

**RELOCATION OF RING ROAD
(1-B2_B4) IN MÝRDALUR
ENVIRONMENTAL IMPACT
ASSESSMENT REPORT -
SUMMARY**



**Environmental impact assessment
November 2023**





Summary

Premises and preconditions

The Icelandic Road and Coastal Administration, IRCA, plans reforms on the Ring Road (1-b2_b4) in Mýrdalur. The improvements are necessary for the Ring Road in Mýrdalur to fulfil the road design rules of the IRCA. The traffic west of Reynisfjall and Reynishverfisvegur has quadrupled since the approval of the Mýrdalshreppur master plan in 2013, and traffic on the Ring Road east of Vík has increased more than five-fold. The main reason for the increased traffic is a growing number of foreign visitors in Iceland. Furthermore, the built-up area in Vík has expanded with more pedestrian traffic by and across the road. An important aspect of moving the Ring Road from the residential area is to support increased traffic safety within the town, as well as promoting passability and capacity of all traffic and goods transportation via the Ring Road. In addition, the existing road has many road connections, and it is necessary to remove some of them alongside the road improvements. In accordance with the statutory role of IRCA, support for increased traffic safety and accessibility of all traffic and goods transportation on the Ring Road is necessary. The objective of the project consists of the following factors:

- Traffic Safety with improved road technical elements (visibility, turns, inclination, fewer road connections.)
- Passability during winter for all traffic and transportation.
- A highway outside of urban area, increasing safety and decreasing environmental noise.
- Shortening of the Ring Road.

The project has a long history; a tunnel through Reynisfjall has been discussed for decades. In the report of the collaboration committee on the merger of Dyrhólahreppur and Hvammshreppur, which was merged with Mýrdalshreppur on 1 January 1984, it is noted that in the regional plan for the area that a focus should be put on constructing a new road closer to the shore by adding a tunnel through Reynisfjall (The master plan of Mýrdalshreppur 2012-2028.) Tunnel through Reynisfjall was a part of the

parliamentary resolution concerning the formulation of a long-term plan on tunnel construction in Iceland, passed by the Althing in March 1999. In 2013 the master plan for Mýrdalshreppur 2012-2028 was passed, with a new road route of the Ring Road through Mýrdalur and with a tunnel through the south part of Reynisfjall. According to the Transport Plan for 2020-2024, funds are allocated for the preparation for 13.3 km road construction through Mýrdalur and Víkurþorp, along with a tunnel through Reynisfjall.

In the draft of Transport plan 2024 – 2038, published in the government's consultation portal in July 2023, it is proposed that the Ring Road around Reynisfjall will be repaired. However, the draft has not been submitted to Alþingi and has therefore not received substantive proceedings, but it can be expected that the transport plan will be submitted in the autumn session. Regarding the preparation of the transportation plan, the Road Administration's proposal for prioritizing tunnel options was also submitted, which can be found on the Road Administration's website. In that prioritization, the tunnel around Reynisfjall is not considered a priority and other tunnel projects are considered more urgent. Therefore, it is considered important to repair the Ring Road by Reynisfjall as early as 2029-2033. This implementation will immediately benefit road users with increased safety and passability and is related to some of the options presented in the environmental impact assessment. On October 6, 2023, a parliamentary resolution proposal was submitted on the transport plan 2024-2038, which is now being discussed in Alþingi.

Options for consideration in Environmental Impact Assessment

According to Act No. 111/2021 on the environmental impact assessments of projects and plans, an environmental impact assessment report shall include a description and assessment of realistic options that the developer has examined, as well as information about the main reasons for the option selected, with regard to the environmental impact of the project. During the assessment plan stage, an option analysis was conducted in order to find realistic options for the environmental impact assessment. Options that are evaluated in the environmental impact assessment are six in total, as well as a zero option (Figure 1) and are the following:

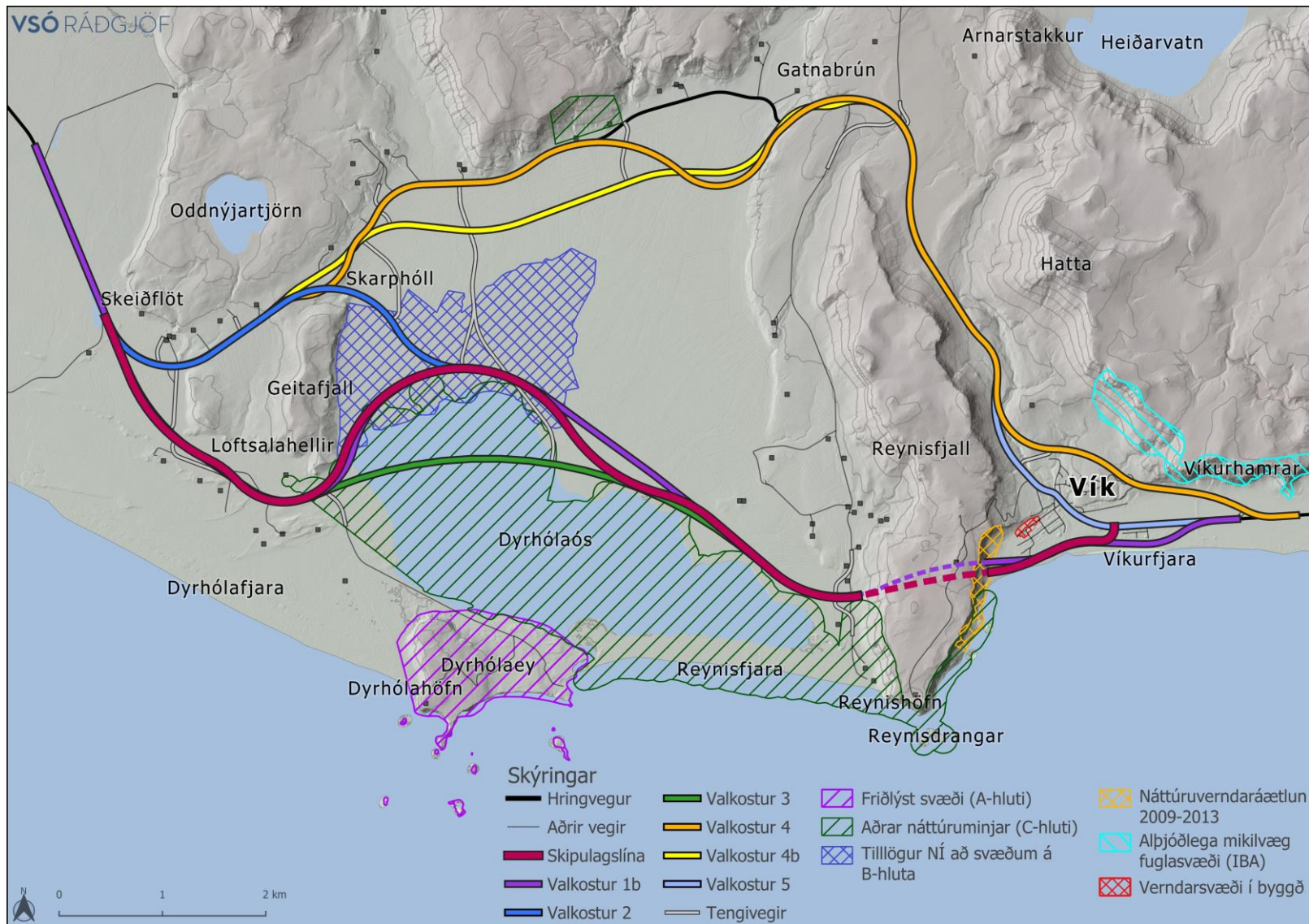


Figure 1 Options that are under evaluation for environmental impact assessment, along with areas that protection provisions apply to, or other limitations of land use.



- Option 1 | 1b** Option 1 aligns with the strategic planning of Mýrdalshreppur. Option 1b is a version of option 1 where plan line has been moved slightly due to road technical issues. In the environmental impact assessment these two options are covered together, apart from traffic safety and costs.
- Option 2 |** North of Geitafjall and with a tunnel through Reynisfjall.
- Option 3 |** Crossing of Dyrhólaós with a tunnel through Reynisfjall.
- Option 4 |** Improvements of the existing road with the road leading north of Vík.
- Option 4b |** A version of option 4 west of Gatnabrún, where the Ring Road is moved south and the existing road becomes a side road.
- Option 5 |** Includes improvements of the existing road west of Reynisfjall (cf. 4 or 4b) with the road still leading through Vík.

The zero option corresponds to maintaining the status quo. Towards the west, the road lies in a vegetated flat landscape that includes farm grounds, while by Skarphóll and Gatnabrún, the inclination is considerable, or around 10-12%. There is limited room for improvements to the road with associated safety area. In cases where IRCA takes on a new construction, such as the project covered in this report, the reason is that the authorities deem the existing roads inadequate when it comes to requirements for traffic safety and passability. Both of which are basic preconditions for urgent need for starting construction. The existing road does not meet the objective set for the project and does not fulfil IRCA's criteria for safe and easy transport.

IRCA's preferred option

According to law, IRCA is obligated to support safe, sustainable, easy, and economical transport. Furthermore, it is the institution's role to promote the development of transport according to social and environmental objectives. After comprehensive consideration of the options evaluated in the environmental assessment, it is evident that options 1/1b to 4b offer increased safety and passability compared to the current situation. Option 5

is least likely to meet the requirements for increased safety and passability and does not meet the goal of the project to move the highway out of the urban area.

Options 1/1b, 2, and 3 are better options with regards to safety and passability, as well as improving connections between areas. However, options 1/1b, 2, and 3 are less feasible economically and with regards to environmental impact. The starting cost is double, and the shortening of the Ring Road is insignificant. Fee collection for the tunnel is expected, however, it is unlikely that the charges will cover the construction costs. In addition, some risk is taken when constructing a road on a coast that is as exposed to open sea, as is the case with Víkurströnd. There is considerable difference in protecting a residential area at a certain distance from the coast compared to protecting a road by the coastline. This uncertainty, as well as costs of coastal protection, can be decreased by selecting option 1, which includes a connection within the town of Vík. Considering the cost and risk that is included in tunnel and road construction along Víkurströnd, IRCA cannot recommend those options at this time.

Options 4 and 4b meet the goals of the project regarding increased traffic safety, passability, and the relocation of the Ring Road out of urban area. These options are considerably more efficient than options 1/1b, 2, and 3 and have less environmental impact. IRCA therefore, recommends options 4 or 4b.

Road Design

All options include starting east of Vík, just west of the levee Kötlugarður, and end just west of the road to Skeiðflöt. Table 1 shows the changes to the length of the Ring Road with each option. The table also shows the length of the new road construction, both for the Ring Road and the side roads with respect to each option. The options can be divided into three categories. Option 1/1b, 2, and 3 are comparable since they are options that involve mostly lowlands. They go through Reynisfjall by a tunnel and pass by Vík on the south side of the town. With options 4 and 4b the road lies in a hilly landscape north of Reynisfjall and passes by Vík north of the town. Option 5 is the same as option 4 and 4b except the road goes through Vík. Since the



roads lie in lowlands and outside of built-up areas, it is assumed that the Ring Road will be of road type C₁₀. This applies to all options. This road type includes a road that is 10 metres wide, with one 3.5 m wide lane in each direction, and 1.5 m wide paved road shoulders with a road gradient of 1:4 on average.

Options 4, 4b, and 5 are partly in a hilly landscape. Where the roads lie in a hilly area, it is assumed that the Ring Road will be of road type B₁₂. This road type includes a road that is 12 m wide, with one 3.5 m wide lane in each direction, a 2 m middle separation with a guardrail, and 1.5 m wide road shoulders. Overtaking lanes are assumed on at least 20% of the new road as well as an extra crawler lane uphill. Connecting roads are planned to be of type C₈, which is an 8 m wide road with 3.5 m wide lanes, and 0.5 m wide road shoulders. Connecting roads are planned to be of type C₇, which is an 7 m wide road with 3.0 m wide lanes, and 0.5 m wide road shoulders.

Table 1 The length of the Ring Road in kilometres for each option

Options	Ring Road, length (km)	Side roads, length (km)	New road construction, length (km)	New road construction in current roadbed, length (km)
1/1b	13,9	4,3	18,2	17,5
2	13,1	2	15,1	12,1
3	13,0	5,4	18,4	17,3
4	15,5	1,7	17,2	9,4
4b	15,1	2,5	17,6	9,9
5+4	15,4	2,2	16,9	6,1
5+4b	15	2,2	17,2	6,6
Current Ring Road	15,6	-	-	-

For option 5, where the Ring Road goes through the town, the road type will be B_{12e}. This includes a 12 m wide road, with one lane in each direction with

2 m middle separation, and 1.5 wide shoulders. No walking trails are anticipated along the Ring Road, nor kerbstone, as shown in Figure 8.5. Since the traffic forecast east (1-b2) and west (1-b4) of Vík anticipates less than 6000 cars every 24 hours in the year 2045, no overtaking lanes are planned. The maximum speed allowed will continue to be 50 km/hour and the design speed 70 km/hour.

Construction duration and phases

For options 1/1b, 2, and 3 — 15 months is estimated for tunnel excavation, followed by a period of fixings and development inside the tunnel. Bridges, underpasses, levees, and roads need to be built. The total project period is assumed to be around 3-4 years.

For options 4, 4b, and 5, the total work period is expected to be around 2-3 years. The construction for the options can be divided into phases where improvements of the road through Gatnabrún would likely be the starting point.

Traffic forecast and safety

All the options greatly increase traffic safety, since the number of connections to the Ring Road is reduced and road technical issues are improved. Options 1/1b, 2, and 3 have the best outcome in the traffic safety assessment, where options 4 and 4b come in second. Option 5 is the least feasible regarding traffic safety, since the road leads into the urban area resulting in an increased risk of accidents and risk to pedestrians crossing the Ring Road. Considering traffic safety IRCA deems the relocation of the Ring Road out of the urban area immensely beneficial. Option 5 does not accord with IRCA's aims to separate highway traffic from pedestrian traffic.

Costs

Table 2 shows the estimated initial cost of options in ISK millions; at this stage of the design there is considerable uncertainty of cost.



Table 2 Estimated cost in ISK millions at September 2022 price levels.

Options	Tunnel	Coastal Defences	Road construction	Total
Option 1/1b	10,600	1,200/300*	4,900	16,700/15,800*
Option 2	10,600	1,200	5,300	17,100
Option 3	10,600	1,200	4,700	16,500
Option 4	-	-	8,700	8,700
Option 4b	-	-	8,200	8,200
Option 5 (+4/4b)**	-	-	8,300/7,800	8,300/7,800

* Option 1 includes a connection within the built-up area. This connection would considerably decrease the need for coastal defences and costs thereof.

** The initial cost of option 5 differs depending of whether it is connected with option 4 or 4b.

Table 3 Estimated operational cost in ISK millions at 2022 price levels.

Options	General services	Winter services	Main-tenance of paved roads	Main-tenance of coastal defences	Tunnel	Total
Option 1/1b	71	7	90	40/5*	7	215/180*
Option 2	67	7	85	40	7	206
Option 3	71	7	87	40	7	212
Option 4	55	21	83	-	-	159
Option 4b	60	21	85	-	-	166
Option 5 (+4)*	54	20	83	-	-	157
Option 5 (+4b)*	58	21	85	-	-	164

* Option 1 includes a connection within the urban area. This connection would considerably decrease the need for maintenance and coastal defences and costs thereof.

Operation of the road system influences accessibility and safety of the transport that commences as soon as the road is taken into use. The operation mostly includes maintenance and service. Operational cost is the aggregate cost of the whole road system within the evaluated area; the Ring Road, connection roads, and side roads, along with the tunnel and coastal defences. Estimated yearly operational cost (service and maintenance) for all of the options in ISK millions can be seen in Table 4. Using the same methodology, the cost of the road system today is ISK 137.1 million per year.

Natural hazards – slides, weather conditions and coastal stability

The environmental assessment report describes a possible risk of slides (landslides and avalanches) with regards to each option, as well as weather conditions and coastal stability. The accumulated impact due to risk of slides onto road lines from all areas shows that options 1/1b, 3, and 5 have the best outcome according to subjective assessment. Options 1/1b and 3 score higher on the assessment, since they only involve two areas affected by slides, meaning that the cumulative impact is considered less than for e.g. option 4 that lies in five areas and has the most cumulative impact.

Options 1/1b, 2 and 3 lie at Víkurströnd, a coast that is extremely exposed to the sea, and waves have been measured off the south coast of Iceland that are among the tallest and most powerful in the world. Considerable stone walls would have to be built along the road with the addition of a third breakwater to protect the coast from erosion. In all likelihood, protecting the coast will be increasingly difficult towards the east. There is great uncertainty that accompanies the building of infrastructure on an exposed coast such as Víkurströnd, it is unclear what construction and maintenance will be necessary to maintain a road in the area.

The Danish Hydraulic Institute (DHI) was hired to evaluate the erosive forces and the stability of the coast (DHI, 2022 - 1, 2022.) DHI's conclusion on the performance of a breakwater to lessen or prevent erosion on the coast mostly apply to the area between the current two breakwaters and towards the east, if more will be built. The area between Reynisfjall and the western breakwater was not examined closely as that area is well-sheltered by Reynisfjall and seems to have reached an equilibrium with a rather broad



shoreline. The general conclusion is that it is not advisable to build new infrastructure on an erosional coast, and if it is done extensive coastal defences are needed, including both breakwaters and levees along the shoreline. When the erosion between the breakwaters reaches the levee there is always a risk of the sandflat turning rocky.

Weather analysis was done for the area. For options 1/1b, 2 and 3 there is a change of sandstorms, high wind close to Geitafjall and Reynisfjall. There is uncertainty concerning option 3 regarding icing where the road lies on a filling over Dyrhólaós. For options 4, 4b and 5 there is increased risk of icing with higher altitude and areas with chances of high wind and turbulence. Following the report of Veðurvaktin, IRCA decided to place three anemometers in the area that will be of use during further project design, as well as for other projects in the area.

In the period 2010 – 2022, it has happened four times that there have been more closures per year at Reynisfjall compared to Hellisheiði. During this period, Reynisfjall has been inaccessible/closed 87 times or 6.7 times a year (718.5 hours). In the road sections on either side of Reynisfjall, the road section Markarfljót-Steinar has been inaccessible/closed 75 times or 5.8 times a year (703.4 hours), Mýrdalssandur has been inaccessible/closed for 52 days or 4 days a year (560 hours). On 14 occasions, Reynisfjall was inaccessible or closed when the other routes were open, or 1.1 times a year (5.5 hours).

In a report that University of Akureyri Research Centre (2022) made on tunnels regarding schedule, assessment of return, traffic safety, connections between areas, and regional development, information was collected on closures of mountain roads or other difficult areas in the road system that can be fixed with the 11 tunnels that are covered in the report. In line with that summary, an indication was made for measuring the scope of traffic disruption on the roads in question. The conclusion indicated how many were affected by the closure incidents on each mountain road during winter. Of the places being observed for disruptions, the Ring Road by Reynisfjall comes in second place. Even though the number of days under closure is not high, the

traffic disruption is more extensive than in most other places in the country where a tunnel option is being considered.

Protected areas and restrictions to land use

All options lie in areas or close to areas to which protection provisions or other restrictions to land use apply (Figure 1.) The following is a discussion on each of these protection provisions and the applicable areas. None of the options are in a water protection area or areas that fall under environmental protection according to the master plan.

Areas in part A of the Nature Conservation Register – protected areas

Dyrhólaey is close to the options and became a protected area because of bird nesting, etc. in 1978, cf. announcement No. 101/1978.

List of proposed areas for the strategic plan of the Nature Conservation Register (Part B)

In the year 2018, with additions in 2020, the Icelandic Institute of Natural History put forward a list of proposed areas for the strategic plan (Part B) of the Nature Conservation Register, including Mýrdalur, the wetlands upwards of the west part of Dyrhólaós. The procedure of these areas has not been completed by the authorities.

Areas in Part C of the Nature Conservation Register – other sites of natural interest

Two areas included in Part C of the Nature Conservation Register are within the area of observation, on the one hand Dyrhólaós-Fagradalur-Vík (area No. 708) due to Reynisfjara, Loftsalahellir, part of Reynisfjall, Reynisdrangar, and Hellnaskagi, along with Dyrhólaós. On the other hand Skammadalaskambar (area No. 709) due to ancient seashells and gastropods preserved in the palagonite.

Special protection according to the Nature Conservation Act

All road options will to some extent lie in geological formations and ecosystems that have special protection cf. Article 61 of the Nature Preservation Act (No. 60/2013). The area under observation contains



wetlands larger than 20,000 m², lakes and ponds that are 1,000 m² or larger in area, mudflats, caves, and waterfalls. With these geological formations and ecosystems, disturbance must be avoided to the greatest extent possible.

Nature Conservation Strategy 2009-2013

Options 1/1b, 2, and 3 are situated in an area that was placed on the Nature Conservation Strategy 2009-2013, namely Angelica fields in the hills of Reynisfjall, as they are the habitat for the white-lipped snail, which is rare in Iceland.

Bird habitats of international importance

Víkurhamrar (Fagridalur-Vík) is a vegetated rock belt, around 220 metres above sea level, and is 109 ha in area including the protected edge. The area is a seabird settlement of international importance due to the number of fulmar that nests there and falls under the IBA criteria A4iii (The Icelandic Institute of Natural History, 2016.). In addition the arctic tern nesting in Vík and the puffin nesting in Reynisfjall are of international importance (Icelandic Institute of Natural History, 2022.).

Katla Geopark

The planned construction is within the Katla UNESCO Global Geopark. The role of UNESCO Global Geoparks promotes the protection of important geological formations, cultural and natural heritage and that the inhabitants of the geoparks adopt the responsibility of the aforementioned, as well as focusing on strengthening the inner economy of the areas in question. The Geopark has listed certain places as important or vulnerable that are within the examined area, such as Dyrhólaey, Dyrhólaós, Loftsalahellir, Reynisfjall, Reynisdrangar, Reynisfjara, Skammadalskambar og Vík (older part of town.)

Protected Areas in urban areas

Protected Area in built-up areas, in the west part of Vík in Mýrdal cf. Act No. 87/2015 on protected area in built up area, was passed by the Minister of Education and Culture in February 2020.

Organisation and permits

The current Master Plan of Mýrdalshreppur 2021-2033 is dated 23.07.2023. In the Master Plan the relocation of the Ring Road is according to option 1, plan line. Option 1b is version of option 1 and is partly in line with the strategic plan for Mýrdalshreppur. Options 2 and 3 are also partly in line with the strategic plan for Mýrdalshreppur, since they also include a tunnel through Reynisfjall. Options 4, 4b, and 5 are not in accordance with the strategic plan of Mýrdalshreppur. The relocation of the Ring Road through Mýrdalur is dependent upon the following permits:

- Construction permit from Mýrdalshreppur according to Article 13 and 14 of the Planning Act No. 123/2010 for Major projects, which affect the environment and changes its appearance, such as alteration of land with landfill, or extraction, and other projects that are subject to legislation on environmental impact assessment.
- Operating licence of the Health Inspectorate of Suðurland, in accordance with Regulation No. 550/2018 on emissions from commercial operations and pollution prevention monitoring. This is an operating business that can cause pollution, such as processing of minerals, work-camps, portable toilets and kitchens, facilities for oil change, etc.
- A permit issued by the Cultural Heritage Agency of Iceland due to disturbance of archaeological relics in accordance with Act No. 80/2012 on Cultural Heritage.
- A permit from the Iceland Forest Service cf. Act No. 33/2019 on forestry.
- A licence from the Directorate of Fisheries for construction around fishing lakes, up to 100 m from the shoreline, cf. Act No. 61/2006 on salmon and trout fishing.

The Conclusion of the Environmental Impact Assessment

All options include both negative and positive impact on natural and social factors that vary between options. Options 4 and 4b have much less impact on environmental factors than the options which include a tunnel, especially with regards to natural surroundings and cultural heritage. Options 1/1b, 2, and 3 involve a more negative impact on the environment than other options and this applies to most of the environmental factors that are covered in the



environmental impact assessment report. These options will cause disturbances to areas that are vulnerable to change, and ecosystems, wetlands, and mudflats that fall under protection cf. Article 61 of Act No. 60/2013 on Nature Conservation. Additionally, these options will disturb habitat types with extremely high conservation value (15-32 habitat types,) that are listed as priority habitats in the Berne Convention on the Conservation of Wildlife and Natural Habitats. Furthermore, ecosystems that inhabit red-listed or protected species, will be disturbed. According to Article 61 of the Nature Conservation Act, disturbing ecosystems that enjoy special protection must be avoided unless absolutely necessary.

Options 4, 4b, and 5 involve considerably less disturbance of the aforementioned areas and habitats. Options 1/1b, 2, and 3 include more invasion into the natural water systems in the area and are more likely to have negative impact than options 4, 4b, and 5, where the Ring Road undergoes less change. Options 1/1b, 2, and 3, will, furthermore, disturb the ecosystem, especially birdlife and the habitat for the white-lipped snail, which is a rare species in Iceland. The options impact important breeding grounds of many migratory bird species as well as the habitat of the white-lipped snail. The impact of options 1/1b, 2, and 3 mostly involves fragmentation of the continuity and function of the areas in question. Red-listed bird species and/or responsibility species will be affected. A great many bird species rely on the area for food gathering during migration, and the mudflats by Dyrhólaás are especially significant for birds during that time. The options lie through an Angelica field at the foot of Reynisfjall that was added to the Nature Conservation Strategy 2009–2013.

Option 5 presents the least change from the current situation, and therefore has less impact on environmental factors such as natural surroundings, cultural heritage, and appearance, than other options. Option 5 maintains the socially negative impact of keeping the highway in a built-up area. Options 1/1b to 4b involve relocating the highway, moving it from the urban area. These options are more likely to increase traffic safety, improve environmental noise, decrease barrier effect, and other negative effects that accompany a highway that leads through the town. Option 1 aligns with the strategic planning of Mýrdalshreppur included in the master plan, both the

current master plan of Mýrdalshreppur 2012-2028, as well as the proposed revised master plan of Mýrdalshreppur 2021-2033, that was published in February 2023. Option 1b is a version of option 1, and is mostly in line with the strategic plan for Mýrdalshreppur. Options 2 and 3 are partially in line with the strategic plan for Mýrdalshreppur, since they also include a tunnel through Reynisfjall. Options 4, 4b, and 5 are not in accordance with the strategic plan of Mýrdalshreppur. All options, excluding option 1, require changes to the master plan of Mýrdalshreppur. Mýrdalshreppur has, during the assessment procedure and conversation with IRCA, delivered their opinion that option 4 and 4b, above the town, should not be considered since they involve a future area of construction and outdoor activities in the upper part of the town, and would intersect an area that is subject to land-use plan for a new residential area in the east part of town. In addition, they think that option 1b is out of the question since that version involves an industrial zone, rendering future development of the area next to impossible. With option Zero the negative environmental impact that is involved in road construction is avoided, such as influence on ecosystems, vegetation, birdlife, landscape and appearance, irrespective of options.

Mitigating measures and monitoring

The most comprehensive part of mitigating measures is revegetation and restoration of habitats. IRCA and the Environment Agency of Iceland (EAI) have signed a collaboration contract regarding the methods of clean-up of project sites. Revegetation will be carried out in consultation with EAI, the relevant landowners, and municipalities. IRCA has put forward proposals of mitigating measures due to listed archaeological relics in the project area.

The Cultural Heritage Agency of Iceland has the final decision on how the necessary mitigating measures will be carried out. All relics in the vicinity of the project site will be carefully marked and demarcated, in collaboration with an archaeologist. IRCA has proposed the construction of an underpass to decrease effects on outdoor activities and tourism. Detailed arrangements will be carried out in collaboration with the municipalities and landowners. The mitigating measures through revegetation and restoration of habitats will be monitored.



Table 4 Summary of the results of the environmental assessment of options. IRCA proposes options 4 or 4b that are identified with a black square.

Environmental factor	Option 1/1b	Option 2	Option 3	Option 4	Option 4b	Option 5
Water systems and water protection	Some to rather negative	Some to rather negative	Some to rather negative	Negligible to somewhat negative impact	Negligible to somewhat negative impact	Negligible to somewhat negative impact
Vegetation and habitats	Considerable to significantly negative impact	Considerable to significantly negative impact	Significant negative impact	Somewhat negative impact	Some to rather negative	Some to considerably negative *
Birdlife	Significantly negative impact	Significantly negative impact	Significantly negative impact	Negligible to somewhat negative impact	Somewhat negative impact	Negligible to somewhat negative impact
Aquatic systems of lakes and rivers	Some to rather negative	Some to rather negative	Some to rather negative	Somewhat negative impact	Somewhat negative impact	Somewhat negative impact
Other ecosystems	Some to considerably negative	Some to considerably negative	Some to considerably negative	Insignificant impact	Insignificant impact	Insignificant impact
Environmental noise	Somewhat negative impact	Somewhat negative impact	Somewhat negative impact	Negligible to somewhat negative impact	Negligible to somewhat negative impact	Somewhat negative impact
Air quality	Insignificant impact	Insignificant impact	Insignificant impact	Insignificant impact	Insignificant impact	Insignificant impact
Geological formations	Considerable negative effect	Some to rather negative	Considerable negative effect	Somewhat negative impact	Somewhat negative impact	Insignificant impact
Cultural heritage	Some to rather negative	Negligible to considerably negative impact	Some to rather negative	Somewhat negative impact	Somewhat negative impact	Insignificant impact
Tourist services and outdoor recreation	Some to considerably negative	Some to considerably negative	Some to considerably negative	Some to considerably negative	Some to considerably negative	Some to considerably negative
Landscape and appearance	Considerable negative effect	Considerable negative effect	Considerable negative effect	Some to rather negative	Some to rather negative	Somewhat negative impact
Land use and transportation	Some to considerably negative	Some to considerably negative	Some to considerably negative	Some to considerably negative	Some to considerably negative	Somewhat negative impact
Climate	Insignificant impact	Insignificant impact	Insignificant impact	Insignificant impact	Insignificant impact	Insignificant impact
Community	Some to considerably positive impact	Some to considerably positive impact	Some to considerably positive impact	Some to considerably positive impact	Some to considerably positive impact	Insignificant impact

* Dependant on whether option 5 is connected with options 4 or 4b.