West and Wales would enhance the value of existing businesses through increased custom, improving the profitability of existing enterprises.

How does the proposer plan to engage with local communities in taking forward their plans? The Commission is interested in understanding how the proposer plans to engage with local communities, including local authorities, local businesses and other community stakeholders, as part of the development of their proposal. This will also help to inform the development of appropriate public engagement processes if the proposal is taken forward into Phase 2 for further assessment.

This is an **outline** option proposal. Currently, there are no fixed plans to present to local communities, authorities, businesses or stakeholders **during Stage 1** of the Commission's remit lasting to the end of this year. In 2002/3 extensive meetings and presentations were made to councils, council chambers, development agencies and interested businesses and trade bodies. The general proposal is known and understood in the western regions and been reported and debated in the regional press for many years.

This is an outline proposal for the Commission to consider weighing up all facets for example NATS / CAA integration and UK regional policy. However, if the Commission elected to investigate this proposal further and there was public interest, then full public consultations would be required, taking into account any findings and direction the Commission proposes or in their interim report due towards the of this year.

Cost

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What is the estimated cost of the proposal, including surface access, land purchase, compensation and any other associated infrastructure? What are the associated cost assumptions and risks?

Estimated cost for this proposal is **3Billion GBP** in phase 1 and a further **2Billion GBP** in phase 2 if consecutive.

Associated Assumptions and Risks - Recommended Guidance

Cost assessments for a **new UK Airport** are recommended to be evaluated on a separate basis to existing UK airports submitted to the Commission. Capital costs for new airports are significantly lower than extending an existing facility, particularly in the UK. However, there are no contemporary benchmarks or cross checks for overall costs for major new UK Airports. In order to place estimated costs in perspective guidance is thus:-

Cost estimates generated from certain existing UK airports reflect significantly higher framework procurements that are above international norms. Madrid airport was built at half the cost and half the time compared to T5. Operationally complete new International airports currently vary from **500m to 1.5 Billion GBP** range dependent on size and complexity. Inevitably, the Commission will need to formulate a comparison cost matrix between UK proposals. Unfortunately inputs to previous DfT methodology added 1 Billion GBP to a previous Severn Proposal [Severnside]. A generalised methodology can generate distortions.

Phase 1 capital costs were assessed **mid 2002** at circa 2 Billion with in-built contingencies. This was updated in late 2003 to **2.3 Billion** adding further contingencies derived from the given DfT templates - and submitted.

DfT Actuality - The starting cost for a new airport was assessed in 2003 at 1 Billion GBP

2003 – The final DfT & Consultant cost estimates used for comparative purposes were increased; Breakdown; *[Extract: Demand Forecasts for a Potential New International Airport in South East Wales - December 2003 – P24 /25]*

DfT Airport Proposal Comparative Build up for `Severnside` Airport – 1 Runway Island	Cost GBP
The 'medium' UK One capital cost estimate of £1 billion, taken from; Table 6.29 of the South West Consultation Document:	1 Billion
Additional terminal costs to allow for passenger capacity of 30 mppa [450m]:	(s/t [1.45 Billion])
Airport proposal, including a 40% mark-up on costs to allow for offshore construction activity:	(s/t [2.03Billion])
Standard allowances of 25% of estimated costs in allowance for on-costs:	(s/t [2.54 Billion])
And a further 25% contingency allowance:	(s/t [3.2 Billion])
Total 2003 Estimate by DfT	3.2 Billion

Albeit the figures of 2.3 Billion and 3.2 Billion may appear in range, the difference when factored through various then comparators represented 40% disadvantage magnified in further comparative of cost / benefits.

Additionally 2003 assessment methodologies did not credit major environmental costs, or no demolition costs, or credit for regenerating existing infrastructure or employing existing urbanisation.

However, the 3.2Billion GBP estimate developed by the DfT is of value in determining an overview cross check and, an improvement from the DfT draft taking the estimated cost for four runways to be moved off shore.

In 2003 it was intimidated in the 2003 DfT report, and by others, that the capital cost could be reduced by relocating the airfield platform inland positioned over the Gwent Levels. This area has deep complex sub-soil rendering heavy structures esp. runways expensive in construction and was passed over in WWII airfield surveys. Additionally, environmental destruction, environmental costs, loss of amenity wildlife and heritage, including multiple demolitions, would have added significantly to the capital cost and could not be justified.

Cost

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The delivery of airport infrastructure can involve significant expenditure. As a first step in understanding the likely financing requirements of any proposal, the Commission will need to understand its estimated total delivery cost, broken down into its high-level component parts with a short description of what each would deliver. For example, the proposal should consider the cost of associated infrastructure like surface access requirements and the cost related to land purchase and compensation. Proposers should set out how these estimates have been calculated, including what allowances have been made for risk or optimism bias, and any assumptions underpinning them.

No major capital costs are expected on land acquisition for the airfield island as the off-shore tidal area titled to the Crown Estate and would be leased. NATS airspace management enhancement was examined in 2003 by a serving air traffic controller finding the location rather than presenting any difficulty rather presented an ideal location. Airspace costs assumed minimal. The new airport can integrate into existing ground, and air traffic infrastructures.

The **Q2 2002** estimate of Phase 1 of **2 Billion GBP** was updated to **Q4 2003 to 2.3 Billion GBP**, reflecting lagoon energy harnessing and environmental clean-up, environmental planning and future safeguards.

Estimated Costs - Elemental Breakdown as Guidance Figures

Item	GBP - m	Item	Cost Allocation
Road Surface Access Connections + Land Acquisition	50	Surface Access Enhancements	By Rail Operator
Runway + Manoeuvring	150	Land Acquisition	Crown Estate
Radar ATC / NavAids - Solar Lighting	30	Major Surface Access	GWR HST Upgrades by 2022
Control Towers VCR + Operations Control	20	NATS / Airspace	Existing
Ground Services MEP	100		
IT Field Infrastructures	100		
Terminal [initial 15mppa envelope]	200	Demolitions / Relocations	Not Required
Campus Platform for Lease	50	Urbanisation + Infrastructure	Existing Conurbation's
Parking Structures / Coach Shuttle	50	Air Cargo Freight Forwarders	By Operator
Island Reclamation	100	Maintenance Hangers	By Airline
Island Build-Up	600	Aviation Fuel	Franchise
Island Subterranean – Water Treatments	20	Airline Bases	By Airline
Operator Offices	10	Commercial Offices	By Commercial Agents
Re-Cycling Centres	10	Hotels	By Operator / Franchise
Air Sea Rescue - Vehicle	10	Hydro Power Lagoon	By Operator
Sub-Total	1500	Water Supply	Extant
Planning / Legal / Design / Construction On - Costs / HSE @ 40% , Risk - @25%	1125		
Contingencies @ 15%	2625		
Estimated Guide Total – Phase 1 – 1 Runway	3000		
Estimated Guide Total – 2 runways – if consecutive	5000		

Cost Risks and Optimism Basis

The costs for the second phase and second runway, estimated at Q1 2013 is £2 Billion and this to be financed in whole or in major part from Phase 1 OpEx. Phase 1 OpEx should also finance surface access capacity enhancement's as demand develops. Phase cost estimates subject to inflation over the projected 7-10 years.

These estimates are considered valid and could reduce but included high factors for potential UK construction and legal on-costs. It should be noted that costs provided by some existing operators under framework agreements are considered high by international norms. As example, on US indices a Code F runway structure at 4000m should be approximately \$100m or 60m GBP doubled to include manoeuvring areas. Contemporary European indices are 5-700m Euros for a similar land based facility. At 2014 Nantes Airport the figure is 586 million Euros however the total including major surface access provision is estimated to a complete total of **2 Billion Euros**. And at Nantes that 586m euros includes two 4000m ICAO Code F runways & in difficult terrain.

Project time-line for ease of clarity has been established as 2 years planning and 5 in construction. Large airport projects overseas are set to circa four years window for a new airport. Planning and enabling works can overlap and there are other elements such as procurement that can control timelines to enable 5 years.

Cost

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Is it likely that the cost can be met entirely by the private sector? What is the likely split between public and private sector funding if not? How would the proposal be financed? What are the associated assumptions and risks? While the Commission accepts that parties developing proposals may not have fully developed financing plans at this stage, the Commission is nevertheless interested in understanding (based on the high level breakdown mentioned in the previous question) how the costs of a proposal might be delivered by the private sector and what aspects would require public funding or guarantees.

In 2002, the estimated cost of 2 Billion was underwritten by an international bank subject to political support. In principal the project as then, was anticipated to be privately funded by debt equity if Govt. /HMT so decreed.

Simply stated, there are national and international funds available for long term infrastructure – subject to **risk**. Primarily that risk is political. Governments can choose to underwrite that risk by guarantee or other means, but essentially the proposal could be entirely privately funded should the Government or National Assemblies elect so. Alternatively Government can choose to partner on this project. Indeed, there are several advantages in full state ownership with shared taxpayer benefits. Choices are open to Political and Treasury discretion – All options are considered open at outline proposal stage.

The Commission is also interested in understanding any assumptions that have been made in calculating how a proposal might be financed. This might include, for example, any assessment of how the proposed airport's landing charges might be set and how it might attract investment. The information provided should enable the Commission to make an initial assessment of the commercial viability of the proposal.

Confidence from a 2002 investment bank funding underwritten for 2 Billion GBP - was derived from background research and financial modelling as applied for major infrastructure capital investments. That would include allowances for 20/50 life cycle maintenance and replacement costs as example. The DfT criteria for financial assessment were comparative tabulated figures.

The variables caused by the London options prescribes that no detailed financial planning can be delivered with certainty and as such the base elements for revenue generation are described in principal.

By 2022 – when the facility could begin operating, the regulatory landscape may be different but current planning assumes landing charges subject to regulatory oversight and would require to be commercially competitive as would ground handling charges. As such landing and handling charges would be set competitively to the market rate equivalent to present day value norms seen at the major UK airports, inflation adjusted.

Revenue Planning

This has developed to highly complex models and management modes options – beyond comparative tables.

A revenue plan has been prior developed and considered confident. We believe the proposals costs are realistically competitive as an option proposal. As the Commission suggested, it may not be appropriate to go into detail at this stage.

Operational Viability

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Is the proposal consistent with relevant safety requirements? What operational, safety and/or resilience risks are associated with the proposal? What measures are proposed to mitigate these?

Airspace, weather and visibility considered ideal in the UK, bird strike potential low and minimal PSZs. The proposal option will be designed to highest operational and safety standards. The strategic location and airfield Island are ideal to address national and international security and, operational resilience.

The Commission is conscious that any proposal should not jeopardise the safety of users of air transport while being mindful of those living and working under the flight path. Scheme proposers should explain how it will comply with relevant safety requirements once operational, including documenting any specific safety risks and how these will be managed.

Public Safety Zones [PSZs] that is those areas extending from the runways at potential risk of aircraft stretch over water. There would be no need for restrictions on human density patterns under the flight paths. Air Sea Rescue facilities will be provided by hovercraft, and launches to access tidal and marine areas.

The Commission would also like to understand what risks may be associated with the proposal within the areas of operations, safety and resilience. These may include but are not limited to; bird strike, prevailing winds and weather conditions and prevalence of fog. Any risks described in the proposal will also need mitigation measures included along with the cost and feasibility of those measures.

There are no risks identified in the proposal that would require feasible mitigations or any significant costs.

Weather - [from GCC 1981 Stansted Inquiry Report]

Since no meteorological records were readily available for the proposed Severn airport site, comparative 10-year records for Rhoose, Heathrow and Stansted have significance. The weather at Rhoose, being some 25 miles (40km) to the south-west and lying 220 ft (67m) above sea level, would be expected to be less affected by the estuary than Severn, so the records should not be assumed to be directly applicable to the airport.

Wind - *Based on a runway aligned 063 degrees/243 degrees (grid) the wind information for Rhoose suggests a "natural" split of operations 57%/43% between westerly and easterly take-offs. If all the calm occasions (winds of 3 knots or less) are taken as allowing westerly take-offs this change to a 65%/35% split. Further, if in light variable winds a tailwind component of 5 knots is considered operationally acceptable for westerly take-offs, the split becomes 76%/24%. Crosswind components exceeding 20 knots (a value accepted by all aircraft expected to use Severn) occur on a negligible number of occasions, 0.35%.*

Visibility - *A measure of runway availability is the number of hours with runway visual range less than 800 metres and or cloud base 200ft (60m) or less. Data provided by the Meteorological Office quotes the number of occasions when visibility did not exceed 100 metres, the latter being close to the weather minimum associated with "Category 3" operations. The comparative data is tabulated in the table below.*

	Rhoose / Severn	Stansted	Heathrow
Cloud base not exceeding 60m	568	2,849	1,046
Visibility not exceeding 800m			
Visibility not exceeding 100m	349	691	536

Snow - *Snow is unlikely to create a problem for a major airport at Severn especially since the estuarine situation should be favourable.*

Several site visits and observations confirm the location is ideal.

Operational Viability

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Bird Strike

In principle potential bird strike is a risk that requires management at all airports. Incidences of bird strikes are relatively rare but not to be dismissed. Whilst no detailed research on bird strike is within the scope of this outline proposal, it is worthwhile quoting the 1981 report on a potential new airport at Severn that addressed the principles even if produced 30 years ago. Quote in full, verbatim: *Bird Strike Hazards:*

Insufficient evidence is available to compare the risks at Severn with other international airports. Further research is desirable into the bird populations known to use the area at present, both on the surface and over-flying, and also the changes in habitat and population that may occur as a result of the land reclamation.

It is clear, however, that there is always a high probability of bird strikes at estuary sites and at major inland airport sites, such as Heathrow, that have food and an attractive habitat, especially for Gulls at certain times of the year. The Severn Estuary supports a large Gull population, with breeding sites on the islands of Flat Holm and Steep Holm – each of which will be affected by the proposed barrage [1981 Severn Barrage Scheme] – and at Chepstow. These birds fly to on-shore feeding grounds during the day, especially on the rubbish tips of Cardiff and Weston-Super-Mare. The estuary has rather barren slits but ranks high among estuaries for waders and ducks, supporting a seasonal population of some 76-120,000 waders and 6,000 ducks, with probably about half of them between the rivers Taff and Wye. These birds constitute a very much lower strike threat than do the gulls. There is also a population of Geese and Swans on the New Grounds at Slimbridge (Severn Wildfowl Reserve), area 17 miles (27km) from the airport. These too should not constitute a severe threat. While the total bird population may not be the largest near major airports, it must be noted that bird flight paths may be more concentrated since they “use” the estuary.

So far as Gulls are concerned, the most common objects of bird strikes, it is not thought likely that any coastal or near inland large airport will be shown to be better than any other, and it must be accepted that when all the known practicable measures have been taken the hazard is controlled. However, at Severn special attention will have to be given to the possibility that the feeding and roosting habits – particularly as affected by the reclamation process – do not cause an exceptional concentration of such birds in the flight paths. Fortunately in their daily round the heavier Ducks, Geese, and Swans do not fly high in relation to aircraft heights beyond the perimeter and are less likely to be struck. The migrating flights of these birds occur at a much wider range of heights and create a potential conflict over a large area, not necessarily identified with a particular airfield site. But the risk is extremely low.

The Civil Aviation Authority (see CAP 384, [CAP 680], “Bird Control on Aerodromes”) requires aerodrome staff to retain a continuous awareness of the bird situation using any available information source or technique. This may include the use of radar. Dispersal methods are recommended. The alerting of flight crews, added to the statistical remoteness of the more severe strikes, will contain the risk adequately.

In summary the report found that: *“The Severn Estuary supports populations of Gulls (at Flat Holm, Steep Holm and Chepstow), waders and ducks (mainly in the area between the rivers Taff and Wye) and Geese and Swans (at Slimbridge). The risk of bird strikes is very low, and certainly no higher than at any other coastal or near inland airport site. The bird populations in the estuary do not therefore constitute any severe threat.”*

Several site visits and observations confirm the above. The area contains circa 60,000 birds covering the Bristol Channel to the Upper Severn marine areas. The birds predominately shelter and feed in coves, or feed in the preserved habitats at Slimbridge. The exposed headlands at the proposals location have a very low density of birds, and none observed offshore during several site inspections.

For resilience issues, the Commission will require a description of the measures that will show how the proposal will remain operationally resilient. In considering this criteria, scheme developers may also consider the need to understand and accommodate the potential impacts of climate change, for instance in relation to severe weather or flood risks.

Control of value engineering in design construction and operational values in provision of snow clearance, adequate de-icing, and contingency management are the primary influences on resilience in end effect. At this stage the provision of two runways is optimal for operational resilience economically during maintenance periods – or to consider upgrading the parallel taxiway[s] to emergency runway capability. The airfield island revetment has been dimensionally massed to meet recorded surge tides. There are no flood risks.

Operational Viability

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Proposals should be deliverable efficiently within European and UK airspace regulations. Scheme developers should set out any assumptions underpinning their assessment of deliverability.

Airspace Assumptions

Since 2003, there has been reorganisation of the lower level Severn zone by CAA / NATS, but any assumption would include there is no reason why the fundamentals for a major airport in this locality could have changed.

There is an assumption that no significant airspace capacity management systems are required, and that little or no cost is involved, or no risk to timeline in what should be relatively free airspace.

It is not comparable to London ATC.

Consideration has been given for a long term potential new rail bridge Severn crossing with the position to the north east of the airfield island. No obstacle clearances were identified as rail crossing location 2km distant, and that modern rail bridges do not require high suspension masts.

Airspace

Previous airspace studies have been undertaken for this proposal. We believe CAA/NATS has undertaken a recent study but are presently unaware of any findings or recommendations from these national bodies.

Irish UK FAB has since been enabled and is delivering positive carbon reductions by flight co-ordinations.

Upper Airspace

Previous studies by a serving flight controller demonstrated no problems with upper & lower air space and in all respects the location was ideal to efficiently deliver the proposal to meet all EU and UK airspace regulations.

Lower Airspace

Previous studies from 1981 preliminary for lower airspace indicated minor obstacle surface infractions from some pylons that could be relocated, from bridge masts and from some hill points some 12km distant. From a summary of worst case scenario [1981] *‘However, it is clear that aircraft using a runway centred on the grid reference point 450 838 will be well over 1000 feet (300m) height even in an abnormally low approach and should exceed 750 feet (229m) height when over the bridge in the most adverse take off situations. It is understood that the CAA will be satisfied with such a margin of obstacle clearance.’*

Detail Surveys Collations

The variables are the runway orientation range from 063 degrees / 243 degrees to the optimal alignment for noise footprint and to the final height of the islands reference point. Since that time, the island in preliminary study has moved SW to optimise available rock levels. Essentially it is an exercise in fine tuning when all detailed surveys have been undertaken. However preliminary design confirms lower airspace as deliverable.

Local Airports

A 650m unlicensed aerodrome at Upfield Farm, Whitson, on the Gwent Levels, would require to close.

Filton Airport - closed in December 2012.

Delivery

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What are the main delivery risks in the proposal? Scheme developers should consider what delivery risks are associated with their proposals, how each of these risks could be mitigated, and any assumptions that underpin these assessments.

This proposal can only be delivered without major expansion in the SE. The proposition in 2003 was that no SE options could be delivered despite White Paper support. That proposition has materialised, and in 2013 the same SE options are being re-presented whilst the fundamentals have hardened against SE options.

The risks are that 2003 is repeated, or a 'do nothing policy', and in both cases the process re-starts in 2020 - 2025 - unless and until the future of Heathrow is finalised. The very real commercial merits and benefits of Heathrow expansion are understood. However, the physical and societal limits remain.

This has generated a primary delivery risk for this proposal, namely funding. Funders will not support the proposals delivery until there is crystal clarity on future direction on UK Airports. As such funding is the overriding delivery risk to which no mitigations can be applied at this time.

If the proposal were supported, it would have undergone extensive and rigorous testing beforehand. A significant test anticipated, as example, is carbon modelling for the proposal and the national strategy as proposed to significantly reduce surface access. The resources to bring this proposal to delivery are limited before clarity on the direction of UK Airports Policy.

Risks associated with the effective transition to the proposed solution whether it is within an existing airport or to a new airport site as well as the risks associated with ensuring the proposal is commercially attractive to airlines, passengers and businesses will also be considered.

As a new airport, there are no 'grandfather rights' on slots. An airline from any country would view that potential with full runway capability as an opportunity. The industry works to tight margins where cost and price drive airlines to seek the most favourable economic airports to operate from. European and world experience demonstrates long haul airline carriers and airfreight will naturally migrate or discover new opportunities for capable runways particularly dual 4000m. Passengers and business will discover significantly cheaper long haul journeys saving time and money travelling to the SE.

Costs advantages via in situ major surface access and available airspace can be supplanted with newly created airfield island financial land lease models to attract commercial carrier base operations.

Risks associated with effective transition have not been identified under current plans as there is no need to transfer from Cardiff or any desire from carriers **to transfer** from the London system. Airline seeding is not envisaged as impractical in end effect. However a second major interlining hub would allow UK carriers and overseas airlines to expand from restrictive London slot availability. The new facility would allow new overseas entrants and airlines that have withdrawn or scaled back due to existing London costs.

This proposal has been researched to sufficient confidence. Items to be addressed in construction planning are large scale US and EU toxic reclamation process available and this requires off shore and land testing for pollutant types and quantities. A further item is archaeological studies that can only be ascertained by exploratory works and for many that presents an opportunity rather than a risk – similar to reclamation.

This will include the risk to delivery during the planning and construction phase e.g. those associated with the legal and planning process; the financing of the proposal; and any technical, construction and engineering risks.

Planning and Legal risks will occur at all airport options. These have been mitigated as best possible by a considered environmental approach. Environmental challenge is nevertheless anticipated but mitigated by extensive research that should be proven in an objective full environmental appraisal. There are no identified civil engineering risks to endanger the proposal. There are several UK concerns supported by experienced architect, engineering and associated professions who have successfully delivered major and, challenging projects across the UK, and abroad in recent years. UK professional airport experience is valued worldwide.

Delivery

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Commission

Proposed airport layouts for one and two runways can be presented to the Commission if / when required.

Detailed design studies have been undertaken demonstrating the proposal is feasible within aerodrome, capacity and geographic parameters. Layouts will include option studies for landside connections to surface access and airfield layouts demonstrating the potential intercontinental capability of this long term installation both in functionality and in geometries to efficiently accommodate long haul and interlining alliance airlines.

For ease of description the core airfield island layout is similar to Hong Kong. The `Landside` on the island will be nearest the shore and bridge connections. A terminal, end central to two runways will develop.

Design Variables

A 50dBA aircraft noise contour has been adopted in core design briefing. The precise runway alignment will require to be determined with CAA / NATS integration of prospective flight paths to maximise this advantage.

The final level of runways generated by the construction technique will determine the final Airfield Reference Point [ARP] used to calculate detailed aerodrome clearance parameters. The estimated height level difference for potential options is circa 10m dependent on final detail survey and construction detail.

Design Capacity

Capacity and spatial studies have indicated that two runways can be provided without losing environmental advantages and is taken as a core design briefing parameter limiting theoretical maximum capacity to 60mppa. That capacity ceiling is taken as upper design limit for long term calculations for surface access, all supporting infrastructure's and sizing of facilities, including the airfield island to the given upper cost estimates.

Design Context Geography

The airport lies on shallow intertidal mud-flats beyond the navigable channels serving Bristol. Seismic surveys indicate varying depths of silt before bedrock between approximately 5 and 10 metres below surface. From information available the bedrock undulates in profile creating pockets estimated to 15 and 20m in depth before bedrock. The tidal mudflats contain agricultural and human run-off and lie in the area sluiced with untreated toxic waste from the former Llanwern steel works and blast furnace. The proposal intends to environmentally recover this area to minimise long term dispersals.

Between the island and GWR HST lie the Gwent / Caldicot Levels. These levels has been reclaimed in areas since Roman times continuing through medieval periods. Sections contain deep complex subsoil's unsuitable for heavy construction. The Levels areas undisturbed by the steelworks have in part high amenity value and in others high amenity potential. Environmental recovery is planned in areas to recover amenity and nature.

Marine Environment

The airport island is formed by revetments. Depending on the quantities of polluted material and, environmental recovery technology employed, a reserve solution of bunding can be employed to form a built up airfield island platform. At this stage the design brief has employed revetments that should enable the platform level to be below current surface levels generating certain design advantages. The revetments or bunding can be designed to withstand all marine tidal surges of the Severn.

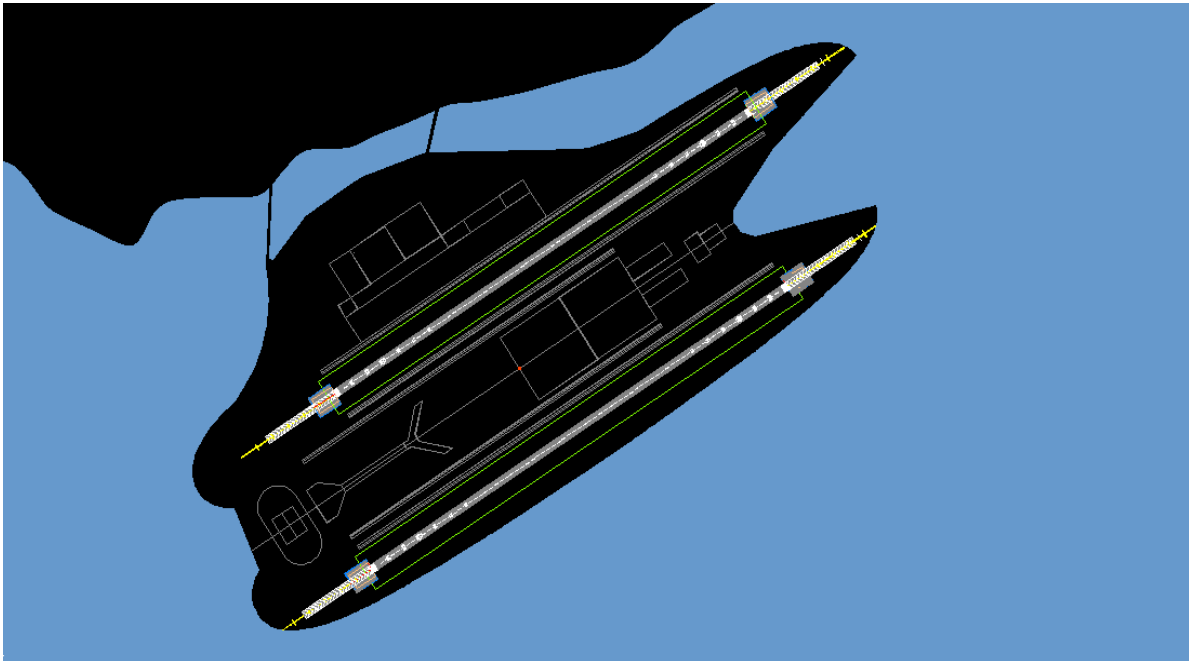
The proposal intends the island is sealed to avoiding any airfield run-off to the estuary. All water treatment will be contained on the island with no risk of short or long term contamination. This is an important environmental advantage over land based airport development options demonstrably mitigating any environmental risk from airfield effluent to sub soils, water tables, aquifers, marine and wild life.

Delivery

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AIRPORT PLATFORM

The airport island indicated on the diagram is circa 12,000ha or 3000 acres. It is distinctively and purposely separate from the land. This preserves the existing shore walls, maintains the sealed integrity of the island, allows any migratory fish to pass, creates greatest flexibility for hydrologists and avoids any land tenure risks.



The island or enclosure geometric shape as described is illustrative only. Hydrologists will determine the optimum shape of the enclosure in relation to tidal velocities and sand / mud flows. The final shape will be defined by hydrologists to equalise tidal pressures on revetments thus minimising estuarial effect to sediment flows. The island enclosure may be finally shaped as a hydrofoil or teardrop and have the characteristics and setting of a natural island in the Severn Estuary. The existing man made coastline that forms a dyke should not be disturbed, and neither should the existing drainage installations for the Caldicot Gwent Levels.

When hydrological studies are available, the optimal profile will develop. As understood here is no official tidal model as developed on the Clyde or Humber to understand estuarial tidal movements. A model to understand the Severn is considered a major study to be undertaken in the design phase. This study will investigate the proposed hydro-tidal lagoons.

Design Potential

The underlying undulating rock profile in 3D allows the potential of underground structures roads and supporting technical functions – this can include major volume uses for water treatment.

Airport Island Economic Planning

The plan uses revenue from the first runway to finance the second.

The land created will have value particularly the `landside` areas.

For environmental reasons generated by marine bulk access and plant disposition, determines that the first runway is coastal inboard from the second and that major support landside facilities planning such as major airfreight, is coastal inboard from the first runway. To economically reduce the recovered island area required, both surface dependent airside and landside functions will be carefully assessed in detail design.

Delivery

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AIRFIELD BRIEF

The island concept presents opportunities for ideal aerodrome design. Runway lengths are not restricted by topography. The lack of conventional constraints for airport development can be exploited to produce an ideal aerodrome that caters for all new and existing aircraft exploiting modern airport operational techniques.

- The runways specification length should be stipulated as fixed as a design brief requirement.

Aerodrome Design Standard

The airport design brief is Group 1 FAA Class VI / ICAO Code 4G Intercontinental airport capability.

Dual Runways Standard

ICAO Code 4G - 4000m Threshold separation distance.

Dual Runway Aerodrome Safety

The RESA (Runway End Safety Area), that is the area between the runway ends towards the perimeter of the island are 650 metres in length, in excess of the minimum ICAO standards of 240 metres. This is intended to contain any aircraft overshoot within the island enclosure. Beyond the RESA is an area of approximately 150 metres that ground tapers upwards to the height of the revetment thus ensuring that no aircraft can impact the revetment directly, thus negating the risk of flooding by breaching the airfield marine containment.

Airfield Manoeuvring Areas

At Severn24, the runways, outer and inner taxiways, and aircraft stands are all designed to the currently highest standard of aerodrome design. The airfield design would have a straightforward taxiway system that allows for efficient manoeuvring and rapid turnaround. With airspace and efficient layout, punctuality can be maintained.

This is attractive to the airline industry minimising fuel and crew time wasted by ground and air manoeuvring. Severn24 is designed to efficiently handle the largest passenger and freight aircraft foreseen in development or in operation, with maximum payloads.

Security

The airport will provide enhanced security by its location and perimeter.

Aviation Fuels

The airfield is to have aviation fuel storage area served by a pipeline from a marine jetty. This sized, positioned and equipped to deliver aviation fuel by marine transport. The fuel storage is to be located underground. This should remove the need for tanker surface access. There is no allowance for a fuel farm on the island.

Operational Safety

The control tower and airfield operations centre are positioned in the centre of the airside between the passenger and ground operations airfield zones. Air and ground radar will be located in the detailed design phase. Two ARFF Stations are provided and can be co-ordinated to the marine rescue station.

History

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1965 - Mr A.V. Hooker FICE, of the Cardiff Offices of Atkins, first proposed a `Severnside of the Future`.

1968 1971

In 1968-69 at the time of the Roskill Inquiry – A four runway airport was included in a Severn Barrage Study:

THE BRISTOL CHANNEL BARRAGE PROJECT by:

Eric Montgomery Wilson, Reader in Civil Engineering, University of Salford, England.

Brian Severn, Chief Engineer, Tidal Power Consultants Ltd, Montreal, Canada.

Martin Carson Swales) Postgraduate research students at Donald Henery) University of Sheffield, England.

1971

Roskill recommended in favour of Cublington as London's Third Airport. "Severnside" was considered for supersonic jet travel by Concorde primarily on noise reasons but considered too distant from London with then travel times by road and rail. The decision was later reversed by the selection of Foulness, Maplin Sands. That decision was reversed in favour of Stansted which had been long favoured for Civil Defence reasons.

1981 - Stansted Inquiry

Severn was again identified as a potential site for a new Gateway Intercontinental Airport at the time of the Stansted Public Inquiry in 1981. At that time Gwent County Council commissioned a report (by a consortium of consultants including Alan Stratford and Scott Wilson Kirkpatrick) to be submitted to the Stansted Inquiry. The case presented in 1981 was to develop a new airport serving demand for the South East and South West of the UK. The 1981 Severn Report concluded:

- *It is feasible to locate an airport on reclaimed land on the Welsh Grounds in the River Severn which consists of one, two or possibly even more runways to deal with international traffic.*
- *There are no major insurmountable technical problems in the operation of an airport of this type, relating to air traffic control, noise, birds, weather, etc.*
- *On the contrary, there are distinct technical ADVANTAGES at Severn in terms, for example, of the minimal effects of noise on population.*
- *An airport will FIT naturally into the local environment even at its maximum development.*

2002

Following the July 2002 Publication of "*The Future Development of Air Transport in the United Kingdom - A National Consultation*", concerns developed that the long term options then presented and including Cliffe in the Thames Estuary – would not in fact be deliverable from 2003. Given the importance of Aviation to the UK economy an alternative major UK Airport proposal in this location was developed for National Consultation.

2003

January 2003 - The proposal was submitted on behalf of SIA Ltd to HMG / DfT in response to the 2002 National Consultation. The proposal was `not supported` by HMGs Aviation White Paper of December 2003 - in favour of developing Cardiff International Airport in the long term. This view supported by a DfT Report of Dec 2003 employing projected capacity for Cardiff and Bristol in excess of all 2002 modelled National Policy scenarios.

2013 – Davies Commission - February 28 - Intent to Submit - Long Term Option

2013 – Davies Commission - July 19 - Submission - Long Term Option - Stage 1