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INTRODUCTION

9.1 Atmos Consulting, under the direction of SLR, has been commissioned by the applicant to undertake a review of the Ornithological implications that could arise from the relocation of one wind turbine (Turbine T7), together with those as a result of the changing status and design of wind farms in the cumulative study, resulting in a need for a reassessment of the cumulative ornithological effects of the proposed development.

9.2 This Supplementary Environmental Information (SEI) Chapter supplements **Chapter 9: Ornithology** of the 2022 Kirkton Energy Park Environmental Impact Assessment (EIA) Report. The methodology employed in this SEI is as set out in EIA Report **Chapter 9: Ornithology**.

9.3 The following key documents should be read in conjunction with this SI:

- EIA Report Volume 2 - **Chapter 9: Ornithology** (2022);
- EIA Report Volume 3d - Chapter 9 Plan Figures (2022); and
- EIA Report Volume 4a – Chapter 9 Technical Appendices (2022).

CONSULTEE RESPONSES TO 2022 EIA REPORT

9.4 **Table 9-1** below provides a summary of the Ornithology related responses to the 2022 Kirkton Energy Park application, received from key consultees. It should be noted that the responses have been summarised and not quoted verbatim. While errors in interpretation have tried to be avoided, they may have crept in given the amount of material which had to be summarised and the actual responses from the consultees should be consulted to see what they said in detail. A reply to the consultee responses is also provided in **Table 9-1**.

Table 9-1: Consultee Responses

Consultee	Area of concern	Consultee comment	Our response
The Highland Council (THC) Ecology Officer	Candidate Flow Country World Heritage Site	Object due to the adverse impact on the candidate Flow Country World Heritage Site	A detailed assessment of the impacts of the proposed development on the Outstanding Universal Values of the candidate World Heritage Site has been provided in the Assessment of Impacts on the Candidate World Heritage Site Report
NatureScot (NS)	Caithness and Sutherland Peatlands SPA	There will be a likely significant effect on Red-throated diver, Black-throated diver, Dunlin, Golden plover and Hen harrier of the SPA. Scottish Government will be required to carry out an Appropriate Assessment. If the proposal is carried out in strict accordance with the following mitigation our conclusion is that the	

		proposal will not adversely affect the integrity of the site: - Production and implementation of a Breeding Bird Protection Plan as proposed in EIAR Ch 9: Ornithology - Forest clearance adjacent to the SPA should be delayed until the wind farm is operational to provide screening for Red-throated diver	Noted Noted. Timing of forest clearance will be timed to accommodate this mitigation
	Caithness Lochs SPA	NS advised that the proposal will not undermine the conservation objectives for this site and therefore not adversely affect the integrity of the SPA	Noted
	Wider countryside birds	In relation to wider countryside birds (i.e. those not connected with a protected area) we (NS) are content that the proposal will not have an adverse impact on species populations at the Natural Heritage Zone (NHZ) level. We welcome the intention to produce and implement a BBPP prior to works commencing to ensure breeding birds are safeguarded during construction. The BBPP should cover all works proposed as part of the proposal and refer to current guidance on safe working distances/disturbance buffer zones (i.e. Goodship and Furness, 2022). We note management measures for hen harrier and golden plover are suggested within the HMP. We recommend details of these are fully developed within the final agreed plan. We also agree that prescriptions 5-7 of the HMP are reasonable. However, we highlight that such monitoring at the scale proposed may be unlikely to reach definitive conclusions, given that other drivers of population change are equally likely to affect bird population numbers.	Noted Agreed, particularly since initial populations were relatively low, determining what actually is a decline is also more difficult. The applicant is content to explore more with NatureScot and other parties in the post consent development of detailed proposals.
Royal Society for the Protection	Effects on SPA	Does not consider that the proposed development would have an adverse effect on the SPA due to the low numbers of SPA bird flights	Noted

of Birds (RSPB) Scotland		at collision risk and the SPA breeding birds within disturbance distances of infrastructure. Considers there is a lack of assessment of the likely effects on the SPA resulting from habitat changes as a result of the HMP and object as a result of this. Further details of this are provided in Annex 2	Given this is a detailed criticism, a detailed response has been provided in paragraphs 9.24-9.29 of this SEI Chapter.
	Common scoter	RSPB Scotland do not object to the development[1], but do highlight the need for a strategic approach to this issue	Noted. While a strategic approach is outwith the scope of this assessment, in providing the assessment we did seek to investigate RSPB Scotland's concerns regarding this species and allow a more thorough assessment than may have been the norm for this species.
		Technical Appendix 9.1 does not state that waterbodies were searched for Common Scoter.	**Technical Appendix 9.3** states that Common scoter would have been recorded on any survey even if it was not targeted at that species because of the sensitivity of the species. Because waterbodies were the focus of diver surveys, these surveys were the ones most likely to detect Common scoter.
		Walkover surveys would not have been sufficient to detect Common scoter presence because they were carried out in conformance with timing of diver surveys, between late May and July	If Common scoter were observed on any survey, they were to be recorded; this included raptor surveys which commenced earlier than the diver surveys. No Common scoter were observed. Additionally, the concern was to do with the movements of breeding Common scoter; diver surveys showed that there were no breeding Common scoter as any brood would have been present on waterbodies when they were carried out.
		Scoters may be under-represented in the usual survey methods during migration to and from their breeding sites. Wildfowl often commute at night and therefore VP surveys are unlikely to record them.	Section 4.2 of **Technical Appendix 9.3** explains that due to the northerly location, there is no night when scoters would be expected to be returning. While light levels are low, the period of darkness is a very short period. But also, wildfowl on migration also pass over at high altitude to take advantage of jet streams. They would not be at risk of collision if they were not returning to lochs in the immediate vicinity of the proposed

[1] It is assumed this 'no objection' relates specifically to effects upon this species (Common scoter), as RSPB has objected to this application, but on a matter unrelated to the effects upon Common scoter.

			development. There is no evidence of use of those lochs.
	Common Scoter (cont.)	RSPB raised a number of concerns about the flight modelling undertaken; very little is known about local movements because no tagged surveys have been undertaken and this would undermine the accuracy of the model. Other factors could affect the routes such as preferred feeding areas, other windfarms, weather and artificial lighting. There is no evidence that scoter would take the shortest route to the sea.	The model was designed to identify routes where were energetically efficient as the shortest route would not necessarily be the route used because of energetic constraints. If there was data about local movements, it is unlikely that a model would be required; in the absence of that, and given there is no data to date to support RSPB's stated concerns or show that scoter behave in the way they suggest, a modelled approach was considered to start to give some information as to how scoter could use the landscape. There are other factors which could affect scoter movements, but in the absence of any other data, it was considered that using a simplistic approach would be best, as anything else would start to involve too much estimation of potential factors.
		RSPB consider that there is a high range of uncertainty regarding potential impacts on this species (and went onto to outline some of these areas)	We would agree there is uncertainty. We would note that one of the main areas of uncertainty is whether Common scoter actually carry out any of the theoretical behaviours which would put them at risk of impact. Given the absence of any evidence to date, across many wind farms for which many years of survey have been carried out at all times of day and 'night' the evidence seems to suggest they do not. We consider that the absence of evidence both from survey and historical data, combined with a precautionary look at possible movements routes in the event they do carry out the behaviours suggested is sufficient to suggest that this proposed development would have no adverse effect on the Common scoter population. We note that RSPB has not objected to the development on the grounds of Common scoter.
		RSPB is currently seeking support for a Conservation Management Plan for this species	Notwithstanding the above, and without prejudice, given the sensitivity of this species, this is something the applicant would be willing to discuss with RSPB as a way of providing enhancement to the biodiversity of the region.
	Curlew	RSPB consider that the number of breeding Curlew on the site may be underestimated	The estimate of one pair lost came from applying the 42% reduction to pairs identified within 500m of turbines as per

			Pearce Higgins (2012). RSPB have suggested that an 800m buffer should be applied when making this assessment. We consider this to be incorrect given Pearce Higgins (2012). The definition of how territories are assigned is given in **Technical Appendix 9.1** (of the EIA Report) section 3.2.3; it is not the same as the definition RSPB used to say the number of breeding territories was underestimated. Given Curlew are known to commute some distance from territories to feed, the RSPB definition would overestimate the number of breeding territories as birds foraging away from their territories would be recorded as territory holding, thus potentially overestimating the number of territories present. We do not consider data that is more than 10 years old, for a species which has suffered population decline over that period to be more accurate/reliable than survey data gathered recently. For population estimates, data should have been collected in the past five years, per guidance. The omission of detail on predator control was an error; this would be a consideration for the HMP.
	Other assessment concerns	The random collision risk model was used for all species as they exhibited more random flight patterns. This was not the case for Greylag goose, Pink-footed goose and Whooper Swan and these should have been modelled using a linear approach	There were two Whooper swan flights; if a linear model had been used the collision risk would have been zero as the flights did not interact with any turbine corridor. We consider two flights are too low a sample to establish a repeatable linear movement. For Greylag goose, breeding season and local geese did not show a pattern of regular linear movements (**Figures 9.1.6d** and **9.1.8d** of the EIA Report). There were only two flights which we would consider could have a provenance from Caithness Lochs; all other observations appeared to be locally breeding geese given the very small numbers or larger numbers observed but during the breeding season. This does not justify the presumption of regular linear movements the linear model is based on. There is similar lack of justification for use of the linear model for Pink-footed goose. There were three flights at collision risk height during two years of survey all of which occurred in April 2021. This is not the pattern of regular linear movements that is the assumption behind the regular linear model. We consider it would therefore be

			inappropriate to use the linear model in these scenarios.
	Turning areas	No bird surveys covered the proposed turning area sites; both have the potential to support breeding birds. Recommend that breeding bird surveys should be undertaken to inform decision - making	The primary concerns for choice of turning area will relate to peat, habitats and engineering constraints. Since two of those relate to environmental impacts which have the potential to be greater than any potential effects on a very small area of potential bird breeding habitat, one of which sits within the village of Melvich, the design choice should be driven by more sensitive receptors.
	Cumulative impacts	RSPB expressed concerns about the cumulative impacts in particular to Melvich Energy Hub and withdrawn Akron windfarm. RSPB highlights a number of wind farms which were not included RSPB states that the cumulative effects are high against the population data for some birds, giving Golden plover and Hen harrier as an example.	The Melvich Wind Energy Hub application was submitted after the Kirkton Energy Park application was, so could only be taken into account in outline. Further consideration has now been made in paras in 9.14 – 9.23 of this SEI Chapter. Cumulative data has been reviewed and an updated table is provided in **Table 9-2** of this SEI Chapter. RSPB have failed to highlight that the cumulative collision risk figures will include effects on birds which do not form part of the NHZ or the Special Protection Area (SPA) population. For example much of the estimate for Golden plover mortality comes from Tormsdale, with CR estimated at 49.98 birds per year, but this does not fall on SPA birds; RSPB has not clarified this, and instead assumed all that predicted mortality will apply to SPA population. This is unrealistic and would exaggerate the effects on the SPA/NHZ. It also takes no account of the predicted effects of mitigation as that cannot be estimated quantitatively. As such, in saying the risk is high, RSPB are overestimating it themselves.

DESIGN AMENDMENTS

9.5 As outlined in **SEI Chapter 3: Description of Development**, the only design amendments from the site layout of the 2022 Kirkton Energy Park application (as detailed in the 2022 EIA Report) are the repositioning of Turbine No.7 (and associated crane pad) approximately 53m north and the realignment of the proposed access track to Turbines No.5 - 11. This relatively minor repositioning of Turbine No.7 has been undertaken in order to accommodate a request from SEPA (see **SEI Chapter 2** and **SEI Chapter 10** for further detail) to move the turbine away from sensitive habitats.

9.6 It should be noted that although the location of Turbine No.7 has moved, this does not affect the collision risk modelling already carried out for the flight activity observed over the proposed development (as presented in the EIA Report). The collision risk model approach used does not tie

the turbines to a particular location, but uses a whole viewshed approach to calculate collision risk based on the number of turbines within that viewshed. Although Turbine No.7 has been relocated, it does not alter the distribution of the turbines within the viewsheds, so the collision risk modelling estimates presented in the EIA Report remain unchanged.

REVISED FIGURES

Figures

9.7 In order to update the graphic information previously issued with the 2022 EIA Report, a series of revised Figures have been produced for the SEI as follows.

- Figures which support **Chapter 9: Ornithology**:
  - **SEI Figure 9.2: Vantage point locations and viewsheds**;
  - **SEI Figure 9.3: Breeding bird survey results 2020**; and
  - **SEI Figure 9.4: Breeding bird survey results 2021**.
- Figures which support **Technical Appendix 9.1**:
  - **SEI Figure 9.1.3: Vantage point locations and viewsheds**;
  - **SEI Figure 9.1.4: Diver vantage point location and viewsheds**;
  - **SEI Figure 9.1.5a: Vantage point activity (Sep 2019 – Feb 2020) – Raptors**;
  - **SEI Figure 9.1.5b: Vantage point activity (Sep 2019 – Feb 2020) – Geese**;
  - **SEI Figure 9.1.5c: Vantage point activity (Sep 2019 – Feb 2020) – Other Species**;
  - **SEI Figure 9.1.6a: Vantage point activity (Mar – August 2020) – Raptors**;
  - **SEI Figure 9.1.6b: Vantage point activity (Mar – August 2020) – Waders A**;
  - **SEI Figure 9.1.6c: Vantage point activity (Mar – August 2020) – Waders B**;
  - **SEI Figure 9.1.6d: Vantage point activity (Mar – August 2020) – Geese, Swans and Other Species**;
  - **SEI Figure 9.1.7a: Vantage point activity (Sep 2020 – Feb 2021) – Raptors**;
  - **SEI Figure 9.1.7.b: Vantage point activity (Sep 2020 – Feb 2021) – Geese**;
  - **SEI Figure 9.1.7c: Vantage point activity (Sep 2020 – Feb 2021) – Other Species**;
  - **SEI Figure 9.1.8a: Vantage point activity (Mar 2021 – August 2021) - Raptors**;
  - **SEI Figure 9.1.8b: Vantage point activity (Mar 2021 – August 2021) - Waders A**;
  - **SEI Figure 9.1.8c: Vantage point activity (Mar 2021 – August 2021) - Waders B**;
  - **SEI Figure 9.1.8d: Vantage point activity (Mar 2021 – August 2021) – Geese, Swans and Other Species**;
  - **SEI Figure 9.1.9: Diver vantage point activity 2020**;
  - **SEI Figure 9.1.10: Diver vantage point activity 2021**;
  - **SEI Figure 9.1.11: Breeding bird survey results 2020**;
  - **SEI Figure 9.1.12: Breeding bird survey results 2021**;
  - **SEI Figure 9.1.13: Breeding raptor survey results 2020**; and
  - **SEI Figure 9.1.14: Breeding raptor survey results 2021**.
- Figures which support **Confidential Technical Appendix 9.2**:
  - **SEI Figure 9.2.2: Breeding bird survey results 2020**; and

- **SEI Figure 9.2.3: Breeding bird survey results 2023**.

CUMULATIVE BASELINE UPDATE

9.8 Since the 2022 Kirkton Energy Park application the cumulative wind farm situation in the study area has changed. The relevant changes to the cumulative context, with regards ornithology, since the 2022 Kirkton Energy Park application are as follows:

- Melvich Wind Energy Hub (application): Located on the northern boundary of the proposed development. Twelve wind turbines at 149.9m to tip height; and
- Armadale Wind Farm - amended application which saw the number of turbines reduced and hence a reduction in assessed collision risk.

9.9 Other applications reviewed included the application for Pentland Offshore Wind Farm (now consented), and the West of Orkney Offshore Wind Farm. However, there is no overlap between the species assessed for collision risk as a result of both Pentland Offshore Wind Farm and West of Orkney Offshore Wind Farm and the species assessed for collision risk for the proposed development. As a result, given the offshore status of those projects, there would be no cumulative effects.

9.10 In addition, the response to the Kirkton Energy Park application from RSPB highlighted some omissions from the cumulative assessment presented in the EIA Report. This has been reviewed and the revised cumulative table is shown in **Table 9-2**.

9.11 In **Table 9-3** the total estimates are provided.

Table 9-2: Updated Cumulative Information

Wind Farm	Status	Greylag Goose	Pink-footed Goose	Curlew	Lapwing	Golden Eagle	Whooper Swan	Golden Plover	Dunlin	Hen Harrier
Achairn	Op	0.06	0			0	0	0		0
Achlachan	Op							c. 16 birds per year	0	
Bad a Cheo	Op	0.17					0.08	0.51		
Bettyhill	Op	0.01	0.4			0	0			0.007
Burn of Whilk	Op	0.08	0			0.01	0	0	0	0.027
Camster	Op	0.7	0			0	0	0	0	0.06
Camster II	Op	0.52					0.12	0.23		0.02
Gordonbush	Op	0	0			0.07	0	1.27	0	0
Gordonbush Extension	Op	0.37	2.26							
Halsary	Op	0.22	0			0	0.06	0	0	0.017
Strathy North	Op	0.127 (br)	0			0.039	Insufficient data	0.94 (theoretical)		0.381

Wind Farm	Status	Greylag Goose	Pink-footed Goose	Curlew	Lapwing	Golden Eagle	Whooper Swan	Golden Plover	Dunlin	Hen Harrier
		0.23 (non-br)								
Lairg	Op	0	0			0.01	0	0	0	0
Achany	Op	0	0			0	0	0	0	0
Kilbraur	Op	0.02								
Melness	Op							2		
Achlachan 2	Cons	0.56 (Aut) *	0.33 (non-br) *		0.14 (Aut) 0.42 (non-br) *			17.03 (non-br) *		
Limekilm	Cons	0.32								
Strathy Wood	Cons	0.015	0.005			0.008		0		0.056
Achany extension	App					0.12	0.08			
Braemore	App	0.8	0.29			0	0	0	0	0.07
Creag Riabhach	App		0.78			0.04				
Golticlay	App	2.38 (non-br)	2.73 (non-br) 0.77 (br)				0.08	0.05		0.05
Hill of Lychrobbie	App	0.16	0.01				0.13	3.38		
Lairg II	App					0.031	0.01			0.018
Strathy South	App	0.27	1.33			0.01	1.13	0		0.020 (sum) 0.008 (win)
Strath Tirry	App	0.02 (br) 0.87 (non-br)	1.2				0.02			
Armadale	IP	0.254		0.038		0.009	0.007	0.038		0.001
Chleansaid	IP					0.43				0.09
Garvary	IP	0.5	4.96			0.23	0.34	0.98		0.05
Melvich	IP							0.002 (br)		
	IP	0.0095						0.053 (non-br)		
Sallachy 2	IP					0.1				
Tormsdale	IP	0.1	0.005	0.053	0.64		0.02	49.98 (0.29 SPA only)		0.198
Kirkton	IP	0.203	0.029	0.031	0.015	0.008	0.006	0.008	0.006	0.001

Table 9-3: Cumulative Summary

	Greylag Goose	Pink-footed Goose	Curlew	Lapwing	Golden Eagle	Whooper Swan	Golden Plover	Dunlin	Hen Harrier
Consented sites									
Annual Collision Risk	7.902	10.105	0	0.56	0.338	1.71	41.41	0	0.734
Annual Collision Risk including proposed development	8.105	10.134	0.031	0.575	0.346	1.716	41.418	0.006	0.735
Estimate of 30 year loss, including proposed development	243.15	304.02	0.93	17.25	10.38	51.48	1242.54	0.18	22.05
Sites in Planning									
In Planning	1.0865	4.974	0.122	0.655	0.777	0.373	51.061	0.006	0.34
Number lost over 30 years	32.595	149.22	3.66	19.65	23.31	11.19	1531.83	0.18	10.2

ASSESSMENT OF EFFECTS

9.12 The proposed relocation of Turbine No.7 would not alter the assessment of impacts as presented in **Chapter 9: Ornithology** of the EIA Report. The change is relatively minor from an ornithological perspective, moving the location within the existing line of turbines and therefore not changing the situation with respect to locations from potentially sensitive territories.

9.13 Similarly the proposed rerouting of the access track would not alter the assessment of effects as presented in **Chapter 9: Ornithology** of the EIA Report. While it might change the impacts on individual territories, the overall effect of habitat loss to tracks and infrastructure is limited across the proposed development and the re-routed track would not affect this.

Cumulative Effects

9.14 **Table 9-3** presents a revised estimate of cumulative collision risk across the NHZ. This was as a result of the additional developments, submitted or amended after the proposed development was submitted and a review of those already considered which as RSPB had identified had omitted some consented sites.

9.15 For most species the revised cumulative collision risk estimate would still not be considered significant, even although most of them have increased. However, for four species which are also qualifying species of either Caithness and Sutherland Peatlands SPA or Caithness Lochs SPA, the revised estimate show a substantial increase over that presented in **Chapter 9: Ornithology** of the EIA Report. The four species are Golden eagle, Whooper swan, Golden plover and Hen harrier.

9.16 The initial estimate of consented cumulative collision risk for Golden eagle was 0.129 birds per year; it is now estimated at 0.338. It should be noted that this is the level of collision risk already considered acceptable as these are the estimates from consented developments. The proposed development would increase this to 0.346 birds per year. Across the lifetime of the proposed development, this would be less than one bird; as such, the increase to the cumulative collision risk is not considered to be significant.

9.17 The initial estimate of consented cumulative collision risk for Whooper swan was 0.15 birds per year; it is now estimated at 1.71 birds per year. It should be noted that this is the level of collision risk already considered acceptable as these are the estimates from consented developments. The proposed development would increase this to 1.716 birds per year. Across the lifetime of the proposed development, this would be less than one bird; as such, the increase to the cumulative collision risk is not considered to be significant. Additionally, the birds observed at the proposed development were not considered to form part of the Caithness Lochs SPA population due to the distance from that SPA, so there would be no further cumulative impact on the population from that SPA.

9.18 The initial estimate of consented cumulative collision risk for Golden plover was 35.750 birds per year; it is now estimated at 41.41. It should be noted that this is the level of collision risk already considered acceptable as these are the estimates from consented developments. The proposed development would increase this to 41.418 birds per year. Across the lifetime of the proposed development, this would be less than one bird; as such, the increase to the cumulative collision risk is not considered to be significant. Much of this risk comes from the Achlachan complex and is as a result of non-breeding activity.

9.19 The initial estimate of consented cumulative collision risk for Hen harrier was 0.5 birds per year; it is now estimated at 0.734. It should be noted that this is the level of collision risk already considered acceptable as these are the estimates from consented developments. The proposed development would increase this to 0.735 birds per year. Across the lifetime of the proposed development, this would be less than one bird; as such, the increase to the cumulative collision risk is not considered to be significant.

9.20 As a result, despite the revision to the estimated mortality associated with collision risk, there would be no change to the assessment as presented in **Chapter 9: Ornithology** of the EIA Report.

9.21 Aside from cumulative collision risk effects, there are also potential disturbance/displacement effects to be considered, particularly with the proximity of Melvich Wind Energy Hub, the boundary of which lies adjacent to the boundary of the proposed development. There is however spacing between the infrastructure of Melvich and the proposed development, with the closest turbines being approximately 1.4km apart. Cumulative displacement and disturbance effects could occur in the short term if construction occurs on both sites simultaneously. While these would be short term so not considered significant should this situation occur, the project CEMPs should consider the

additional adverse effects which could result and promote a combined approach to management of environmental issues associated with the construction activity.

9.22 Longer term, the area between the proposed development and Melvich Wind Energy Hub, which would include the HMP area for this development could have greater effects of displacement upon it, lying as it does between two wind farms in relatively close proximity. While the habitat management proposed in the HMP would still be beneficial to enhancing habitats, it might mean it becomes less suitable for establishing additional habitat for species such as Golden plover which in some locations have been susceptible to displacement from wind farms. At the same time, removal of forestry in this area may also help mitigate for cumulative effects of the windfarms by removing other displacement effects caused by the presence of forest edge, which itself has a displacing effect on open ground species as part of their anti predation strategy. It is therefore difficult to predict how those two conflicting pressures will play out. There will be some additional habitat available but its suitability may be limited by the presence of two wind farms in proximity .

9.23 No Golden plover were recorded breeding in this area during surveys in support of the Kirkton Energy Park application; possibly because of the displacing effects of the existing woodland. As such, this would then suggest there would be no significant cumulative effect from displacement between the two proposed wind farms (Kirkton Energy Park and Melvich Wind Energy Hub), but cumulatively there may be an adverse effect on the HMP proposals for this development if both developments were to proceed. The presence of the proposed HMP area was not identified in the assessment of effects of Melvich Wind Energy Hub.

Assessment of Effects of Proposed HMP Changes

9.24 RSPB in their response to the Kirkton Energy Park application highlighted that there had been no assessment of the effects of the HMP and how this could positively benefit the SPA populations of birds, which might in turn cause adverse effects on those same populations and objected on this basis. So for example, additional pairs of sensitive species might establish territories within the HMP area which changes the impacts on that species from those assessed within the EcIA.

9.25 **Table 9.4** shows a summary assessment of the sensitive ornithology receptors, particularly those highlighted by RSPB and how the HMP impacts on those species.

Table 9-4: Cumulative Summary

Receptor	Potential impacts	Assessment	Evaluation
Hen harrier	Additional collision mortality as a result of increased use of the HMP	Virtually all foraging flights will occur below collision risk height; most risk is believed to occur at or in the vicinity of any nest, due to display and food pass flights and young birds fledging. The increased collision risk to breeding Hen harrier (i.e. those with nests within 500m of turbines) has been recognised and the prescriptions of the HMP are aimed at developing suitable foraging habitat which	No adverse/significant effect

Receptor	Potential impacts	Assessment	Evaluation
		is less suitable for breeding (wetter habitats in particular which are less attractive to breeding Hen harrier). Since Hen harrier will forage over a much wider area in their home range than is suitable to act as breeding habitat and as such, targeting management to provide suitable foraging but not breeding habitat is possible. Ongoing habitat review would continue to monitor habitat improvement to ensure that issues are not created with the addition of Hen harrier breeding habitat.	
Short-eared owl	Additional collision mortality as a result of increased use of the HMP	There is no evidence of Short-eared owl using the site currently, which suggests lack of suitable breeding or habitat. As such, any use of this area as a result of new habitat creation is likely to be a result of population increase. This, married with the fact that Short-eared owl are very low level foragers that only breed intermittently means that levels of predicted collision risk would be negligible and would be offset by the population expansion required to move into this area.	No adverse/significant effect
Greenshank	Additional collision mortality as a result of increased use of the HMP	There is no evidence of Greenshank using the site currently, which suggests lack of suitable breeding or habitat. As such, any use of this area as a result of new habitat creation is likely to be a result of population increase, of additional pairs adopting new habitat as a territory. Greenshank would be considered susceptible to collision risk because they have been reported making longer distance higher altitude flights, although this is not always a feature of their behaviour in Caithness. No Greenshank have been observed foraging on the proposed development making it less likely flight paths would occur through the array. As a result it is likely that while there could be an increased risk to this species, the growth of the population would have to be positive and as such, additional mortality at one locale would be unlikely to exceed the positive population growth.	Potential for minor impact which would not significantly affect the population

Receptor	Potential impacts	Assessment	Evaluation
Golden plover	Additional collision mortality as a result of increased use of the HMP	Golden plover were recorded breeding in the vicinity of the proposed development, so there is potential for increased mortality as a result of proximity to turbines. At the same time, given the size of the regional population, collision risk associated with one pair would not be so great as to impact adversely on the population as a whole.	Potential for minor impact which would not significantly affect the population
Dunlin	Additional collision mortality as a result of increased use of the HMP	Dunlin were recorded breeding in the vicinity of the proposed development, so there is potential for increased mortality as a result of proximity to turbines. However, Dunlin flights do tend to be low level and localised and below collision risk height (as can be seen from the evidence of activity on the proposed development), which would make additional collision risk negligible, particularly given the size of the regional population.	

9.26 Additionally it should be remembered that the HMP is to some extent an iterative process; an outline HMP has been presented in which a number of aims have been proposed namely:

- reducing peatland degradation;
- habitat enhancement for Golden plover and Hen harrier; and
- monitoring the effect of the proposed development.

9.27 A more detailed HMP would be produced post consent, and would require approval from consultees including THC and NatureScot. During and after construction the effects of the management would be monitored and should adverse unintended effects be identified, then the management would be adjusted, after seeking agreement with consultees to reduce the impact of those effects.

9.28 As such, while there is potential for adverse effects to occur, the process of developing the HMP and then the monitoring associated with it would work to prevent or mitigate for any unexpected impacts which would occur.

9.29 Given the control steps inherent within the establishment and management of the HMP this will not occur. There would thus be no adverse effects on the SPA or significant effects on ornithological receptors.

SUMMARY OF CHANGES TO THE SIGNIFICANCE OF EFFECTS

9.30 As a result of the changes to the proposed development there would be no changes to the assessed effects as presented in **Chapter 9: Ornithology** of the EIA Report.

CONCLUSIONS

9.31 This SEI chapter has reviewed the relevant responses from consultees, providing additional information as requested where necessary, and clarifying a number of concerns.

9.32 Amendments to the layout of the proposed development have been reviewed and it has been described how these amendments would have no change on the assessment of the effects of the proposed development on ornithological receptors.

9.33 This SEI chapter has updated the cumulative assessment, particularly with respect to cumulative collision risk, but has also undertaken as assessment of the cumulative effects of the Melvich Wind Energy Hub, given the close proximity of that development. These showed that there would be no significant adverse effect as a result of the revised cumulative collision risk estimates, but that the in-combination effect could have a negative effect on the proposed HMP area, resulting in it being less effective in acting as an enhanced area for some breeding wader species.