

INITIAL OPTIONS APPRAISAL									
Group	Impact	Level of Analysis	Procedure Option 28	Procedure Option 30	Procedure Option 32	Procedure Option 34	Procedure Option 35	Procedure Option 36	Procedure Option 37
	Summary of Analysis		Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.	Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.	Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.	Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.	Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.	Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.	Rejected: Minimum practicable impact from approach. Missed approach has greater noise impact than the previous option. Hold position is preferred over the previous option. Hold position away from the Windfarm whilst remaining over the sea. Rejected in favour of lower noise impact of previous option.
Communities	Noise impact on health and quality of life	Initial Options Appraisal: Qualitative	The initial approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The intermediate and Final Approach segments are unable to avoid the town of Farnborough due to the location and orientation of the runway. The MAP goes over the town of Farnborough, which is unavoidable due to the location. Noise impact likely to be greater than the Do Minimum option due to the design requirements of an IFR with more concentration further from the runway.	The initial approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The intermediate and Final Approach segments are unable to avoid the town of Farnborough due to the location and orientation of the runway. The MAP goes over the town of Farnborough, which is unavoidable due to the location. Noise impact likely to be greater than the Do Minimum option due to the design requirements of an IFR with more concentration further from the runway.	The initial approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The intermediate and Final Approach segments are unable to avoid the town of Farnborough due to the location and orientation of the runway. The MAP goes over the town of Farnborough, which is unavoidable due to the location. Noise impact likely to be greater than the Do Minimum option due to the design requirements of an IFR with more concentration further from the runway.	With this option, aircraft will be required to hold away from the airport but in specific locations. The position will be determined by the aircraft captain operating VFR in Class G airspace. Aircraft could even be as low as 500ft, affecting schools and care homes. Greater noise impact than the Do Minimum option.	For this option, aircraft would be required to hold over the outskirts of Birtchington meaning that noise impacts will be significantly increased. Other than Birtchington, the remainder of this hold flies over rural areas, avoiding schools and care homes. Greater noise impact than the Do Minimum option.	For this option, aircraft would be required to hold over rural areas, avoiding towns and villages, although aircraft would be close to the villages of Cliff End, Minter and Manton. Compared to the previous two options, this proposed option impacts less communities in terms of noise. Noise impact will be more concentrated but over a rural area so likely to be less people affected than the Do Minimum option.	Does not allow for any protection of aircraft during the critical stages of flight.
Communities	Air Quality	Initial Options Appraisal: Qualitative	Local Air Quality is likely to be affected by aircraft within 3 nautical miles of the airfield below 1,000ft. Rungate is only 2.3 nautical miles from Touchdown, so overhead below 1,000ft is likely to be very similar to the Do Minimum option. No change to the Do Minimum option due to the location and proximity of Rungate in relation to the runway and hence no change in the Thetford Urban AQMA as a result of implementing this option. The MAP is closer to the village of St Nicholas-Ar Wood than the previous option, but aircraft less likely to carry out a MAP which should result in less impact than the Do Minimum option.	Local Air Quality is likely to be affected by aircraft within 3 nautical miles of the airfield below 1,000ft. Rungate is only 2.3 nautical miles from Touchdown, so overhead below 1,000ft is likely to be very similar to the Do Minimum option. No change to the Do Minimum option due to the location and proximity of Rungate in relation to the runway and hence no change in the Thetford Urban AQMA as a result of implementing this option. The MAP is closer to the village of St Nicholas-Ar Wood than the previous option, but aircraft less likely to carry out a MAP which should result in less impact than the Do Minimum option.	Local Air Quality is likely to be affected by aircraft within 3 nautical miles of the airfield below 1,000ft. Rungate is only 2.3 nautical miles from Touchdown, so overhead below 1,000ft is likely to be very similar to the Do Minimum option. No change to the Do Minimum option due to the location and proximity of Rungate in relation to the runway and hence no change in the Thetford Urban AQMA as a result of implementing this option. The MAP is closer to the village of St Nicholas-Ar Wood than the previous option, but aircraft less likely to carry out a MAP which should result in less impact than the Do Minimum option.	Aircraft will generally hold above 1,000ft so will have no impact on the Local Air Quality and specifically in the Thetford Urban AQMA. No change to the Do Minimum option.	The hold will be flown at 2,000ft so there will be no impact on the Local Air Quality and specifically in the Thetford Urban AQMA. No change to the Do Minimum option.	The hold will be flown at 2,000ft so there will be no impact on the Local Air Quality and specifically in the Thetford Urban AQMA. No change to the Do Minimum option.	The hold will be flown at 2,000ft so there will be no impact on the Local Air Quality and specifically in the Thetford Urban AQMA. No change to the Do Minimum option.
Wider Society	Greenhouse Gas Impact	Initial Options Appraisal: Qualitative	The procedure incorporates a continuous descent profile, to be flown at optimum aircraft performance and represents the most direct flight path, minimising track miles and emissions. The MAP is slightly longer than the previous option. The MAP is an emergency procedure seldom used, but by its nature may require maximum engine power setting. More efficient profile should result in less impact than the Do Minimum option.	The procedure incorporates a continuous descent profile, to be flown at optimum aircraft performance and represents the most direct flight path, minimising track miles and emissions. The MAP is slightly longer than the previous option. The MAP is an emergency procedure seldom used, but by its nature may require maximum engine power setting. More efficient profile should result in less impact than the Do Minimum option.	The procedure incorporates a continuous descent profile, to be flown at optimum aircraft performance and represents the most direct flight path, minimising track miles and emissions. The MAP is slightly longer than the previous option. The MAP is an emergency procedure seldom used, but by its nature may require maximum engine power setting. More efficient profile should result in less impact than the Do Minimum option.	Aircraft will generally only hold for the minimum amount of time necessary. However, the NDB Hold may be used for training purposes, hence increasing airborne time and track miles flown resulting in an increase in emissions. This could have a greater impact than the Do Minimum option.	Aircraft will generally only hold for the minimum amount of time necessary. However, the NDB Hold may be used for training purposes, hence increasing airborne time and track miles flown resulting in an increase in emissions. This could have a greater impact than the Do Minimum option.	Aircraft will generally only hold for the minimum amount of time necessary. However, the NDB Hold may be used for training purposes, hence increasing airborne time and track miles flown resulting in an increase in emissions. This could have a greater impact than the Do Minimum option.	Without any regulated airspace, there is an increased likelihood of aircraft requiring avoidance action which will have an impact on noise in the area around the airport.
Wider Society	Capacity and resilience	Initial Options Appraisal: Qualitative	This procedure has been designed in consultation with NATS and the FAS 5 programme, in accordance with the UK Airspace Modernisation Strategy. This option enables a consistent approach to aircraft arriving from the airway system. This enables increased capacity, efficiency and reduced track mileage.	This procedure has been designed in consultation with NATS and the FAS 5 programme, in accordance with the UK Airspace Modernisation Strategy. This option enables a consistent approach to aircraft arriving from the airway system. This enables increased capacity, efficiency and reduced track mileage.	This procedure has been designed in consultation with NATS and the FAS 5 programme, in accordance with the UK Airspace Modernisation Strategy. This option enables a consistent approach to aircraft arriving from the airway system. This enables increased capacity, efficiency and reduced track mileage.	This Do Minimum option will have no impact on the capacity and resilience of the overall national airspace infrastructure.	This option will have no impact on the capacity and resilience of the overall national airspace infrastructure. No change to the Do Minimum option.	This option will have no impact on the capacity and resilience of the overall national airspace infrastructure. No change to the Do Minimum option.	This option will have no impact on the capacity and resilience of the overall national airspace infrastructure. No change to the Do Minimum option.
General Aviation	Access	Initial Options Appraisal: Qualitative	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted.	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted.	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted.	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted. No change to the Do Minimum option.	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted. No change to the Do Minimum option.	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted. No change to the Do Minimum option.	No changes are proposed to the parameters of the current airspace structure around Manston Airport and therefore no change to airspace access is predicted. No change to the Do Minimum option.
General Aviation / Commercial Airlines	Economic impact from increased effective capacity	Initial Options Appraisal: Qualitative	The introduction of PBN procedures coordinated with NATS and other FAS 5 sponsors will contribute to the delivery of associated benefits including increased effective capacity which is predicted to have direct and indirect economic benefits associated with an increase in both air transport and GA movements.	The introduction of PBN procedures coordinated with NATS and other FAS 5 sponsors will contribute to the delivery of associated benefits including increased effective capacity which is predicted to have direct and indirect economic benefits associated with an increase in both air transport and GA movements.	The introduction of PBN procedures coordinated with NATS and other FAS 5 sponsors will contribute to the delivery of associated benefits including increased effective capacity which is predicted to have direct and indirect economic benefits associated with an increase in both air transport and GA movements.	The Do Minimum option could have a positive economic benefit to the area giving GA aircraft the flexibility to hold while waiting clearance to land at the airport, rather than landing elsewhere.	No change to the Do Minimum option.	No change to the Do Minimum option.	No change to the Do Minimum option.
General Aviation / Commercial Airlines	Fuel burn	Initial Options Appraisal: Qualitative	Flown at optimum aircraft performance and with continuous descent profile to minimise fuel burn. The MAP is slightly longer than the previous option with an associated increase in fuel burn. The MAP is an emergency procedure requiring maximum engine power settings but it is typically rarely used. More efficient profile should result in less impact than the Do Minimum option.	Flown at optimum aircraft performance and with continuous descent profile to minimise fuel burn. The MAP is slightly longer than the previous option with an associated increase in fuel burn. The MAP is an emergency procedure requiring maximum engine power settings but it is typically rarely used. More efficient profile should result in less impact than the Do Minimum option.	Flown at optimum aircraft performance and with continuous descent profile to minimise fuel burn. The MAP is slightly longer than the previous option with an associated increase in fuel burn. The MAP is an emergency procedure requiring maximum engine power settings but it is typically rarely used. More efficient profile should result in less impact than the Do Minimum option.	Aircraft will generally only hold for the minimum amount of time necessary, so there is a limited fuel burn impact.	Aircraft will generally only hold for the minimum amount of time necessary. However, the NDB Hold may be used for training purposes, hence increasing airborne time and track miles flown resulting in an increase in fuel used. This could have a greater impact than the Do Minimum option.	Aircraft will generally only hold for the minimum amount of time necessary. However, the NDB Hold may be used for training purposes, hence increasing airborne time and track miles flown resulting in an increase in fuel used. This could have a greater impact than the Do Minimum option.	Aircraft will generally only hold for the minimum amount of time necessary. However, the NDB Hold may be used for training purposes, hence increasing airborne time and track miles flown resulting in an increase in fuel used. This could have a greater impact than the Do Minimum option.
Commercial Airlines	Training costs	Initial Options Appraisal: Qualitative	There will be no additional training costs required for commercial operators flying PBN routes or procedures.	There will be no additional training costs required for commercial operators flying PBN routes or procedures.	There will be no additional training costs required for commercial operators flying PBN routes or procedures.	The NDB Hold option relates only to GA aircraft so there will be no additional training costs required for commercial operators. There would be no training costs for GA aircraft associated with the Do Minimum option.	The NDB Hold option relates only to GA aircraft so there will be no additional training costs required for commercial operators. If used for training purposes, implementing this option could increase training costs for GA.	The NDB Hold option relates only to GA aircraft so there will be no additional training costs required for commercial operators. If used for training purposes, implementing this option could increase training costs for GA.	The NDB Hold option relates only to GA aircraft so there will be no additional training costs required for commercial operators. If used for training purposes, implementing this option could increase training costs for GA.
Commercial Airlines	Other costs	Initial Options Appraisal: Qualitative	The availability of approved procedures should lead to fewer minima related diversions and associated costs. Other costs to operators may include updates to aircraft Flight Management Systems (FMS) and navigation databases. Any additional costs are likely to be small and not significant compared to the Do Minimum option.	The availability of approved procedures should lead to fewer minima related diversions and associated costs. Other costs to operators may include updates to aircraft Flight Management Systems (FMS) and navigation databases. Any additional costs are likely to be small and not significant compared to the Do Minimum option.	The availability of approved procedures should lead to fewer minima related diversions and associated costs. Other costs to operators may include updates to aircraft Flight Management Systems (FMS) and navigation databases. Any additional costs are likely to be small and not significant compared to the Do Minimum option.	The NDB Hold option relates only to GA aircraft so there will be no additional costs required for commercial operators.	The NDB Hold option relates only to GA aircraft so there will be no additional costs required for commercial operators.	The NDB Hold option relates only to GA aircraft so there will be no additional costs required for commercial operators.	The NDB Hold option relates only to GA aircraft so there will be no additional costs required for commercial operators.
Airport / Air navigation service provider	Infrastructure costs	Initial Options Appraisal: Qualitative	Implementing ILS approach procedures would incur costs associated with the installation and maintenance of ILS equipment. This represents an increase over the Do Minimum option. However, these costs are privately funded costs and although this will have an impact on the Cost Benefit Analysis conducted at Stage 3, this will have no impact on other stakeholders.	Implementing ILS approach procedures would incur costs associated with the installation and maintenance of ILS equipment. This represents an increase over the Do Minimum option. However, these costs are privately funded costs and although this will have an impact on the Cost Benefit Analysis conducted at Stage 3, this will have no impact on other stakeholders.	Implementing ILS approach procedures would incur costs associated with the installation and maintenance of ILS equipment. This represents an increase over the Do Minimum option. However, these costs are privately funded costs and although this will have an impact on the Cost Benefit Analysis conducted at Stage 3, this will have no impact on other stakeholders.	There are no additional infrastructure costs associated with the introduction of an NDB Hold. The NDB will be used primarily as a navigation aid and therefore will be installed as part of the infrastructure plan for the reopening of Manston Airport as a NDB as shown in Section 6 paragraph 6.1.3. This represents no change from the Do Minimum option.	There will be no additional infrastructure costs associated with the introduction of an NDB Hold. The NDB will be used primarily as a navigation aid and therefore will be installed as part of the infrastructure plan for the reopening of Manston Airport as a NDB as shown in Section 6 paragraph 6.1.3. This represents no change from the Do Minimum option.	There will be no additional infrastructure costs associated with the introduction of an NDB Hold. The NDB will be used primarily as a navigation aid and therefore will be installed as part of the infrastructure plan for the reopening of Manston Airport as a NDB as shown in Section 6 paragraph 6.1.3. This represents no change from the Do Minimum option.	There are no additional infrastructure costs associated with the introduction of an NDB Hold. The NDB will be used primarily as a navigation aid and therefore will be installed as part of the infrastructure plan for the reopening of Manston Airport as a NDB as shown in Section 6 paragraph 6.1.3. This represents no change from the Do Minimum option.
Airport / Air navigation service provider	Operational costs	Initial Options Appraisal: Qualitative	The operational costs associated with implementing PBN procedures relate to IFR design, validation (ground and airborne), safety assessment, airspace change and consultation, certification and publication. Once implemented, the costs of ownership of PBN procedures is very low, requiring maintenance of the procedure on a five yearly basis. This represents a small increase from the Do Minimum option.	The operational costs associated with implementing PBN procedures relate to IFR design, validation (ground and airborne), safety assessment, airspace change and consultation, certification and publication. Once implemented, the costs of ownership of PBN procedures is very low, requiring maintenance of the procedure on a five yearly basis. This represents a small increase from the Do Minimum option.	The operational costs associated with implementing PBN procedures relate to IFR design, validation (ground and airborne), safety assessment, airspace change and consultation, certification and publication. Once implemented, the costs of ownership of PBN procedures is very low, requiring maintenance of the procedure on a five yearly basis. This represents a small increase from the Do Minimum option.	There will be no additional routine operational costs associated with implementing the Do Minimum option over and above the operational costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.4.	There will be no additional operational costs associated with the introduction of an NDB Hold over and above the costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.4. No change from the Do Minimum option.	There will be no additional operational costs associated with the introduction of an NDB Hold over and above the costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.4. No change from the Do Minimum option.	There will be no additional operational costs associated with the introduction of an NDB Hold over and above the costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.4. No change from the Do Minimum option.
Airport / Air navigation service provider	Deployment costs	Initial Options Appraisal: Qualitative	This option may require some additional air traffic controller training specifically associated with the implementation of approved procedures over and above the training required for the Do Minimum option. This would represent a small increase in deployment costs from the Do Minimum option.	This option may require some additional air traffic controller training specifically associated with the implementation of approved procedures over and above the training required for the Do Minimum option. This would represent a small increase in deployment costs from the Do Minimum option.	This option may require some additional air traffic controller training specifically associated with the implementation of approved procedures over and above the training required for the Do Minimum option. This would represent a small increase in deployment costs from the Do Minimum option.	There will be no additional deployment costs associated with implementing the Do Minimum option over and above the operational costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.5.	There will be no additional deployment costs associated with the introduction of an NDB Hold over and above the costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.5. No change from the Do Minimum option.	There will be no additional deployment costs associated with the introduction of an NDB Hold over and above the costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.5. No change from the Do Minimum option.	There will be no additional deployment costs associated with the introduction of an NDB Hold over and above the costs of reopening Manston Airport as a NDB as shown in Section 6 paragraph 6.1.5. No change from the Do Minimum option.
Safety Assessment	Safety Assessment	Initial Options Appraisal: Qualitative	No significant safety implications were identified during the safety assessment. The hold is positioned overhead the Thetford Urban Windfarm. Potential loss of aircraft identification in Class G airspace, requiring implementation of technical or operational mitigation for the impact of wind turbine generation on PBN.	The safety assessment identified significant safety implications relating to the position of the south eastern Initial Approach Segment (conflict with gliders in Class G airspace with the Transition procedure) and the position of the hold close to Southern CTAs and overhead the Kenilworth Flats (Offshore Windfarm). These issues have been mitigated in the Design Process Evaluation stage by the removal of this Initial Approach Segment for consideration and the hold position will be moved further east. There are no further significant safety implications for this option.	The safety assessment identified significant safety implications relating to the position of the south eastern Initial Approach Segment (conflict with gliders in Class G airspace with the Transition procedure) and the position of the hold close to Southern CTAs and overhead the Kenilworth Flats (Offshore Windfarm). These issues have been mitigated in the Design Process Evaluation stage by the removal of this Initial Approach Segment for consideration and the hold position will be moved further east. There are no further significant safety implications for this option.	No significant safety implications were identified during the safety assessment.	Safety conflict with commercial aircraft executing a MAP. Not possible to deconflict traffic in the overhead hold from aircraft executing a MAP. Possible wake turbulence risk to VFR traffic in the hold. Mitigated by not allowing the hold to be used by GA aircraft when aircraft are inbound on an approach procedure.	Safety conflict with commercial aircraft executing a MAP. Not possible to deconflict traffic in the overhead hold from aircraft executing a MAP. Possible wake turbulence risk to VFR traffic in the hold. Mitigated by not allowing the hold to be used by GA aircraft when aircraft are inbound on an approach procedure.	Safety conflict with commercial aircraft executing a MAP. Not possible to deconflict traffic in the overhead hold from aircraft executing a MAP. Possible wake turbulence risk to VFR traffic in the hold. Mitigated by not allowing the hold to be used by GA aircraft when aircraft are inbound on an approach procedure.