Disi Wellfield Project

CRITICAL HABITAT SCREENING

Anwar El-Halah

Biodiversity Specialist

Table of Contents

1 Introduction

The Critical Habitat (CH) screening report has been developed to evaluate the potential presence of critical habitat within and around the footprint of the Disi Wellfield project area. The report is prepared in accordance with the International Finance Corporation's (IFC) Performance Standard 6 and the European Investment Bank (EIB) Environmental and Social Standard 4. These standards require projects financed by international institutions to assess and avoid adverse impacts on critical habitats and ensure the conservation of biodiversity.

The Disi Wellfield project involves the drilling of several groundwater wells and the construction of associated infrastructure, such as access roads and electricity transmission lines. While the project footprint is limited in size and many areas show signs of ecological degradation and sparse vegetation, its proximity to sensitive ecological features, especially the Rum Important Bird Area (IBA), necessitates a thorough review of potential impacts on habitats and species of conservation concern.

This screening is a preliminary assessment tool used to determine whether the project is located within or near critical habitats as defined by IFC PS6 and EIB Environmental and Social Standard 4. It aims to:

- Identify whether any of the IFC PS6 and EIB Environmental and Social Standard 4 criteria for critical habitat are met.
- Assess the biodiversity value of the project site and its surrounding areas.
- Determine whether a Critical Habitat Assessment (CHA) is required.
- Support biodiversity risk management and inform mitigation planning in the early project stages.

The report relies on a combination of data sources, including:

- A literature review and desktop analysis of IUCN Red List species and known ecological values in the area.
- Walkover field visit and rapid biodiversity assessments conducted in August 2024.
- Mapping of proximity to protected areas, Important Bird Areas (IBAs), rangeland reserves, and known sensitive habitats.
- Review of vegetation types and ecosystem services specific to the Saharo-Arabian and Sudanian biogeographic zones where the wells are located.

2 Methodology

Critical habitat, as per international standards, refers to areas with high biodiversity value that are essential for the survival of species or the functioning of ecosystems. This may include habitats supporting threatened or endemic species, important congregations, or ecosystems with unique ecological functions.

The methodology for this critical habitat screening followed the guidance of **IFC Performance Standard 6 (PS6)**, as well as the complementary framework outlined by **EIB Environmental and Social Standard 4**. The process involved the following key steps:

2.1 Desktop Assessment and Field Survey

A comprehensive desktop review was conducted to gather information on biodiversity features relevant to the Disi Wellfield project area. The desktop review followed by a field visit was conducted over two days (6–7 August 2024) to ground-truth the desktop findings and document local flora and fauna.

2.2 Application of IFC PS6 Critical Habitat Criteria

Each of the five criteria for defining critical habitat under IFC PS6 was assessed systematically, using a combination of field data, literature sources, and spatial analysis. The criteria are

- Habitat of significant importance to critically endangered and/or endangered species (International Union for Conservation of Nature and Natural Resources (IUCN) Red List)
- Habitat of significant importance to endemic and/or restricted-range species
- Habitat supporting globally significant concentrations of migratory species and/or congregatory species
- Highly threatened and/or unique ecosystems
- Areas associated with key evolutionary processes

Species or ecosystems that triggered any of the above criteria were examined to determine the following:

- Whether their presence or use of the area is confirmed, likely, or unlikely.
- Whether the project footprint overlaps or is near important habitat features.
- Whether impacts are expected to be significant, residual, or irreversible.

2.3 Application of EIB E&S Standard 4: Biodiversity and Ecosystem

Critical habitat is the most sensitive of the high-value biodiversity features and is defined as comprising one of the following:

1. A highly threatened and/or unique ecosystem.
2. A habitat of priority and/or significant importance to critically endangered, endangered, or vulnerable species, as defined by the IUCN Red List of threatened species and in relevant national legislation.
3. A habitat of priority and/or significant importance to a population, range, or distribution of endemic or restricted-range species, or highly distinctive assemblages of species.
4. A habitat required for the survival of migratory species and/or congregatory species.
5. Biodiversity and/or an ecosystem of significant social, economic, or cultural importance to local communities and indigenous groups.
6. A habitat of key scientific value and/or associated with key evolutionary processes.

2.4 Risk Assessment

An expert evaluation was used to determine the potential likelihood of critical habitat triggers. In addition, consideration was given to the scale of project activities, the condition of the habitat, and existing disturbances. Where ambiguity existed, a **precautionary principle** was applied, recommending further investigation where necessary.

2.5 Delineation of Areas of Influence

The screening also considered the project's area of influence, including indirect impacts. The spatial scope was extended to buffer zones around the project footprint (typically up to 5 km) to capture relevant features such as Rum IBA and potential ecological corridors.

3 Results and Screening Against Critical Habitat Criteria

This section presents the findings of the critical habitat screening for the Disi Wellfield Project, structured in accordance with the five criteria of IFC Performance Standard 6 and six criteria of EIB Environmental and Social Standard 4. The evaluation integrates both desktop review findings and data collected from the rapid field assessment conducted in August 2024. The study area encompasses the well locations and their

surrounding landscape, which includes sensitive areas such as the Rum Important Bird Area (IBA) and Rum Protected Area.

3.1 IFC PS6 Criterion 1, EIB E&S Standard 4 Criterion 2:

Habitat of Critically Endangered (CR) and/or Endangered (EN) Species

According to the IUCN Red List and national red lists, several species of conservation concern have been documented in the broader region surrounding the project area. Literature reviews and field surveys indicate that the area supports, or lies near the range of, species that are either globally or nationally threatened due to factors such as habitat degradation, overexploitation, and climate-related pressures. While a few of these species may occasionally utilize habitats within or adjacent to the project's area of influence, their observed presence was minimal, seasonal, or inferred from secondary sources.

Importantly, the proposed well locations are situated in areas that are already highly disturbed, dominated by bare ground, mudflats, degraded hammada, or sand dune habitats with limited vegetation cover. The small scale and spatial footprint of the project activities, including the nature of well drilling and related infrastructure, further reduce the likelihood of significant impacts on such species. Therefore, while species of concern are acknowledged, Criterion 1 is not considered triggered under current conditions. Nonetheless, precautionary mitigation is recommended to ensure that potential effects on sensitive species remain negligible.

Thus, **Criterion 1 is not triggered.**

3.2 IFC PS6 Criterion 2, EIB E&S Standard 4 Criterion 3:

Endemic and/or Restricted-Range Species

Based on the literature review and findings from the walkover field assessment, no endemic or restricted-range species were recorded within the project footprint. While Jordan does support a number of endemic plant species, these are typically associated with specific biogeographic zones or isolated microhabitats. The Sudanian biogeographic zone, which partially overlaps with the project area, includes species such as *Acacia tortilis, Ochradenus baccatus*, and *Retama raetam*, which are regionally common and often found in wadis and ephemeral watercourses.

However, the areas selected for well drilling and associated infrastructure are characterized by degraded habitats such as bare hammada plains, disturbed sandy flats, and mudflats, none of which provided suitable or intact habitat for restricted-range or endemic species. Furthermore, the criteria for Critical Habitat under IFC PS6 require that the area of assessment support ≥10% of the global population of a species

with a global range ≤50,000 km², which was not met based on available data. As such, Criterion 2 is not considered triggered for this project.

Thus, **Criterion 2 is not triggered**.

3.3 IFC PS6 Criterion 3, EIB E&S Standard 4 Criterion 4:

Migratory and/or Congregatory Species

According to IFC PS6, migratory species are defined as those whose members cyclically and predictably move between geographical areas, while congregatory species are those that gather in large numbers on a regular basis for breeding, foraging, roosting, or migration. Examples of congregatory behaviors include colonial breeding, formation of large non-breeding foraging flocks, or use of migration bottlenecks.

The IFC PS6 Guidance Note further elaborates that such species include:

- Species that form colonies, either for breeding or non-breeding purposes.
- Species that utilize bottleneck sites, where large numbers pass through in a short time (e.g., raptors migrating through a desert corridor).
- Species with clumped distributions, where few sites support a disproportionate number of individuals.
- Source populations, which contribute significantly to recruitment across the species' range.

To trigger Critical Habitat under Criterion 3, the thresholds defined by IFC PS6 GN78 must be met:

- Sites that support ≥1% of the global population of a migratory or congregatory species on a cyclical basis.
- Sites that predictably support ≥10% of the global population during periods of environmental stress.

The Rum Important Bird Area (IBA), internationally recognized for its role in supporting migratory birds, overlaps with the western portion of the project area, particularly in the vicinity of wells W69 and W98. According to literature and regional bird data, this IBA serves as an important nesting, stopover, and foraging site for a variety of species of conservation concern, including

Aquila heliaca	Eastern Imperial Eagle	Vulnerable
Neophron percnopterus	Egyptian Vulture	Endangered
Falco cherrug	Saker Falcon	Endangered

Gypaetus barbatus	Bearded Vulture	Near Threatened
Falco concolor	Sooty Falcon	Near Threatened
Falco biarmicus	Lanner Falcon	Regionally Near Threatened
Aquila verreauxii	Verreaux's Eagle	Regionally Threatened
Circus cyaneus	Hen Harrier	Regionally Vulnerable

During the walkover field assessment, two species of global conservation concern were recorded:

Falco naumanni	Lesser Kestrel	Vulnerable
Falco concolor	Sooty Falcon	Near Threatened

These observations confirm that the project area is used by migratory raptors and other bird species, likely as a temporary stopover or foraging ground during migration. The IBA supports a range of habitat types, including rocky cliffs, wadis, and desert plains, which are essential for nesting and feeding, especially for raptors and arid-land species.

While the project area lies partially within a recognized migratory corridor and IBA, and some species of conservation concern were observed, there is insufficient evidence that the site meets the quantitative thresholds defined under IFC PS6 Criterion 3. As such, Critical Habitat under this criterion is not formally triggered at this time.

Nevertheless, due to the sensitivity of the IBA and the observed presence of threatened migratory birds, the project should adopt precautionary measures. These include minimizing construction noise and activity during peak migration seasons, avoiding unnecessary lighting during operation, and monitoring avifaunal activity during sensitive periods. Continued coordination with bird conservation experts and institutions, particularly with the Royal Society for the Conservation of Nature, the Birdlife International regional office, and Rum Protected Area management, is also advised to ensure alignment with IBA conservation priorities.

Thus, **Criterion 3 is not triggered**.

3.4 IFC PS 6 Criterion 4, EIB E&S Standard 4 Criterion 1:

Highly Threatened and/or Unique Ecosystems

As per IFC Performance Standard 6 Guidance Note 79, the identification of critical habitat under Criterion 4 requires reference to the IUCN Red List of Ecosystems where formal assessments exist. In the absence of formal global assessments, systematic evaluations at the national or regional level conducted by government agencies,

academic institutions, or recognized NGOs can also be used to determine ecosystem conservation status and priority.

Thresholds under IFC PS6 GN80 to trigger critical habitat include:

- Areas representing ≥5% of the global extent of an ecosystem type that qualifies as Critically Endangered (CR) or Endangered (EN) under IUCN criteria.
- Ecosystems that, although not yet formally assessed, are recognized as high conservation priorities through national or regional conservation planning.

The project area spans two major biogeographic zones:

- Saharo-Arabian: Dominated by gravel hammada, runoff hammada, and sandy plains.
- Sudanian: Found in parts of southern Jordan, characterized by sand dunes, scattered Acacia and Haloxylon species, and ephemeral watercourses (wadis).

These ecosystems are part of Jordan's natural desert landscape and support a variety of desert-adapted species and key ecosystem services, such as water retention and groundwater recharge through wadis, erosion control through perennial vegetation and shrubs, and grazing value for pastoralist communities.

However, based on a literature review and field reconnaissance, the project's footprint is concentrated in highly degraded, bare, and disturbed areas, such as mudflats, rocky flats, and disturbed hammada, which lack intact vegetation structure or sensitive ecological features.

Neither the Saharo-Arabian nor Sudanian desert ecosystems in the project area have been classified as Critically Endangered or Endangered under the IUCN Red List of Ecosystems. Furthermore, no evidence suggests that the project area comprises a significant portion (≥5%) of the global extent of any threatened ecosystem type, nor has it been flagged in national conservation plans as a priority conservation ecosystem.

Based on the current data and site condition, Criterion 4 is not triggered. The project site does not lie within an ecosystem type that is formally listed as threatened or identified as irreplaceable at the global or national level. However, efforts should still be made to maintain ecosystem services, avoid further degradation, and prevent indirect impacts such as erosion or disruption of natural runoff channels.

Thus, **Criterion 4 is not triggered**.

3.5 IFC PS6 Criterion 5, EIB E&S Standard 4 Criterion 6:

Key Evolutionary Processes or Biodiversity Support Functions

No areas within the project site have been identified as centers of endemism, refugia, or as providing critical support for long-distance ecological connectivity. The ecological function of the area is limited, given extensive historical degradation, low productivity, and existing infrastructure.

Thus, **Criterion 5 is not triggered**.

3.6 EIB S&E Standard 4 Criterion 5:

Biodiversity and/or Ecosystem of Significant Importance to Local Communities

Under the EIB Environmental and Social Standard 4, critical habitat may include biodiversity or ecosystems that hold significant social, economic, or cultural value for local communities. This includes areas important for traditional livelihoods, food security, cultural identity, or spiritual practices. Even if such areas are not formally protected or classified as ecologically sensitive, their human dependence and cultural value can qualify them as critical habitat under this criterion.

The Disi wellfield project is situated in a remote arid region of southern Jordan, historically used for pastoralism and rangeland grazing. Local Bedouin communities have long relied on these landscapes, particularly wadis and runoff hammada, for seasonal grazing, water collection, and the harvesting of native plants with traditional medicinal or fodder value.

The ecosystem services provided by wadis (such as water retention and forage production) are essential to local livelihoods, particularly in a region where rainfall is scarce and drought frequency is increasing. The surrounding rangelands support extensive grazing systems, forming a cornerstone of the social and economic fabric of the local population.

However, the specific well locations selected for drilling and access roads are situated in areas that are highly degraded, such as bare mudflats and disturbed hammada, with little to no current productive or cultural use.

While the broader project region has ecosystem services of importance to local communities, the project footprint does not overlap with any actively used traditional lands, water sources, or culturally sensitive ecosystems. There is no evidence that the project will cause displacement, disruption of traditional practices, or restriction of access to resources of social or cultural significance.

Therefore, EIB E&S Standard 4 Criterion 5 is not triggered. Nonetheless, continued engagement with local users and implementation of mitigation measures to avoid

accidental restrictions or disturbance of grazing and water access routes are strongly recommended.

4 Conclusion of Screening

Based on the comprehensive assessment of the five Critical Habitat (CH) criteria under the IFC Performance Standard 6 and EIB Environmental and Social Standard 4, the following conclusions are drawn:

1. **Critically Endangered or Endangered Species: Not Triggered**

Although species of conservation concern have been recorded regionally, including *Uromastyx aegyptia* and *Falco naumanni*, the project site itself is highly degraded, and no significant populations were recorded.

2. **Restricted-range and Endemic Species: Not Triggered**

No endemic or restricted-range species were confirmed through literature review or the walkover survey, and none of the well locations support the required threshold of ≥10% of a global population.

3. **Migratory and Congregatory Species: Not Triggered**

Not formally triggered. While the eastern part of the project overlaps with the Rum IBA, and several migratory bird species of conservation concern (e.g., Sooty Falcon, Lesser Kestrel) were observed during the field visit, the scale of the project, the limited and disturbed footprint, and the absence of core nesting or roosting habitats reduce the likelihood of significant impact. According to IFC PS6 thresholds, the site does not appear to regularly support ≥1% of any migratory species' global population. Therefore, Criterion 3 is not formally triggered, although precautionary measures are still advised due to the ecological sensitivity of the area.

4. **Threatened Ecosystems: Not Triggered**

The site includes Saharo-Arabian and Sudanian habitats, but these are not listed as CR or EN in the IUCN Red List of Ecosystems, nor are they identified as high conservation priority by national planning frameworks.

5. **Key Evolutionary Processes: Not Triggered**

The site does not support recognized evolutionary processes such as major ecological gradients, refugia, centers of endemism, or unique species assemblages. No evidence of key ecological connectivity or evolutionary significance was identified through the literature or field visits. Consequently, Criterion 5 is not triggered.

6. **Ecosystems of Importance to Communities: Not Triggered**

Although rangelands are used locally, the project area is located in degraded and rarely used lands, and no biodiversity features of social, cultural, or economic significance to local communities were identified.

5 Recommendations

Based on the results of the screening, it is concluded that the Disi Wellfield Project does not trigger a formal Critical Habitat designation under IFC PS6 and EIB E&S Standard 4. However, the proximity of certain project components to the Rum IBA necessitates a precautionary approach. While the project footprint does not intersect nesting cliffs or core habitats, several wells fall within or near the IBA boundary, and a number of bird species of conservation concern were recorded or are known to use the broader area.

Therefore, instead of initiating a full Critical Habitat Assessment, the following avoidance and management recommendations are proposed to ensure biodiversity safeguards are upheld and that project activities do not result in adverse or irreversible residual impacts:

5.1 Mitigation and Avoidance Measures

- Minimize construction and drilling during peak breeding and migration seasons for sensitive bird species. Activity scheduling should take this into account to minimize disturbance.

- Implement buffer zones around active nesting or roosting sites (if any are discovered) during construction and operation, especially in areas near cliffs or dense vegetation within the IBA.

- Restrict vehicle access and movement to pre-designated tracks to minimize habitat degradation and edge effects, particularly in the vicinity of the IBA and ephemeral wadis.

- Avoid nighttime lighting and reduce unnecessary noise during construction, especially near W98 and W69, which fall within the IBA. Bright artificial lighting can disorient nocturnal species and attract or repel birds in unintended ways.

- Prohibit illegal hunting or collection of fauna by workers. Include biodiversity protection protocols in worker induction and codes of conduct, with regular awareness briefings and enforcement mechanisms.

- Ensure no introduction of non-native species (e.g., trees planted around wells). Existing non-native vegetation near operational wells should be gradually

replaced with native drought-resistant species, consistent with the local flora of the Saharo-Arabian and Sudanian zones.

5.2 Monitoring and Oversight

- Establish a site-level biodiversity monitoring plan, with a focus on observing bird activity near wells located within or adjacent to the Rum IBA. Monitoring during construction and early operation phases will help verify that impacts are within acceptable thresholds.
- Involve local biodiversity experts or ornithologists in pre-construction checks to identify any active nests or roosting sites in the vicinity of works.
- Maintain regular coordination with the Royal Society for the Conservation of Nature (RSCN), Birdlife International regional office, Rum Protected Area management, and local environmental authorities to share monitoring findings and adopt any additional mitigation if new sensitive elements are detected.