Avian Study for incorporation into AA & Ecology EIA

As per ERA requirements for the Planning Application of proposed second Electrical Malta-Sicily Interconnector regarding avifauna (EA 00018/21)

Technical Report

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1.0 Methodology (AA, EIA)

1.1 Avian study

The study at hand considers populations of wild birds, in particular populations of protected species and of species with conservation concern as relevant sensitive receptors.

The Area of Influence for the avifauna assessment of the terrestrial part of the planned development, from here onwards labelled as **AoI-1**, consists of:

- A 0.1 km buffer either side of the trenched part of the proposed onshore cable route of which approximately 0.5 km are flanked by (disused) agricultural land, internal routes within the ECOHIVE complex and approximately 1.3 km along the side of a road (see Figure 1).
- The temporary construction yard for the HDD facility of approximately 2800 m^2 and a 0.1 km buffer around it.

The Area of Influence for the avifaunal assessment of the marine part of the planned development, labelled **AoI-2** from here onward, consists of a 0.5 km buffer each side of the proposed offshore cable route, considered as the extent of potential influence of activities on marine avifauna during construction, operation, and decommissioning (see Figure 1 and 2).

The additional potential impact on marine avifauna specifically caused by light pollution during the construction of the offshore cable route is assessed as a 5.0 km buffer (direct line of sight) at each side of the prosed offshore cable route, labelled **AoI-3** from here onward (see Figure 3).

The assessment of potential impacts on avifauna receptors in the identified AoIs was performed through a literature review.

Main references considered are:

- Malta Breeding Bird Atlas 2008 (BirdLife Malta 2009)
- Malta Breeding Bird Atlas 2018 (Epsilon 2019)
- The Breeding Birds of Malta (Sultana et al. 2011)
- Malta Marine IBA Inventory Report (BirdLife Malta 2015)
- MSFD initial assessment report, seabirds (Borg et al. 2013)
- MSFD second assessment report (ERA 2020)
- BirdLife International (2020) IUCN Red List for birds (http://www.birdlife.org)
- Bird species of Annex I of the Birds Directive (Last updated: 14/09/2020)

The Natura 2000 sites partially overlapping with the AoI-2 (offshore cable routes plus 0.5 km buffer) are the SAC L-Għadira s-Safra (MT0000008) and the marine SPA Żona fil-Baħar madwar Għawdex (MT0000112).

Additional areas of importance for avifauna which are protected within the Natura 2000 network are located within/ bordering the 5.0 km buffer of the offshore cable route, AoI-3**,** and are therefore considered for potential impacts e.g. from light pollution. These are the SAC Is-Salini (MT0000007), and SAC Il-Gżejjer ta' San Pawl (Selmunett, MT0000022) as well as the SPA Żona fil-Baħar tal-grigal (MT0000107).

The report details the conservation status of the relevant bird species within the AoIs and in the above-mentioned Natura 2000 sites.

2.0 Avifauna baseline for AA & EIA

2.1 Avian baseline study - desktop review

2.1.1 General overview

More than 400 bird species have been recorded in the Maltese Islands and its FMZ (25NM) (Bonavia, pers. comm.). Slightly above two hundred of these species occur in the Maltese Islands regularly[1]. Up to 48 bird species have been recorded breeding on the Maltese Islands, of which 23 are regular breeders from wild populations[2]. Three species, all pelagic seabirds, hold significant breeding populations in the Maltese islands from an EU, European and global perspective, and are listed under Annex I of the EU Birds Directive[3]. Information regarding the species' conservation status, population numbers, trends and range presented below are derived from BirdLife International's Data Zone[4]. All information regarding species listed in Annex I of the EU-Birds Directive such as population numbers in the EU were obtained from the Environment, Nature and Biodiversity site of the European Commission[5].

AoI-1 and/or AoI-2 partially overlap with the following sites of conservation interest in relation to bird species:

- SAC L-Għadira s-Safra u l-Iskoll tal-Għallis (MT0000008)
- SPA Żona fil-Baħar madwar Għawdex (MT0000112)

Additionally, three areas, all protected within the Natura 2000 network and with various importance for avifauna were considered for the assessment at hand, as they are located within the 5.0 km buffer each side of the proposed offshore cable route, considered for potential impact by light pollution during the construction phase.

- SAC Is-Salini (MT0000007)
- SAC Il-Gżejjer ta' San Pawl (Selmunett, MT0000022)
- Żona fil-Baħar fil-Grigal (MT0000107)

This baseline study intends to inform in general which receptors (bird species) can be expected to occur in the AoI and in the above listed, potentially impacted protected areas in relevant numbers.

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[1] *Bonavia et al. (2005): Systematic list 1996-1999, Il-Merill 31, 1-34.*

Bonavia et al. (2010): Systematic list 2000-2005, Il-Merill 32, 55-109.

[2] *Epsilon Malta Ltd, Nature Conservation Consultants (2019). Malta Breeding Bird Atlas 2018. Malta: Wild Birds Regulation Unit, Ministry for the Environment, Sustainable Development and climate Change*

[3] Maltese Environment and Resources Authority - ERA (2020): Update of Articles 8, 9 and 10 of the Marine Strategy Framework Directive (2008/56/EC) in Malta's Marine Waters. Second Assessment Report, pp.321-344.

[4] *BirdLife International (2020) IUCN Red List for birds. Downloaded from http://www.birdlife.org on 18/09/2020.*

[5] *https://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm*

2.1.2 *Breeding land birds within the terrestrial part, AoI-1*

Eight bird species have been reported at least possibly breeding within the AoI according to the Malta Breeding Bird Atlas 2008[6] and 2018[7], considering the breeding seasons 2008, 2017 and 2018. One of them, the Greater Short-toed Lark *Calandrella brachydactyla* is listed under Annex I of the EU Birds Directive. None are listed as having an unfavourable conservation status in Malta, the EU, or globally. None of the species can be considered specifically sensitive to the type of infrastructure as the planned development, while three of the eight species regularly choose anthropogenic structures as nest sites.

Table 1: List of breeding bird species in the terrestrial AoI (AoI-1) and their status

Species	Breeding status in terrestrial AoI	Abundance status	Trend in Malta	Trend in Europe	Conser-vation status	Annex I (EU Birds Directive)
Common Swift *Apus apus*	Probable	Scarce	Increasing	Stable	Least Concern	No
Greater Short-toed Lark *Calandrella brachydactyla*	Probable	Common	Increasing	Increasing	Least Concern	Yes
Blue Rock Thrush *Monticola solitarius*	Possible	Frequent	Stable	Unknown	Least Concern	No
Sardininian Warbler *Curruca melanocephala*	**Confirmed**	Common	Decreasing	Stable	Least Concern	No
Spectacled Warbler *Curruca conspicillata*	Possible	Frequent	Decreasing	Unknown	Least Concern	No
Zitting Cisticola *Cisticola juncidis*	Probable	Abundant	Stable	Increasing	Least Concern	No
Cetti's Warbler *Cettia cetti*	Possible	Frequent	Decreasing	Increasing	Least Concern	No
Spanish Sparrow *Passer hispaniolensis*	**Confirmed**	Abundant	Stable	Decreasing	Least Concern	No

2.1.3 *Breeding seabirds making use of MT0000112 Żona fil-baħar madwar Għawdex*

Three pelagic seabird species from the order Procellariiformes – the Yelkouan Shearwater *Puffinus yelkouan*, Scopoli's Shearwater *Calonectris diomedea*, and Mediterranean Storm-petrel *Hydrobates pelagicus melitensis* – nest on the Maltese Islands and inhabit Maltese waters in significant population numbers from a global and European population perspective.

[6] *Raine, A., Sultana, J., and Gillings, S. (2009) Malta Breeding Bird Atlas 2008. Malta: BirdLife Malta*

[7] *Epsilon Malta Ltd, Nature Conservation Consultants (2019). Malta Breeding Bird Atlas 2018. Malta: Wild Birds Regulation Unit, Ministry for the Environment, Sustainable Development and climate Change*

All three species are listed in Annex I of the EU Birds Directive. One of them, the Yelkouan Shearwater is listed as Vulnerable on the IUCN's Redlist. In addition to these, Malta hosts a breeding population of Yellow-legged Gull *Larus michahellis*, not listed in Annex I of the EU Birds Directive. The designation of the marine SPA Żona fil-baħar madwar Għawdex (MT0000112) was triggered by two of the above-mentioned species: The Yelkouan Shearwater and the Scopoli's Shearwater.

Scopoli's Shearwater *Calonectris diomedea – Least Concern, Annex I*

The Scopoli's Shearwater is currently listed as Least Concern by the IUCN. It is listed under Annex I of the EU-Birds Directive. The species is endemic (breeding) to the Mediterranean basin, with major colonies in the Central Mediterranean. The global population size was last estimated in 2013 at 285,000 – 446 000 mature individuals equating to 142,478 – 222,886 breeding pairs, showing a decreasing trend. For the Maltese islands, the total population estimate in 2018 was 2670 – 3605 breeding pairs according to Malta's second assessment report for the MSFD, roughly equating to around 1.6 – 1.9% of the global breeding population. Previous figures reported in 2013 had estimated the total Maltese population to be 3,046 – 3,962 breeding pairs. The available data suggests a decreasing population trend. Birds only approach land to breed, entering and leaving the colonies under the cover of darkness. Adults in and near the colonies and fledglings are sensitive to light pollution[8]. The closest breeding colony to the proposed development is Irdum tal-Madonna (SPA MT0000009) – this is not expected to be impacted directly by noise and light pollution from the development.

The Scopoli's Shearwater inhabits Maltese waters from February to November, with the highest activity at and in front of the colonies mainly from March to October. The species is strictly pelagic, foraging frequently together in large numbers on shoaling fish and squid by plunge-diving and pursue-diving, up to 15m deep. During the breeding period, Scopoli's Shearwaters congregate in large flocks, sitting on the water's surface exhibiting 'rafting' behaviour within a 4km radius in front of the colonies in the evenings[9], as described by Sultana et al. 2011. GPS-tracking of individuals from Maltese colonies during the chick-rearing period (July-October) shows that Scopoli's Shearwaters utilise at-sea areas in the Maltese EEZ, including the marine AoIs. The distribution of foraging Scopoli's Shearwaters within the FMZ (25nm), including the marine AoIs has been confirmed by vessel-based counts. Up to 7,300 individuals of the species make regular use of the SPA MT0000112, Żona fil-Baħar madwar Għawdex during the reproductive season as foraging ground and rafting areas in front the colonies. Frequent passage occurs through the marine AoIs by birds commuting between breeding grounds and foraging areas. While Scopoli's Shearwaters have not been reported breeding inside the AoIs, they make regular use of the marine part of the AoIs.

Yelkouan Shearwater *Puffinus yelkouan – Vulnerable, Annex I*

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[8]Rodríguez et al. (2017). Seabird mortality induced by land-based artificial lights. Conservation Biology, 31(5), 986-1001.

Crymble et al. (2020): Identifying light-induced grounding hotspots for Maltese seabirds. Il-Merill 34, 23-43.

[9]BirdLife International (2010). Marine Important Bird Areas toolkit: standardised techniques for identifying priority sites for the conservation of seabirds at sea. BirdLife International, Cambridge UK. Version 1.2: February 2011.

The IUCN lists the Yelkouan Shearwater as Vulnerable. It is furthermore listed under Annex I of the EU-Birds Directive. The Yelkouan Shearwater is endemic to the Mediterranean basin. The global population size, estimated in 2011, is 15,337 – 30,519 pairs, roughly equating to 46,000 – 92,000 individuals, although the quality of this estimate is moderate due to data gaps. According to the IUCN the global population trend is decreasing. The latest total population estimates of Yelkouan Shearwaters for the Maltese Islands (2016-2018) is 1,795 – 2,635 breeding pairs, roughly equating to 10% of the global breeding population. While previous figures reported in 2013 in the initial MSFD report suggest a short-term increase for Maltese population, the report stresses the fact that the apparent short-term increase of the Maltese Yelkouan Shearwater population is rather a result of intense research in recent years with the result of increased monitoring intensity rather than an actual increase in population numbers[10]. The long-term trend indicates a stable population. By-catch is likely to be responsible for low adult survival rates[11] as shown for Maltese Yelkouan Shearwaters. Birds only approach land to breed, entering and leaving the colonies under cover of darkness. Adults and fledglings are sensitive to light pollution[12]. The largest Yelkouan Shearwater colony in Malta is situated at Irdum tal-Madonna (MT0000009). The colony closest to the planned development is situated on Selmunett (MT0000022), within the 5km buffer area of the proposed offshore cable route (AoI-3).

The Yelkouan Shearwater inhabits Maltese waters, including the SPA MT0000112 and SPA MT0000107. It can be found in the colonies from October to July. Outside the breeding season, the birds disperse more widely across the Central Mediterranean and a significant part of the population migrates East to the Aegean and into the Black Sea[13]. Yelkouan Shearwaters are strictly pelagic, foraging frequently together in flocks on shoaling fish and squid mainly by pursuit-diving, up to 50m deep. Like Scopoli's Shearwaters, Yelkouan Shearwaters congregate in flocks exhibiting rafting behaviour within a 7km radius in front of the colonies in the evenings, according to GPS-tracking data. The individual rafts tend to be further out at sea than those of the Scopoli's Shearwaters and be made up of fewer individuals.

GPS-tracking of individuals during chick-rearing from the two main Maltese colonies (2012-14)[14] suggests that Yelkouan Shearwaters forage predominantly in waters further offshore and partially outside Maltese waters. Like other shearwater species, Yelkouan Shearwaters avoid crossing over land. The Yelkouan Shearwater is one of the trigger species for the designation of the relevant marine SPAs at hand (MT0000112, MT0000107). 3,270 – 4,650 individuals of the species make regular use of the SPA MT0000112 during the reproductive

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[10] *Maltese Environment and Resources Authority - ERA (2020): Update of Articles 8, 9 and 10 of the Marine Strategy Framework Directive (2008/56/EC) in Malta's Marine Waters. Second Assessment Report, pp.321-344.*

[11] *Oppel et al. (2011): Is the Yelkouan shearwater Puffinus yelkouan threatened by low adult survival probabilities?. Biological Conservation, 144(9), 2255-2263.*

[12] *Crymble et al. (2020): Identifying light-induced grounding hotspots for Maltese seabirds. Il-Merill 34, 23-43.*

[13] *Raine, A. F., Borg, J. J., Raine, H., & Phillips, R. A. (2013): Migration strategies of the Yelkouan Shearwater Puffinus yelkouan. Journal of Ornithology, 154(2), 411-422.*

[14] *Metzger, B., Oppel, S., Carroll, M., Meirinho, A., Dias, M. P., Barbara, N., & Lago, P. (2015). Malta Marine IBA Inventory Report. https://birdlifemalta.org/wp-content/uploads/2018/03/LIFE10NATMT090-MSP-A8_mIBA_Report_final.pdf*

season as foraging ground and rafting areas in front the colonies. 380 – 450 individuals make regular use of SPA MT0000107 during the reproductive season as foraging ground. Frequent passage occurs regularly through AoI-2 and AoI-3 by birds commuting between breeding grounds and foraging areas. Yelkouan Shearwaters have been reported breeding inside the AoI-3, with the latest population estimates for the colony in the SAC Selmunett (MT0000022) ranging from 45 to 70 breeding pairs[15].

[15] *Metzger, B., Austad, M. (2022). Towards effective management of Malta's marine waters – Seabird Fieldwork Report 2021 (https://era.org.mt/wp-content/uploads/2022/11/Seabird-Fieldwork-Report-2021-public.pdf)*

Mediterranean Storm-petrel *Hydrobates pelagicus melitensis – Least Concern, Annex I*

The Mediterranean Storm-petrel *Hydrobates pelagicus melitensis* is a Mediterranean subspecies, clearly separated both genetically[16] and morphologically[17] from the Atlantic breeding population of the European Storm-petrel. Neither IUCN/BirdLife International nor the EU-Birds Directive has assessed this taxonomic unit separately. The IUCN lists the species overall as Least Concern. It is listed under Annex I of the EU-Birds Directive. The Mediterranean subspecies *H. pelagicus melitensis* is endemic to the Mediterranean basin and therefore has a relatively restricted distribution range. The global estimated population size of the entire species is 430000 – 519999 mature individuals. However, the data quality is poor (estimated in 2015). The most recent population size estimates for the Mediterranean sub-species are 8,500 – 15,200 pairs, roughly 2 – 3% of the global population. While the global population trend is unknown, the population trend of Mediterranean sub-species is decreasing according to EU-Birds Directive. The closest breeding colony to the proposed development is Irdum tal-Madonna (MT0000009) – which is not expected to be directly impacted by noise and light pollution from the planned development.

A recent population assessment through capture mark recapture led to an overall population size estimate of 8575 breeding pairs for the Maltese Population, around 7% of the estimated global population of the species and at least 56% of the entire population of the Mediterranean subspecies. The short-term trend (2008-2018) and the long-term trend (1980-2018) for the Maltese population (2008-2018) are both reported to be stable[18].

The species is found in the Maltese EEZ year-round and in the colonies from February to October. It is by far more commonly seen in Maltese waters during the breeding season, and more frequently and in higher numbers southeast and south of Malta. Adults and fledglings are sensitive to light pollution[19].

The 70% KDE of seven Storm-petrels from the Filfla colony GLS-tracked during the breeding season indicate that the birds make use of the entire Maltese EEZ, but also of areas further offshore between Malta and Libya[20].

While not being a trigger species for the designation of the marine SPA MT0000112, Storm-petrels are commonly making use of this area (including AoI-3) year-round, and more so during the breeding season. Furthermore, they are one of the trigger species for the designation of the marine SPA MT0000107, with a modelled 1700 individuals making use of the area, including AoI-3. While Storm-petrels have been captured at night on Selmunett

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[16]*Cagnon et al. (2004): Phylogeographic differentiation of storm petrels (Hydrobates pelagicus) based on cytochrome b mitochondrial DNA variation. Marine Biol. 145(6): 1257–1264.*

[17]*Lalanne et al. (2001): Morphological differentation between European Storm-petrel subspecies: new results regarding two Mediterranean populations. Alauda 69(4): 475–482.*

[18]*Maltese Environment and Resources Authority - ERA (2020): Update of Articles 8, 9 and 10 of the Marine Strategy Framework Directive (2008/56/EC) in Malta's Marine Waters. Second Assessment Report, pp.321-344.*

[19]*Crymble et al. (2020): Identifying light-induced grounding hotspots for Maltese seabirds. Il-Merill 34, 23-43.*

[20] *Lago, P., Austad, M. & Metzger, B. (2019): Partial migration in the Mediterranean Storm Petrel Hydrobates pelagicus melitensis. Marine Ornithology 47: 105–113.*

(MT0000022) inside the AoI-3 during the breeding season, breeding has not been confirmed inside the AoI. Frequent passage of Storm-petrels is expected to occur regularly through AoI-2 and AoI-3 by birds commuting between breeding grounds and foraging areas.

Yellow-legged Gull *Larus michahellis – Least Concern*

The IUCN lists the Yellow-legged Gull as Least Concern with an increasing population trend. The Global population numbers are unknown. The European population is estimated at 409,000 – 534,000 pairs equating to 819,000 – 1,070,000 mature individuals, with an increasing trend. The latest assessment of the Maltese YLG population for Malta's Article 12 reporting to the EU[21] lists 250 breeding pairs for the Maltese islands with an increasing trend. The largest colony, approximately 202 ± 24 apparently occupied nests (5-year mean) is located on Filfla. Similar numbers have been reported from Filfla before. Smaller colonies at Ta' Ċenċ, Dingli and Wardija might have expanded in the last years and the species has established new breeding locations such as Comino, Għarb and within AoI-3 on Selmunett (MT0000022) recently[22]. Therefore, the actual number of breeding pairs might exceed 300 pairs.

Western to Central Mediterranean populations are mainly sedentary and dispersive but some populations are partially migratory. In the Maltese Islands a large number of non-breeders are present year-round. Ring recoveries show that birds ringed on Filfla as chicks utilise other locations in Malta and abroad, mainly Sicily and Southern Italy. Yellow-legged Gulls are highly opportunistic feeders and benefit from human activities, such as fishing, discard from fisheries and other vessels, food-waste, landfills, aquaculture and agriculture. In the Maltese islands, they occur in their highest densities and largest abundances in the harbours areas, around the largest colony (Filfla), around areas with large aquaculture facilities, especially tuna pens such as in the vicinity of St Paul's Island and the wider area off Selmun. Large numbers of feeding flocks can be observed in the AoI-1 at the Magħtab landfill and also in adjacent sea areas in the AoI-2 and AoI-3 inside SPA MT0000112 and SPA MT0000107.

2.1.4 Other avian species expected to occur in the AoIs

The following is a list of species expected to make use of the AoIs.

Seabird species *sensu lato*

Several seabird species *sensu lato* have been recorded to make use of the AoIs, mainly crossing the area during migration, but also stopping over during the migration period or staging extended periods of time during summer or winter. Two of these species are listed as Vulnerable and one is listed as Near Threatened. Overall, nine species are listed in Annex I of the EU Birds Directive.

Ferruginous Duck *Aythya nyroca – Near Threatened, Annex I of the EU Birds Directive*

Population trend decreasing. A significant proportion of the European Ferruginous Duck population and more than 1% of the global population funnels through Gozo Channel situated in the marine SPA (MT0000112) annually, mainly during spring migration. The birds often pass

[21] https://circabc.europa.eu/sd/a/4e807e1b-8aa1-4ede-ac48-a13cdd32889f/MT_A12NatSum_20141031.pdf

[22] *Crymble et al. (2020): New breeding sites of Yellow-legged Gull around the Maltese Islands. Il-Merill 34, 72-80.*

in larger flocks, also alighting on the water to rest. Occasionally observed in Is-Salini (MT0000007). However, no larger numbers of the species have been recorded in the AoIs.

Greater Flamingo *Phoenicopterus roseus – Least Concern, Annex I of the EU Birds Directive*

Overall population trend increasing**.** Flamingos migrate through the Maltese Islands, including the marine SPA MT0000112 annually often gathering in larger flocks. In recent years they have been recorded in increasing numbers, mainly in autumn. Expected to pass through the AoIs regularly on migration, but it is unlikely that this happens in significant numbers. Reported stopping over in Is-Salini (MT0000007).

Slender-billed Gull *Chroicocephalus genei – Least Concern, Annex I of the EU Birds Directive*

European population size decreasing. In Malta Slender-billed Gulls are recorded annually on migration mainly from (July) August to March (April) in single to low double figures of daily observations. Slender-billed Gulls are considered a coastal species. The species can be expected to occur regularly in the AoI, including foraging at Magħtab landfill and foraging, roosting and passing over the marine part of the AoI that is situated in the SPA MT0000112. Furthermore, the species has been reported making use of the reserves, Is-Salini (MT0000007) and L-Għadira s-Safra (MT0000008) for foraging and roosting. However, it is very unlikely that numbers in any of the AoI reach significant levels from a global or European population perspective at any point.

Mediterranean Gull *Larus melanocephalus – Least Concern, Annex I of the EU Birds Directive*

The European population trend is decreasing. In the Maltese islands the species is mainly recorded from October to April with numbers in the lower hundreds reported in the period from November to March. Regularly makes use of the SPA MT0000112, including the marine part of the AoI. Birds will also make use of the adjacent land areas for roosting as well as foraging at the landfill. SPA MT0000112. Furthermore, recorded regularly in Is-Salini (MT0000007), L-Għadira s-Safra (MT0000008) and Selmunett (MT0000022). It is not expected that Mediterranean Gulls reach relevant numbers in the AoI as compared with the European population which is equivalent to the global population.

Audouin's Gull *Ichthyaetus audouinii – Vulnerable, Annex I of the EU Birds Directive*

The European breeding population is believed to be currently rapidly decreasing. Audouin's Gulls are mainly found in marine habitats year-round, very frequently following trawlers to feed discarded fish. The species is migratory and dispersive. Before 2000 the Audouin's Gull was considered a very rare bird species to the Maltese islands. The species' status has changed significantly since. From 2000 to 2009 there were 311 records of 535 individuals, with a maximum of 184 sightings during this period in 2007. During stopover on migration the species can be expected regularly in the AoIs, foraging at Magħtab landfill and roosting, foraging and passing through SPA MT0000112, including the AoIs. It has also been recorded regularly from Is-Salini (MT0000007), L-Għadira s-Safra (MT0000008) and Selmunett (MT0000022). However, it is very unlikely that numbers in any of the aforementioned areas reach significant levels from a global or European population perspective at any point.

Little Tern *Sternula albifrons – Least Concern, Annex I of the EU Birds Directive*

The overall population trend is decreasing, the European population size trend is unknown. In Malta Little Terns are recorded annually in small numbers, mainly in spring (April-May). The

species is at least partially migratory and dispersal in the region. Little Terns regularly frequent coastal areas, including lagoons and saltpans when foraging, including the marine part of the AoI inside SPA MT0000112. They also have been reported from Is-Salini (MT0000007). However, it is highly unlikely that significant numbers regarding the global, European or EU population are reached inside the AoIs.

Common Gull-billed Tern *Gelochelidon nilotica – Least Concern, Annex I of the EU Birds Directive*

The global population is suspected to be in decline, while the European population is estimated to be increasing. The species is recorded in Malta annually in single to double digit numbers on migration, both in spring and autumn. It is likely that Gull-billed terns occur in the AoIs annually during passage on migration and make use of the area for foraging. However, it is highly unlikely that significant numbers regarding the European population are reached at any time.

Caspian Tern *Hydroprogne caspia – Least Concern, Annex I of the EU Birds Directive*

The overall as well as the European population trend are increasing. The species is recorded in Malta annually in double digit numbers on migration, both in spring and autumn. It is likely that Caspian Terns occur in the AoIs annually during passage on migration and that they make use of it as foraging areas, plunge-diving for fish while feeding on the wing. However, it is highly unlikely that significant numbers regarding the European population are reached at any time. Ringed Caspian Terns that have been recorded in Malta were ringed in Finland (e.g. 9 until 1996), confirming that birds of the European population are passing through Malta regularly.

Black Tern *Chlidonias niger – Least Concern, Annex I of the EU Birds Directive*

The overall population trend is declining, while the European population trend is unknown. The species occurs in Maltese waters annually and in good numbers mainly during autumn migration, peaking in the second half of August to the beginning of September with few scattered records from spring migration. The species passes through the Maltese islands mainly in offshore areas, frequently foraging on the wing for small prey items at or close to the sea surface. The birds are often attracted to the net cages of the Maltese Tuna aquaculture industry where they feed from next to the cages but also rest on the rails of the cages. Black Terns can also be frequently observed offshore resting on the floats of FAGs of the Dolphin-fish (Lampuka, *Coryphaena hippurus*) fisheries, but also on sun-bathing turtles (*Caretta caretta*), buoys and floating debris (all own observations). During vessel-based surveys and trips to tuna-cages in the Maltese FMZ end of August, numbers of up to 2000 individuals were counted during a single trip. On migration, Black Terns are very likely to pass through the AoI and use it to forage and rest during migration and stop-over. Nevertheless, it is not likely that significant threshold values are reached in the AoIs as compared to the global, European and EU populations at any point.

Sandwich Tern *Thalasseus sandvicensis - Least Concern, Annex I of the EU Birds Directive*

The overall and European population trends are fluctuating. In Malta Sandwich Terns occur on passage and to a lower extend wintering from (August) September to March (April). They are reported annually in double figures. As other tern species, Sandwich Terns forage in

coastal waters. Sandwich Terns occur in the SPA MT0000112 and SPA MT0000107, including the marine parts of the AoIs, annually during passage on migration and make use of it as foraging area. Furthermore, they are recorded or can be expected regularly in Is-Salini (MT0000007), L-Għadira s-Safra (MT0000008) and Selmunett (MT0000022). However, it is very unlikely that significant numbers regarding the global European or EU population are reached at any time.

Red-breasted Merganser *Mergus serrator – Least Concern,* expected to pass through the marine part of the AoIs in small numbers on migration, observed on passage and stopover in the marine AoI.

Common Shelduck *Tadorna tadorna – Least Concern,* recorded regularly from Is-Simar, (MT0000006), Is-Salini (MT0000007), observed on passage and stopover in the marine AoI.

Common Pochard *Aythya ferina – Vulnerable*, recorded in small numbers on stop-over from Is-Simar (MT0000006).

Little Grebe *Tachybabtus ruficollis – Least Concern,* regularly winter visitor Is-Salini (MT0000007).

Great-crested Grebe *Podiceps cristatus – Least Concern,* scarce winter visitor and passage migrants, recorded from Is-Salini (MT0000007)

Black-necked Grebe *Podiceps nigricollis – Least Concern,* regular winter visitor and passage migrant in small numbers in Is-Salini (MT0000007)

Common Moorhen *Gallinula chloropus – Least Concern*, recent breeding attempt from Is-Salini (MT0000007)

Northern Gannet *Morus bassanus – Least Concern,* expected to pass through and potentially forage in the marine AoIs, mainly during the winter months

Great Cormorant *Phalacrocorax carbo – Least Concern,* recorded regularly in increasing numbers wintering in the Maltese islands, including the marine part of the AoI and the relevant Natura 2000 sites (MT0000007, MT0000008 and MT0000022).

Little Gull *Hydrocoloeus minutus – Least Concern,* regularly passing through MT0000112 and MT0000107 during migration, has been occasionally recorded roosting and/or foraging in singles at Is-Salini (MT0000007).

Black-headed Gull *Chroicocephalus ridibundus - Least Concern,* large numbers migrate through the Maltese islands and winter there. Larger flocks forage and roost in the AoIs and the relevant Natura 2000 sites (MT0000007, MT0000008, MT0000022, MT0000112, MT0000107).

Lesser Black-backed Gull *Larus fuscus – Least Concern,* regular on migration and to some extend wintering in smaller numbers, making use of the AoIs for foraging and roosting, recorded in all relevant Natura 2000 sites (MT0000007, MT0000008, MT0000022, MT0000112, MT0000107).

Long-tailed Skua *Stercorarius longicaudus - Least Concern,* expected to pass through the marine part of the AoI (including MT0000112 and MT0000107) on migration in singles.

Arctic Skua *Stercorarius parasiticus – Least Concern* expected to pass through the marine part of the AoI (including MT0000112 and MT0000107) in small numbers on migration.

Pomarine Skua *Stercorarius pomarinus – Least Concern* expected to pass through the marine part of the AoI (including MT0000112 and MT0000107) in small numbers on migration and when wintering.

Great Skua *Catharacta skua - Least Concern* expected to pass through the marine part of the AoI (including MT0000112 and MT0000107) in small numbers on migration and when wintering.

Land-birds

Non-passeriformes

Here we provide a list of non-passeriform species that are recorded in the Maltese islands regularly to frequently on migration and as winter visitors. We also include those species that have been recorded breeding on the islands. Information regarding their conservation status, whether they are listed in Annex I of the EU Birds Directive, and their local occurrence (wintering, breeding, migrant) and frequency of occurrence (scarce, regular, common) is noted. Furthermore, information on their expected or reported status in the AoIs including the relevant Natura 2000 site is given. Of approximately 80 species, less than half of them are listed in Annex I of the EU Birds Directive. The majority is listed as Least Concern, while 8 are listed as Near Threatened, one is listed as Vulnerable and 1 is listed as Endangered.

The majority of species listed here mainly pass through the AoIs during migration. It is not expected that any of the species listed below will be significantly impacted by the planned development nor are they expected to ever reach threshold values in the AoIs.

Common quail *Coturnix coturnix – Least Concern,* declining, irregular breeder, common passage migrant (nocturnal), winters in small numbers, expected to occur regularly in the AoI-1, mainly on stopover during migration.

European Turtledove *Streptopelia turtur – Vulnerable,* strong decline, would breed regularly if spring hunting was abolished, regular passage migrant in declining numbers, more common in spring, can be expected stopping over in the AoI-1.

Collared Dove *Streptopelia decaocto – Least Concern*, trend increasing, likely to occur in the terrestrial AoI-1.

European Nightjar *Caprimulgus europaeus – Least Concern,* common on passage in spring and autumn, can be expected to pass regularly through the AoIs on migration and make use of AoI-1 for foraging and roosting.

Alpine Swift *Tachymarptis melba – Least Concern,* recorded in small numbers during spring and autumn migration, aerial feeder, likely to pass occasionally through the AoIs.

Pallid Swift *Apus palidus – Least Concern,* in Malta regularly to commonly seen from March to October, small breeding populations in Malta, can be expected to make regular use of the airspace of the AoIs including the relevant Natura 2000 sites (MT0000007, MT0000008, MT0000022, MT0000112, MT0000107).

Common Swift *Apus apus – Least Concern,* common on migration in spring and autumn, small but increasing breeding population, including the AoI. Can be expected/ has been recorded to make regular use of the airspace of the AoIs, including the relevant Natura 2000 sites (MT0000006, MT0000007, MT0000008, MT0000022, MT0000107, MT0000112).

Common Cuckoo *Cuculus canorus – Least Concern,* fairly common on spring migration, less common during autumn, single breeding records in Malta. Expected to occur in the terrestrial part of AoI during migration and stopping over, reported from Is-Salini (MT0000007).

Western Water Rail ***Rallus aquaticus – Least Concern,*** population numbers decreasing. Frequent autumn migrant and common winter visitor in the wetlands of the Maltese islands. Some breeding attempts. Recorded from Is-Salini (MT0000007).

Spotted Crake ***Porzana porzana – Least Concern, Annex I of the EU Birds Directive,*** small numbers in spring and autumn on migration.

Common Crane ***Grus grus – Least Concern, Annex I of the EU Birds Directive,*** population trend increasing, recorded annually on migration in small flocks, potentially through the AoIs.

Black Stork ***Ciconia nigra – Least Concern, Annex I of the EU Birds Directive,*** European population increasing, in Malta annually in small numbers during migration, mainly in autumn.

White Stork ***Ciconia ciconia – Least Concern, Annex I of the EU Birds Directive,*** population increasing, in Malta annually in small numbers on migration mainly autumn, to less extend in spring. White Storks are frequently foraging on landfills. Therefore, can be expected to occur in the AoI.

Eurasian Spoonbill ***Platalea leucorodia – Least Concern, Annex I of the EU Birds Directive,*** trend increasing, in Malta mainly on passage in spring and autumn. Regularly migrating through the AoI, including MT0000107 and MT0000112 and has been recorded in Is-Salini (MT0000007).

Glossy Ibis ***Plegadis falcinellus – Least Concern, Annex I of the EU Birds Directive,*** European population increasing, in Malta recorded annually on migration. Has been recorded passing through the AoI, including MT0000107 and MT0000112.

Common Little Bittern ***Ixobrychus minutus - Least Concern, Annex I of the EU Birds Directive,*** European population stable, irregularly breeding in Malta, recorded annually in small numbers on migration. Expected to migrate through the AoIs (at night). Recorded on stopover during migration for the Natura 2000 site Is-Salini (MT0000007).

Black-crowned Night Heron ***Nycticorax Nycticorax - Least Concern, Annex I of the EU Birds Directive,*** decreasing in Europe, frequently migrating over Malta, regularly observed during stop-over at Salini (MT0000007), expected to migrate regularly through the AoIs.

Squacco Heron ***Ardeola ralloides - Least Concern, Annex I of the EU Birds Directive,*** European population considered stable, passing through Malta in small numbers on migration annually. Has been recorded at Is-Salini (MT0000007); expected to migrate through the AoIs regularly.

Grey Heron ***Ardea cinerea - Least Concern,*** regular visitor to the Maltese islands year-round but higher numbers during migration. Can be expected to migrate regularly through the AoIs. Has been recorded regularly to frequently in all relevant Natura 2000 sites (MT0000006, MT0000007, MT0000008, MT0000022, MT0000107, MT0000112).

Purple Heron ***Ardea purpurea - Least Concern, Annex I of the EU Birds Directive,*** European population decreasing, passing through Maltese islands annual during migration in good

numbers. Has been recorded regularly at Is-Salini (MT0000007). Can be expected to pass through the AoIs on migration.

Great White Egret ***Casmerodius alba – Least Concern, Annex I of the EU Birds Directive,*** recorded annually on passage in small numbers, Is-Salini (MT0000007). Can be expected to pass through the AoIs on migration.

Little Egret ***Egretta garzetta – Least Concern, Annex I of the EU Birds Directive,*** fairly common passage migrant in spring and autumn, few individuals year-round, recently established small breeding population close to Is-Salini, at least partially founded by escapes. Recorded regularly Is-Salini (MT0000007), recorded in the AoIs and including the relevant Natura 2000 sites (MT0000008 and MT0000022, MT0000107, MT0000112) regularly.

Stone Curlew / Eurasian Thick-knee ***Burhinus oedicnemus – Least Concern, Annex I of the EU Birds Directive,*** recorded in Malta regularly in small numbers on migration in spring and autumn. Potentially passing through the AoIs in low numbers.

Oystercatcher ***Haematopus ostralegus – Near threatened,*** population declines across Europe, recorded in Malta annually in small numbers. Potentially passing through and resting/ foraging in the AoI in small numbers, including MT0000022.

Pied Avocet ***Recurvirostra avosetta – Least Concern, Annex I of the EU Birds Directive,*** recorded in Malta annually in small numbers mainly during autumn migration, potentially wintering. Recorded from Is-Salini (MT0000007).

Black-winged Stilt ***Himantopus himantopus – Least Concern, Annex I of the EU Birds Directive,*** frequent spring migrant in the Maltese islands, expected to occur regularly in the AoIs mainly on migration.

Grey Plover ***Pluvialis squatarola – Least Concern,*** in Malta recorded annually in small numbers during spring and autumn migration. Potentially migrating through the AoIs.

Eurasian Golden Plover ***Pluvialis apricaria - Least Concern, Annex I of the EU Birds Directive,*** population trend increasing. Common in Malta during winter months, both on migration and wintering. Expected migrating through and/or stopping over in the AoIs.

Eurasian Dotterel ***Charadrius morinellus - Least Concern, Annex I of the EU Birds Directive,*** in Malta annually in small numbers, stopping over mainly during autumn migration. Potentially migrating through and stopping over in the AoIs.

Common Ringed Plover ***Charadrius hiaticula – Least Concern,*** decreasing on EU and global level, fairly common passage migrant in spring and autumn. Recorded from Is-Salini (MT0000007). Expected to be also foraging and stopping over at MT0000022 on migration and to pass through the AoIs.

Little Ringed Plover ***Charadrius dubius – Least Concern,*** population decreasing, common passage migrant in spring and autumn; recorded regularly from Is-Salini (MT0000007). Expected to also occur in the AoIs including MT0000022.

Kentish Plover ***Charadrius alexandrinus – Least Concern, Annex I of the EU Birds Directive,*** regular passage migrant in small numbers in spring and autumn. Potentially occurring in the AoIs.

Northern Lapwing ***Vanellus vanellus – Near Threatened,*** overall declining population trend, recorded regularly in Malta during the winter months in small flocks regular passage migrant in small numbers in spring and autumn. Potentially occurring in the AoIs.

Whimbrel ***Numenius phaeopus – Least Concern,*** recorded annually in small numbers in spring and autumn during migration. Expected to occur in the AoIs in small numbers and irregularly, foraging/ roosting on the rocky shore and migrating through the area at night.

Eurasian Curlew ***Numenius arquata – Near Threatened,*** global population trend decreasing, passing regularly through Malta during spring and autumn. Expected to occur in the AoIs in small numbers and irregularly, foraging/ roosting on the rocky shore and migrating through the area at night.

Black-tailed Godwit ***Limosa limosa – Near Threatened,*** population trend decreasing, in Malta recorded annually, mainly on spring migration. Potentially migrating through the AoIs in small numbers.

Ruddy Turnstone ***Arenaria interpres – Least Concern,*** recorded in Malta annually in small numbers in spring and autumn. Expected to occur in the AoIs in small numbers and irregularly, foraging/ roosting on the rocky shore and migrating through the area at night.

Red Knot ***Calidris canutus – Near Threatened,*** global population trend decreasing, recorded in Malta almost annually in small numbers on passage. Potentially passing through the AoIs on migration.

Ruff ***Calidris pugnax – Least Concern, Annex I of the EU Birds Directive,*** population trend decreasing, recorded in the Maltese islands regularly and in good numbers, mainly during spring migration, including in Is-Salini (MT0000007). Expected to be passing through the AoIs on migration.

Curlew Sandpiper ***Calidris ferruginea – Near Threatened,*** suspected to be declining, in Malta regularly in small flocks on passage migration in spring and autumn. Recorded in Is-Salini (MT0000007) and expected to be passing through the AoIs on migration.

Temminck's Stint ***Calidris temminckii – Least Concern,*** population trend stable, recorded in Malta in small numbers during spring and autumn migration, including in Is-Salini (MT0000007). Expected to be passing through the AoIs on migration occasionally.

Sanderling ***Calidris alba – Least Concern,*** passing through Malta annually in small numbers during spring and autumn. Potentially passing through the AoIs.

Dunlin ***Calidris alpina – Least Concern,*** recorded in Malta annually in small numbers mainly on passage in spring and autumn including in Is-Salini (MT0000007). Expected to be passing through the AoIs on migration.

Little Stint ***Calidris minuta – Least Concern,*** singles recorded in Malta year-round, common during spring and autumn migration. Observations at Is-Salini (MT0000007) and expected to be passing through the AoIs on migration.

Eurasian Woodcock ***Scolopax rusticola – Least Concern,*** trend estimated stable, observed in Malta during the winter months, expected to occur in the AoIs during migration and wintering.

Great Snipe ***Gallinago media – Near Threatened, Annex I of the EU Birds Directive,*** overall trend decreasing, in Malta encountered annually in singles on spring migration. It is expected that the species occasionally passes through the AoI on migration.

Common Snipe ***Gallinago gallinago – Least Concern,*** common passage migrant, mainly in spring, regularly observed at Is-Salini (MT0000007). Can be expected to occur at L-Għadira s-Safra u l-Iskoll tal-Għallis (MT0000008) and to pass through the AoIs on migration.

Jack Snipe ***Lymnocryptes minimus – Least Concern,*** population trend stable, passing through the Maltese islands annually in small numbers during the winter months, potentially passing through and stopping over in the AoIs.

Common Sandpiper ***Actitis hypoleucos – Least Concern,*** overall population trend decreasing, common passage migrant in Malta in spring and autumn, recorded in small numbers year-round. Recorded or expected regularly in the AoIs, including all relevant Natura2000 sites (MT0000007, MT0000008, MT0000022, MT0000107, MT0000112).

Green Sandpiper ***Tringa ochropus – Least Concern,*** population trend increasing, regular passage migrant through the Maltese islands in spring and autumn and expected to pass through the AoIs on migration.

Spotted Redshank ***Tringa erythropus – Least Concern,*** population trend stable, recorded annually in Malta in small numbers on migration and in winter. Expected to occasionally pass through the AoIs.

Common Greenshank ***Tringa nebularia – Least Concern,*** population stable, common visitor to the Maltese islands in relatively low numbers on spring and autumn migration. Expected to pass through the AoIs.

Common Redshank ***Tringa totanus – Least Concern,*** European population has undergone a moderate decline, a regularly passage migrant in Malta in small numbers, both in spring and autumn. Expected to pass through the AoIs.

Wood Sandpiper ***Tringa glareola – Least Concern, Annex I of the EU Birds Directive,*** population trend stable, common passage migrant in the Maltese islands in spring and autumn. Expected to pass through the AoIs.

Marsh Sandpiper ***Tringa stagnatilis – Least Concern,*** overall population trend decreasing, recorded in Malta regularly in small numbers on migration. Recorded from Is-Salini (MT0000007). Potentially passing through the AoIs.

Collared Pratincole ***Glareola pratincola – Least Concern, Annex I of the EU Birds Directive,*** overall population trend decreasing, recorded almost annually in singles, mainly during spring migration. Recorded from Is-Salini (MT0000007). Potentially passing through the AoI.

Eurasian Scops-owl ***Otus scops – Least Concern,*** global population trend declining, regularly recorded in the Maltese islands, mainly during migration. Can be expected to pass through the AoIs occasionally and in low numbers and also use the terrestrial area during stopover on migration.

Short-eared Owl ***Asio flammeus – Least Concern, Annex I of the EU Birds Directive,*** population trend in Europe fluctuating, recorded annually in small numbers, mainly on migration, has been reported nesting in the Maltese islands, at least two times in recent years. Can be expected to pass through the AoIs on migration.

Osprey ***Pandion haliaetus – Least Concern, Annex I of the EU Birds Directive,*** European population trend increasing, regularly recorded in the Maltese islands on spring and autumn migration. Has been observed foraging and roosting at Is-Salini (MT0000007). Can be expected to pass through the AoIs regularly in small numbers.

European Honey-buzzard ***Pernis apivorus – Least Concern, Annex I of the EU Birds Directive,*** overall population trend decreasing, common passage migrant over the Maltese islands, mainly in autumn. Can be expected to migrate through the AoIs regularly.

Egyptian Vulture ***Neophron percnopterus – Endangered, Annex I of the EU Birds Directive,*** population trend declining in entire range, recorded in Malta almost annually in singles on migration, mainly in autumn. Birds might be attracted to the landfill and therefore the species might occur in the AoIs occasionally on migration.

Short-toed Snake-eagle ***Circaetus gallicus – Least Concern, Annex I of the EU Birds Directive,*** population trend stable, appears on passage in the Maltese islands annually in small numbers, mainly in autumn. Potentially passes through the AoIs on migration.

Lesser spotted Eagle ***Aquila pomarina – Least Concern, Annex I of the EU Birds Directive,*** European population estimated stable, in Malta almost recorded annually in singles to small flocks mainly on autumn migration. Potentially passes through the AoIs on migration.

Booted Eagle ***Aquila pennata – Least Concern, Annex I of the EU Birds Directive,*** population size increasing in Europe, recorded in Malta almost annually in singles mainly during autumn migration. Potentially passes through the AoIs on migration.

Western Marsh Harriers ***Circus aeruginosus – Least Concern, Annex I of the EU Birds Directive,*** population trend in Europe increasing, common passage migrant to the Maltese islands both in spring and autumn. Has been reported at Is-Salini (MT0000007). Can be expected to appear in the AoIs on passage migration regularly.

Montagu's Harrier ***Circus pygargus – Least Concern, Annex I of the EU Birds Directive,*** population decreasing in the EU, recorded in the Maltese islands annually in double figure numbers during spring and autumn migration. Can be expected to migrate through the AoIs occasionally.

Eurasian Sparrowhawk ***Accipiter nisus – Least Concern,*** overall population trend stable, recorded annually in Malta in small numbers on migration, mainly in autumn. Can be expected to pass through the AoIs occasionally.

Black Kite ***Milvus migrans – Least Concern, Annex I of the EU Birds Directive,*** population trend unknown, recorded in Malta annually in double figure numbers on migration. Species is attracted by landfills. Can be expected to occur in the AoIs occasionally.

Common Hoopoe ***Upupa epops – Least Concern,*** overall population trend decreasing, common passage migrant in Malta, both in spring and autumn, at least one breeding recorded in recent years. Has been observed at Is-Salini (MT0000007). Can be expected to pass through the AoIs and foraging and roosting there during stop-over on migration.

European Bee-eater ***Merops apiaster, Least Concern,*** overall population trend declining, common spring migrant in Malta, less common in autumn, has made single breeding attempts on the islands in recent years. Regularly observed in all relevant Natura 2000 sites and can be expected regularly in the AoIs on migration.

European Roller ***Coracias garrulus – Least Concern, Annex I of the EU Birds Directive,*** European population trend decreasing, recorded in Malta annually in small numbers, mainly during spring migration. Can be expected to pass through the AoIs occasionally.

Common Kingfisher ***Alcedo atthis – Least Concern, Annex I of the EU Birds Directive,*** European population trend decreasing, common winter visitor and passage migrant in Malta. Observed regularly making use of all relevant Natura 2000 sites. Expected to pass through the AoIs regularly on migration and when wintering.

Eurasian Wryneck ***Jynx torquilla – Least Concern,*** population trends: long-term decline, short-term increase, fairly common passage migrant and winter visitor to the Maltese islands. Can be expected to be present in the AoIs during migration, stopping over and potentially also wintering in the terrestrial part.

Lesser Kestrel ***Falco naumanni – Least Concern, Annex I of the EU Birds Directive,*** population trend previous severe declines, recently stable, fairly common passage migrant to the Maltese islands in spring and autumn. Expected to pass through the AoIs on migration and also foraging in the terrestrial area when stopping over.

Common Kestrel ***Falco tinnunculus – Least Concern,*** population trend decreasing, present in Malta year-round, common during passage in spring and autumn, breeding almost annually in very low numbers (1-3 pairs). Can be expected foraging in the terrestrial part of the AoIs year-round (local birds). Passage migrants can be expected to pass through all AoIs.

Red-footed Falcon ***Falco vespertinus – Near Threatened, Annex I of the EU Birds Directive,*** European population trend declining, in Malta fairly regularly encountered on migration, numbers higher in spring. Can be expected to pass through the AoIs and forage in the terrestrial part during passage.

Eleonora's Falcon ***Falco eleonorae – Least Concern, Annex I of the EU Birds Directive,*** European population size increasing, recorded in Malta annually in fairly good numbers on

migration in spring and autumn. Can be expected to pass through the AoIs, including the relevant Natura 2000 sites on migration.

Merlin ***Falco columbarius – Least Concern, Annex I of the EU Birds Directive,*** population trend fluctuating, recorded in Malta annually in low numbers mainly on autumn migration. Might occasionally migrate through the AoIs.

Eurasian Hobby ***Falco subbuteo – Least Concern,*** overall population trend declining, fairly common in Malta on migration in spring and autumn. Can be expected to migrate through the AoIs regularly.

Peregrine Falcon ***Falco peregrinus – Least Concern, Annex I of the EU Birds Directive,*** population trend increasing, potentially regular breeder in the Maltese islands in very low numbers, would be more common if left undisturbed/ not persecuted, also appears on passage and as winter visitor. Can be expected to make use of the AoIs including the relevant Natura 2000 sites regularly and year-round, especially hunting for Black-headed Gulls etc. in the landfill area.

Passeriformes

Here we provide a list of all passerine species that are recorded in the Maltese islands regularly to frequently on migration and as winter visitors. We also include those species that are residents i.e. breeding on the islands. Information regarding their conservation status, whether they are listed in Annex I of the EU-Birds directive, and their local occurrence (wintering, breeding, migrant) and frequency of occurrence (scarce, regular, common) is noted. Furthermore, information on their expected or reported status in the AoIs including the relevant Natura 2000 site is given.

The vast majority of species is listed as Least Concern (only two are listed as Near Threatened, both not in Annex I of the EU Birds Directive) and only seven species are listed in Annex I of the EU-Birds-Directive (all Least Concern). Of all passerine species that have been recorded breeding in the Maltese islands, two are listed in Annex I of the EU Birds Directive. One of them is a common breeder – the Greater Short-toed Lark *Calandrella brachydactyla* (see above) while the other one has been reported breeding irregularly - the Tawny Pipit *Anthus campestris.*

In general, small passerines have relatively higher reproductive rates and shorter life-spans (generation cycles) compared to most larger non-passerine species. This, together with a large distribution range and often distribution density in most species listed below, reduces their overall population vulnerability. The majority of migratory species listed here mainly migrate during the night and cross the area in broad front. It is not expected that any of the species listed below will ever reach threshold values in the AoIs.

Species list of Passeriformes regularly encountered on the Maltese islands

Eurasian Golden Oriole *Oriolus oriolus* - Least Concern, common passage migrant, expected frequently in the AoIs on migration.

Red-backed Shrike *Lanius collurio* - Least Concern, Annex I, passage in low numbers, not expected to occur in the AoIs in relevant numbers.

Woodchat Shrike *Lanius senator* - Least Concern, regular passage migrant, expected to occur in the AoIs occasionally.

Penduline Tit *Remiz pendulinus* - Least Concern, passage in small numbers, might migrate through the AoI occasionally and in small numbers.

Greater Short-toed Lark *Calandrella brachydactyla* - Least Concern, Annex I, common breeder and passage migrant, reported breeding in the AoI-1 (see Figure 1), not expected to occur in the AoIs in relevant numbers, but expected to pass through on migration and potentially stopping over.

Woodlark *Lullula arborea* - Least Concern, Annex I, regular passage migrant in low numbers, expected to also pass through the AoIs.

Eurasian Skylark *Alauda arvensis* - Least Concern, common on passage and wintering, expected to occur in the AoIs regularly.

Zitting Cisticola *Cisticola juncidis* - Least Concern, common breeder in the AoI-1 (see Figure 1).

Olivaceus Warbler *Iduna pallida* - Least Concern, passage in low numbers, potentially occurring in the AoIs.

Isabelline Warbler *Iduna opaca* - Least Concern, passage in low numbers, potentially occurring in the AoIs.

Icterine Warbler *Hippolais icterina* - Least Concern, regular passage migrant, expected to pass through the AoIs regularly on migration.

Moustached Warbler *Acrocephalus melanopogon* - Least Concern, passage and wintering in low numbers, expected to pass through the AoIs occasionally in very low numbers.

Sedge Warbler *Acrocephalus schoenobaenus* – Least Concern, regular passage migrant, to pass through the AoIs regularly on migration.

Common Reed Warbler *Acrocephalus scirpaceus* - Least Concern, breeds in Malta in small numbers, regular passage migrant, single winter records. Expected to pass through the AoIs regularly on migration.

Great Reed Warbler *Acrocephalus arundinaceus* - Least Concern, regular passage migrant, expected to pass through the AoIs regularly on migration.

Savi's Warbler *Locustella luscinioides* - Least Concern, passage migrant in low numbers, expected to pass through the AoIs occasionally on migration.

Northern House Martin *Delichon urbicum* - Least Concern, rare breeder, common passage migrant, expected to make use of the airspace of the AoIs regularly, foraging in the area during migration, potentially roosting in the area, too.

Red-rumped Swallow *Cecropis daurica* - Least Concern, regular passage migrant, expected to make use of the airspace of the AoIs regularly, foraging in the area during migration, potentially roosting in the area, too.

Barn Swallow *Hirundo rustica* - Least Concern, breeder in low numbers, common passage migrant, expected to make use of the airspace of the AoIs regularly, foraging in the area during migration and potentially during breeding. Potentially roosting in the terrestrial part of the area, too.

Common Sand Martin *Riparia riparia* - Least Concern, regular passage migrant, expected to make use of the airspace of the AoIs regularly, foraging in the area during migration and potentially roosting.

Eastern Bonelli's Warbler *Phylloscopus orientalis* - Least Concern, regular passage migrant, expected to pass through the AoIs occasionally during migration.

Western Bonelli's Warbler *Phylloscopus bonelli* - Least Concern, regular passage migrant expected to pass through the AoIs occasionally during migration.

Wood Warbler *Phylloscopus sibilatrix* - Least Concern, common passage migrant, in good numbers, expected to regularly occur in the AoIs on passage.

Yellow-browed Warbler *Phylloscopuls inornatus* - Least Concern, regular passage migrant, expected to occur occasionally in the AoIs on migration.

Willow Warbler *Phylloscopus trochilus* - Least Concern, common passage migrant, expected to regularly pass through the AoIs on migration.

Common Chiffchaff *Phylloscopus collybita* - Least Concern, common passage migrant and winter visitor, expected to pass through the AoIs regularly on migration and winter in the terrestrial part regularly.

Cetti's Warbler *Cettia cetti* - Least Concern, common breeder, possibly breeding in the AoI-1 (see above) and at Is-Salini (MT0000007). Expected to occur in the AoI regularly also during dispersal.

Eurasian Blackcap *Sylvia atricapilla* - Least Concern, common passage migrant and winter visitor. Expected to pass through the AoIs regularly during migration and make use of its terrestrial part during stop-over and wintering.

Garden Warbler *Sylvia borin* - Least Concern, common passage migrant. Expected to pass through the AoIs regularly during migration and make use of its terrestrial part during stop-over.

Lesser Whitethroat *Curruca curruca* - Least Concern, passage migrant in small numbers. Expected to occur in the AoIs occasionally on migration.

Sardinian Warbler *Curruca melanocephala* - Least Concern, common breeder in Malta and probable breeder in the AoI-1 (see Figure 1), present year-round.

Subalpine Warbler *Curruca cantillans* - Least Concern, common passage migrant, expected to regularly pass through the AoIs during migration.

Common Whitethroat *Curruca communis* - Least Concern, common passage migrant, expected to regularly pass through the AoI during migration.

Spectacled Warbler *Curruca conspicillata* - Least Concern, regular breeder, possible breeder in the AoI-1.

Common Starling *Sturnus vulgaris* - Least Concern, breeding in small numbers, common passage migrant and winter visitor, expected to occur in the AoIs regularly in good number on passage and while wintering, including making use of the terrestrial area for foraging and potentially roosting.

Mistle Thrush *Turdus viscivorus* - Least Concern, regular passage migrant, can be expected to pass through the AoIs occasionally on migration.

Song Thrush *Turdus philomelos* - Least Concern, common passage migrant and winter visitor, can be expected to occur regularly in the AoIs.

Redwing *Turdus iliacus* - Near Threatened, regular passage migrant in small numbers, potentially wintering, can be expected to occasionally occur in the AoIs on migration.

Eurasian Blackbird *Turdus merula* - Least Concern, regular passage migrant and winter visitor, can be expected in the AoIs on passage and during wintering.

Fieldfare *Turdus pilaris* - Least Concern, regular passage migrant, potentially wintering, can be expected to occasionally occur in the AoIs on migration.

Rufous-tailed Scrub-robin *Cercotrichas galactotes* - Least Concern, rare but regular visitor, potentially occurring irregularly in singles in the AoIs.

Spotted Flycatcher *Muscicapa striata* - Least Concern, breeder in increasing numbers, common passage migrant, expected to be present regularly in the AoIs on passage and stopping over.

European Robin *Erithacus rubecula* - Least Concern, very common passage migrant and winter visitor. Expected to be present in the AoIs outside the breeding season in good numbers.

Bluethroat *Luscinia svecica* - Least Concern, Annex I, regular passage migrant, potentially wintering in small numbers, can be expected to pass through the AoIs occasionally on migration.

Common Nightingale *Luscinia megarhynchos* - Least Concern, common passage migrant, one breeding record from 1995, expected to pass through the AoIs on migration.

Semicollared Flycatcher *Ficedula semitorquata* - Least Concern, Annex I, regular passage migrant in small numbers, expected to pass through the AoIs occasionally on migration.

European Pied Flycatcher *Ficedula hypoleuca* - Least Concern, common passage migrant, expected to be present regularly in the AoIs during the migration periods.

Collared Flycatcher *Ficedula albicollis* – Least Concern, Annex I, regular passage migrant in low numbers, expected to pass through the AoIs during the migration periods.

Black Redstart *Phoenicurus ochruros* - Least Concern, common passage migrant, common winter visitor, expected to be regularly present in the AoIs during the non-breeding period.

Common Redstart *Phoenicurus phoenicurus* - Least Concern, common passage migrant, expected to regularly occur in the AoIs during the migration periods.

Rufous-tailed Rock-thrush *Monticola saxatilis* - Least Concern, regular passage migrant, can be expected to occur in the AoIs on passage and stop-over in the migration periods.

Blue Roch-thrush *Monticola solitarius* - Least Concern, common breeder, possibly breeding in the AoI-1, expected to make use of the terrestrial part of the AoIs year-round.

Whinchat *Saxicola rubetra* - Least Concern, common passage migrant, expected to pass through the AoIs on migration and also stopping over in the terrestrial area.

Common Stonechat *Saxicola rubicola* - Least Concern, common passage migrant and winter visitor, expected to be common in the AoIs during the non-breeding period.

Northern Wheatear *Oenanthe oenanthe* - Least Concern, common passage migrant, can be expected to pass through the AoIs on migration regularly.

Isabelline Wheatear *Oenanthe isabellina* - Least Concern, regular passage migrant in low numbers, might occasionally pass through the AoIs on migration.

Black-eared Wheatear *Oenanthe hispanica* - Least Concern, regular passage migrant, expected to occur in the AoIs regularly in low numbers during migration.

Goldcrest *Regulus regulus* - Least Concern, regular passage migrant and winter visitor, can be expected to regularly occur in the AoIs on passage.

Common Firecrest *Regulus ignicapilla* - Least Concern, regular passage migrant and winter visitor, can be expected to regularly occur in the AoIs on passage.

Dunnock *Prunella modularis* - Least Concern, regular passage migrant and winter visitor, expected to be present in the AoIs outside the breeding season in small numbers.

Spanish Sparrow *Passer hispaniolensis* - Least Concern, common breeder and regular passage migrant, common breeding resident in the AoI-1.

Eurasian Tree Sparrow *Passer montanus* - Least Concern, expected to occur in the AoIs during dispersal and in the non-breeding period in low numbers.

Tree Pipit *Anthus trivialis* - Least Concern, common passage migrant, during migration, expected to occur regularly in the AoIs on passage.

Red-throated Pipit *Anthus cervinus* - Least Concern, regular passage migrant, wintering in low numbers, expected to occasionally pass through the AoIs during migration and stopping over.

Meadow Pipit *Anthus pratensis* - Near Threatened, common passage migrant and winter visitor, expected to make regular use of the terrestrial part of the AoIs on stop-over during migration and as foraging grounds in winter.

Water Pipit *Anthus spinoletta* - Least Concern, rare passage migrant or winter visitor, expected to make use of the AoIs during migration occasionally.

Tawny Pipit *Anthus campestris* - Least Concern, Annex I, rare breeder, regular passage migrant, expected to pass through the AoIs occasionally on migration.

Western Yellow Wagtail *Motacilla flava* - Least Concern, common passage migrant, expected to pass through the AoIs regularly during migration, including foraging and potentially roosting during stop-over in the terrestrial part.

Grey Wagtail *Motacilla cinerea* - Least Concern, rare breeder, regular passage migrant and winter visitor, expected to occur in the AoIs occasionally to regularly in singles.

White Wagtail *Motacilla alba* - Least Concern, common passage migrant and winter visitor, expected to be regularly present in the AoIs during the non-breeding period.

Common Chaffinch *Fringilla coelebs* - Least Concern, regular passage migrant and winter visitor, potential breeder, but no breeding confirmed in recent years, expected to occur in the AoIs regularly during migration and as winter visitor.

Hawfinch *Coccothraustes coccothraustes* - Least Concern, regular passage migrant and winter visitor, expected to occur in the AoIs occasionally on migration and as winter visitor.

European Greenfinch *Chloris chloris* - Least Concern, common passage migrant and winter visitor, has bred occasionally on the Maltese islands but no confirmed breeding record in recent years. Can be expected to occur in the AoIs regularly during migration and as winter visitor.

Common Linnet *Linaria cannabina* - Least Concern, common passage migrant and winter visitor, irregular breeder in very low numbers, expected to occur in the AoIs regularly during migration and as winter visitor, potentially year-round.

European Goldfinch *Carduelis carduelis* - Least Concern, common passage migrant and winter visitor, irregular breeder in very low numbers, expected to occur in the AoIs regularly during migration and as winter visitor, potentially year-round.

European Serin *Serinus serinus* - Least Concern, common passage migrant and winter visitor, irregular breeder in very low numbers, expected to occur in the AoIs regularly during migration and as winter visitor.

Eurasian Siskin *Spinus spinus* - Least Concern, regular passage migrant and winter visitor, expected to occur in the AoIs on migration and as winter visitor occasionally.

Corn Bunting *Emberiza calandra* - Least Concern, regular breeder in Malta in very small numbers, might occasionally occur in the AoIs during dispersal.

Ortolan Bunting *Emberiza hortulana* - Least Concern, Annex I, regular passage migrant, expected to occasionally pass through the AoIs during migration.

Reed Bunting *Emberiza schoeniclus* - Least Concern, regular passage migrant and winter visitor, expected to pass through the AoIs occasionally during migration and in the winter months.

3.0 Impact Assessment (AA, EIA)

3.1 Construction phase

3.1.1 Temporary reduction of terrestrial habitat (AoI-1)

The proposed development will result in a temporary loss of potential breeding habitat for up to 8 terrestrial songbird species. The terrestrial part of the development, namely the onshore cable routing, will not be carried out inside Natura 2000 sites, however, the habitats disturbed during the construction phase along the trenched cable route and in the area of the HDD facility including a buffer set at 0.1 km provide nesting territories for some birds[23],[24]. Furthermore, any excavation material from the trenched cable route that will be used for refilling needs to be temporarily stored, while the excess excavation material needs to be permanently stored. The short-term disturbance and potentially long-term alteration or loss of additional breeding habitat for terrestrial species will depend on the location and area size utilized.

Several breeding territories of the Sardinian Warbler and the Zitting Cisticola, as well as single breeding territories of the Greater Short-toed Lark, the Cetti's Warbler and the Spectacled Warbler can be expected to be disturbed during the construction phase, if works will be carried out during the breeding season (March – August). 1-2 breeding pairs of Blue Rock Thrush could be disturbed during the construction phase, if works will be carried out during the breeding season (March – July). This can potentially lead to the complete temporary displacement and consecutive reduction in breeding success up to reproductive failure of the breeding pairs of these species during the construction phase if it coincides with the breeding season.

Foraging areas and potential colonial nest sites of the Spanish Sparrow can be expected to be reduced temporarily during the construction phase and some broods may fail if works are carried out during the breeding season (March – August).

No significant impact is expected on the population of Common Swift nesting in AoI-1 since no nest sites are expected to be disturbed during the construction phase.

Temporary habitat loss and disturbance can also be expected to result in the destruction of foraging areas for other breeding, wintering, and/or staging species in the AoI-1 depending on the period of the year in which the construction works will take place.

The impacts during the construction of the onshore cable route will act temporarily on a localised scale along the trenched route in AoI-1 and in the area of the HDD facility including the buffer, when creating the cable trench and culvert, placing the cable and re-filling the trench. These works are not expected to impact a significant proportion of the relevant bird

[23] *Sultana et al. (2011): The Breeding Birds of Malta. BirdLife Malta, Malta.*

[24] *Epsilon Malta Ltd, Nature Conservation Consultants (2019). Malta Breeding Bird Atlas 2018. Malta: Wild Birds Regulation Unit, Ministry for the Environment, Sustainable Development and climate Change*

populations on a national scale but are expected to impact few local breeders of common species significantly at least short-term.

3.1.2 Temporary reduction of available marine habitat (AoI-2)

Especially during the reproductive season seabirds are central place foragers, exploiting marine resources in a radius around the colonies. Marine habitat utilised by pelagic seabirds for foraging and resting will be reduced temporarily during the construction phase both, inside and a Natura 2000 site (marine SPA MT0000112) and in general along the offshore cable route in the Maltese EEZ. It can be expected that the three tubenose species holding significant populations in Maltese waters, will show avoidance behaviour in relation to the construction site (the cable laying vessel with 0.5 km buffer, AoI-2). However, due to the temporary and localized nature of this habitat reduction, the radius of 0.5 km around the construction site along the marine cable route, paired with the high mobility and flexibility of the relevant seabird species regarding exploitable foraging areas, it is not expected that the impact on populations of these seabird species is significant.

Other seabird species *sensu lato* that make use of the area might also show avoidance behaviour vis-à-vis the construction site. However, none of these species is expected to ever reach thresholds of significance regarding population numbers.

3.1.3 Impacts from light pollution (AoI-3)

Artificial light at night (ALAN) is well documented to negatively affect seabirds. Adults from all three procellariform species nesting on the Maltese Islands actively avoid approaching breeding areas under high levels of illumination and may desert colonies as a result of exposure to ALAN. That seabirds are negatively affected by temporary light pollution from large vessels in front of their colonies has been recently proven for a *P. yelkouan* colony in Malta[25]. Furthermore, ALAN causes the stranding of seabird fledglings on their first flight out of the colony. These may be injured or killed by collisions with structures, or they might get grounded. Unless grounded individuals are found and released, they are likely to die[26]. In general, light pollution from ALAN is additive and light trespass that creating skyglow adds to light pollution in areas that are otherwise dark.

While the planned development on land is not within the immediate line of sight of any seabird nest sites, the marine cable route is in direct line of sight of seabird colonies at Saint Paul's Island (MT0000022), Rdum tal-Madonna (MT0000009), and Comino, all holding significant breeding pair numbers of *P. yelkouan* and the latter ones holding smaller colonies of one or both other seabird taxa (*C. diomedea, H. pelagicus melitensis*). The marine construction site along the cable route will be a source of light pollution during the construction phase, particularly during proposed night-time construction activities. The seabird colonies at Rdum tal-Madonna and Comino – albeit in direct line of sight – are

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[25] Austad, M., Oppel, S., Crymble, J., Greetham, H., Sahin, D., Lago, P. & Metzger, B. (in press). The effects of temporally distinct light pollution from ships on nocturnal colony attendance in a threatened seabird

[26] Rodríguez, A., Holmes, N. D., Ryan, P. G., Wilson, K. J., Faulquier, L., Murillo, Y., Raine, A. F., Penniman, J. F., Neves, V., Rodríguez, B., Negro, J. J., Chiaradia, A., Dann, P., Anderson, T., Metzger, B., Shirai, M., Deppe, L., Wheeler, J., Hodum, P., … Corre, M. Le. (2017). Seabird mortality induced by land-based artificial lights. Conservation Biology, 31(5), 986–1001. https://doi.org/10.1111/cobi.12900

considered outside the AoI in which impact by ALAN is considered significant. However, light pollution from the construction site will likely have a significant negative impact on birds from the *P. yelkouan* colony on St Paul's Island (MT0000022) as the area falls within AoI-3 (5.0 km buffer). This negative impact will potentially act on 45-70 breeding pairs. Including their offspring and prospecting birds, this equates to 225-350 individuals.

Additionally, ALAN is known to have negative consequences on nocturnally migrating birds in general. Bright lights are known to attract, disorient, and ground birds in active migration during the night[27] if construction work or operations are carried out at night during spring or autumn migration with no mitigation measures in place. A lit-up cable laying vessel during night-time operation is highly likely to have above mentioned impacts on nocturnally migrating birds passing within a 5.0 km radius of the construction site. However, it is extremely unlikely that the number of birds of any species impacted by the marine construction site during their nocturnal migration can reach threshold levels of significance.

3.2 Operational phase

3.2.1 General standard operations versus repair scenarios

Situated on the seafloor and underground, the interconnector cable will physically not overlap with habitat that is utilized by the receptor species. Therefore, no significant residual impacts on avifauna is expected during standard operations. However, the cable can get accidentally damaged, which has happened in the marine area (Maltese national waters) at least once to the existing 1st Sicily-Malta Interconnector. It is expected that repair operations during the operational phase would have impacts on avifauna comparable to those during the construction phase. Such impacts would be probably more localized as it is unlikely that the cable gets damaged along the whole route or needs a complete replacement. However, a cable repair scenario is likely to entail strong time constraints. Therefore, the mitigation methods proposed for the construction phase linked to the timing of the work (not at night, not during reproductive season of sensitive receptors) can be expected to be less feasible, ultimately increasing the residual impact of such events during the operational phase. It is thus likely that residual impacts especially on vulnerable receptor species such as *P. yelkouan* remain for repair scenarios. Compensatory measures are therefore proposed (see chapter 5).

3.2.2 Source of energy and climate change

The indirect long-term impact of the proposed development will highly depend on the type of primary energy from which the electricity sent through the interconnector is generated. While this may not entirely be under national control, it has the potential to increase the proportion of the local energy supply from renewable sources while Malta's energy production is still predominantly based on fossil fuels.

Currently, Italy's energy production is also still predominantly produced through the burning of fossil fuels, but this is expected to change as the EU increases the proportion of renewable energy sources within the EU with the aim of reaching climate neutrality by 2050. Conventional energy production by burning fossil fuels such as coal, oil or natural gas

[27] *Evans Ogden, L. J. (2002). Summary report on the bird friendly building program: Effect of light reduction on collision of migratory birds. In Fatal Light Awareness Program (Vol. 1).*

inevitably produces large quantities of the greenhouse gas CO_2, the main contributor of man-made climate change, also leading to ocean acidification. Both are currently starting to have well-known catastrophic impacts on global ecosystems and biodiversity[28], including avifauna[29].

Some renewable sources of electricity production (biogas from intensively managed agriculture and forestry, windfarms) can also leave some detrimental impacts on biodiversity including receptor taxa if not properly planned or managed. As a result, decisions on energy sources are not trivial and require serious comparative assessment and long-term views within the context of the climate crisis.

Additionally, it must be stressed that the current rate of energy consumption is not sustainable and needs to be addressed, regardless of energy source.

Ultimately, this aspect of potential residual impacts of the proposed project during the operational phase can currently not be quantified.

3.3 Decommissioning phase

The potential removal and recovery of the interconnector cable at the end of the operational phase would likely have similar impacts on avifauna in the AoIs as compared to the construction phase. However, currently it is planned to leave the cable in the ground and on the seabed at the end of its lifetime, with no additional impacts envisaged for this stage.

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[28] *IPCC, 2022:* Climate Change 2022: Impacts, Adaptation, and Vulnerability. *Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press. Cambridge University Press, Cambridge, UK and New York, NY, USA, 3056 pp., doi:10.1017/9781009325844.*

[29] *BirdLife International (2015), BirdLife International's Position on Climate Change. Cambridge, UK: BirdLife International*

4.0 Mitigation measures (AA, EIA)

4.1 Mitigation by abstaining from the proposed development

No direct negative residual impacts on avifauna are expected under the scenario that the project is not realized. However, with the importance of Malta's energy security in a period of increasing demand, it is unlikely that increased energy efficiency and economisations alone would render the project obsolete. Indirect residual impacts of this scenario would therefore highly depend on the source type and quantity of local electricity production, particularly alternative means with which to cover the natural intermittency of renewable energy sources, such as solar and wind.

4.2 Mitigation measures during the construction phase

4.2.1 Mitigation of impact on terrestrial breeding birds (AoI-1)

To further reduce the residual impact on local terrestrial breeding bird populations the following recommendations are made:

- The construction phase for the onshore cable route is kept as short as possible.
- Ideally, the construction phase would be timed to a period outside the main reproductive season (March to August) of the bird species breeding in the area, thus focusing on the autumn and winter months. However, as this appears to be unfeasible, it is recommended that:
    - The footprint of the construction sites, including the storage areas for material from the trenches, is kept as small as possible, specifically in the areas of natural and seminatural habitat (agricultural land, garrigue on disused agricultural land).
    - No works will be carried out during the night.
    - Adequate landscaping will be applied to restore the disturbed habitat in all affected areas at the end of the construction phase to mitigate any longer-term impact. It is recommended that solely native plants are used for habitat restoration and that species with known benefit to avifauna are chosen.

4.2.2 Mitigation of impact on marine habitat (AoI-2)

To further reduce the residual impact on the receptor species utilising the marine habitats in the AoI, the following mitigation measures are recommended:

- Ideally, construction work (including the 0.5 km buffer area) which overlaps with the Natura 2000 site (MT0000112) is carried out outside the fledging period of the most vulnerable receptor species, *P. yelkouan*, which spans over the period June to July. However, if this appears to be unfeasible, mitigation methods listed below under 4.2.3 and/ or relevant compensatory measures as listed under 5.3 are implemented.

4.2.3 Mitigation of impact on seabirds caused by light pollution (AoI-3)

To reduce the residual impact on receptors (*P. yelkouan*) breeding in the AoI-3 to below threshold levels of significance the following mitigation methods are proposed:

- No construction is carried out during darkness and lights on the cable laying vessel are reduced to the ones required at anchor. If this is not feasible, the following alternative measures should be taken:
- The construction phase for the offshore cable route is kept as short as possible.
- The construction phase with work being carried out specifically in the area of the AoI-3 overlapping with the buffer zone around the *P. yelkouan* colony on St Paul's Island (MT0000022, see Figure 2, relevant area shown in pink) is timed to a period outside the fledging period (June to July) or, alternatively, during hours with daylight only.
- Where nighttime work cannot be avoided and artificial light is required, such lighting should strictly follow ERA's draft "Guidelines for the Reduction of Light Pollution in the Maltese Islands" throughout the duration of any nighttime works[30].

4.3 Mitigation measures during the operational phase

For the operational phase, significant impacts are expected to occur localised if the interconnector cable gets damaged and requires repair. Therefore, it is recommended to map the risks for accidental or intentional damage to the interconnector cable and take precautionary measures to reduce such risks.

If repairs become necessary during the operational phase, the same mitigation measures as proposed for the construction phase apply.

Measures leading to the increase in energy efficiency, reduction in demand, the use of electricity from certified renewable sources produced with insignificant impact on avifauna, and the increase in "avifauna-friendly" energy production locally (e.g. via PV-systems installed on suitable flat roofs, roofing car parks) would help to mitigate indirect long-term impacts of the proposed development regarding climate change and biodiversity loss. In principle, a second Interconnector provides the possibility for increased importation of electricity sourced from renewables, and for an increase of local renewable energy sources through the enhancement of the grid stability and balancing of intermittent RES, and may lead to a net beneficial impact if it results in an absolute reduction in energy production from the burning of fossil fuels (as discussed under 3.2.2)

4.4 Mitigation measures during the decommissioning phase

For the decommissioning phase no mitigation measures are deemed required as long as the cable remains in the ground/ on the seabed.

[30] *Environment and Resources Authority (2020): Guidelines for the Reduction of Light Pollution in the Maltese Islands. Draft (Public Consultation Document) downloaded from https://era.org.mt/topic/public-consultation-guidelines-for-the-reduction-of-light-pollution-in-the-maltese-islands/ on 12-07-20223.*

5.0 Residual impacts, monitoring, compensation measures

5.1 Potentially significant residual impacts on avifauna

Depending on the mitigation measures implemented, it cannot be excluded that a temporary significant impact on *P. yelkouan* population nesting on St Paul's Island (MT0000022) remains. Such impact would remain during the construction, as well as for repair scenarios during the operational phase.

5.2 Monitoring of residual impacts

It is recommended to monitor the *P. yelkouan* population on St Paul's Island (MT0000022) regarding population size, reproductive performance, and survival rates in relevant breeding periods during the construction phase, as well as during the operational phase if repair scenarios occur. Data collected on the above-mentioned parameters can be then compared to available baseline values (with thresholds) to reveal whether a significant residual impact remains.

5.3 Compensatory measures

In case a significant residual impact on the *P. yelkouan* colony inside MT0000022 remains, the following compensatory measures are recommended:

- Support of Invasive Alien Species (predator) control schemes to improve reproductive performance in the above mentioned or other nearby *P. yelkouan* colonies.
- Support of rescue campaigns of grounded *P. yelkouan* fledglings to reduce light pollution induced mortality.
- Support the implementation of fisheries by-catch mitigation measures to increase overall adult survival rates of relevant seabirds.

6.0 Conclusions (AA)

Overall, the development of the 2nd Sicily-Malta interconnector is not expected to have a direct significant impact on avifauna if the appropriate mitigation measures are adopted.

Affecting relatively small areas of the marine SPA MT0000112 and MT0000107 temporarily, the impacts of the planned development on the seabird community inside the marine SPAs is estimated to be not significant as long as the proposed mitigation measures are fully implemented. With these mitigation measures in place, specifically concerning light pollution, the impact magnitude and extent of the proposed development on the marine SPAs and on the relevant seabird populations triggering them are expected to be not significant in relation to Article 6(3) of the EU Habitats Directive, and the overall dynamics and conservation status of the marine Natura 2000 sites concerning the pelagic seabird species will not be impacted significantly.

Remaining concerns arise from the potential residual impacts of temporary light pollution from the marine construction site on seabirds, particularly on the *P. yelkouan* colony on St. Paul's Island, inside the Natura 2000 site MT0000022. Such residual impacts are likely if it appears unfeasible to fully implement the relevant mitigation measures. As a result, it is recommended to monitor the situation in this seabird colony carefully during relevant periods and take compensatory measures if necessary. Following the principle of precaution, such compensatory measures could alternatively be implemented irrespective of the outcome of the monitoring.

Currently, it is not possible to conclusively assess the significance of indirect impacts of the interconnector to avifauna stemming from its potential contribution or otherwise to climate change.

7.0 Summary of Impacts

7.1 AA table

A detailed summary of impacts is provided in 2.

Table 2: Summary of impacts table (AA)

Impact type and source			Impact receptor		Effect & Scale							Probability of impact occurring	Overall impact significance	Proposed mitigation measures	Residual impact significance	Other requirements
Impact type	**Specific intervention leading to impact**	**Project phase**	**Receptor type**	**Sensitivity & resilience toward impact**	**Direct/ Indirect/ Cumulative**	**Beneficial/ Adverse**	**Severity**	**Physical/ geographic extent of impact**	**Short-/ Medium-/ Long-term**	**Temporary/ Permanent**	**Reversible/ Irreversible**					
Loss of habitat for terrestrial avian species	Destruction of (disused) agricultural land and disturbed garrigue	Construction, repair during operation phase	Terrestrial avian species	High & Low	Direct	Adverse	Low	Local	Short-term	Temporary	Reversible	Inevitable	Not significant to significant	Keep time short, keep footprint low, avoid (if possible) reproductive season, habitat restoration	Not significant	N/A
Noise, vibration, and light pollution negatively affecting terrestrial avian assemblages in AoI-1	Excavation and construction activities, night-time operation	Construction, repairs during operation	Terrestrial avian species	Moderate & Moderate	Direct	Adverse	Low	Local along onshore cable route and HDD site (AoI-1)	Short-term	Temporary	Reversible	High	Not significant to significant	Limit night-time activities, reduce light pollution, avoid (if possible) sensitive periods	Not significant	N/A
Light pollution negatively impacting nocturnally migrating birds	Lighting during construction, repairs during operation	Construction, repairs during operation	Nocturnally migrating birds	Moderate & Moderate	Direct	Adverse	Low	Broad (AoI-1 and AoI-3)	Short-term	Temporary, potentially re-occurring	Reversable	High	Not significant to significant	Limit night-time activities, reduce light pollution, avoid (if possible) sensitive periods	Not significant	N/A

Impact type and source			Impact receptor		Effect & Scale							Probability of impact occurring	Overall impact significance	Proposed mitigation measures	Residual impact significance	Other requirements
Impact type	**Specific intervention leading to impact**	**Project phase**	**Receptor type**	**Sensitivity & resilience toward impact**	**Direct/ Indirect/ Cumulative**	**Beneficial/ Adverse**	**Severity**	**Physical/ geographic extent of impact**	**Short-/ Medium-/ Long-term**	**Temporary/ Permanent**	**Reversible/ Irreversible**					
Colony disturbance MT0000022, grounding of seabird fledgling, associated induced mortality caused by ALAN	Lighting during construction, repairs during operation	Construction, repairs during operation	Procellariform seabirds, specifically *P. yelkouan*	High & Low	Direct	Adverse	High	Broad (AoI-3)	Short-term	Temporary	Reversible	High	Significant	Limit night-time activities, reduce light pollution, avoid (if possible) sensitive periods.	Not significant	Monitoring of relevant seabird colony, compensatory measures if residual impacts remain
Loss of foraging and resting habitat for marine avian species	Disturbance and noise from cable laying vessel, ALAN during night-time operation	Construction, repair during operation	marine avian species	High & Low	Direct	Adverse	Low	Local	Short-term	Temporary	Reversible	Inevitable	Not significant to significant	Keep time short, avoid night-time, avoid (if possible) sensitive periods	Not significant	N/A

Contribution or otherwise to climate change, impacting biodiversity, ocean acidification	Source of electricity sent through IC-2 from conventional vs renewable sources or sources detrimental vs beneficial to avifauna; potential for increasing local renewable energy production	Operation	Biotic and abiotic environment	Moderate & Moderate	Indirect/ Cumulative	Adverse to Beneficial	Moderate	Very broad	Long-term	Permanent	Reversible, with difficulty	Low to Inevitable	Not significant to Significant	Tapping into renewable sources (locally and European grid) to reduce net energy proction from fossil fuels	Not significant	N/A

7.2 EIA table

A detailed summary of impacts is provided in 3

Table 3: Summary of impacts table (EIA)

Impact type and source			Impact receptor		Effect & Scale							Probability of impact occurring	Overall impact significance	Proposed mitigation measures	Residual impact significance	Other requirements
Impact type	**Specific intervention leading to impact**	**Project phase**	**Receptor type**	**Sensitivity & resilience toward impact**	**Direct/ Indirect/ Cumulative**	**Beneficial/ Adverse**	**Severity**	**Physical/ geographic extent of impact**	**Short-/ Medium-/ Long-term**	**Temporary/ Permanent**	**Reversible/ Irreversible**					
Loss of habitat for terrestrial avian species	Destruction of (disused) agricultural land and disturbed garrigue	Construction, repair during operation	Terrestrial avian species	High & Low	Direct	Adverse	Low	Local	Short-term	Temporary	Reversible	Likely	Minor to moderate	Keep time short, keep footprint low, avoid (if possible) reproductive season, habitat restoration	Minor	N/A
Noise, vibration, and light pollution negatively affecting terrestrial avian assemblages in AoI-1	Excavation and construction activities, night-time operation	Construction, repairs during operation	Terrestrial avian species	Moderate & Moderate	Direct	Adverse	Low	Local along onshore cable route and HDD site (AoI-1)	Short-term	Temporary	Reversible	Likely	Minor to moderate	Limit night-time activities, reduce light pollution, avoid (if possible) sensitive periods	Minor	N/A
Light pollution negatively impacting nocturnally migrating birds	Lighting during construction, repairs during operation	Construction, repairs during operation	Nocturnally migrating birds	Moderate & Moderate	Direct	Adverse	Low	Broad (AoI-1 and AoI-3)	Short-term	Temporary, potentially re-occurring	Reversable	Likely	Minor to moderate	Limit night-time activities, reduce light pollution, avoid (if possible) sensitive periods	Minor	N/A

Impact type and source			Impact receptor		Effect & Scale							Probability of impact occurring	Overall impact significance	Proposed mitigation measures	Residual impact significance	Other requirements
Impact type	**Specific intervention leading to impact**	**Project phase**	**Receptor type**	**Sensitivity & resilience toward impact**	**Direct/ Indirect/ Cumulative**	**Beneficial/ Adverse**	**Severity**	**Physical/ geographic extent of impact**	**Short-/ Medium-/ Long-term**	**Temporary/ Permanent**	**Reversible/ Irreversible**					
Colony disturbance MT0000022, grounding of seabird fledgling, associated induced mortality caused by ALAN	Lighting during construction, repairs during operation	Construction, Operation (repairs)	Procellariform seabirds, specifically *P. yelkouan*	High & Low	Direct	Adverse	High	Broad (AoI-3)	Short-term	Temporary	Reversible	Likely	Major	Limit night-time activities, reduce light pollution, avoid (if possible) sensitive periods.	Minor to moderate	Monitoring of relevant seabird colony, compensatory measures if residual impacts remain
Loss of foraging and resting habitat for marine avian species	Disturbance and noise from cable laying vessel, ALAN during night-time operation	Construction, repair during operation	marine avian species	High & Low	Direct	Adverse	Low	Local	Short-term	Temporary	Reversible	Likely	Minor to moderate	Keep time short, avoid night-time, avoid (if possible) sensitive periods	Minor	N/A
Contribution or otherwise to climate change, impacting biodiversity, ocean acidification	Source of electricity sent through IC-2 from conventional vs renewable sources or sources detrimental vs beneficial to avifauna; potential for increasing local	Operation	Biotic and abiotic environment	Moderate & Moderate	Indirect/ Cumulative	Adverse to Beneficial	Moderate	Very broad	Long-term	Permanent	Reversible, with difficulty	Likely	Minor to Moderate	Tapping into renewable sources (locally and European grid) to reduce net energy proction from fossil fuels	Minor	N/A

	renewable energy production															

8.0 Figures

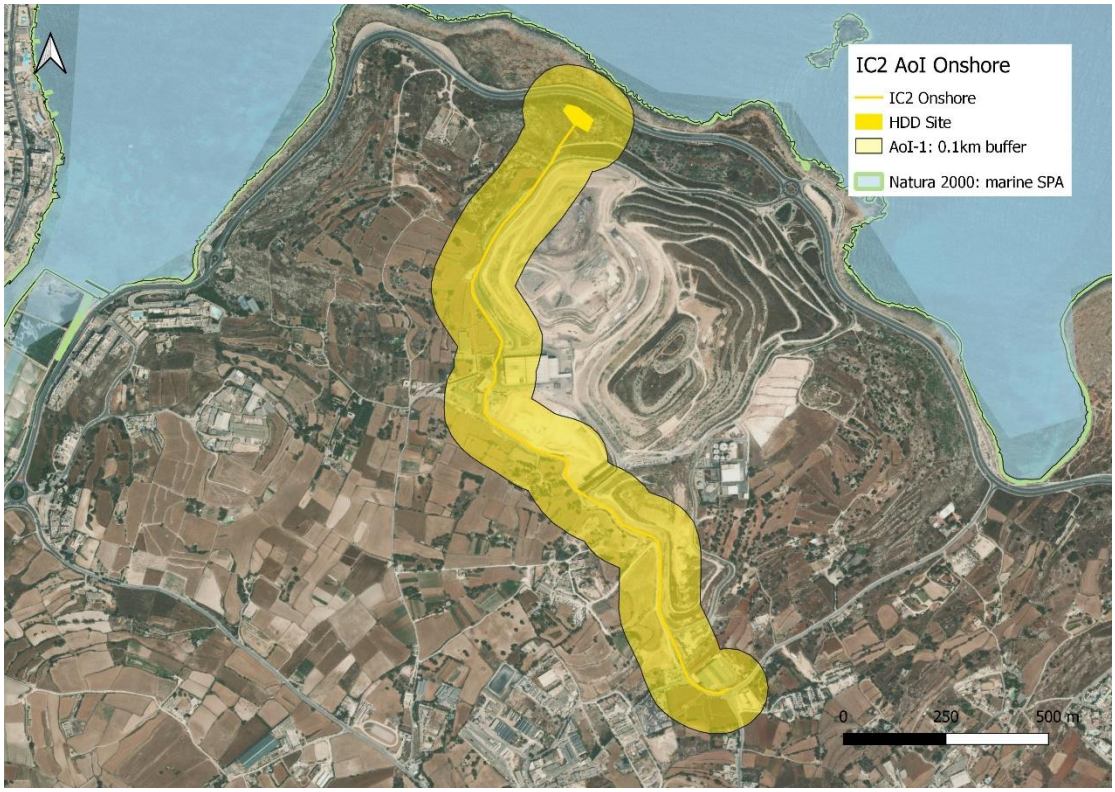

Figure 1: Onshore cable route and HDD site with AoI relevant to avifauna.

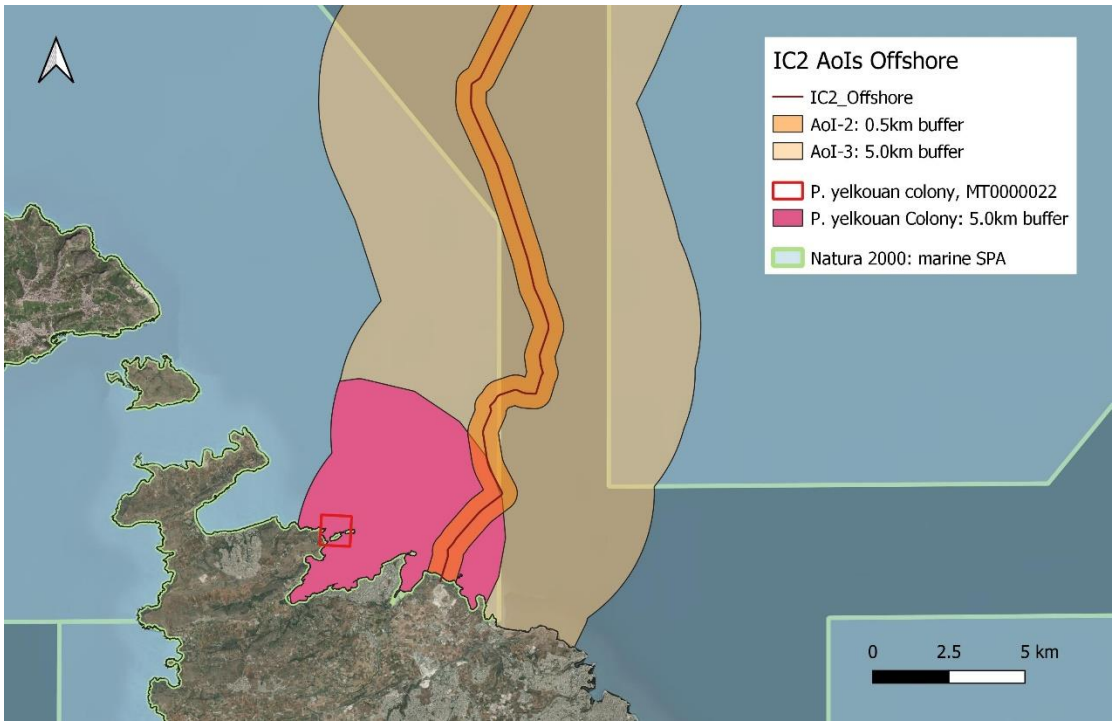

Figure 2: Offshore cable route with AoIs relevant to avifauna, relevant P. yelkouan colony with buffer overlapping with AoIs (pink), marine SPAs.